# Family 9009+05 IBM Power System S914 (9009-41G)

IBM United States Sales Manual
Revised: November 10, 2020

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## Product life cycle dates

| Type Model | Announced | Available | Marketing Withdrawn | Service Discontinued |
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| 9009-41G | 2020-07-14 | 2020-07-24 | - | - |

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## Abstract

The IBM Power Systems has always been focused on reliability and performance. The Power System S914 server is primed with a POWER9 processor, displaying a technology designed from the ground up for data-intensive workloads, such as operational databases, advanced analytics, and business applications. The system is built with innovations that deliver the highest security and reliability standards for future-driven enterprises.

When it comes to virtualization technology, IBM Power Systems are unmatched. With the built-in PowerVM hypervisor, clients have been relying on IBM for years to provide consumability and agility in IT data centers. Today, leveraging IBM's unique, comprehensive approach to the cloud, from on-premises IT to public cloud provider, we are taking one step forward. The new Power System S914, powered by PCIe Gen4 switches, delivers a seamless and lightspeed throughput I/O between multiple on-premises and public cloud applications.

The Power S914 (9009-41G) server has been refreshed to provide:

A superior on-premises infrastructure for hybrid cloud

- Twice as fast back-end I/O enables seamless maximum speed and throughput between on-premises and multiple public cloud infrastructures with high availability.
- Largest memory bandwidth and memory storage in the market together with up to 11 (four U.2 NVMe plus up to seven PCIe add in cards) NVMe adapters allow a huge VM, container, and bare metal consolidation, saving data center space and networking costs.
- Support multiple OS instances without processing overhead in the server.
- PowerVM hypervisor is built in at no extra charge, so every POWER9 workload is virtualized, mobile, and cloud ready.
- IBM VM Recovery Manager, built on PowerVM, provides easy, low-cost solutions for high availability (HA) and disaster recoery (DR) operations.
- IBM PowerHA for AIX and IBM i are the low-cost, highly automated solutions to deliver high availability features to your mission- critical applications.

Increased performance and flexibility for your key workloads

- Upgrade IBM AIX and IBM i installations to speed up your journey to a hybrid multicloud
- Benefit from an increased I/O architecture on IBM Db2 Mirror for i
- Optimize performance and license costs with Oracle applications
- Red Hat Enterprise Linux and Red Hat OpenShift deployments

Key features

The Power System S914 server is a 1-socket system that meets today's growth and tomorrow's processing needs. It ships with up to 8 powerful cores and I/O configuration flexibility in a 19-inch rack- mount, 4U (EIA units) form factor. The server supports:

- One processor socket populated with the following POWER9 processor modules:
  - 4-core typical 2.3 to 3.8 GHz (max)
  - 6-core typical 2.3 to 3.8 GHz (max)
  - 8-core typical 2.8 to 3.8 GHz (max)
  - Power Management mode is set to Max Performance by default in the system. This mode can dynamically optimize the processor frequency at any given time based on CPU utilization and operating environmental conditions. For a description of this feature and other power management options available for this server, see the IBM EnergyScale for POWER9 Processor-Based Systems website.
- Up to 1.0 TB of system memory distributed across 16 DDR4 DIMM slots. Supports different memory DIMMs sizes such as 16 GB, 32 GB, and 64 GB, running at different speeds of 2133, 2400, and 2666 Mbps.

- Multiple I/O options:
  - One PCIe x16 Gen4, full-height, half-length slot (This slot can contain a CAPI-capable card or an I/O drawer interface card.)
  - One PCIe x8 Gen4, full-height, half-length slot (with x16 connector) (CAPI)
  - Two PCIe x16 Gen4, full-height, half-length slots (not CAPI)
  - Four PCIe x8 Gen4, full-height, half-length slots (One of these slots is used for the required base LAN adapter.)
- Storage features:
  - Storage backplane with six SFF-3 bays and two front PCIe Gen4 capable NVMe U.2 drive slots
  - Storage backplane with two or four front PCIe Gen4 capable NVMe U.2 drive slots
  - Twelve or eighteen 2.5-in. SFF-3 (Gen3 carrier) disk bays
  - RAID 0, 5, 6, 10, 5T2, 6T2, and 10T2 support
  - One RDX bay (only available with x12 disk bays, not available with x18 disk bays)
  - Split feature to 6+6 SFF bays: Add a second SAS controller
  - Expanded function 18 SFF-3 bays/dual IOA with write cache and optional external SAS port
  - Expanded function 12 SFF-3 bays/RDX bay and optional external SAS port
  - Expansion capabilities for the EXP12SX/EXP24SX SFF Gen2-bay drawer
  - Hot-plug PCIe Gen4 capable U.2 slots
- Integrated technologies and features:
  - Service processor
  - EnergyScale
  - Hot-plug and redundant cooling
  - One front and two rear USB 3.0 ports
  - Two HMC ports
  - One system port with RJ45 connector
- 1+1 redundant hot-plug AC power supplies in each enclosure , or
- 2+2 redundant hot-plug AC power supplies in each enclosure
- PowerVM integrated virtualization with minimum processing overhead

### Model abstract 9009-41G

The IBM Power S914 Model 41G server supports one-processor sockets, offering 4-core typical 2.3 to 3.8 GHz (max), or 6-core typical 2.3 to 3.8 GHz (max), or 8-core typical 2.8 to 3.8 GHz (max) POWER9 processor-based configurations in a 19-inch rack-mount, 4U (EIA units) drawer or desk-side configuration. All the cores are active. The Power S914 server supports a maximum of 16 DDR4 DIMM slots. Memory supported are 16 GB, 32 GB, and 64 GB, and run at speeds of 2133, 2400, and 2666 Mbps, allowing for a maximum system memory of 1024 GB.

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## Highlights

The IBM Power System S914 (9009-41G) server easily integrates into your organization's cloud and cognitive strategy and delivers industry-leading price and performance for your mission-critical workloads.

- Deliver superior price and performance for your mission-critical applications with room to scale in IBM AIX, IBM i, and Linux environments.
- Prevent security threats with advanced security features combined with unmatched reliability and resiliency.
- Harness the integrated virtualization capabilities of the server to rapidly deploy, optimize, and recover workloads.
- Migrate from previous IBM Power Systems servers with Live Partition Mobility (LPM) capabilities. Every new Power S914 server comes with a temporary IBM PowerVM license for your old server to support a seamless move to IBM POWER9 technology-based servers.
- Use this cloud-enabled server to build an agile, containerized cloud on a server platform that is optimized for data and cognitive services.
- Extend IBM i, the integrated operating system, and connect to the cognitive capabilities of the IBM Cloud using secure APIs.
- Twice as much bandwidth for a seamless integration between on- premises and public clouds with a new back-end PCIe Gen4 switch.
- More NVMe adapters with seven PCIe Gen4 slots in the back and four PCI Gen4 capable U.2 front-accessible drives.
- New cost-effective 800 GB data center PCIe Gen3 NVMe device supported for AIX, IBM VIOS, or Linux environments.
- Boot from PCIe Gen4 NVMe devices supported for native IBM i deployments.

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## Description

The POWER9 scale-out family is the first set of servers that comes completely cloud enabled out of the box with integrated PowerVM Enterprise capabilities. These servers have a native hypervisor included at no additional license cost. Additionally, on-chip analytics and algorithms combined with a sophisticated PCIe Gen4 I/O architecture help clients run their workloads at an optimized processor frequency for performance and throughput. In combination with the DDR4 memory footprint of 1 TB, IBM provides a system that is unmatched by the competition in terms of memory scaling as well as the core to memory ratio needed for data-centric and in-memory workloads. Live Partition Mobility capabilities help you migrate from previous Power Systems. Every new S914 also has the option of a temporary PowerVM license for your old server to support a seamless move of workloads to POWER9. The Power System S914 server has built-in security that can help you to be ready for current and future security threats.

Summary of standard features for Power S914 server:

- POWER9 processor modules:
  - 4-core, typical 2.3 to 3.8 GHz (max) POWER9 processor (#EP50)
  - 6-core, typical 2.3 to 3.8 GHz (max) POWER9 processor (#EP51)
  - 8-core, typical 2.8 to 3.8 GHz (max) POWER9 processor (#EP52) (rackmount configuration only)
- High-performance Mbps DDR4 ECC memory
  - 16 GB (#EM62), 32 GB (#EM63), or 64 GB (#EM64) memory features
  - Up to 1024 GB of DDR4 memory with one Power Systems processor
- Storage features:
  - Storage backplane with six SFF-3 bays and two front PCIe Gen4 capable NVMe U.2
  - Storage backplane with two or four front PCIe Gen4 capable NVMe U.2 drive slots
  - Twelve SFF-3 bays/RDX bays
  - Option to split the above SFF-3 bays and add a second integrated SAS controller without cache
  - Eighteen SFF-3 bays/dual IOA with write cache and external SAS port
  - Twelve SFF-3 bays/RDX bay/dual IOA with write cache and external SAS port
  - Option to attach an EXP12SX/EXP24SX SAS HDD/SSD expansion drawer to the dual IOA
- PCIe slots with single processor:
  - One x16 Gen4 full-height, half-length (CAPI)
  - One x8 Gen4 full-height, half-length (with x16 connector) (CAPI)
  - Two x16 Gen4 full-height, half-length
  - Four x8 Gen4 full-height, half-length (One of these slots is used for the required base LAN adapter.)
- Integrated:
  - Service processor
  - EnergyScale technology
  - Hot-swap and redundant cooling
  - One front USB 3.0 ports
  - Two rear USB 3.0 ports
  - Two HMC 1 GbE RJ45 ports
  - One system port with RJ45 connector
  - Four hot-plug, redundant power supplies
  - Nineteen-inch rack-mounting hardware (4U)

### PowerVM

PowerVM, which delivers industrial-strength virtualization for AIX and Linux environments on POWER processor-based systems, offers a virtualization-oriented performance monitor, and performance statistics are available through the HMC. These performance statistics can be used to understand the workload characteristics and to prepare for capacity planning.

### Power S914 Capacity Backup (CBU) for IBM i

The Power S914 (9009-41G) CBU designation enables you to temporarily transfer IBM i processor license entitlements and IBM i user license entitlements purchased for a primary machine to a secondary CBU-designated system for HA and DR operations. Temporarily transferring these resources instead of purchasing them for your secondary system may result in significant savings. Processor activations cannot be transferred.

The CBU specify feature 0444 is available only as part of a new server purchase. Certain system prerequisites must be met, and system registration and approval are required before the CBU specify feature can be applied on a new server. Standard IBM i terms and conditions do not allow either IBM i processor license entitlements or IBM i user license entitlements to be transferred permanently or temporarily. These entitlements remain with the machine they were ordered for. When you register the association between your primary and on-order CBU system, you must agree to certain terms and conditions regarding the temporary transfer.

After a new CBU system is registered as a pair with the proposed primary system and the configuration is approved, you can temporarily move your optional IBM i processor license entitlement and IBM i user license entitlements from the primary system to the CBU system when the primary system is down or while the primary system processors are inactive. The CBU system can then support failover and role swapping for a full range of test, disaster recovery, and high availability scenarios. Temporary entitlement transfer means that the entitlement is a property transferred from the primary system to the CBU system and may remain in use on the CBU system as long as the registered primary and CBU system are in deployment for the high availability or disaster recovery operation. The intent of the CBU offering is to enable regular role-swap operations.

The Power S914 server is available with six or eight cores in the P10 software tier and four cores in the P05 software tier.

### Power S914 SW tiers for IBM i on 9009-41G

- The 4-core processor (#EP50, QPRCFEAT EP50) is IBM i SW tier P05.
- The 6-core processor (#EP51, QPRCFEAT EP51) is IBM i SW tier P10.
- The 8-core processor (#EP52, QPRCFEAT EP52) is IBM i SW tier P10.

### For the Power S914 (9009-41G) CBU server in the P10 software tier

The primary systems for a Power S914 (9009-41G) CBU server with an IBM i P10 software tier can be a POWER8 or POWER9 server with a P10 or P20 software tier listed below:

- Power S824 (8286-42A)
- Power S814 6-core or 8-core (8286-41A)
- Power S822 (8284-22A)
- Power S924 (9009 42A)
- Power S924 (9009 42G)
- Power S914 6-core or 8-core (9009-41A)
- Power S914 6-core or 8-core (9009-41G)
- Power S922 (9009-22A)
- Power S922 (9009-22G)

The primary machine must be in the same enterprise as the CBU system. The IBM i Solution Editions are not eligible for CBU status.

Before you can temporarily transfer IBM i processor license entitlements from the registered primary system, you must have more than one IBM i processor license on the primary machine and at least one IBM i processor license on the CBU server. To be in compliance, the CBU will be configured in a such a manner that there will be no out-of-compliance messages prior to a failover. An activated processor(s) must be available on the CBU server to use the transferred entitlement. You can then transfer any IBM i processor entitlements above the minimum one, assuming the total IBM i workload on the primary system does not require the IBM i entitlement you would like to transfer during the time of the transfer. During this temporary transfer, the CBU system's internal records of its total number of IBM i processor license entitlements are not updated, and you may see IBM i license noncompliance warning messages from the CBU system. These warning messages in this situation do not mean you are not in compliance.

Before you can temporarily transfer IBM i user entitlements, you must have more than the minimum number of IBM i user entitlements on a primary server. You can then transfer any IBM i user entitlements above the minimum, assuming the total IBM i users on the primary system do not require the IBM i entitlement you want to transfer during the time of the transfer. The Power S924 and Power S824 servers do not have IBM i user entitlements to transfer, only processor entitlements. For a P10 primary, the minimum number of IBM i user entitlements on the eligible P10 POWER9 and POWER8 servers are:

- Power S814 6-core or 8-core (8286-41A): 10 users
- Power S822 (8284-22A): 10 users
- Power S914 6-core or 8-core (9009-41A): 10 users
- Power S914 6-core or 8-core (9009-41G): 10 users
- Power S922 (9009-22A): 10 users
- Power S922 (9009-22G): 10 users

### For the Power S914 (9009-41G) CBU server in the P05 software tier

The primary systems for a Power S914 (9009-41G) CBU server with an IBM i P05 software tier can be a POWER8 or POWER9 server with a P05 or P10 software tier listed below:

- Power S814 (8286-41A) 4, 6, or 8 core
- Power S822 (8284-22A)
- Power S914 (9009-41A) 4, 6, or 8 core
- Power S914 (9009-41G) 4, 6, or 8 core
- Power S922 (9009-22A)
- Power S922 (9009-22G)

Before you can temporarily transfer IBM i user entitlements, you must have more than the minimum number of IBM i user entitlements on a primary server. You can then transfer any IBM i user entitlements above the minimum, assuming the total IBM i users on the primary system do not require the IBM i entitlement you want to transfer during the time of the transfer. The minimum number of IBM i user entitlements on the P05 or P10 POWER9 and POWER8 with IBM i user entitlements are:

- Power S814 4 core (8286-41A): 5 users
- Power S814 6 core or 8 core (8286-41A): 10 users
- Power S822 (8284-22A): 10 users
- Power S914 4 core (9009-41A): 5 users
- Power S914 6 core or 8 core (9009-41A): 10 users
- Power S922 (9009-22A): 10 users
- Power S914 4 core (9009-41G): 5 users
- Power S914 6 core or 8 core (9009-41G): 10 users
- Power S922 (9009-22G): 10 users

For example, if you have a Power S914 6-core server as your primary system with two IBM i processor license entitlements (one above the minimum) and 40 IBM i user entitlements (30 above the minimum), you can temporarily transfer up to one IBM i entitlement and up to 30 user entitlements. During this temporary transfer, the CBU system's internal records of its total number of IBM i processor and user license entitlements is not updated, and you may see IBM i license noncompliance warning messages from the CBU system.

If your primary or CBU machine is sold or discontinued from use, any temporary entitlement transfers must be returned to the machine on which they were originally acquired. For CBU registration, terms and conditions, and further information, see the IBM Power Systems: Capacity BackUp website.

### 4-core Power S914 processor feature

The 4-core Power S914 server offers clients running AIX, IBM i, or Linux an entry server based on POWER9 technology. It uses a typical 2.3 to 3.8 GHz (max) POWER9 Processor Card (#EP50) with processor core activation feature (#EP60). All four processor cores must be activated, but factory deconfiguration feature (#2319) is supported. The chargeable feature EP60 is used for these activations. The 4-core Power S914 server supports a maximum system memory of 64 GB. The 4-core Power S914 server has eight PCIe Gen4 slots. One slot is used by one 4-port 1 Gb Ethernet adapter. If the expanded function backplane is chosen, another PCIe slot is used, leaving six slots.

There is no upgrade to increase the cores on this feature. This server supports AIX, IBM i, and Linux, but it is especially attractive to IBM i clients with its P05 software tier.

If IBM i is selected as the primary operating system. The Capacity Backup option for IBM i (#0444) is supported. The 4-core S914 server supports a maximum of 10 disk drives or 10 SSDs or a combination of 10 disks and SSDs in the system unit. Alternatively, in the system unit, a maximum of two NVMe PCIe devices (and no SAS drives) are allowed. This is true with any of the storage backplane options selected. SAS drives located in feature code I/O drawers such as the EXP24SX (#ESLS) are not supported. Attachment to SANs is supported.

The following SFF-3 SAS drives and NVMe devices for IBM i are supported in the SAS/NVMe bays of the 4-core Power S914 system unit:

15k rpm disk drives

- 283 GB 15k rpm disk drive (#ESDA) 5xx byte blocks (IBM i)
- 283 GB 15k rpm disk drive (#ESFA) 4k byte blocks (IBM i)
- 283 GB 15K rpm disk drive (#ESNJ) 4k byte blocks (IBM i)

10k rpm disk drives

- 571 GB 10k rpm disk drive (#ESD4) 5xx byte blocks (IBM i)
- 571 GB 10k rpm disk drive (#ESF4) 4k byte blocks (IBM i)

SSDs

- 387 GB SSD (#ES7L) 5xx byte blocks (eML4 technology) for IBM i
- 387 GB SSD (#ES8P) 4k byte blocks (eML4 technology) for IBM i
- 387 GB SSD (#ESGA) 5xx byte blocks (Enterprise technology) for IBM i
- 387 GB SSD (#ESGE) 4k byte blocks (Enterprise technology) for IBM i
- 387 GB SSD (#ES91) 4k byte blocks (Enterprise technology) for IBM i
- 387 GB SSD (#ESB9) 4k byte blocks (Enterprise technology) for IBM i
- 931 GB SSD (#ES84) 4k byte blocks (Mainstream technology) for IBM i
- 931 GB SSD (#ESHT) 4k byte blocks (Mainstream technology) for IBM i
- 931 GB SSD (#ESJ9) 4k byte blocks (Mainstream technology) for IBM i
- 931 GB SSD (#ESJT) 4k byte blocks (Mainstream technology) for IBM i

NVMe PCIe devices

- 1.6 TB (#EC6V) - PCIe3 x8 NVMe Flash Adapter for IBM i
- 1.6 TB (#EC7K) - PCIe4 x8 NVMe Flash Adapter for IBM i
- 1.6 TB (#ES1F) - PCIe4 U.2 NVMe module for IBM i
- 3.2 TB (#EC6X) - PCIe3 x8 NVMe Flash Adapter for IBM i
- 3.2 TB (#EC7M) - PCIe4 x8 NVMe Flash Adapter for IBM i
- 3.2 TB (#ES1H) - PCIe4 U.2 NVMe module for IBM i

The CBU specify feature (#0444) is supported with the 4-core processor card (#EP50) in IBM i environments. With its P05 software, it can be paired with a POWER7, POWER7+, or POWER8 server with P05 or P10 software tier.

If IBM AIX or Linux is selected as the primary operating system. The 4-core S914 server supports a maximum of 10 disk drives or 10 SSDs or a combination of 10 disks and SSDs in the system unit. Alternatively, in the system unit, a maximum of 3 NVMe PCIe devices (and no SAS drives) are allowed. This is true with any of the storage backplane options selected.

The following SFF-3 SAS drives and NVMe devices for AIX/Linux are supported in the SAS/NVMe bays of the 4-core Power S914 system unit:

15k rpm disk drives

- 300 GB 15k rpm disk drive (#ESDB) 5xx byte blocks (AIX/Linux)
- 300 GB 15k rpm disk drive (#ESFB) 4k byte blocks (AIX/Linux)
- 300 GB 15K rpm disk drive (#ESNK) 4k byte blocks (AIX/Linux)

10k rpm disk drives

- 600 GB 10k rpm disk drive (#ESD5) 5xx byte blocks (AIX/Linux)
- 600 GB 10k rpm disk drive (#ESF5) 4k byte blocks (AIX/Linux)

SSDs

- 387 GB SSD (#ES7K) 5xx byte blocks (eML4 technology) for AIX/Linux
- 387 GB SSD (#ES8N) 4k byte blocks (eML4 technology) for AIX/LinuxM i
- 387 GB SSD (#ESG9) 5xx byte blocks (Enterprise technology) for
- AIX/Linux
- 387 GB SSD (#ESGD) 4k byte blocks (Enterprise technology) for
- AIX/Linux
- 387 GB SSD (#ES90) 4k byte blocks (Enterprise technology) for
- AIX/Linux
- 387 GB SSD (#ESB8) 4k byte blocks (Enterprise technology) for
- AIX/Linux
- 387 GB SSD (#ESB0) 5xx byte blocks (Enterprise technology) for
- AIX/Linux
- 931 GB SSD (#ES83) 4k byte blocks (Mainstream technology) for
- AIX/Linux
- 931 GB SSD (#ESHS) 4k byte blocks (Mainstream technology) for
- AIX/Linux
- 931 GB SSD (#ESJ8) 4k byte blocks (Mainstream technology) for
- AIX/Linux
- 931 GB SSD (#ESJS) 4k byte blocks (Mainstream technology) for
- AIX/Linux

NVMe PCIe devices

- 1.6 TB (#EC5B) - PCIe3 x8 NVMe Flash Adapter for AIX/Linux
- 1.6 TB (#EC7B) - PCIe4 x8 NVMe Flash Adapter for AIX/Linux
- 3.2 TB (#EC5D) - PCIe3 x8 NVMe Flash Adapter for AIX/Linux
- 3.2 TB (#EC7D) - PCIe4 x8 NVMe Flash Adapter for AIX/Linux
- 6.4 TB (#EC5F) - PCIe3 x8 NVMe Flash Adapter for AIX/Linux
- 6.4 TB (#EC7F) - PCIe4 x8 NVMe Flash Adapter for AIX/Linux
- 1.6 TB (#ES1E) - PCIe4 U.2 NVMe module for AIX/Linux
- 3.2 TB (#ES1G) - PCIe4 U.2 NVMe module for AIX/Linux
- 6.4 TB (#EC5V) - PCIe4 U.2 NVMe module for AIX/Linux
- 800 GB (#EC5X) - PCIe3 U.2 NVMe module for AIX/Linux

Other NVMe PCI devices or SFF-3 drives are not supported. Note that 4k byte drives are generally less expensive than 5xx byte drives.

The PCIe expansion drawer (#EMX0) and EXP24SX /EXP12SX SAS Storage Enclosures (#ESLS or #ESLL) do not apply to the 4-core configuration Power S914 server.

### IBM i Solution Edition for Power S914

The IBM i Solution Edition is designed to help you take advantage of the combined experience and expertise of IBM and ISVs in building business value with your IT investments. A qualifying purchase of software, maintenance, services, or training for a participating ISV solution is required when purchasing an IBM i Solution Edition.

The Power S914 Solution Edition feature 4928 supports 4-core configurations and feature 4927 supports 6-core configurations. For a list of participating ISVs, registration form, and additional details, see the IBM i Solution Editions website.

### IBM i Express Edition for Power S914

IBM i clients acquiring a new 4-core or 6-core Power S914 server can choose to use an IBM i Express Edition. Two new editions are similar to the editions provided with POWER8 servers and offer specific licensing advantages that further improve the price and performance of the Power S914 server when running IBM i. Feature EU2C can be included with a new 4-core Power S914 server, and feature EU2D can be included with a new 6-core Power S914 server.

### Processor modules

A maximum of one processor is allowed. The following defines the allowed quantities of processor activation entitlements:

- One 4-core, typical 2.3 to 3.8 GHz (max) processor (#EP50) requires that four processor activation codes be ordered. A maximum of four processor activations (#EP60) is allowed.
- One 6-core, typical 2.3 to 3.8 GHz (max) processor (#EP51) requires that six processor activation codes be ordered. A maximum of six processor activation code features (#EP61) is allowed.
- One 8-core, typical 2.8 to 3.8 GHz (max) processor (#EP52) requires that eight processor activation codes be ordered. A maximum of eight processor activation code features (#EP62) is allowed.

### System memory

- A minimum of 32 GB of memory is required on the Power S914 system.
- Memory upgrades require memory pairs. Base memory is 2x 16 GB DIMMs (#EM62) with one socket installed.

Plans for future memory upgrades should be taken into account when deciding which memory feature size to use at the time of initial system order.

Summary of standard features for Power S914:

| Feature description | Feature number | Minimum DIMM quantity | Maximum DIMM quantity |
|---|---|---|---|
| 16 GB DDR4 Memory | EM62 | 0 | 16 |
| 32 GB DDR4 Memory | EM63 | 0 | 16 |
| 64 GB DDR4 Memory | EM64 | 0 | 16 |

Note: Different sizes and configurations run at different frequencies of 2133, 2400, and 2666 Mbps.

### Power supply

- Four power supplies supporting a tower or rack: 2+2 900 Watt 100 - 127 Volt or 200 - 240 Volt AC options (#EB2L)
- Two power supplies supporting a rack: 1+1 1400 Watt 200 - 240 Volt (#EB2M)

### Redundant fans

Redundant fans are standard.

### Power cords

Four power cords are required with power supply EB2L and two power cords are required with power supply EB2M. A maximum of four feature 6458 cords is allowed on the system unless a valid I/O drawer or tower is attached to the system. The Power S914 server supports power cord 4.3 m (14 ft), Drawer to Wall/IBM PDU (250V/10A) in the base shipment group. See the feature listing for other options.

### PCIe slots

The Power S914 server has up to 11 (four U.2 NVMe plus up to seven PCIe add in cards) PCIe hot-plug slots, providing excellent configuration flexibility and expandability. For more information about the PCIe slots, see the I/O expansion drawer section.

With one POWER9 processor single-chip modules (SCM), eight PCIe slots are available: One is x16 Gen4 full-height, half-length slot (CAPI), one is x8 Gen4 full-height, half-length slot (with x16 connector) (CAPI), two are x16 Gen4 full-height, half-length slots, and four are x8 Gen4 full-height, half-length slots (one of these slots is used for the required base LAN adapter).

The x16 slots can provide up to twice the bandwidth of x8 slots because they offer twice as many PCIe lanes. PCIe Gen4 slots can support up to twice the bandwidth of a PCIe Gen3 slot, and PCIe Gen3 slots can support up to twice the bandwidth of a PCIe Gen2 slot, assuming an equivalent number of PCIe lanes.

At least one PCIe Ethernet adapter is required on the server by IBM to ensure proper manufacture, test, and support of the server. One of the x8 PCIe slots is used for this required adapter.

These servers are smarter about energy efficiency when cooling the PCIe adapter environment. They sense which IBM PCIe adapters are installed in their PCIe slots, and, if an adapter requires higher levels of cooling, they automatically speed up fans to increase airflow across the PCIe adapters. Note that faster fans increase the sound level of the server. Higher wattage PCIe adapters include the PCIe3 SAS adapters and SSD/flash PCIe adapters (#EJ10, #EJ14, and #EJ0J).

### NVMe drive slots, SAS bays, and storage backplane options

- Storage backplane with six SFF-3 Bays and two front PCIe Gen4 capable NVMe U.2 drive slots (#EJ1S)
- Storage backplane with two front PCIe Gen4 capable NVMe U.2 drive slots (#EJ1T)
- Storage backplane with four front PCIe Gen4 capable NVMe U.2 drive slots (#EJ1U)
- Base storage backplane 12 SFF-3 bays/RDX bay (#EJ1C)
- Feature EJ1E (6 +6 SFF-3 bays split backplane for #EJ1C)
- Expanded function storage backplane 18 SFF-3 bays/dual IOA with write cache and optional external SAS port (#EJ1D)
- Expanded function storage backplane 12 SFF-3 bays/RDX bay/dual IOA with write cache and optional external SAS port (#EJ1M)

The backplane options provide SFF-3 SAS bays in the system unit. These 2.5-inch or small form factor (SFF) SAS bays can contain SAS drives (HDD or SSD) mounted on a Gen3 tray or carrier. Thus the drives are designated SFF-3. SFF-1 or SFF-2 drives do not fit in an SFF-3 bay. All SFF-3 bays support concurrent maintenance or hot-plug capability.

These backplane options use leading-edge, integrated SAS RAID controller technology designed and patented by IBM. A custom-designed PowerPC based ASIC chip is the basis of these SAS RAID controllers and provides RAID 5 and RAID 6 performance levels, especially for SSD. Internally, SAS ports are implemented and provide plenty of bandwidth. The integrated SAS controllers are placed in dedicated slots and do not reduce the number of available PCIe slots.

The feature EJ1C base storage backplane option provides twelve SFF-3 bays and one SAS controller with zero write cache.

By optionally adding the feature EJ1E split backplane, a second integrated SAS controller with no write cache is provided, and the twelve SSF-3 bays are logically divided into two sets of six bays. Each SAS controller independently runs one of the six-bay sets of drives.

This backplane option supports HDDs or SSDs or a mixture of HDDs and SSDs in the SFF-3 bays. Mixing HDDs and SSDs applies even within a single set of six bays of the split backplane option. Note that if mixing HDDs and SSDs, they must be in separate arrays.

This backplane option can offer different drive protection options: RAID 0, RAID 5, RAID 6, or RAID 10. RAID 5 requires a minimum of three drives of the same capacity. RAID 6 requires a minimum of four drives of the same capacity. RAID 10 requires a minimum of two drives. Hot spare capability is supported with RAID 5, or RAID 6, or RAID 10.

Note that RAID 5 and RAID 6 result in more drive write activity than mirroring or than unprotected drives.

This backplane option is supported by AIX, Linux, VIOS, and IBM i. It is highly recommended but not required that the drives be protected. With IBM i all drives are required to be protected by either RAID or mirroring.

If you need a change after the server is installed, the backplane option can be changed. For example, the feature EJ1E split backplane feature can be added to an existing feature EJ1C backplane.

Unlike the hot-plug PCIe slots and SAS bays, concurrent maintenance is not available for the integrated SAS controllers. Scheduled downtime is required if a service action is required for these integrated resources.

In addition to supporting HDDs and SSDs in the SFF-3 SAS bays, the expanded function storage backplanes (#EJ1D and #EJ1M) support the optional attachment of an EXP12SX/EXP24SX drawer in mode 1. For these expanded function backplanes, all bays are accessed by both of the integrated SAS controllers. The bays support concurrent hot-plug maintenance.

### Cable management arm

A folding arm is attached to the server's rails at the rear of the server. The server's power cords and the cables from the PCIe adapters or integrated ports run through the arm and into the rack. The arm enables the server to be pulled forward on its rails for service access to PCIe slots, memory, processors, and so on without disconnecting the cables from the server. Approximately 1 meter (3 feet) of cord or cable length is needed for the arm.

### Integrated I/O ports

In addition to the integrated SAS controllers and SAS ports associated with the storage backplane, there are two HMC ports, one system port, and three USB ports. The two HMC ports are RJ45 supporting 1 Gb Ethernet connections.

The one system port is RJ45 and is supported by AIX and Linux for attaching serial devices such as an asynchronous device like a console. If the device does not have an RJ45 connection, a converter cable such as feature 3930 can provide a 9-pin D-shell connection. Note that serial devices can have very individual characteristics (different pin outs), and the feature 3930 may not be appropriate for all possible devices. In this case, the user should acquire an OEM converter cable appropriate for their device.

Three USB-3 ports are available for general client use; one is located in front and two in the rear. Additionally, there are two USB-2 ports in the service processor located in the rear of the system. These ports are for limited client use. A converter cable ECCF provides a USB-to-9-pin D-Shell connection for this function.

### Rack-integrated system with I/O expansion drawer

Regardless of the rack-integrated system to which the PCIe Gen3 I/O expansion drawer is attached, if the expansion drawer is ordered as factory integrated, the PDUs in the rack will be placed horizontally by default to enhance cable management.

Expansion drawers complicate the access to vertical PDUs if located at the same height. IBM recommends accommodating PDUs horizontally on racks containing one or more PCIe Gen3 I/O expansion drawers.

After the rack with expansion drawers is delivered, you can rearrange the PDUs from horizontal to vertical. However, the configurator will continue to consider the PDUs as being placed horizontally for the matter of calculating the free space still available in the rack.

Vertical PDUs can be used only if CSRP (#0469) is on the order. When specifying CSRP, you should provide the locations where the PCIe Gen3 I/O expansion drawers must be placed to avoid locating them adjacent to vertical PDU locations, EIA 6 through 16 and 21 through 31.

The I/O expansion drawer can be migrated from a POWER8 to a POWER9 processor-based system. Only I/O cards supported on POWER9 in the I/O expansion drawer are allowed. Clients migrating the I/O expansion drawer configuration might have one or two PCIe3 6-slot fanout modules (#EMXF or #EMXG) installed in the rear of the I/O expansion drawer.

For a 4U server configuration with one processor module, up to one I/O expansion drawer and one fanout module (#EMXF or #EMXG) connected to one optical cable adapter (#EJ08) are supported (the right PCIe module bay must be populated by a filler module).

For a 4U server configuration with one processor module, up to one I/O expansion drawer and one fanout module (#EMXH) connected to one optical cable adapter (#EJ20) are supported (the right PCIe module bay must be populated by a filler module).

### Limitations:

- Mixing of prior PCIe3 fanout modules (#EMXF, #EMXG) with PCIe3 fanout module (#EMXH) in the same I/O expansion drawer is not allowed.
- Mixing of I/O expansion drawer with prior PCIe3 fanout modules (#EMXF or #EMXG) and I/O expansion drawer with PCIe3 fanout module (#EMXH) in same configuration is allowed.
- PCIe3 optical cable adapters (#EJ20) requires use of optical cables (#ECCX or ECCY) or copper cable (#ECCS).

### Note: Tower system configuration does not allow attachment of any I/O expansion drawer.

### RDX docking station

The RDX docking station EUA4 accommodates RDX removable disk cartridges of any capacity. The disk is in a protective rugged cartridge enclosure that plugs into the docking station. The docking station holds one removable rugged disk drive or cartridge at a time. The rugged removable disk cartridge and docking station performs saves, restores, and backups similar to a tape drive. This docking station can be an excellent entry capacity and performance option.

### EXP24SX SAS storage enclosure (#ESLS)

The EXP24SX is a storage expansion enclosure with twenty-four 2.5-inch SFF SAS bays. It supports up to 24 hot-plug HDDs or SSDs in only 2 EIA of space in a 19-inch rack. The EXP24SX SFF bays use SFF Gen2 (SFF-2) carriers or trays.

The EXP24SX drawer feature ESLS is supported on the Power S914, Power S922, and Power S924 servers by AIX, IBM i, Linux, and VIOS.

With AIX, Linux, and VIOS, the EXP24SX can be ordered with four sets of 6 bays (mode 4), two sets of 12 bays (mode 2), or one set of 24 bays (mode 1). With IBM i, only one set of 24 bays (mode 1) is supported. It is possible to change the mode setting in the field using software commands along with a specifically documented procedure. The predecessor EXP24S did not support this mode change in the field.

Important: When changing modes, a skilled, technically qualified person should follow the special documented procedures. Improperly changing modes can potentially destroy existing RAID sets, prevent access to existing data, or allow other partitions to access another partition's existing data. Hire an expert to assist if you are not familiar with this type of reconfiguration work.

Four mini-SAS HD ports on the EXP24SX are attached to PCIe Gen3 SAS adapters or attached to an integrated SAS controller in a POWER9 scale-out server such as the Power H922 or Power H924 servers. The following PCIe3 SAS adapters support the EXP24SX:

- PCIe3 RAID SAS Adapter Quad-port 6 Gb x8 (#EJ0J)
- PCIe3 12 GB Cache RAID Plus SAS Adapter Quad-port 6 Gb x8 (#EJ14)

Earlier generation PCIe2 or PCIe1 SAS adapters are not supported with the EXP24SX.

The attachment between the EXP24SX and the PCIe3 SAS adapters or integrated SAS controllers is through SAS YO12 or X12 cables. X12 and YO12 cables are designed to support up to 12 Gb SAS. The PCIe Gen3 SAS adapters support up to 6 Gb throughput. The EXP24SX has been designed to support up to 12 Gb throughput if future SAS adapters support that capability. All ends of the YO12 and X12 cables have mini-SAS HD narrow connectors. Cable options are:

- X12 cable: 3-meter copper (#ECDJ)
- YO12 cables: 1.5-meter copper (#ECDT), 3-meter copper (#ECDU)
- 3M 100 GbE Optical Cable QSFP28 (AOC) (#EB5R)
- 5M 100 GbE Optical Cable QSFP28 (AOC) (#EB5S)
- 10M 100 GbE Optical Cable QSFP28 (AOC) (#EB5T)
- 15M 100 GbE Optical Cable QSFP28 (AOC) (#EB5U)
- 20M 100 GbE Optical Cable QSFP28 (AOC) (#EB5V)
- 30M 100 GbE Optical Cable QSFP28 (AOC) (#EB5W)
- 50M 100 GbE Optical Cable QSFP28 (AOC) (#EB5X)
- 100M 100 GbE Optical Cable QSFP28 (AOC) (#EB5Y)

An AA12 cable interconnecting a pair of PCIe3 12 GB cache adapters (two #EJ14) is not attached to the EXP24SX. These higher-bandwidth cables could support 12 Gb throughput if future adapters support that capability. Copper feature ECE0 is 0.6 meters long, ECE3 is 3 meters long, and optical AA12 feature ECE4 is 4.5 meters long.

One no-charge specify code is used with each EXP24SX I/O drawer (#ESLS) to communicate to IBM configurator tools and IBM Manufacturing which mode setting, adapter, and SAS cable are needed. With this specify code, no hardware is shipped. The physical adapters, controllers, and cables must be ordered with their own chargeable feature numbers. There are more technically supported configurations than are represented by these specify codes. IBM Manufacturing and IBM configurator tools such as e-config only understand and support EXP24SX configurations represented by these specify codes.

| Specify code | Mode | Adapter/Controller | Cable to drawer | Environment |
|---|---|---|---|---|
| #EJW0 | Mode 1 | CEC SAS Ports | 2 YO12 cables | AIX/IBM i/Linux/VIOS |
| #EJW1 | Mode 1 | One (unpaired) #EJ0J/#EJ0M | 1 YO12 cable | AIX/IBM i/Linux/VIOS |
| #EJW2 | Mode 1 | Two (one pair) #EJ0J/#EJ0M | 2 YO12 cables | AIX/IBM i/Linux/VIOS |
| #EJW3 | Mode 2 | Two (unpaired) #EJ0J/#EJ0M | 2 X12 cables | AIX/Linux/VIOS |
| #EJW4 | Mode 2 | Four (two pair) #EJ0J/#EJ0M | 2 X12 cables | AIX/Linux/VIOS |
| #EJW5 | Mode 4 | Four (unpaired) #EJ0J/#EJ0M | 2 X12 cables | AIX/Linux/VIOS |
| #EJW6 | Mode 2 | One (unpaired) #EJ0J/#EJ0M | 2 YO12 cables | AIX/Linux/VIOS |
| #EJW7 | Mode 2 | Two (unpaired) #EJ0J/#EJ0M | 2 YO12 cables | AIX/Linux/VIOS |
| #EJWF | Mode 1 | Two (one pair) #EJ14 | 2 YO12 cables | AIX/IBM i/Linux/VIOS |
| #EJWG | Mode 2 | Two (one pair) #EJ14 | 2 X12 cables | AIX/Linux/VIOS |
| #EJWJ | Mode 2 | Four (two pair) #EJ14 | 2 X12 cables | AIX/Linux/VIOS |
| #EJWU | Mode 1 | Controller EJ1G | 1 YO12 cables | Linux/AIX |

All of the above EXP24SX specify codes assume a full set of adapters and cables able to run all the SAS bays configured. The following specify codes communicate to IBM Manufacturing a lower-cost partial configuration is to be configured where the ordered adapters and cables can run only a portion of the SAS bays. The future MES addition of adapters and cables can enable the remaining SAS bays for growth. The following specify codes are used:

| Specify | Mode | Adapter/Controller | Cable to drawer | Environment |
|---|---|---|---|---|
| #EJWA (1/2 of #EJW7) | Mode 2 | One (unpaired) #EJ0J/#EJ0M | 1 YO12 cables | AIX/Linux/VIOS |
| #EJWB (1/2 of #EJW4) | Mode 2 | Two (one pair) #EJ0J/#EJ0M | 1 X12 cable | AIX/Linux/VIOS |
| #EJWC (1/4 of #EJW5) | Mode 4 | One (unpaired) #EJ0J/#EJ0M | 1 X12 cable | AIX/Linux/VIOS |
| #EJWD (1/2 of #EJW5) | Mode 4 | Two (unpaired) #EJ0J/#EJ0M | 1 X12 cables | AIX/Linux/VIOS |
| #EJWE (3/4 of #EJW5) | Mode 4 | Three (unpaired) #EJ0J/#EJ0M | 2 X12 cables | AIX/Linux/VIOS |
| #EJWH (1/2 of #EJWJ) | Mode 2 | Two (one pair) #EJ14 | 1 X12 cables | AIX/Linux/VIOS |

An EXP24SX drawer in mode 4 can be attached to two or four SAS controllers and provide a great deal of configuration flexibility. For example, if using unpaired feature EJ0J adapters, these EJ0J adapters could be in the same server in the same partition, same server in different partitions, or even different servers.

An EXP24SX drawer in mode 2 has similar flexibility. If the I/O drawer is in mode 2, then half of its SAS bays can be controlled by one pair of PCIe3 SAS adapters, such as a 12 GB write cache adapter pair (#EJ14), and the other half can be controlled by a different PCIe3 SAS 12 GB write cache adapter pair or by zero-write-cache PCIe3 SAS adapters.

Note that for simplicity, IBM configurator tools such as e-config assume that the SAS bays of an individual I/O drawer are controlled by one type of SAS adapter. As a client, you have more flexibility than e-config understands.

A maximum of twenty-four 2.5-inch SSDs or 2.5-inch HDDs is supported in the EXP24SX 24 SAS bays. There can be no mixing of HDDs and SSDs in the same mode 1 drawer. HDDs and SSDs can be mixed in a mode 2 or mode 4 drawer, but they cannot be mixed within a logical split of the drawer. For example, in a mode 2 drawer with two sets of 12 bays, one set could hold SSDs and one set could hold HDDs, but you cannot mix SSDs and HDDs in the same set of 12 bays.

The indicator feature EHS2 helps IBM Manufacturing understand where SSDs are placed in a mode 2 or a mode 4 EXP24SX drawer. On one mode 2 drawer, use a quantity of one feature EHS2 to have SSDs placed in just half the bays, and use two EHS2 features to have SSDs placed in any of the bays. Similarly, on one mode 4 drawer, use a quantity of one, two, three, or four EHS2 features to indicate how many bays can have SSDs. With multiple EXP24SX orders, IBM Manufacturing will have to guess which quantity of feature ESH2 is associated with each EXP24SX. Consider using CSP (#0456) to reduce guessing.

Two-and-a-half-inch small form factor (SFF) SAS HDDs and SSDs are supported in the EXP24SX. All drives are mounted on Gen2 carriers or trays and thus named SFF-2 drives.

The EXP24SX drawer has many high-reliability design points:

- SAS drive bays that support hot swap
- Redundant and hot-plug-capable power and fan assemblies
- Dual line cords
- Redundant and hot-plug enclosure service modules (ESMs)
- Redundant data paths to all drives
- LED indicators on drives, bays, ESMs, and power supplies that support problem identification
- Through the SAS adapters or controllers, drives can be protected with RAID and mirroring and hot-spare capability

Order two ESLA features for AC power supplies. The enclosure is shipped with adjustable depth rails and can accommodate 19-inch rack depths from 59.5 - 75 cm (23.4 - 29.5 in.). Slot filler panels are provided for empty bays when initially shipped from IBM.

EXP12SX SAS storage enclosure (#ESLL)

The EXP12SX is a storage expansion enclosure with twelve 3.5-inch LFF SAS bays. It supports up to 12 hot-plug HDDs in only 2 EIA of space in a 19-inch rack. The EXP12SX SFF bays use LFF Gen1 (LFF-1) carriers/trays. The 4k byte sector drives (#4096 or #4224) are supported. SSDs are not supported.

The EXP12SX drawer feature ESLL is supported on the Power S914, Power S922, and Power S924 servers by AIX, Linux, and VIOS.

With AIX/Linux/VIOS, the EXP12SX enclosure can be ordered with four sets of 3 bays (mode 4), two sets of 6 bays (mode 2), or one set of 12 bays (mode 1). The mode setting can be changed in the field using software commands along with a specifically documented procedure.

Important: When changing modes, it is very important that you follow the documented procedures. Improperly changing modes can potentially destroy existing RAID sets, prevent access to existing data, or allow other partitions to access another partition's existing data. Hire an expert to assist if you are not familiar with this type of reconfiguration work.

Four mini-SAS HD ports on the EXP12SX are attached to PCIe Gen3 SAS adapters or attached to an integrated SAS controller in a POWER9 scale-out server such as the Power S914, S922, or S924 server. The following PCIe3 SAS adapters support the EXP12SX:

- PCIe3 RAID SAS Adapter Quad-port 6 Gb x8 (#EJ0J)
- PCIe3 12 GB Cache RAID Plus SAS Adapter Quad-port 6 Gb x8 (#EJ14)

Earlier generation PCIe2 or PCIe1 SAS adapters are not supported with the EXP12SX drawer.

The EXP12SX drawer and the PCIe3 SAS adapters or integrated SAS controllers are attached through SAS YO12 or X12 cables. X12 and YO12 cables are designed to support up to 12 Gb. The PCIe Gen3 SAS adapters support up to 6 Gb throughput. The EXP12SX has been designed to support up to 12 Gb throughput if future SAS adapters support that capability. All ends of the YO12 and X12 cables have mini-SAS HD narrow connectors. Cable options are:

- X12 cable: 3-meter copper (#ECDJ)
- YO12 cables: 1.5-meter copper (#ECDT), 3-meter copper (#ECDU)
- 3M 100 GbE Optical Cable QSFP28 (AOC) (#EB5R)
- 5M 100 GbE Optical Cable QSFP28 (AOC) (#EB5S)
- 10M 100 GbE Optical Cable QSFP28 (AOC) (#EB5T)
- 15M 100 GbE Optical Cable QSFP28 (AOC) (#EB5U)
- 20M 100 GbE Optical Cable QSFP28 (AOC) (#EB5V)
- 30M 100 GbE Optical Cable QSFP28 (AOC) (#EB5W)
- 50M 100 GbE Optical Cable QSFP28 (AOC) (#EB5X)
- 100M 100 GbE Optical Cable QSFP28 (AOC) (#EB5Y)

An AA12 cable interconnecting a pair of PCIe3 12 GB cache adapters (two #EJ14) is not attached to the EXP12SX drawer. These higher- bandwidth cables could support 12 Gb throughput if future adapters support that capability. Copper feature ECE0 is 0.6 meters long, feature ECE3 is 3 meters long, and optical AA12 feature ECE4 is 4.5 meters long.

One no-charge specify code is used with each EXP12SX I/O drawer (#ESLL) to communicate to IBM configurator tools and IBM Manufacturing which mode setting, adapter, and SAS cable are needed. With this specify code, no hardware is shipped. The physical adapters, controllers, and cables must be ordered with their own chargeable feature numbers. There are more technically supported configurations than are represented by these specify codes. IBM Manufacturing and IBM configurator tools such as e-config only understand and support EXP12SX configurations represented by these specify codes.

| Specify | Mode | Adapter/Controller | Cable to drawer | Environment |
|---|---|---|---|---|
| #EJV0 | Mode 1 | CEC SAS Ports | 2 YO12 cables | AIX/Linux/VIOS |
| #EJV1 | Mode 1 | One (unpaired) #EJ0J/#EJ0M | 1 YO12 cable | AIX/Linux/VIOS |
| #EJV2 | Mode 1 | Two (unpaired) #EJ0J/#EJ0M | 2 YO12 cables | AIX/Linux/VIOS |
| #EJV3 | Mode 2 | Two (one pair) #EJ0J/#EJ0M | 2 X12 cables | AIX/Linux/VIOS |
| #EJV4 | Mode 2 | Four (two pair) #EJ0J/#EJ0M | 2 X12 cables | AIX/Linux/VIOS |
| #EJV5 | Mode 4 | Four (unpaired) #EJ0J/#EJ0M | 2 X12 cables | AIX/Linux/VIOS |
| #EJV6 | Mode 2 | One(unpaired) #EJ0J/#EJ0M | 2 YO12 cables | AIX/Linux/VIOS |
| #EJV7 | Mode 2 | Two (unpaired) #EJ0J/#EJ0M | 2 YO12 cables | AIX/Linux/VIOS |
| #EJVF | Mode 1 | Two #EJ14 (one pair) | 2 YO12 cables | AIX/Linux/VIOS |
| #EJVG | Mode 2 | Two #EJ14 (one pair) | 2 X12 cables | AIX/Linux/VIOS |
| #EJVJ | Mode 2 | Four #EJ14 (two pair) | 2 X12 cable | AIX/Linux/VIOS |
| #EJVU | Mode 1 | Controller #EJ1G/#EL67 | 1 YO12 cables | Linux |

All of the above EXP12SX specify codes assume a full set of adapters and cables able to run all the SAS bays configured. The following specify codes communicate to IBM Manufacturing a lower cost, partial configuration is to be configured where the ordered adapters and cables can run only a portion of the SAS bays. The future MES addition of adapters and cables can enable the remaining SAS bays for growth. The following specify codes are used:

| Specify | Mode | Adapter/Controller | Cable to drawer | Environment |
|---|---|---|---|---|
| #EJVA (1/2 of #EJV7) | Mode 2 | One (unpaired) #EJ0J/#EJ0M | 1 YO12 cables | AIX/Linux/VIOS |

```
#EJVB (1/2 of  Mode 2 One pair #EJ0J/#EJ0M  1 X12 cable   AIX/Linux/VIOS
#EJV4)
#EJVC (1/4 of  Mode 4 One (unpaired)       1 X12 cable   AIX/Linux/VIOS
#EJV5)                #EJ0J/#EJ0M
#EJVD (2/4 of  Mode 4 Two (unpaired)       1 X12 cables  AIX/Linux/VIOS
#EJV5)                #EJ0J/#EJ0M
#EJVE (3/4 of  Mode 4 Three (unpaired)     2 X12 cables  AIX/Linux/VIOS
#EJV5)                #EJ0J/#EJ0M
```

An EXP12SX drawer in mode 4 can be attached to two or four SAS controllers and provide a great deal of configuration flexibility. For example, if using unpaired feature EJ0J adapters, these EJ0J adapters could be in the same server in the same partition, same server in different partitions, or even different servers.

An EXP12SX drawer in mode 2 has similar flexibility. If the I/O drawer is in mode 2, then half of its SAS bays can be controlled by one pair of PCIe3 SAS adapters, such as a 12 GB write cache adapter pair (#EJ14), and the other half can be controlled by a different PCIe3 SAS 12 GB write cache adapter pair or by zero-write-cache PCIe3 SAS adapters.

Note that for simplicity, IBM configurator tools such as e-config assume that the SAS bays of an individual I/O drawer are controlled by one type of SAS adapter. As a client, you have more flexibility than e-config understands.

The 3.5-inch large form factor (LFF) SAS HDDs are supported in the EXP24SX. All drives are mounted on Gen1 carriers or trays and thus are named LFF-1 drives. Only 4k byte sector drives are supported in the EXP24SX drawer. The 5xx byte sector drives are not announced or planned. Drives are 7200 rpm and sometimes referred to as nearline . These drives provide excellent cost per gigabyte. Note that formatting or rebuilding arrays on large disk drives can take hours. If higher performance is required, consider higher rpm disks or SSDs in the EXP24SX drawer.

The EXP12SX drawer has many high-reliability design points:

- SAS bays that support hot swap
- Redundant and hot-plug power and fan assemblies
- Dual line cords
- Redundant and hot-plug ESMs
- Redundant data paths to all drives
- LED indicators on drives, bays, ESMs, and power supplies that support problem identification
- Through the SAS adapters or controllers, drives can be protected with RAID and mirroring and hot-spare capability

Order two ESLA features for AC power supplies. The enclosure is shipped with adjustable depth rails and can accommodate 19-inch rack depths from 59.5 - 75 cm (23.4 - 29.5 in.). Slot filler panels are provided for empty bays when initially shipped from IBM.

EXP24SX and EXP12SX enclosures can be mixed on the same server. EXP24SX and EXP12SX enclosures can be mixed on the same PCIe3 adapter.

### PCIe Gen3 I/O drawer cabling option

A copper cabling option (#ECCS) is available for the scale-out servers. The cable option offers a much lower-cost connection between the server and the PCIe Gen3 I/O drawer fanout modules. The currently available Active Optical Cable (AOC) offers much longer length cables, providing rack placement flexibility. AOC cables are also much thinner and have tighter bend radius and thus are much easier to cable in the rack.

The 3M Copper CXP Cable Pair (#ECCS) has the same performance and same reliability, availability, and serviceability (RAS) characteristics as the AOC cables. One copper cable length of 3 m is offered. Note that the cable management arm of the scale-out servers requires about 1 meter of cable.

Like the AOC cable pair, the copper pair is cabled in the same manner. One cable attaches to the top CXP port in the PCIe adapter in the x16 PCIe slot in the server system unit and then attaches to the top CXP port in the fanout module in the I/O drawer. Its cable pair attaches to the bottom CXP port of the same PCIe adapter and to the bottom CXP port of the same fanout module. Note that the PCIe adapter providing the CXP ports on the server was named a PCIe3 "Optical" Cable Adapter. In hindsight, this naming was unfortunate as the adapter's CXP ports are not unique to optical. But at the time, optical cables were the only connection option planned.

Copper and AOC cabling can be mixed on the same server. However, they cannot be mixed on the same PCIe Gen3 I/O drawer or mixed on the same fanout module.

Copper cables have the same operating system software prerequisites as AOC cables.

### High-function (switched and monitored) Power Distribution Units (PDUs)

The high-function PDUs provide switching, better monitoring, and 50% more C19 receptacles than previous Power Systems PDUs. Depending on country wiring standards, either two or four full-price features are orderable.

```
       208 V 3-phase delta 200 V - 240 V 1-phase or 3-phase wye
------ ------------------- -----------------------------------
12xC13 #EPTQ               #EPTN
9xC19  #EPTL               #EPTJ
```

These PDUs can be mounted vertically in rackside pockets or they can be mounted horizontally. If mounted horizontally, they each use 1 EIA (1U) of rack space. See feature EPTH for horizontal mounting hardware, which is used when IBM Manufacturing doesn't automatically factory-install the PDU. Two RJ45 ports on the front of the PDU enable you to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password. IBM strongly urges you to change the password upon installation. These PDUs do provide the same low price as the low-function 12xC13 PDU feature (#7188).

### High-function (switched and monitored) PDUs plus

Hardware

- IEC 62368-1 and IEC 60950 safety standard
- A new product safety approval
- No China 5000 m altitude or tropical restrictions
- Detachable inlet for 3-phase delta-wired PDU with 30A, 50A, and 60A wall plugs
- IBM Technology and Qualification approved components, such as Anti-Sulfur Resistors (ASRs)
- Ethernet 10/100/1000 Mb/s

Software

- IPv4 and IPv6 support
- SSH command line
- Ability to change passwords over a network

```
PDU         208 V       200 V - 240
description 3-phase     V 1-phase
```

| | delta | or 3-phase wye |
|---|---|---|
| 12xC13 | #ECJQ/#ECJP | #ECJN/#ECJM |
| 9xC19 | #ECJL/#ECJK | #ECJJ/#ECJG |

These PDUs can be mounted vertically in rackside pockets or they can be mounted horizontally. If mounted horizontally, they each use one EIA (1U) of rack space. See feature EPTH for horizontal mounting hardware, which is used when IBM Manufacturing doesn't automatically factory-install the PDU. Two RJ45 ports on the front of the PDU enable you to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off.

Recommendation: The PDU is shipped with a generic PDU password. IBM strongly urges you to change it upon installation.

Existing and new high-function (switched and monitored) PDUs have the same physical dimensions. New high-function (switched and monitored) PDUs can be supported in the same racks as existing PDUs. Mixing of PDUs in a rack on new orders is not allowed.

Also, all factory-integrated orders must have the same PDU line cord.

The PDU features ECJQ/ECJP and ECJL/ECJK with the Amphenol inlet connector require new PDU line cords:

- #ECJ5 - 4.3 m (14-Ft) PDU to Wall 3PH/24A 200-240V Delta-wired Power Cord
- #ECJ7 - 4.3 m (14-Ft) PDU to Wall 3PH/48A 200-240V Delta-wired Power Cord

No pigtail (like feature ELC0) is available because an Amphenol male inline connector is unavailable.

The PDU features ECJJ/ECJG and ECJN/ECJM with the UTG624-7SKIT4/5 inlet connector use the existing PDU line cord features 6653, 6667, 6489, 6654, 6655, 6656, 6657, 6658, 6491, or 6492.

High-function 12xC13 PDU plus 3-phase delta

(#ECJQ/#ECJP)

This is an intelligent, switched 200 - 240 volt 3-phase delta AC PDU plus with twelve C13 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack, making the twelve C13 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Three-phase delta-wired connectors have 4 pins and use three line conductors and a protective earth. The input is 200 - 240 volt line- to-line and the output is 200 - 240 volt line-to-line for 3-phase delta PDUs.

The PDU can be mounted vertically in rackside pockets, or it can be mounted horizontally. If mounted horizontally, it uses one EIA (1U) of rack space. See feature EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One wall line cord is also ordered separately and attaches to the Amphenol inlet connector. Supported line cords include features ECJ5 and ECJ7.

Two RJ45 ports on the front of the PDU enable you to monitor the electrical power usage of each receptacle and to remotely switch any receptacle on or off.

Recommendation: The PDU is shipped with a generic PDU password. IBM strongly urges you to change it upon installation.

Features ECJP and ECJQ are identical PDUs. Up to one lower-priced feature ECJP can be ordered with a new 7014-T42/T00 rack in place of a no-charge feature 9188 PDU.

For comparison, this is most like the earlier generation feature EPTP PDU.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with an Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS customer would like to use this capability, it is the customer's responsibility to configure this PDU. In any case, the Ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

High-function 9xC19 PDU plus 3-phase delta (#ECJL/#ECJK)

This is an intelligent, switched 200 - 240 volt 3-phase delta AC PDU plus with nine C19 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack, making the nine C19 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Three-phase delta-wired connectors have 4 pins and use three line conductors and a protective earth. The input is 200 - 240 volt line- to-line and the output is 200 - 240 volt line-to-line for 3-phase delta PDUs.

The PDU can be mounted vertically in rackside pockets, or it can be mounted horizontally. If mounted horizontally, it uses one EIA (1U) of rack space. See feature EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One wall line cord is also ordered separately and attaches to the Amphenol inlet connector. Supported line cords include features ECJ5 and ECJ7.

Two RJ45 ports on the front of the PDU enable you to monitor the electrical power usage of each receptacle and to remotely switch any receptacle on or off.

Recommendation: The PDU is shipped with a generic PDU password. IBM strongly urges you to change it upon installation.

There are also three C13 receptacles on the rear of the PDU positioned toward the middle of the rack. These are not easily accessed, and therefore IBM does not generally recommend their use.

Features ECJK and ECJL are identical PDUs. Up to one lower-priced feature ECJK can be ordered with a new 7014-T42/T00 rack in place of a no-charge feature 9188 PDU.

For comparison, this is most like the earlier generation feature EPTL PDU.

Limitation: Some configurations of the ESS are delivered with an Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS customer would like to use this capability, it is the customer's responsibility to configure this PDU. In any case, the Ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

High-function 9xC19 1-phase or 3-phase wye PDU plus (#ECJJ/#ECJG)

This is an intelligent, switched 200 - 240 volt 1-phase or 380 - 415/220 - 240 volt 3-phase wye AC PDU plus with nine C19 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack, making the nine C19 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Depending on country wiring standards, the PDU is 1-phase or 3-phase wye. Three-phase wye-wired connectors have 5 pins and use three line conductors, a neutral, and a protective earth. The input is 380 - 415 volt line-to-line and the output is 220 - 240 volt line-to-neutral for 3-phase wye PDUs.

The PDU can be mounted vertically in rackside pockets, or it can be mounted horizontally. If mounted horizontally, it uses one EIA (1U) of rack space. See feature EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One country-specific wall line cord is also ordered separately and attaches to a UTG524-7 connector on the front of the PDU. Supported line cords include features 6489, 6491, 6492, 6653, 6654, 6655, 6656, 6657, 6658, and 6667.

Two RJ45 ports on the front of the PDU enable you to monitor the electrical power usage of each receptacle and to remotely switch any receptacle on or off.

Recommendation: The PDU is shipped with a generic PDU password. IBM strongly urges you to change it upon installation.

There are also three C13 receptacles on the rear of the PDU positioned toward the middle of the rack. These are not easily accessed, and therefore IBM does not generally recommend their use.

Features ECJG and ECJJ are identical PDUs. Up to one lower-priced feature ECJG can be ordered with a new 7014-T42/T00 rack in place of a no-charge feature 9188 PDU.

For comparison, this is most like the earlier generation feature EPTJ PDU.

Limitation: Some configurations of the ESS are delivered with an Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS customer would like to use this capability, it is the customer's responsibility to configure this PDU. In any case, the Ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

High-function 12xC13 1-phase or 3-phase wye PDU plus (#ECJN/#ECJM)

This is an intelligent, switched 200 - 240 volt 1-phase or 380 - 415/220 - 240 volt 3-phase wye AC PDU plus with twelve C13 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack, making the twelve C13 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Depending on country wiring standards, the PDU is 1-phase or 3-phase wye. Three-phase wye-wired connectors have 5 pins and use three line conductors, a neutral, and a protective earth. The input is 380 - 415 volt line-to-line and the output is 220 - 240 volt line-to-neutral for 3-phase wye PDUs.

See 3-phase #ECJP/#ECJQ for countries that do not use wye wiring.

The PDU can be mounted vertically in rackside pockets, or it can be mounted horizontally. If mounted horizontally, it uses one EIA (1U) of rack space. See feature EPTH for horizontal mounting hardware.

Device power cords with a C14 plug connect to C13 PDU receptacles and are ordered separately. One country-specific wall line cord is also ordered separately and attaches to a UTG524-7 connector on the front of the PDU. Supported line cords include features 6489, 6491, 6492, 6653, 6654, 6655, 6656, 6657, 6658, and 6667.

Two RJ45 ports on the front of the PDU enable you to monitor the electrical power usage of each receptacle and to remotely switch any receptacle on or off.

Recommendation: The PDU is shipped with a generic PDU password. IBM strongly urges you to change it upon installation.

Features ECJM and ECJN are identical PDUs. Up to one lower-priced feature ECJM can be ordered with a new 7014-T42/T00 rack in place of a no-charge feature 9188 PDU.

For comparison, this is most like the earlier generation feature EPTN PDU.

Limitation: Some configurations of the ESS are delivered with an Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS customer would like to use this capability, it is the customer's responsibility to configure this PDU. In any case, the Ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

Reliability, Availability, and Serviceability

Reliability, fault tolerance, and data correction

The reliability of systems starts with components, devices, and subsystems that are designed to be highly reliable. During the design and development process, subsystems go through rigorous verification and integration testing processes. During system manufacturing, systems go through a thorough testing process to help ensure the highest level of product quality.

Memory subsystem RAS

The memory has error detection and correction circuitry designed such that the failure of any one specific memory module within an ECC word by itself can be corrected absent any other fault. Mutual surveillance

The service processor monitors the operation of the firmware during the boot process and also monitors the hypervisor for termination. The hypervisor monitors the service processor and reports a service reference code when it detects surveillance loss. In the PowerVM environment, it will perform a reset/reload if it detects the loss of the service processor.

Environmental monitoring functions

The Power Systems family does ambient and over temperature monitoring and reporting.

POWER9 processor functions

As in POWER8, the POWER9 processor has the ability to do processor instruction retry for some transient errors.

Cache availability

The L2 and L3 caches in the POWER9 processor in the memory buffer chip are protected with double-bit detect, single-bit correct error detection code (ECC). In addition, a threshold of correctable errors detected on cache lines can result in the data in the cache lines being purged and the cache lines removed from further operation without requiring a reboot in the PowerVM environment.

Modified data would be handled through Special Uncorrectable Error handling. L1 data and instruction caches also have a retry capability for intermittent errors and a cache set delete mechanism for handling solid failures.

Special Uncorrectable Error handling

Special Uncorrectable Error (SUE) handling prevents an uncorrectable error in memory or cache from immediately causing the system to terminate. Rather, the system tags the data and determines whether it will ever be used again. If the error is irrelevant, it will not force a check stop. If the data is used, termination may be limited to the program/kernel or hypervisor owning the data; or the I/O adapters controlled by an I/O hub controller would freeze if data were transferred to an I/O device.

PCI extended error handling

PCI extended error handling (EEH)-enabled adapters respond to a special data packet generated from the affected PCI slot hardware by calling system firmware, which will examine the affected bus, allow the device driver to reset it, and continue without a system reboot. For Linux, EEH support extends to the majority of frequently used devices, although some third-party PCI devices may not provide native EEH support.

Uncorrectable error recovery

When the auto-restart option is enabled, the system can automatically restart following an unrecoverable software error, hardware failure, or environmentally induced (AC power) failure.

Serviceability

The purpose of serviceability is to efficiently repair the system while attempting to minimize or eliminate impact to system operation. Serviceability includes system installation, MES (system upgrades/downgrades), and system maintenance/repair. Depending upon the system and warranty contract, service may be performed by the client, an IBM representative, or an authorized warranty service provider.

The serviceability features delivered in this system help provide a highly efficient service environment by incorporating the following attributes:

- Design for Customer Set Up (CSU), Customer Installed Features (CIF), and Customer Replaceable Units (CRU)
- Error Detection and Fault Isolation (ED/FI)
- First Failure Data Capture (FFDC)
- Lightpath service indicators
- Service labels and service diagrams available on the system and delivered through IBM Knowledge Center
- Step-by-step service procedures documented in IBM Knowledge Center or available through the Hardware Management Console
- Automatic reporting of serviceable events to IBM through the Electronic Service Agent Call Home application
- CRU videos planned to be available on the web at general availability
- Mobile access to important customer service functions available by scanning a QR label

### Service environment

In the PowerVM environment, the HMC is a dedicated server that provides functions for configuring and managing servers for either partitioned or full-system partition using a GUI or command-line interface (CLI) or REST API. An HMC attached to the system allows support personnel (with client authorization) to remotely, or locally to the physical HMC that is in proximity of the server being serviced, log in to review error logs and perform remote maintenance if required.

The POWER9 processor-based platforms support several service environments:

- Attachment to one or more HMCs or vHMCs is a supported option by the system with PowerVM. This is the default configuration for servers supporting logical partitions with dedicated or virtual I/O. In this case, all servers have at least one logical partition.
- For non-HMC systems.
  - Full-system partition with PowerVM: A single partition owns all the server resources and only one operating system may be installed. The primary service interface is through the operating system and the service processor.

### Service interface

Support personnel can use the service interface to communicate with the service support applications in a server using an operator console, a graphical user interface on the management console or service processor, or an operating system terminal. The service interface helps to deliver a clear, concise view of available service applications, helping the support team to manage system resources and service information in an efficient and effective way. Applications available through the service interface are carefully configured and placed to give service providers access to important service functions.

Different service interfaces are used, depending on the state of the system, hypervisor, and operating environment. The primary service interfaces are:

- LEDs
- Operator Panel
- Service Processor menu
- Operating system service menu
- Service Focal Point on the HMC or vHMC with PowerVM

In the light path LED implementation, the system can clearly identify components for replacement by using specific component-level LEDs, and can also guide the servicer directly to the component by signaling (turning on solid) the amber system fault LED, enclosure fault LED, and component FRU fault LED. The servicer can also use the identify function to blink the FRU-level LED. When this function is activated, a roll-up to the blue enclosure locate and system locate LEDs will occur. These enclosure LEDs will turn on solid and can be used to follow the light path from the system to the enclosure and down to the specific FRU in the PowerVM environment.

### First Failure Data Capture and error data analysis

First Failure Data Capture (FFDC) is a technique that helps ensure that when a fault is detected in a system, the root cause of the fault will be captured without the need to re-create the problem or run any sort of extending tracing or diagnostics program. For the vast majority of faults, a good FFDC design means that the root cause can also be detected automatically without servicer intervention.

FFDC information, error data analysis, and fault isolation are necessary to implement the advanced serviceability techniques that enable efficient service of the systems and to help determine the failing items.

In the rare absence of FFDC and Error Data Analysis, diagnostics are required to re-create the failure and determine the failing items.

### Diagnostics

General diagnostic objectives are to detect and identify problems so they can be resolved quickly. Elements of IBM's diagnostics strategy include:

- Provide a common error code format equivalent to a system reference code with PowerVM, system reference number, checkpoint, or firmware error code.
- Provide fault detection and problem isolation procedures. Support remote connection ability to be used by the IBM Remote Support Center or IBM Designated Service.
- Provide interactive intelligence within the diagnostics with detailed online failure information while connected to IBM's back-end system.

### Automatic diagnostics

Because of the FFDC technology designed into IBM servers, it is not necessary to perform re-create diagnostics for failures or require user intervention. Solid and intermittent errors are designed to be correctly detected and isolated at the time the failure occurs. Runtime and boot-time diagnostics fall into this category.

### Standalone diagnostics with PowerVM

As the name implies, standalone or user-initiated diagnostics requires user intervention. The user must perform manual steps, including:

- Booting from the diagnostics CD, DVD, USB, or network
- Interactively selecting steps from a list of choices

### Concurrent maintenance

The determination of whether a firmware release can be updated concurrently is identified in the readme information file that is released with the firmware. An HMC is required for the concurrent firmware update with PowerVM. In addition, concurrent maintenance of PCIe adapters is supported with PowerVM. Concurrent maintenance of the Operator Panel is supported through ASMI. Additional concurrent maintenance includes power supplies, fans, and HDD/SSD drives.

### Service labels

Service providers use these labels to assist them in performing maintenance actions. Service labels are found in various formats and positions and are intended to transmit readily available information to the servicer during the repair process. Following are some of these service labels and their purpose:

- Location diagrams: Location diagrams are located on the system hardware, relating information regarding the placement of hardware components. Location diagrams may include location codes, drawings of physical locations, concurrent maintenance status, or other data pertinent to a repair. Location diagrams are especially useful when multiple components such as DIMMs, CPUs, processor books, fans, adapter cards, LEDs, and power supplies are installed.

- Remove/replace procedures: Service labels that contain remove/replace procedures are often found on a cover of the system or in other spots accessible to the servicer. These labels provide systematic procedures, including diagrams detailing how to remove or replace certain serviceable hardware components.
- Arrows: Numbered arrows are used to indicate the order of operation and the serviceability direction of components. Some serviceable parts such as latches, levers, and touch points need to be pulled or pushed in a certain direction and in a certain order for the mechanical mechanisms to engage or disengage. Arrows generally improve the ease of serviceability.

### QR labels

QR labels are placed on the system to provide access to key service functions through a mobile device. Once the QR label is scanned, it will go to a landing page specific to that server which contains many of the service functions of interest while physically located at the server. These include things such as installation and repair instructions, service diagrams, reference code look up, and so on.

### Packaging for service

The following service enhancements are included in the physical packaging of the systems to facilitate service:

- Color coding (touch points): Blue-colored touch points delineate touchpoints on service components where the component can be safely handled for service actions such as removal or installation.
- Tool-less design: Selected IBM systems support tool-less or simple tool designs. These designs require no tools or simple tools such as flathead screw drivers to service the hardware components.
- Positive retention: Positive retention mechanisms help to assure proper connections between hardware components such as cables to connectors, and between two cards that attach to each other. Without positive retention, hardware components run the risk of becoming loose during shipping or installation, preventing a good electrical connection. Positive retention mechanisms like latches, levers, thumb-screws, pop Nylatches (U-clips), and cables are included to help prevent loose connections and aid in installing (seating) parts correctly. These positive retention items do not require tools.

### Error handling and reporting

In the event of system hardware or environmentally induced failure, the system runtime error capture capability systematically analyzes the hardware error signature to determine the cause of failure. The analysis result will be stored in system NVRAM. When the system can be successfully restarted either manually or automatically, or if the system continues to operate, the error will be reported to the operating system. Hardware and software failures are recorded in the system log. When an HMC is attached in the PowerVM environment, an ELA routine analyzes the error, forwards the event to the Service Focal Point (SFP) application running on the HMC, and notifies the system administrator that it has isolated a likely cause of the system problem. The service processor event log also records unrecoverable checkstop conditions, forwards them to the SFP application, and notifies the system administrator.

The system has the ability to call home through the operating system to report platform-recoverable errors and errors associated with PCI adapters/devices.

In the HMC-managed environment, a call home service request will be initiated from the HMC and the pertinent failure data with service parts information and part locations will be sent to an IBM service organization. Customer contact information and specific system- related data such as the machine type, model, and serial number, along with error log data related to the failure, are sent to IBM Service.

### Live Partition Mobility

With Live Partition Mobility, users can migrate an AIX or IBM i partition running on one POWER partition system to another POWER system without disrupting services. The migration transfers the entire system environment, including processor state, memory, attached virtual devices, and connected users. It provides continuous operating system and application availability during planned partition outages for repair of hardware and firmware faults.

### Service processor

The service processor provides the capability to diagnose, check the status of, and sense the operational conditions of a system. It runs on its own power boundary and does not require resources from a system processor to be operational to perform its tasks.

Under PowerVM, the service processor supports surveillance of the connection to the HMC and to the system firmware (hypervisor). It also provides several remote power control options, environmental monitoring, reset, restart, remote maintenance, and diagnostic functions, including console mirroring. The service processors menus (ASMI) can be accessed concurrently with system operation, allowing nondisruptive abilities to change system default parameters.

### Call home

Call home refers to an automatic or manual call from a client location to the IBM support structure with error log data, server status, or other service-related information. Call home invokes the service organization in order for the appropriate service action to begin. Call home can be done through HMC or most non-HMC-managed systems through Electronic Service Agent running on top of the operating system. While configuring call home is optional, clients are encouraged to implement this feature in order to obtain service enhancements such as reduced problem determination and faster and potentially more accurate transmittal of error information. In general, using the call home feature can result in increased system availability. The Electronic Service Agent application can be configured for automated call home. See the next section for specific details on this application.

### IBM Electronic Services

Electronic Service Agent and the IBM Electronic Services web portal comprise the IBM Electronic Services solution, which is dedicated to providing fast, exceptional support to IBM clients. IBM Electronic Service Agent is a no-charge tool that proactively monitors and reports hardware events such as system errors, performance issues, and inventory. Electronic Service Agent can help focus on the client's company business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues.

System configuration and inventory information collected by Electronic Service Agent also can be viewed on the secure Electronic Services web portal and used to improve problem determination and resolution between the client and the IBM support team. As part of an increased focus to provide even better service to IBM clients, Electronic Service Agent tool configuration and activation comes standard with the system. In support of this effort, a new HMC External Connectivity security whitepaper has been published, which describes data exchanges between the HMC and the IBM Service Delivery Center (SDC) and the methods and protocols for this exchange. To read the whitepaper and prepare for Electronic Service Agent installation, see the "Security" section at the IBM Electronic Service Agent website.

1. Select your country.
2. Click "IBM Electronic Service Agent Connectivity Guide."

### Benefits: increased uptime

Electronic Service Agent is designed to enhance the warranty and maintenance service by potentially providing faster hardware error reporting and uploading system information to IBM Support. This can optimize the time monitoring the symptoms, diagnosing the error, and manually calling IBM Support to open a problem record. And 24x7 monitoring and reporting means no more dependency on human intervention or off-hours client personnel when errors are encountered in the middle of the night.

Security: The Electronic Service Agent tool is designed to help secure the monitoring, reporting, and storing of the data at IBM. The Electronic Service Agent tool is designed to help securely transmit either through the internet (HTTPS or VPN) or modem to provide clients a single point of exit from their site. Communication is one way. Activating Electronic Service Agent does not enable IBM to call into a client's system.

For additional information, see the IBM Electronic Service Agent website.

### More accurate reporting

Because system information and error logs are automatically uploaded to the IBM Support Center in conjunction with the service request, clients are not required to find and send system information, decreasing the risk of misreported or misdiagnosed errors. Once inside IBM, problem error data is run through a data knowledge management system, and knowledge articles are appended to the problem record.

Customized support

By using the IBMid entered during activation, clients can view system and support information in the "My Systems" and "Premium Search" sections of the Electronic Services website.

The Electronic Services web portal is a single internet entry point that replaces the multiple entry points traditionally used to access IBM internet services and support. This web portal enables you to gain easier access to IBM resources for assistance in resolving technical problems. The newly improved My Systems and Premium Search functions make it even easier for Electronic Service Agent-enabled clients to track system inventory and find pertinent fixes.

My Systems provides valuable reports of installed hardware and software using information collected from the systems by IBM Electronic Service Agent. Reports are available for any system associated with the client's IBMid. Premium Search combines the function of search and the value of Electronic Service Agent information, providing advanced search of the technical support knowledgebase. Using Premium Search and the Service Agent information that has been collected from the system, clients are able to see search results that apply specifically to their systems.

For more information on how to utilize the power of IBM Electronic Services, see the following website or contact an IBM Systems Services Representative.

## Section 508 of the US Rehabilitation Act

The Power S914 server (9009-41G) is capable as of July 24, 2020, when used in accordance with IBM's associated documentation, of satisfying the applicable requirements of Section 508 of the Rehabilitation Act, provided that any assistive technology used with the product properly interoperates with it. A US Section 508 Voluntary Product Accessibility Template (VPAT) can be found on the Product accessibility information website.

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# Models

## Model summary matrix

| Model | Processor | Processor sockets | NVMe drive | Memory |
|---|---|---|---|---|
| 41G | POWER9 | One | U.2 | 1024 GB |

## Customer setup (CSU)

Yes.

## Devices supported

The 7226-1U3 that offers a 1U rack-mountable dual bay enclosure with storage device options of LTO5, 6, 7,and 8 tape drives with both SAS and Fiber Channel interface; the 7226 also offers DVD-RAM SAS and USB drive features as well as RDX 500GB, 1TB, and 2TB drive options. Up to two drives (or four DVD-RAM) can be installed in any combination in the 7226 enclosure.

## Model conversions

Not available.

## Feature conversions

The existing components being replaced during a model or feature conversion become the property of IBM and must be returned.

Feature conversions are always implemented on a "quantity of one for quantity of one" basis. Multiple existing features may not be converted to a single new feature. Single existing features may not be converted to multiple new features.

The following conversions are available to customers:

*Feature conversions for 9009-41G adapters features:*

| From FC: | To FC: | RETURN PARTS |
|---|---|---|
| EJ32 - PCIe3 Crypto Coprocessor no BSC 4767 | EJ33 - PCIe3 Crypto Coprocessor BSC-Gen3 4767 | No |

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# Technical description



## Physical specifications

- 19-inch rackmount hardware
  - Width: 482 mm (18.97 in.)
  - Depth: 769.6 mm (30.3 in.)
  - Height: 173.3 mm (6.8 in.)
  - Weight: 36.3 kg (80 lb)
- Tower hardware
  - Width: 182.4 mm (7.18 in.)
  - Width with stand: 328.5 mm (12.93 in.)
  - Depth: 751.7 mm (29.59 in.)
  - Depth with front-rotatable door: 814.7 mm (32.07 in.)
  - Height: 486.1 mm (19.14 in.)
  - Height with handle: 522 mm (20.55 in.)
  - Weight: 46.94 kg (103.5 lb)

To assure installability and serviceability in non-IBM industry- standard racks, review the installation planning information for any product-specific installation requirements.

## Operating environment

- Temperature: (nonoperating) 5 to 45 degrees Celsius (41 to 113 Fahrenheit); recommended temperature (operating) 18 to 27 degrees Celsius (64 to 80 Fahrenheit); allowable operating temperature 5 to 40 degrees Celsius (41 to 104 Fahrenheit)
- Relative humidity: 8% - 85% (allowable operating humidity range); recommended 5.5 degrees Celsius (42 Fahrenheit) dew point to 60% RH and 15 degrees Celsius (59 Fahrenheit) dew point
- Maximum dew point: 24 degrees Celsius (75 Fahrenheit) (allowable operating)
- Operating voltage:
  - 900 W PSU: 100 - 127 V AC or 200 - 240 V AC
  - 1400 W PSU: 200 - 240 V AC
- Operating frequency: 47/63 Hz
- Maximum power consumption: 1600 watts (maximum)
- Power factor: 0.98
- Thermal output: 5,461 Btu/hour (maximum)
- Power-source loading
  - 1.65 kVa (maximum configuration)
  - Maximum altitude: 3,050 m (10,000 ft)

  Note: The maximum measured value is the worst case power consumption expected from a fully populated server under an intensive workload. The maximum measured value also accounts for component tolerance and non-ideal operating conditions. Power consumption and heat load vary greatly by server configuration and utilization. The IBM Systems Energy Estimator should be used to obtain a heat output estimate based on a specific configuration.

### Noise levels and declared A-weighted sound power level

- Tower system: 5.8 bels operating; 5.3 bels idling
- Rack-mount system: 5.9 bels operating; 5.3 bels idling

See the Installation Planning Guide in IBM Knowledge Center for additional detail.

For example, the actual power noise level is impacted by multiple factors, including:

- Enablement of the Turbo mode increases fan speed, which increases power noise levels.
- Usage of the Turbo mode further increases fan speed, which further increases power noise levels.
- Using higher wattage PCIe adapters increases fan speed, which increases power noise levels.
- Placing multiple servers in a rack increases the total power noise level.
- Placing servers in racks with acoustic doors reduces the power noise levels.

### EMC conformance classification

This equipment is subject to FCC rules and shall comply with the appropriate FCC rules before final delivery to the buyer or centers of distribution.

- US: FCC Class A
- Europe: CISPR 22 Class A
- Japan: VCCI-A
- Korea: Korean Requirement Class A
- China: People's Republic of China commodity inspection law Class A

### Homologation -- Telecom environmental testing (Safety and EMC):

Homologation approval for specific countries has been initiated with the IBM Homologation and Type Approval (HT&A) organization in LaGaude, France. This Power Systems model and applicable features meet the environmental testing requirements of the country telecom and have been designed and tested in compliance with the Full Quality Assurance Approval (FQAA) process as delivered by the British Approval Board for Telecom (BABT), the UK Telecom regulatory authority.

This product is not certified for connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

### Product safety/Country testing/Certification

- UL 60950-1:2007 Underwriters Laboratory, Safety Information
- CSA C22.2 No. 60950-1-07, Canadian Standards Association
- EN60950 European Norm
- IEC 60950, Edition 1, International Electrotechnical Commission, Safety Information
- Nordic deviations to IEC 60950-1 1st Edition

### General requirements:

The product is in compliance with IBM Corporate Bulletin C-B 0-2594-000 Statement of Conformity of IBM Product to External Standard (Suppliers Declaration).

### Homologation

This product is not certified for direct connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

## Limitations

- Integrated system port is not supported under AIX or Linux when the HMC ports are connected to an HMC. Either the HMC ports or the integrated system ports can be used, but not both. The FSP2 USB 2.0 port is used for communication to a UPS.
- The integrated system port is supported for modem and TTY terminal connections by AIX or Linux. Any other application using serial ports requires a serial port adapter to be installed in a PCI slot. The integrated system port does not support HACMP configurations.

### Boot requirements

- If IBM i (#2145) is selected as the primary operating system and SAN boot is not selected (#0837), one of the load source specify codes for SAS drives or NVMe devices in Special Features - Initial Orders - Specify codes section must be specified.
- If IBM i (#2145) is selected and the load source disk unit is not in the system unit (CEC), one of the following specify codes must also be selected:
  - #0719 Load Source Not in CEC and are to be placed in I/O drawers or in external SAN-attached disk
  - #EHR2 Load Source Specifies DASD are placed in an EXP24SX SFF Gen 2 bay Drawer (#ESLS or ELLS)
  - #0837 SAN Operating System Load Source Specify
- If IBM i (#2145) is selected, one of the following system console specify codes must be selected:
  - #5550 -- System Console on HMC
  - #5557 -- System Console - Internal LAN

### 4-core Power S914 processor feature

The PCIe expansion drawer (#EMX0) and EXP24SX /EXP12SX SAS Storage Enclosures (#ESLS or #ESLL) do not apply to the 4-core configuration S914 server.

## Hardware requirements

### Power S914 system configuration

The minimum Power S914 initial order must include a processor module, two 16 GB DIMMs, four or two power supplies and line cords, an operating system indicator, a cover set indicator, and a Language Group Specify. Also, it must include one of the storage options and the network options below:

Storage options:

- For boot from NVMe: One NVMe drive slot and one NVMe drive or one PCIe NVMe add in adapter.
- For boot from direct attach storage SFF-3 / SFF-2 HDD or SSD: One storage backplane and one SFF-3 / SFF-2 HDD or SSD.
- For boot from SAN: Internal HDD or SSD and RAID card are not required if feature 0837 (Boot from SAN) is selected. A Fibre Channel adapter must be ordered if feature 0837 is selected.

Network options:

- One PCIe2 4-port 1 Gb Ethernet adapter.
- One of the supported 10 Gb Ethernet adapters

AIX or Linux is the primary operating system. The minimum defined initial order configuration is as follows:

| Feature number | Description | Quantity | Notes |
|---|---|---|---|
| EU0B | Operator Panel LCD Display | 1 | Optional in rackmount configuration |
| Processors | | | |
| EP50 | 4-core, typical 2.3 to 3.8 GHz (max) POWER9 Processor | 1 | |
| or | | | |
| EP51 | 6-core, typical 2.3 to 3.8 GHz (max) POWER9 Processor | 1 | |
| or | | | |
| EP52 | 8-core, typical 2.8 to 3.8 GHz (max) POWER9 Processor | 1 | Rackmount configuration only |
| Processor activations | | | |
| EP60 | One Processor Core Activation for #EP50 | 4 | |
| or | | | |
| EP61 | One Processor Core Activation for #EP51 | 6 | |
| or | | | |
| EP62 | One Processor Core Activation for #EP52 | 8 | |
| Memory DIMMs | | | |
| EM62 | 16 GB DDR4 Memory | 2 | |
| or | | | |
| EM63 | 32 GB DDR4 Memory | 2 | |
| or | | | |
| EM64 | 64 GB DDR4 Memory | 2 | |
| Storage Backplane | | | |
| EJ1S | Storage Backplane | 1 | See Note 2 |

| | | | |
|---|---|---|---|
| and Note 4 | | | |
| | with 6 SFF-3 Bays and 2 PCIe Gen4 capable NVMe U.2 drive slots | | |
| or | | | |
| EJ1T | Storage Backplane 1 | | Optional EJ1Q as |
| MES to allow 4 NVMe U.2 drives. See Note 2 and No | | | |
| | with 2 PCIe Gen4 capable NVMe U.2 drive slots | | |
| or | | | |
| EJ1U | Storage Backplane 1 | | See Note 2 |
| and Note 4 | | | |
| | with 4 PCIe Gen4 capable NVMe U.2 drive slots | | |
| Disk Drive | | | |
| ESDB | 300 GB 15K RPM SAS SFF-3 Disk Drive (AIX/Linux) | 1 | |
| LAN Adapter | | | |
| 5899 | PCIe2 LP 4-port 1 GbE Adapter | 1 | See Note 3 |
| Power supplies/Power cord | | | |
| EB2L | AC Power Supply - 900 W for Server (200 - 240 V AC) | 4 | 41G Tower: #EB2L required Qty 4 of |
| or | | | |
| EB2M | AC Power Supply - 1400 W for Server (200 - 240 V AC) | 2 | 41G Rack: Qty 2 of #EB2M required |
| 6458 | Power Cord 4.3 m (14 ft), Drawer to IBM PDU (250V/10A) | 4 | 41G Tower: Qty 4, or 41A Rack: Qty 2 |
| 9300/97xx | Language Group Specify | 1 | 9300 - (default) |
| Front Bezel | | | Default front bezel #EJU2 (rack) or #EJU8 (tower) on when no DASD |
| EJUJ | Front IBM Bezel for 6 SAS + 4 NVMe -Bays BackPlane | 1 | 41G Rack: used with #EJ1S, or #EJ1T, or #EJ1U |
| or | | | |
| EJUL | Front OEM Bezel for 6 SAS + 4 NVMe-Bays BackPlane | 1 | 41G Rack: used with #EJ1S, or #EJ1T, or #EJ1U |
| or | | | |
| EJUQ | Front IBM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane | 1 | 41G Tower: used with #EJ1S, or #EJ1T, or #EJ1U |
| or | | | |
| EJUR | Front OEM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane | 1 | 41G Tower: used with #EJ1S, or #EJ1T, or #EJ1U |
| Optional mounting hardware | | | |
| EJTZ | Rack-mount Rail Kit | 1 | Must order one rail kit with #EJU2 or #EJU4 or #EJUJ bezel |
| Primary operating system | | | |
| 2146 | Primary Operating System Indicator - AIX | 1 | |
| or | | | |
| 2147 | Primary Operating System Indicator - Linux | 1 | |

1. The racking approach for the initial order must be either a 7014-T00, 7014-T42, 7965-S42, or 7953-94Y. If an additional rack is required for I/O expansion drawers as an MES to an existing system, either a feature 0551, 0553, or ER05 rack must be ordered.
2. Must order, at a minimum, one #ES1E/#ES1G/#EC5V/#EC5X (NVMe U.2 drive) with backplane #EJ1S, #EJ1T, or #EJ1U. Maximum of two #ES1E/#ES1G/#EC5V/#EC5X per one #EJ1S/#EJ1T. Maximum of four #ES1E/#ES1G/#EC5V/#EC5X per one #EJ1U. Mixing of #ES1E, #ES1G, #EC5V, or #EC5X is allowed on a backplane.
3. One PCIe2 4-port 1 GbE Adapter (#5899) is defaulted. Options for servers with AIX and Linux as the primary operating system are one of a 10 Gb Ethernet adapter, either feature EC2S, EC2U, EN0H, EN0K, EN0S, EN0U, EN0W, or EN15.
4. Storage backplane features #EJ1C/#EJ1D/#EJ1E/#EJ1M are also available (selected Front Bezel are required).

The minimum defined initial order configuration, if no choice is made, when IBM i is the primary operating system, is:

| Feature number | Description | Quantity | Notes |
|---|---|---|---|
| EU0B | Operator Panel LCD Display | 1 | |
| Processors | | | |
| EP50 | 4-core, typical 2.3 to 3.8 GHz (max) POWER9 Processor | 1 | |

| | | | |
|---|---|---|---|
| or | | | |
| EP51 | 6-core, typical 2.3 to 3.8 GHz (max) POWER9 Processor | 1 | |
| or | | | |
| EP52 | 8-core, typical 2.8 to 3.8 GHz (max) POWER9 Processor | 1 | Rackmount configuration only |
| Processor activations | | | |
| EP60 | One Processor Core Activation for #EP50 | 4 | |
| or | | | |
| EP61 | One Processor Core Activation for #EP51 | 6 | |
| or | | | |
| EP62 | One Processor Core Activation for #EP52 | 8 | |
| Memory DIMMs | | | |
| EM62 | 16 GB DDR4 Memory | 2 | |
| or | | | |
| EM63 | 32 GB DDR4 Memory | 2 | |
| or | | | |
| EM64 | 64 GB DDR4 Memory | 2 | |
| Storage Backplane | | | See Note 3 |
| EJ1S | Storage Backplane with 6 SFF-3 Bays and 2 PCIe Gen4 capable NVMe U.2 | 1 | See Note 2 and Note 4 |
| or | | | |
| EJ1T | Storage Backplane with 2 PCIe Gen4 capable NVMe U.2 drive slots | 1 | Optional EJ1Q as MES to allow 4 NVMe U.2 drives. See Note 2 and Note 4 |
| or | | | |
| EJ1U | Storage Backplane with 4 PCIe Gen4 capable NVMe U.2 drive slots | 1 | See Note 2 and Note 4 |
| Disk Drive | | | |
| ESNJ | 283GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (IBM i) | 2 | One system data protection specify code required |
| LAN Adapter | | | |
| 5899 | PCIe2 LP 4-port 1 GbE Adapter | 1 | |
| or | | | |
| EN15 | PCIe3 4-port 10 GbE SR Adapter | 1 | |
| or | | | |
| EC2S | PCIe3 2-Port 10 Gb NIC&ROCE SR/Cu Adapter | 1 | |
| or | | | |
| EC2U | PCIe3 2-Port 25/10 Gb NIC&ROCE SR/Cu Adapter | 1 | |
| Power supplies/Power cord | | | |
| EB2L | AC Power Supply - 900 W for Server (200 - 240 V AC) | 4 | 41G Tower: Qty 4 of #EB2L required |
| or | | | |
| EB2M | AC Power Supply - 1400 W for Server (200 - 240 V AC) | 2 | 41G Rack: Qty 2 of #EB2M required |
| 6458 | Power Cord 4.3 m (14 ft), Drawer to IBM PDU (250V/10A) | 4 | 41G Tower: Qty 4, or 41G Rack: Qty 2 |
| 9300/97xx | Language Group Specify | 1 | 9300 - (default) |
| Front Bezel | | | Default front bezel #EJU2 (rack) or #EJU8 (tower) on when no DASD backplane is ordered |
| EJUJ | Front IBM Bezel for 6 SAS + 4 NVMe -Bays BackPlane | 1 | 41G Rack: used with #EJ1S, #EJ1T, or #EJ1U |
| or | | | |
| EJUQ | Front IBM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane | 1 | 41G Tower: used with #EJ1S, #EJ1T, or #EJ1U |
| Optional mounting hardware | | | |

| | | | |
|---|---|---|---|
| EJTZ | Rack-mount Rail Kit | 1 | Must order one rail kit with #EJU2, #EJUF, or #EJUJ bezel |
| System Data Protection Specify 0040 | Mirrored System Disk Level, Specify Code | 1 | Default is #0040. One system data protection specify code required. |
| System Console Specify 5550 | System console on HMC | 1 | |
| or 5557 | System Console-Ethernet LAN adapter | 1 | |
| Primary operating system 2145 | Primary Operating System Indicator - IBM i | 1 | Feature EB73 or EB74 is required. |

1. The racking approach for the initial order must be either a 7014-T00, 7014-T42, 7965-S42, or 7953-94Y. If an additional rack is required for I/O expansion drawers as an MES to an existing system, either a feature 0551, 0553, or ER05 rack must be ordered.
2. Must order, at a minimum, two #ES1F/#ES1H/#EC5W (NVMe U.2 drive) with backplane #EJ1S, #EJ1T, or #EJ1U. Maximum of two #ES1F/#ES1H/#EC5W per one #EJ1S/#EJ1T. Maximum of four #ES1F/#ES1H/#EC5W per one #EJ1U except on 4-core P05 platform. A third NVMe U.2 device can be ordered with the first pair (mirrored configuration), the odd number device must be the same size or larger capacity than the first pair.
3. IBM i operating system performance: Clients with write-sensitive disk/HDD workloads should upgrade from the feature EJ1C/EJ1E base storage backplane to the feature EJ1M/EJ1D expanded function storage backplanes to gain the performance advantage of write cache, or upgrade to use NVMe devices to gain the advantage of NVMe.
4. Storage backplane features #EJ1C/#EJ1D/#EJ1E/#EJ1M are also available (selected Front Bezel are required).

POWER9 Tower-to-Rack conversion

The IBM System Server S914 Tower-to-Rack conversion is available through the following MES parts that you need to convert a 4U server (MTM 9009-41G) from a tower model to a rack model. You can then install the server into a 19-inch rack enclosure.

The following MES parts need to be requested for the tower-to-rack conversion:

| Description | Feature | Comments |
|---|---|---|
| Front IBM Bezel for 12-Bay BackPlane | EJU2 | Optional, mutually exclusive with EJUL, EJUJ, EJUF, EJU4, and EJUH |
| Front IBM Bezel 18-Bay BackPlane | EJUF | Optional, mutually exclusive with EJUL, EJUJ, EJU2, EJU4, and EJUH |
| Front OEM Bezel for 12-Bay BackPlane | EJU4 | Optional, mutually exclusive with EJUL, EJUJ, EJU2, EJUF, and EJUH |
| Front OEM Bezel for 18-Bay BackPlane | EJUH | Optional, mutually exclusive with EJUL, EJUJ, EJU2, EJUF, and EJU4 |
| Front IBM Bezel for 6 SAS + 4 NVMe -Bays BackPlane | EJUJ | Optional, mutually exclusive with EJUL, EJU2, EJUF, EJUH, and EJU4 |
| Front OEM Bezel for 6 SAS + 4 NVMe-Bays BackPlane | EJUL | Optional, mutually exclusive with EJUJ, EJU2, EJUF, EJUH, and EJU4 |
| Rack-mount Rail Kit | EJTZ | Required |

Note: Choose the correct set of power cords to PDU for your rack configuration, depending on the rack type, the PDU type, and the number of power supplies.

POWER9 Rack-to-Tower conversion

The System Server S914 Rack-to-Tower Conversion is also available through the following MES parts that you need to convert a 4U server (MTM 9009-41G) from a rack model to a tower model.

The following MES parts need to be requested for the rack-to-tower conversion:

| Description | Feature | Comments |
|---|---|---|
| Front Door and Covers for 12-Bay BackPlane | EJU8 | Optional, mutually exclusive with EJUR, EJUQ, EJU9, EJUA, and EJUB |
| Front Door and Covers for 18-Bay BackPlane | EJU9 | Optional, mutually exclusive with EJUR, EJUQ, EJU8, EJUA, and EJUB |
| Front OEM Door and Covers for 12-Bay BackPlane | EJUA | Optional, mutually exclusive with EJUR, EJUQ, EJU8, EJU9, and EJUB |
| Front OEM Door and Covers for 18-Bay BackPlane | EJUB | Optional, mutually exclusive with EJUR, EJUQ, EJU8, EJU9, and EJUA |
| Front IBM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane | EJUQ | Optional, mutually exclusive with EJUR, EJU8, EJU9, EJUA, and EJUB |
| Front OEM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane | EJUR | Optional, mutually exclusive with EJUQ, EJU8, EJU9, EJUA, and EJUB |

Notes:

- Four 900 W power supplies are required. If two 1400 W power supplies exist on the rack model, they will be removed on the order.
- Choose the correct set of power cords to wall cables, depending on AC, length of cord required, and number of power cords required per power supply.

For installation instructions, see the POWER9 systems information in IBM Knowledge Center.

Hardware Management Console (HMC) machine code

An HMC is required to manage the Power S914 server (9009-41G) implementing partitioning. Multiple POWER7, POWER8, and POWER9 processor-based servers can be supported by a single HMC.

Planned HMC hardware and software support:

- X86 based - 7042-CR7, 7042-CR8, 7042-CR9
  - vHMC x86
- POWER8 based Open Power: 7063-CR1
  - vHMC PowerVM based LPAR

If you are attaching an HMC to a new server or adding function to an existing server that requires a firmware update, the HMC machine code may need to be updated because HMC code must always be equal to or higher than the managed server's firmware. Access to firmware and machine code updates is conditioned on entitlement and license validation in accordance with IBM policy and practice. IBM may verify entitlement through customer number, serial number, electronic restrictions, or any other means or methods employed by IBM at its discretion.

To determine the HMC machine code level required for the firmware level on any server, go to the following web page to access the Fix Level Recommendation Tool (FLRT) on or after the planned availability date for this product. FLRT will identify the correct HMC machine code for the selected system firmware level; see the website Fix Level Recommendation Tool.

If a single HMC is attached to multiple servers, the HMC machine code level must be updated to be at or higher than the server with the most recent firmware level. All prior levels of server firmware are supported with the latest HMC machine code level.

The HMC code latest level contains the following:

- Support for managing Power S922, Power S924, and Power S914 systems.
- Support for the new HMC model 7063-CR1.
- Support for PowerVM functions, such as the new HMC GUI interface for VIOS management.
- GUI for HMC's Performance and Capacity Monitoring function.
- An HMC command to initiate a remote restart operation. This removes the requirement of VMControl for the PowerVM Remote Restart function.
- For PowerVM GUI functions, VIOS is recommended.

For clients installing systems higher than the EIA 29 position (location of the rail that supports the rack-mounted server) in any IBM or non-IBM rack, acquire approved tools outlined in the server specifications section at IBM Knowledge Center. In situations where IBM service is required and the recommended tools are not available, there could be delays in repair actions.

## Software requirements

If installing the Linux operating system LPAR:

- Red Hat Enterprise Linux 8 for Power LE, version 8.1, or later
- SUSE Linux Enterprise Server 15 Service Pack 1, or later

If installing IBM i, the IBM i operating system levels supported are:

- IBM i 7.4 TR2, or later
- IBM i 7.3 TR8 , or later
- IBM i 7.2 with 7.2 Licensed Machine Code - RS 720-Q, or later

If installing the AIX operating system LPAR with any I/O configuration (one of these):

- AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-02-2028, or later
- AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-06-2028, or later
- AIX Version 7.2 with the 7200-03 Technology Level and Service Pack 7 (Planned Availability February 19, 2021)

If installing the AIX operating system Virtual I/O only LPAR (one of these):

- AIX Version 7.2 with the 7200-04 Technology Level, or later
- AIX Version 7.2 with the 7200-03 Technology Level, or later
- AIX Version 7.2 with the 7200-02 Technology Level and Service Pack 7200-02-02-1832, or later
- AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-02-1832, or later

If installing VIOS:

- VIOS 3.1.1.25, or later
- VIOS 2.2.6.65, or later

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# Publications

Power Systems hardware documentation provides clients with the following topical information:

- Licenses, notices, safety, and warranty information
- Planning for the system
- Installing and configuring the system
- Troubleshooting, service, and support
- Installing, configuring, and managing consoles, terminals, and interfaces
- Installing operating systems
- Creating a virtual computing environment
- Enclosures and expansion units
- Glossary

You can access the product documentation at IBM Knowledge Center.

Product documentation is also available on DVD (SK5T-7087).

The following information is shipped with the 9009-41G:

- Power Hardware Information DVD SK5T-7087
- Installing the 9009-41G
- Important Notices
- Warranty Information
- License Agreement for Machine Code

Hardware documentation such as installation instructions, user's information, and service information is available to download or view at the IBM Support website.

You can access IBM i documentation at the IBM website.

You can access AIX documentation at the AIX website.

You can access documentation about Linux on IBM systems at the Linux information for IBM systems website.

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. See the IBM Systems Information Center, at IBM Knowledge Center.

IBM Knowledge Center provides you with a single point of reference where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access by going to IBM Knowledge Center for all your product information needs.

To access the IBM Publications Center Portal, go to the IBM Publications Center website.

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# Features



## Features - No charge

- NONE

## Features - Chargeable

### Special Features - Initial Orders

- Administrative
  - (#ECP0) -Cloud Private Solution
  - (#ESC6) -S&H-b
- Editions
  - (#EU2C) -Express Edition 4 core (IBM i)
  - (#EU2D) -Express Edition 6-core (IBM i)
- Languages
  - (#9300) -Language Group Specify - US English
  - (#9700) -Language Group Specify - Dutch
  - (#9703) -Language Group Specify - French
  - (#9704) -Language Group Specify - German
  - (#9705) -Language Group Specify - Polish
  - (#9706) -Language Group Specify - Norwegian
  - (#9707) -Language Group Specify - Portuguese
  - (#9708) -Language Group Specify - Spanish
  - (#9711) -Language Group Specify - Italian
  - (#9712) -Language Group Specify - Canadian French
  - (#9714) -Language Group Specify - Japanese
  - (#9715) -Language Group Specify - Traditional Chinese (Taiwan)
  - (#9716) -Language Group Specify - Korean
  - (#9718) -Language Group Specify - Turkish
  - (#9719) -Language Group Specify - Hungarian
  - (#9720) -Language Group Specify - Slovakian
  - (#9721) -Language Group Specify - Russian
  - (#9722) -Language Group Specify - Simplified Chinese (PRC)
  - (#9724) -Language Group Specify - Czech
  - (#9725) -Language Group Specify - Romanian
  - (#9726) -Language Group Specify - Croatian
  - (#9727) -Language Group Specify - Slovenian
  - (#9728) -Language Group Specify - Brazilian Portuguese
  - (#9729) -Language Group Specify - Thai
- Miscellaneous
  - (#0444) -CBU Specify
  - (#4927) -Solution Edition for IBM i (6-core)
  - (#4928) -Solution Edition for IBM i (4-core)
  - (#5000) -Software Preload Required
  - (#8143) -Linux Software Preinstall
  - (#8144) -Linux Software Preinstall (Business Partners)
  - (#9461) -Month Indicator
  - (#9462) -Day Indicator
  - (#9463) -Hour Indicator
  - (#9464) -Minute Indicator
  - (#9465) -Qty Indicator
  - (#9466) -Countable Member Indicator
  - (#ECSS) -Integrated Solution Packing
- Processor
  - (#2319) -Factory Deconfiguration of 1-core
  - (#EPZR) -One Processor Core Activation for #EP50
    Feature EPZR is not available in People's Republic ofChina, Hong Kong S.A.R. of the PRC, Marco S.A.R. ofthe PRC and Taiwan.
  - (#EPZS) -One Processor Core Activation for #EP51
    Feature #EPZS is not available in People's Republic ofChina, Hong Kong S.A.R. of the PRC, Marco S.A.R. ofthe PRC and Taiwan.
- Services
  - (#0456) -Customer Specified Placement
  - (#ERF1) -RFID Tags for Servers, Compute Nodes, Chassis, Racks, and HMCs
- Specify Codes
  - (#0205) -RISC-to-RISC Data Migration
  - (#4650) -Rack Indicator-Not Factory Integrated
    One and only one rack indicator feature is required onall orders (#4650 to #4666).

- (#4651) -Rack Indicator, Rack #1
- (#4652) -Rack Indicator, Rack #2
- (#4653) -Rack Indicator, Rack #3
- (#4654) -Rack Indicator, Rack #4
- (#4655) -Rack Indicator, Rack #5
- (#4656) -Rack Indicator, Rack #6
- (#4657) -Rack Indicator, Rack #7
- (#4658) -Rack Indicator, Rack #8
- (#4659) -Rack Indicator, Rack #9
- (#4660) -Rack Indicator, Rack #10
- (#4661) -Rack Indicator, Rack #11
- (#4662) -Rack Indicator, Rack #12
- (#4663) -Rack Indicator, Rack #13
- (#4664) -Rack Indicator, Rack #14
- (#4665) -Rack Indicator, Rack #15
- (#4666) -Rack Indicator, Rack #16
- (#5557) -System Console-Ethernet LAN adapter
- (#9169) -Order Routing Indicator-System Plant
- (#9440) -New AIX License Core Counter
- (#9441) -New IBM i License Core Counter
- (#9442) -New Red Hat License Core Counter
- (#9443) -New SUSE License Core Counter
- (#9444) -Other AIX License Core Counter
- (#9445) -Other Linux License Core Counter
- (#9446) -3rd Party Linux License Core Counter
- (#9447) -VIOS Core Counter
- (#9449) -Other License Core Counter
- (#9450) -Ubuntu Linux License Core Counter

- Standard Factory Services
  - (#4649) -Rack Integration Services

## Special Features - Plant and/or Field Installable

- Accessory
  - (#EU19) -Cable Ties & Labels
- Adapters
  - (#2893) -PCIe 2-Line WAN w/Modem
  - (#5729) -PCIe2 8Gb 4-port Fibre Channel Adapter
  - (#5735) -8 Gigabit PCI Express Dual Port Fibre Channel Adapter
  - (#5748) -POWER GXT145 PCI Express Graphics Accelerator
  - (#5785) -4 Port Async EIA-232 PCIe Adapter
  - (#5899) -PCIe2 4-port 1GbE Adapter
  - (#EC2S) -PCIe3 2-Port 10Gb NIC&ROCE SR/Cu Adapter
  - (#EC2U) -PCIe3 2-Port 25/10Gb NIC&ROCE SR/Cu Adapter
  - (#EC38) -PCIe3 2-port 10GbE NIC&RoCE SFP+ Copper Adapter
  - (#EC3B) -PCIe3 2-Port 40GbE NIC RoCE QSFP+ Adapter
  - (#EC3F) -PCIe3 2-port 100Gb EDR IB Adapter x16
  - (#EC3M) -PCIe3 2-port 100GbE (NIC&RoCE) QSFP28 Adapter x16
  - (#EC3U) -PCIe3 1-port 100Gb EDR IB Adapter x16
  - (#EC46) -PCIe2 4-Port USB 3.0 Adapter
  - (#EC5B) -PCIe3 x8 1.6 TB NVMe Flash Adapter for AIX/Linux
  - (#EC5D) -PCIe3 x8 3.2 TB NVMe Flash Adapter for AIX/Linux
  - (#EC5F) -PCIe3 x8 6.4 TB NVMe Flash Adapter for AIX/Linux
  - (#EC63) -PCIe4 1-port 100Gb EDR IB CAPI adapter
  - (#EC65) -PCIe4 2-port 100Gb EDR IB CAPI adapter
  - (#EC66) -PCIe4 2-port 100Gb ROCE EN adapter
  - (#EC6K) -PCIe2 2-Port USB 3.0 Adapter
  - (#EC6V) -PCIe3 x8 1.6 TB NVMe Flash Adapter for IBM i
  - (#EC6X) -PCIe3 x8 3.2 TB NVMe Flash Adapter for IBM i
  - (#EC6Z) -PCIe3 x8 6.4 TB NVMe Flash Adapter for IBM i
  - (#EC7B) -PCIe4 1.6TB NVMe Flash Adapter x8 for AIX/Linux
  - (#EC7D) -PCIe4 3.2TB NVMe Flash Adapter x8 for AIX/Linux
  - (#EC7F) -PCIe4 6.4TB NVMe Flash Adapter x8 for AIX/Linux
  - (#EC7K) -PCIe4 1.6TB NVMe Flash Adapter x8 for IBM i
  - (#EC7M) -PCIe4 3.2TB NVMe Flash Adapter x8 for IBM i
  - (#EC7P) -PCIe4 6.4TB NVMe Flash Adapter x8 for IBM i
  - (#EJ08) -PCIe3 Optical Cable Adapter for PCIe3 Expansion Drawer
  - (#EJ0J) -PCIe3 RAID SAS Adapter Quad-port 6Gb x8
  - (#EJ0L) -PCIe3 12GB Cache RAID SAS Adapter Quad-port 6Gb x8
  - (#EJ10) -PCIe3 SAS Tape/DVD Adapter Quad-port 6Gb x8
  - (#EJ14) -PCIe3 12GB Cache RAID PLUS SAS Adapter Quad-port 6Gb x8
  - (#EJ1P) -PCIe1 SAS Tape/DVD Dual-port 3Gb x8 Adapter
  - (#EJ1Q) -NVMe U.2 Passthru adapter Gen4 capable
  - (#EJ20) -PCIe x16 to CXP Optical or CU converter Adapter for PCIe3 Expansion Drawer
  - (#EJ32) -PCIe3 Crypto Coprocessor no BSC 4767
  - (#EJ33) -PCIe3 Crypto Coprocessor BSC-Gen3 4767
  - (#EN0A) -PCIe3 16Gb 2-port Fibre Channel Adapter
  - (#EN0G) -PCIe2 8Gb 2-Port Fibre Channel Adapter
  - (#EN0H) -PCIe3 4-port (10Gb FCoE & 1GbE) SR&RJ45
  - (#EN0K) -PCIe3 4-port (10Gb FCoE & 1GbE) SFP+Copper&RJ45
  - (#EN0S) -PCIe2 4-Port (10Gb+1GbE) SR+RJ45 Adapter
  - (#EN0U) -PCIe2 4-port (10Gb+1GbE) Copper SFP+RJ45 Adapter
  - (#EN0W) -PCIe2 2-port 10/1GbE BaseT RJ45 Adapter
  - (#EN12) -PCIe2 8Gb 4-port Fibre Channel Adapter
  - (#EN13) -PCIe 1-port Bisync Adapter
    Not withdrawn in Japan until 2018-08-07

- (#EN15) -PCIe3 4-port 10GbE SR Adapter
- (#EN1A) -PCIe3 32Gb 2-port Fibre Channel Adapter
- (#EN1C) -PCIe3 16Gb 4-port Fibre Channel Adapter
- (#EN1G) -PCIe3 2-Port 16Gb Fibre Channel Adapter
- (#EN2A) -PCIe3 16Gb 2-port Fibre Channel Adapter

- Administrative
  - (#0719) -Load Source Not in CEC
  - (#EHS2) -SSD Placement Indicator - #ESLS/#ELLS
  - (#ESC0) -S&H - No Charge
- Cable
  - (#0348) -V.24/EIA232 6.1m (20-Ft) PCI Cable
  - (#0353) -V.35 6.1m (20-Ft) PCI Cable
  - (#0359) -X.21 6.1m (20-Ft) PCI Cable
  - (#1025) -Modem Cable - US/Canada and General Use
  - (#2456) -2M LC-SC 50 Micron Fiber Converter Cable
  - (#2459) -2M LC-SC 62.5 Micron Fiber Converter Cable
  - (#2934) -3M Asynchronous Terminal/Printer Cable EIA-232
  - (#2936) -Asynchronous Cable EIA-232/V.24 3M
  - (#3124) -Serial-to-Serial Port Cable for Drawer/Drawer-3.7M
  - (#3125) -Serial-to-Serial Port Cable for Rack/Rack-8M
  - (#3925) -0.3M Serial Port Converter Cable, 9-Pin to 25-Pin
  - (#3927) -Serial Port Null Modem Cable, 9-pin to 9-pin, 3.7M
  - (#3928) -Serial Port Null Modem Cable, 9-pin to 9-pin, 10M
  - (#3930) -System Serial Port Converter Cable
  - (#4242) -1.8 M (6-ft) Extender Cable for Displays (15-pin D-shell to 15-pin D-shell)
  - (#4256) -Extender Cable - USB Keyboards, 1.8M
  - (#4276) -VGA to DVI Connection Converter
  - (#7802) -Ethernet Cable, 15m, Hardware Management Console to System Unit
  - (#EB27) -QSFP+ 40GbE Base-SR Transceiver
  - (#EB2B) -1m (3.3-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)
  - (#EB2H) -3m (9.8-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)
  - (#EB2J) -10m (30.3-ft), IBM Passive QSFP+ MTP Optical Cable
  - (#EB2K) -30m (90.3-ft), IBM Passive QSFP+ MTP Optical Cable
  - (#EB46) -10GbE Optical Transceiver SFP+ SR
  - (#EB47) -25GbE Optical Transceiver SFP28
  - (#EB4J) -0.5m SFP28/25GbE copper Cable
  - (#EB4K) -1.0m SFP28/25GbE copper Cable
  - (#EB4L) -1.5m SFP28/25GbE copper Cable
  - (#EB4M) -2.0m SFP28/25GbE copper Cable
  - (#EB4P) -2.0m QSFP28/100GbE copper split Cable to SFP28 4x25GbE
  - (#EB50) -0.5m EDR IB Copper Cable QSFP28
  - (#EB51) -1.0m EDR IB Copper Cable QSFP28
  - (#EB52) -2.0M EDR IB Copper Cable QSFP28
  - (#EB54) -1.5M EDR IB Copper Cable QSFP28
  - (#EB59) -100GbE Optical Transceiver QSFP28
  - (#EB5A) -3M EDR IB Optical Cable QSFP28
  - (#EB5B) -5M EDR IB Optical Cable QSFP28
  - (#EB5C) -10M EDR IB Optical Cable QSFP28
  - (#EB5D) -15M EDR IB Optical Cable QSFP28
  - (#EB5E) -20M EDR IB Optical Cable QSFP28
  - (#EB5F) -30M EDR IB Optical Cable QSFP28
  - (#EB5G) -50M EDR IB Optical Cable QSFP28
  - (#EB5H) -100M EDR IB Optical Cable QSFP28
  - (#EB5J) -0.5M 100GbE Copper Cable QSFP28
  - (#EB5K) -1.0M 100GbE Copper Cable QSFP28
  - (#EB5L) -1.5M 100GbE Copper Cable QSFP28
  - (#EB5M) -2.0M 100GbE Copper Cable QSFP28
  - (#EB5N) -25M EDR IB Optical Cable QSFP28
  - (#EB5R) -3M 100GbE Optical Cable QSFP28 (AOC)
  - (#EB5S) -5M 100GbE Optical Cable QSFP28 (AOC)
  - (#EB5T) -10M 100GbE Optical Cable QSFP28 (AOC)
  - (#EB5U) -15M 100GbE Optical Cable QSFP28 (AOC)
  - (#EB5V) -20M 100GbE Optical Cable QSFP28 (AOC)
  - (#EB5W) -30M 100GbE Optical Cable QSFP28 (AOC)
  - (#EB5X) -50M 100GbE Optical Cable QSFP28 (AOC)
  - (#EB5Y) -100M 100GbE Optical Cable QSFP28 (AOC)
  - (#ECBJ) -SAS X Cable 3m - HD Narrow 6Gb 2-Adapters to Enclosure
  - (#ECBK) -SAS X Cable 6m - HD Narrow 6Gb 2-Adapters to Enclosure
  - (#ECBL) -SAS X Cable 10m - HD Narrow 6Gb 2-Adapters to Enclosure
  - (#ECBM) -SAS X Cable 15m - HD Narrow 6Gb 2-Adapters to Enclosure

- (#ECBM) -SAS X Cable 15m - HD Narrow 3Gb 2-Adapters to Enclosure

- (#ECBN) -5m (16.4-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)
- (#ECBT) -SAS YO Cable 1.5m - HD Narrow 6Gb Adapter to Enclosure
- (#ECBU) -SAS YO Cable 3m - HD Narrow 6Gb Adapter to Enclosure
- (#ECBV) -SAS YO Cable 6m - HD Narrow 6Gb Adapter to Enclosure
- (#ECBW) -SAS YO Cable 10m - HD Narrow 6Gb Adapter to Enclosure
- (#ECBX) -SAS YO Cable 15m - HD Narrow 3Gb Adapter to Enclosure
- (#ECBY) -SAS AE1 Cable 4m - HD Narrow 6Gb Adapter to Enclosure
- (#ECBZ) -SAS YE1 Cable 3m - HD Narrow 6Gb Adapter to Enclosure
- (#ECC7) -3M Optical Cable Pair for PCIe3 Expansion Drawer
- (#ECC8) -10M Optical Cable Pair for PCIe3 Expansion Drawer
- (#ECCF) -System Port Converter Cable for UPS
- (#ECCS) -3M Copper CXP Cable Pair for PCIe3 Expansion Drawer
- (#ECCX) -3M Active Optical Cable Pair for PCIe3 Expansion Drawer
- (#ECCY) -10M Active Optical Cable Pair for PCIe3 Expansion Drawer
- (#ECDJ) -3.0M SAS X12 Cable (Two Adapter to Enclosure)
- (#ECDK) -4.5M SAS X12 Active Optical Cable (Two Adapter to Enclosure)
- (#ECDL) -10M SAS X12 Active Optical Cable (Two Adapter to Enclosure)
- (#ECDT) -1.5M SAS YO12 Cable (Adapter to Enclosure)
- (#ECDU) -3.0M SAS YO12 Cable (Adapter to Enclosure)
- (#ECDV) -4.5M SAS YO12 Active Optical Cable (Adapter to Enclosure)
- (#ECDW) -10M SAS YO12 Active Optical Cable (Adapter to Enclosure)
- (#ECE0) -0.6M SAS AA12 Cable (Adapter to Adapter)
- (#ECE3) -3.0M SAS AA12 Cable
- (#ECE4) -4.5M SAS AA12 Active Optical Cable (Adapter to Adapter)
- (#ECW0) -Optical Wrap Plug
- (#EJ0W) -SAS Ports/Cabling for Dual IOA BackPlane
- (#EN01) -1m (3.3-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper
- (#EN02) -3m (9.8-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper
- (#EN03) -5m (16.4-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper

- Disk
  - (#1817) -Quantity 150 of #1962
  - (#1818) -Quantity 150 of #1964
  - (#1927) -Quantity 150 of #1948
  - (#1929) -Quantity 150 of #1953
  - (#1948) -283GB 15k RPM SAS SFF-2 Disk Drive (IBM i)
  - (#1953) -300GB 15k RPM SAS SFF-2 Disk Drive (AIX/Linux)
  - (#1962) -571GB 10k RPM SAS SFF-2 Disk Drive (IBM i)
  - (#1964) -600GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)
  - (#EQ62) -Quantity 150 of #ES62 3.86-4.0 TB 7200 rpm 4k LFF-1 Disk
  - (#EQ64) -Quantity 150 of #ES64 7.72-8.0 TB 7200 rpm 4k LFF-1 Disk
  - (#EQD2) -Quantity 150 of #ESD2 (1.1TB 10k SFF-2)
  - (#EQD3) -Quantity 150 of #ESD3 (1.2TB 10k SFF-2)
  - (#EQDN) -Quantity 150 of #ESDN (571GB 15K RPM SAS SFF-2 for IBM i)
  - (#EQDP) -Quantity 150 of #ESDP (600GB 15K RPM SAS SFF-2 for AIX/ LINUX)
  - (#EQEU) -Quantity 150 of #ESEU (571GB 10k SFF-2)
  - (#EQEV) -Quantity 150 of #ESEV (600GB 10k SFF-2)
  - (#EQEY) -Quantity 150 of #ESEY (283 GB SFF-2)
  - (#EQEZ) -Quantity 150 of #ESEZ (300GB SFF-2)
  - (#EQF2) -Quantity 150 of #ESF2 (1.1TB 10k SFF-2)
  - (#EQF3) -Quantity 150 of #ESF3 (1.2TB 10k SFF-2)
  - (#EQFN) -Quantity 150 of #ESFN (571GB SFF-2)
  - (#EQFP) -Quantity 150 of #ESFP (600GB SFF-2)
  - (#EQFS) -Quantity 150 of #ESFS (1.7TB 10k SFF-2)
  - (#EQFT) -Quantity 150 of #ESFT (1.8TB 10k SFF-2)
  - (#EQG5) -Quantity 150 of #ESG5 (387GB SAS 5xx)
  - (#ES62) -3.86-4.0 TB 7200 RPM 4K SAS LFF-1 Nearline Disk Drive (AIX/Linux)
  - (#ES64) -7.72-8.0 TB 7200 RPM 4K SAS LFF-1 Nearline Disk Drive (AIX/Linux)
  - (#ESD2) -1.1TB 10K RPM SAS SFF-2 Disk Drive (IBMi)
  - (#ESD3) -1.2TB 10K RPM SAS SFF-2 Disk Drive (AIX/Linux)
  - (#ESD4) -571GB 10K RPM SAS SFF-3 Disk Drive (IBM i)
  - (#ESD5) -600GB 10K RPM SAS SFF-3 Disk Drive (AIX/Linux)
  - (#ESDA) -283GB 15K RPM SAS SFF-3 Disk Drive (IBM i)
  - (#ESDB) -300GB 15K RPM SAS SFF-3 Disk Drive (AIX/Linux)
  - (#ESDN) -571GB 15K RPM SAS SFF-2 Disk Drive - 528 Block (IBM i)
  - (#ESDP) -600GB 15K RPM SAS SFF-2 Disk Drive - 5xx Block (AIX/ Linux)
  - (#ESEU) -571GB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224
  - (#ESEV) -600GB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096
  - (#ESEY) -283GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive
  - (#ESEZ) -300GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive

- (#ESF2) -1.1TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224
- (#ESF3) -1.2TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096
- (#ESF4) -571GB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224
- (#ESF5) -600GB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096
- (#ESF8) -1.1TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224
- (#ESF9) -1.2TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096
- (#ESFA) -283GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive
- (#ESFB) -300GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive
- (#ESFE) -571GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive
- (#ESFF) -600GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive
- (#ESFN) -571GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive
- (#ESFP) -600GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive
- (#ESFS) -1.7TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224
- (#ESFT) -1.8TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096
- (#ESFU) -1.7TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224
- (#ESFV) -1.8TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096
- (#ESNJ) -283GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (IBM i)
- (#ESNK) -300GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (AIX/ Linux)
- (#ESNL) -283GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (IBM i)
- (#ESNM) -300GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (AIX/ Linux)
- (#ESNN) -571GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (IBM i)
- (#ESNP) -600GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (AIX/ Linux)
- (#ESNQ) -571GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (IBM i)
- (#ESNR) -600GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (AIX/ Linux)
- (#ESPL) -Quantity 150 of #ESNL (283GB 15k SFF-2)
- (#ESPM) -Quantity 150 of #ESNM (300GB 15k SFF-2)
- (#ESPQ) -Quantity 150 of #ESNQ (571GB 15k SFF-2)
- (#ESPR) -Quantity 150 of #ESNR (600GB 15k SFF-2)

- Display
  - (#3632) -Widescreen LCD Monitor
- Drive
  - (#1107) -USB 500 GB Removable Disk Drive
  - (#EU00) -RDX USB Internal Docking Station for Removable Disk Cartridge
  - (#EU01) -1TB Removable Disk Drive Cartridge
  - (#EU04) -RDX USB External Docking Station for Removable Disk Cartridge
    Not available in US, EMEA, and Japan

- (#EU08) -RDX 320 GB Removable Disk Drive
- (#EU15) -1.5TB Removable Disk Drive Cartridge
- (#EU2T) -2TB Removable Disk Drive Cartridge (RDX)
- (#EUA4) -RDX USB External Docking Station

- Linecords
  - (#6458) -Power Cord 4.3m (14-ft), Drawer to IBM PDU (250V/10A)
  - (#6460) -Power Cord 4.3m (14-ft), Drawer To OEM PDU (125V, 15A)
  - (#6469) -Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (250V/ 15A) U. S.
  - (#6470) -Power Cord 1.8m (6-ft), Drawer to Wall (125V/15A)
  - (#6471) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/ 10A)
  - (#6472) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/ 16A)
  - (#6473) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/ 10A)
  - (#6474) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/ 13A)
  - (#6475) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/ 16A)
  - (#6476) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/ 10A)
  - (#6477) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/ 16A)
  - (#6478) -Power Cord 2.7 M(9-foot), To Wall/OEM PDU, (250V, 16A)
  - (#6488) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (125V/ 15A or 250V/10A )
  - (#6489) -4.3m (14-Ft) 3PH/32A 380-415V Power Cord
  - (#6491) -4.3m (14-Ft) 1PH/63A 200-240V Power Cord
  - (#6492) -4.3m (14-Ft) 1PH/48A 200-240V Power Cord
  - (#6493) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/ 10A)
  - (#6494) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/ 10A)
  - (#6496) -Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 10A)
  - (#6577) -Power Cable - Drawer to IBM PDU, 200-240V/10A
  - (#6651) -Power Cord 2.7M (9-foot), To Wall/OEM PDU, (125V, 15A)
  - (#6653) -4.3m (14-Ft) 3PH/16A 380-415V Power Cord
  - (#6654) -4.3m (14-Ft) 1PH/24A Power Cord
  - (#6655) -4.3m (14-Ft) 1PH/24A WR Power Cord
  - (#6656) -4.3m (14-Ft) 1PH/32A Power Cord
  - (#6657) -4.3m (14-Ft) 1PH/32A Power Cord
  - (#6658) -4.3m (14-Ft) 1PH/24A Power Cord-Korea
  - (#6659) -Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 15A)
  - (#6660) -Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (125V/ 15A)
  - (#6665) -Power Cord 2.8m (9.2-ft), Drawer to IBM PDU, (250V/10A)
  - (#6667) -4.3m (14-Ft) 3PH/32A 380-415V Power Cord-Australia
  - (#6669) -Power Cord 4.3M (14-foot), Drawer to OEM PDU, (250V, 15A)
  - (#6671) -Power Cord 2.7M (9-foot), Drawer to IBM PDU, 250V/10A
  - (#6672) -Power Cord 2M (6.5-foot), Drawer to IBM PDU, 250V/10A
  - (#6680) -Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/ 10A)
  - (#ECJ5) -4.3m (14-Ft) PDU to Wall 3PH/24A 200-240V Delta-wired Power Cord
  - (#ECJ7) -4.3m (14-Ft) PDU to Wall 3PH/48A 200-240V Delta-wired Power Cord
  - (#ELC0) -PDU Access Cord 0.38m
  - (#ELC5) -Power Cable - Drawer to IBM PDU (250V/10A)
- Manufacturing Instruction
  - (#9387) -Specify mode-1 & CEC SAS port for EXP24 #5887/EL1S
  - (#EJR1) -Specify Mode-1 & (1)EJ0J/EJ0M/EL3B for EXP24S (#5887/ EL1S)
  - (#EJR2) -Specify Mode-1 & (2)EJ0J/EJ0M/EL3B for EXP24S (#5887/ EL1S)
  - (#EJR3) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (2) X for EXP24S (#5887/EL1S)
  - (#EJR4) -Specify Mode-2 & (4)EJ0J/EJ0M/EL3B for EXP24S (#5887/ EL1S)
  - (#EJR5) -Specify Mode-4 & (4)EJ0J/EJ0M/EL3B for EXP24S (#5887/ EL1S)
  - (#EJR6) -Specify Mode-2 & (1)EJ0J/EJ0M/EL3B & (2) YO for EXP24S (#5887/EL1S)
  - (#EJR7) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (2) YO for EXP24S (#5887/EL1S)
  - (#EJRA) -Specify Mode-2 & (1)EJ0J/EJ0M/EL3B & (1) YO for EXP24S (#5887/El1S)
  - (#EJRB) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (1) X for EXP24S (#5887/EL1S)
  - (#EJRC) -Specify Mode-4 & (1)EJ0J/EJ0M/EL3B for EXP24S (#5887/ EL1S)
  - (#EJRD) -Specify Mode-4 & (2)EJ0J/EJ0M/EL3B for EXP24S (#5887/ EL1S)
  - (#EJRE) -Specify Mode-4 & (3)EJ0J/EJ0M/EL3B for EXP24S (#5888/ EL1S)
  - (#EJRF) -Specify Mode-1 & (2)EJ14 for EXP24S (#5887/EL1S)
  - (#EJRG) -Specify Mode-2 & (2)EJ14 & (2) X for EXP24S (#5887/EL1S)
  - (#EJRH) -Specify Mode-2 & (2)EJ14 & (1) X for EXP24S (#5887/EL1S)
  - (#EJRJ) -Specify Mode-2 & (4)EJ14 for EXP24S (#5887/EL1S)
  - (#EJRL) -Non-paired Indicator EJ14 PCIe SAS RAID+ Adapter
  - (#EJRP) -Specify Mode-1 & (2)EJ0L for EXP24S (#5887/EL1S)
  - (#EJRR) -Specify mode-2 & (4) EJ0L for EXP24S #5887/EL1S
  - (#EJRS) -Specify Mode-2 & (2)EJ0L & (2) X for EXP24S (#5887/EL1S)
  - (#EJRT) -Specify Mode-2 & (2)EJ0L & (1) X for EXP24S (#5887/EL1S)
  - (#EJRU) -Non-paired Indicator EJ0L PCIe SAS RAID Adapter
  - (#EJV0) -Specify Mode-1 & CEC SAS Ports & (2)YO12 for EXP12SX #ESLL/ELLL
  - (#EJV2) -Specify Mode-1 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP12SX #ESLL/ELLL

- (#EJV2) -Specify Mode-1 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP12SX #ESLL/ELLL

- (#EJV3) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL
- (#EJV1) -Specify Mode-1 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP12SX #ESLL/ELLL
- (#EJV4) -Specify Mode-2 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL
- (#EJV5) -Specify Mode-4 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL
- (#EJV6) -Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP12SX #ESLL/ELLL
- (#EJV7) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP12SX #ESLL/ELLL
- (#EJVA) -Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP12SX #ESLL/ELLL
- (#EJVB) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP12SX #ESLL/ELLL
- (#EJVC) -Specify Mode-4 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP12SX #ESLL/ELLL
- (#EJVD) -Specify Mode-4 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP12SX #ESLL/ELLL
- (#EJVE) -Specify Mode-4 & (3)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL
- (#EJVF) -Specify Mode-1 & (2)EJ14 & (2)YO12 for EXP12SX #ESLL/ ELLL
- (#EJVP) -Specify Mode-1 & (2)EJ0L & (2)YO12 for EXP12SX #ESLL/ ELLL
- (#EJW0) -Specify Mode-1 & CEC SAS Ports & (2)YO12 for EXP24SX #ESLS/ELS
- (#EJW1) -Specify Mode-1 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP24SX #ESLS/ELLS
- (#EJW2) -Specify Mode-1 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP24SX #ESLS/ELLS
- (#EJW3) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJW4) -Specify Mode-2 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJW5) -Specify Mode-4 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJW6) -Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP24SX #ESLS/ELLS
- (#EJW7) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP24SX #ESLS/ELLS
- (#EJWA) -Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP24SX #ESLS/ELLS
- (#EJWB) -Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS
- (#EJWC) -Specify Mode-4 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS
- (#EJWD) -Specify Mode-4 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS
- (#EJWE) -Specify Mode-4 & (3)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJWF) -Specify Mode-1 & (2)EJ14 & (2)YO12 for EXP24SX #ESLS/ ELLS
- (#EJWG) -Specify Mode-2 & (2)EJ14 & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJWH) -Specify Mode-2 & (2)EJ14 & (1)X12 for EXP24SX #ESLS/ELLS
- (#EJWJ) -Specify Mode-2 & (4)EJ14 & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJWP) -Specify Mode-1 & (2)EJ0L & (2)YO12 for EXP24SX #ESLS/ ELLS
- (#EJWR) -Specify Mode-2 & (4)EJ0L & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJWS) -Specify Mode-2 & (2)EJ0L & (2)X12 for EXP24SX #ESLS/ELLS
- (#EJWT) -Specify Mode-2 & (2)EJ0L& (1)X12 for EXP24SX #ESLS/ELLS

- Media Devices
  - (#EJ1C) -Base Storage Backplane 12 SFF-3 Bays/RDX Bay
  - (#EJ1D) -Expanded Function Storage Backplane 18 SFF-3 Bays/Dual IOA with Write Cache/Opt Ext SAS port
  - (#EJ1E) -Split #EJ1C to 6+6 SFF-3 Bays: Add 2nd SAS Controller
  - (#EJ1M) -Expanded Function Storage Backplane 12 SFF-3 Bays/RDX Bay/Opt Ext SAS port
  - (#EJ1S) -Storage backplane 6 SFF-3 Bays and 2 front PCIe Gen4 capable NVMe U.2 drive slots
  - (#EJ1T) -Storage backplane with two front PCIe Gen4 capable NVMe U.2 drive slots
  - (#EJ1U) -Storage backplane with four front PCIe Gen4 capable NVMe U.2 drive slots
  - (#EUA5) -Standalone USB DVD drive w/cable
- Memory
  - (#4794) -Power Active Memory Expansion Enablement
  - (#EM60) -8 GB DDR4 Memory
  - (#EM62) -16 GB DDR4 Memory
  - (#EM63) -32 GB DDR4 Memory
  - (#EM64) -64 GB DDR4 Memory
  - (#EM7B) -64 GB DDR4 Memory Dimm
  - (#EM7C) -128 GB DDR4 Memory Dimm
- Miscellaneous
  - (#0983) -US TAA Compliance Indicator
  - (#0984) -Product assembled in USA manufacturing plant
  - (#1140) -Custom Service Specify, Rochester Minn, USA
  - (#2145) -Primary OS - IBM i
  - (#2146) -Primary OS - AIX
  - (#2147) -Primary OS - Linux
  - (#ECSF) -Custom Service Specify, Montpellier, France
  - (#ECSM) -Custom Service Specify, Mexico
  - (#ECSP) -Custom Service Specify, Poughkeepsie, USA
  - (#EHB1) -1x HW Subscription Increment
  - (#EHB2) -10x HW Subscription Increment
  - (#EHB3) -100x HW Subscription Increment
  - (#EJU8) -Front Door and Covers for 12-Bay BackPlane
  - (#EJUA) -Front OEM Door and Covers for 12-Bay BackPlane
  - (#EJUQ) -Front IBM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane
  - (#EJUR) -Front OEM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane
  - (#EU0B) -Operator Panel LCD Display
  - (#EU29) -Order Placed Indicator

- (#SVBP) -BP Post-Sale Services: 1 Day

- (#SVCS) -IBM Systems Lab Services Post-Sale Services: 1 Day
- (#SVNN) -Other IBM Post-Sale Services: 1 Day

- Pointing Device
  - (#8845) -USB Mouse
- Power
  - (#7109) -Intelligent PDU+, 1 EIA Unit, Universal UTG0247 Connector
  - (#7188) -Power Distribution Unit
  - (#7196) -Power Distribution Unit (US) - 1 EIA Unit, Universal, Fixed Power Cord
  - (#EB2L) -AC Power Supply - 900W
  - (#EB2M) -AC Power Supply - 1400W for Server (200-240 VAC)
  - (#ECJJ) -High Function 9xC19 Single-Phase or Three-Phase Wye PDU plus
  - (#ECJL) -High Function 9xC19 PDU plus 3-Phase Delta
  - (#ECJN) -High Function 12xC13 Single-Phase or Three-Phase Wye PDU plus
  - (#ECJQ) -High Function 12xC13 PDU plus 3-Phase Delta
  - (#EMXA) -AC Power Supply Conduit for PCIe3 Expansion Drawer
  - (#EPTJ) -High Function 9xC19 PDU: Switched, Monitoring
  - (#EPTL) -High Function 9xC19 PDU 3-Phase: Switched, Monitoring
  - (#EPTN) -High Function 12xC13 PDU: Switched, Monitoring
  - (#EPTQ) -High Function 12xC13 PDU 3-Phase: Switched, Monitoring
  - (#ESLA) -Specify AC Power Supply for EXP12SX/EXP24SX Storage Enclosure
- Processor
  - (#EP50) -4-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor
  - (#EP51) -6-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor
  - (#EP52) -8-core Typical 2.8 to 3.8 Ghz (max) POWER9 Processor
  - (#EP60) -One Processor Core Activation for #EP50
  - (#EP61) -One Processor Core Activation for #EP51
  - (#EP62) -One Processor Core Activation for #EP52
- Rack Related
  - (#0551) -19 inch, 1.8 meter high rack
  - (#0553) -19 inch, 2.0 meter high rack
  - (#0599) -Rack Filler Panel Kit
  - (#5887) -EXP24S SFF Gen2-bay Drawer
  - (#6068) -Opt Front Door for 1.8m Rack
  - (#6069) -Opt Front Door for 2.0m Rack
  - (#6248) -1.8m Rack Acoustic Doors
  - (#6249) -2.0m Rack Acoustic Doors
  - (#6263) -1.8m Rack Trim Kit
  - (#6272) -2.0m Rack Trim Kit
  - (#6580) -Optional Rack Security Kit
  - (#7118) -Environmental Monitoring Probe
  - (#EB3Z) -Lift tool based on GenieLift GL-8 (standard)
  - (#EB4Z) -Service wedge shelf tool kit for EB3Z
  - (#EC07) -Slim Rear Acoustic Door
  - (#EC08) -Slim Front Acoustic Door
  - (#ECR0) -2.0 Meter Slim Rack
  - (#ECRF) -Rack Front Door High-End appearance
  - (#ECRG) -Rack Rear Door Black
  - (#ECRJ) -Rack Side Cover
  - (#ECRK) -Rack Rear Extension 5-In
  - (#ECRM) -Rack Front Door for Rack (Black/Flat)
  - (#EJTZ) -Rack-mount Rail Kit
  - (#EJU2) -Front IBM Bezel for 12-Bay BackPlane
  - (#EJU4) -Front OEM Bezel for 12-Bay BackPlane
  - (#EJU9) -Front Door and Covers for 18-Bay BackPlane
  - (#EJUB) -Front OEM Door and Covers for 18-Bay BackPlane
  - (#EJUF) -Front IBM Bezel 18-Bay Backplane
  - (#EJUH) -Front OEM Bezel for 18-Bay BackPlane
  - (#EJUJ) -Front IBM Bezel for 6 SAS + 4 NVMe -Bays BackPlane
  - (#EJUL) -Front OEM Bezel for 6 SAS + 4 NVMe-Bays BackPlane
  - (#EMX0) -PCIe Gen3 I/O Expansion Drawer
  - (#EMXF) -PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer
  - (#EMXG) -PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer
  - (#EMXH) -PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer
  - (#EPTH) -Horizontal PDU Mounting Hardware
  - (#ERG0) -Rear rack extension
  - (#ESLL) -EXP12SX SAS Storage Enclosure
  - (#ESLS) -EXP24SX SAS Storage Enclosure
- Services
  - (#0010) -One CSC Billing Unit
  - (#0011) -Ten CSC Billing Units
  - (#EUC6) -Core Use HW Feature

- (#EUC6) -Core Use HW Feature

- (#EUC7) -Core Use HW Feature 10X

- Solid State Drive
  - (#EC5V) -Enterprise 6.4 TB SSD PCIe4 NVMe U.2 module for AIX/ Linux
  - (#EC5W) -Enterprise 6.4 TB SSD PCIe4 NVMe U.2 module for IBM i
  - (#EC5X) -Mainstream 800 GB SSD PCIe3 NVMe U.2 module for AIX/ Linux
  - (#EQ0Q) -Quantity 150 of #ES0Q 387GB SFF-2 4k SSD (AIX/Linux)
  - (#EQ0R) -Quantity 150 of #ES0R 387GB SFF-2 4k SSD (IBM i)
  - (#EQ0S) -Quantity 150 of #ES0S 775GB SFF-2 4k SSD (AIX/Linux)
  - (#EQ0T) -Quantity 150 of #ES0T 775GB SFF-2 4k SSD (IBM i)
  - (#EQ78) -Quantity 150 of #ES78 387GB SFF-2 SSD 5xx
  - (#EQ79) -Quantity 150 of #ES79 387GB SFF-2 SSD 5xx
  - (#EQ7E) -Quantity 150 of #ES7E 775GB SFF-2 SSD 5xx
  - (#EQ7F) -Quantity 150 of #ES7F 775GB SFF-2 SSD 5xx
  - (#EQ80) -Quantity 150 of #ES80 1.9TB SFF-2 SSD 4k
  - (#EQ81) -Quantity 150 of ES81 1.9TB SFF-2 SSD 4k
  - (#EQ85) -Quantity 150 of #ES85 387GB SFF-2 SSD 4k
  - (#EQ86) -Quantity 150 of #ES86 387GB SFF-2 SSD 4k
  - (#EQ8C) -Quantity 150 of #ES8C 775GB SFF-2 SSD 4k
  - (#EQ8D) -Quantity 150 of #ES8D 775GB SFF-2 SSD 4k
  - (#EQ8F) -Quantity 150 of #ES8F 1.55TB SFF-2 SSD 4k
  - (#EQ8G) -Quantity 150 of #ES8G 1.55TB SFF-2 SSD 4k
  - (#EQ8Y) -Quantity 150 of #ES8Y 931GB SFF-2 SSD 4k
  - (#EQ8Z) -Quantity 150 of ES8Z 931GB SFF-2 SSD 4k
  - (#EQ96) -Quantity 150 of ES96 1.86TB SFF-2 SSD 4k
  - (#EQ97) -Quantity 150 of ES97 1.86TB SFF-2 SSD 4k
  - (#EQE7) -Quantity 150 of #ESE7 3.72TB SFF-2 SSD 4k
  - (#EQE8) -Quantity 150 of ESE8 3.72TB SFF-2 SSD 4k
  - (#EQG6) -Quantity 150 of #ESG6 (387GB SAS 5xx)
  - (#EQGB) -Quantity 150 of #ESGB (387GB SAS 4k)
  - (#EQGC) -Quantity 150 of #ESGC (387GB SAS 4k)
  - (#EQGF) -Quantity 150 of #ESGF (775GB SAS 5xx)
  - (#EQGG) -Quantity 150 of #ESGG (775GB SAS 5xx)
  - (#EQGK) -Quantity 150 of #ESGK (775GB SAS 4k)
  - (#EQGL) -Quantity 150 of #ESGL (775GB SAS 4k)
  - (#EQGP) -Quantity 150 of #ESGP (1.55TB SAS 4k)
  - (#EQGQ) -Quantity 150 of #ESGQ (1.55TB SAS 4k)
  - (#ER94) -Quantity 150 of ES94 387GB SAS 4k
  - (#ER95) -Quantity 150 of ES95 387GB SAS 4k
  - (#ERGV) -Quantity 150 of ESGV 387GB SSD 4k
  - (#ERGZ) -Quantity 150 of ESGZ 775GB SSD 4k
  - (#ERHJ) -Quantity 150 of #ESHJ 931 GB SSD 4k SFF-2
  - (#ERHK) -Quantity 150 of #ESHK 931 GB SSD 4k SFF-2
  - (#ERHL) -Quantity 150 of #ESHL 1.86 TB SSD 4k SFF-2
  - (#ERHM) -Quantity 150 of #ESHM 1.86 TB SSD 4k SFF-2
  - (#ERHN) -Quantity 150 of #ESHN 7.45 TB SSD 4k SFF-2
  - (#ERJ0) -Quantity 150 of ESJ0 931GB SAS 4k
  - (#ERJ1) -Quantity 150 of ESJ1 931GB SAS 4k
  - (#ERJ2) -Quantity 150 of ESJ2 1.86TB SAS 4k
  - (#ERJ3) -Quantity 150 of ESJ3 1.86TB SAS 4k
  - (#ERJ4) -Quantity 150 of ESJ4 3.72TB SAS 4k
  - (#ERJ5) -Quantity 150 of ESJ5 3.72TB SAS 4k
  - (#ERJ6) -Quantity 150 of ESJ6 7.45TB SAS 4k
  - (#ERJ7) -Quantity 150 of ESJ7 7.45TB SAS 4k
  - (#ERM8) -Quantity 150 of #ESM8 3.72 TB SSD 4k SFF-2
  - (#ERM9) -Quantity 150 of #ESM9 3.72 TB SSD 4k SFF-2
  - (#ERNA) -Quantity 150 of ESNA 775GB SSD 4k
  - (#ERNB) -Quantity 150 of ESNB 775GB SSD 4k
  - (#ERNE) -Quantity 150 of ESNE 1.55TB SSD 4k
  - (#ERNF) -Quantity 150 of ESNF 1.55TB SSD 4k
  - (#ES0Q) -387GB SFF-2 4K SSD for AIX/Linux
  - (#ES0R) -387GB SFF-2 4k SSD for IBM i
  - (#ES0S) -775GB SFF-2 4k SSD for AIX/Linux
  - (#ES0T) -775GB SFF-2 4k SSD for IBM i
  - (#ES1E) -Enterprise 1.6 TB SSD PCIe4 NVMe U.2 module for AIX/ Linux
  - (#ES1F) -Enterprise 1.6 TB SSD PCIe4 NVMe U.2 module for IBM i
  - (#ES1G) -Enterprise 3.2 TB SSD PCIe4 NVMe U.2 module for AIX/ Linux
  - (#ES1H) -Enterprise 3.2 TB SSD PCIe4 NVMe U.2 module for IBM i
  - (#ES78) -387GB SFF-2 SSD 5xx eMLC4 for AIX/Linux
  - (#ES79) -387GB SFF-2 SSD 5xx eMLC4 for IBM i

- (#ES7E) -775GB SFF-2 SSD 5xx eMLC4 for AIX/Linux

- (#ES7F) -775GB SFF-2 SSD 5xx eMLC4 for IBM i

- (#ES7K) -387GB SFF-3 SSD 5xx eMLC4 for AIX/Linux
- (#ES7L) -387GB SFF-3 SSD 5xx eMLC4 for IBM i
- (#ES7P) -775GB SFF-3 SSD 5xx eMLC4 for AIX/Linux
- (#ES7Q) -775GB SFF-3 SSD 5xx eMLC4 for IBM i
- (#ES80) -1.9TB Read Intensive SAS 4k SFF-2 SSD for AIX/Linux
- (#ES81) -1.9TB Read Intensive SAS 4k SFF-2 SSD for IBM i
- (#ES83) -931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ES84) -931GB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ES85) -387GB SFF-2 SSD 4k eMLC4 for AIX/Linux
- (#ES86) -387GB SFF-2 SSD 4k eMLC4 for IBM i
- (#ES8C) -775GB SFF-2 SSD 4k eMLC4 for AIX/Linux
- (#ES8D) -775GB SFF-2 SSD 4k eMLC4 for IBM i
- (#ES8F) -1.55TB SFF-2 SSD 4k eMLC4 for AIX/Linux
- (#ES8G) -1.55TB SFF-2 SSD 4k eMLC4 for IBM i
- (#ES8J) -1.9TB Read Intensive SAS 4k SFF-3 SSD for AIX/Linux
- (#ES8K) -1.9TB Read Intensive SAS 4k SFF-3 SSD for IBM i
- (#ES8N) -387GB SFF-3 SSD 4k eMLC4 for AIX/Linux
- (#ES8P) -387GB SFF-3 SSD 4k eMLC4 for IBM i
- (#ES8Q) -775GB SFF-3 SSD 4k eMLC4 for AIX/Linux
- (#ES8R) -775GB SFF-3 SSD 4k eMLC4 for IBM i
- (#ES8V) -1.55TB SFF-3 SSD 4k eMLC4 for AIX/Linux
- (#ES8W) -1.55TB SFF-3 SSD 4k eMLC4 for IBM i
- (#ES8Y) -931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ES8Z) -931GB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ES90) -387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ES91) -387GB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ES92) -1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ES93) -1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ES94) -387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ES95) -387GB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ES96) -1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ES97) -1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESB0) -387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux
- (#ESB2) -387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux
- (#ESB4) -775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux
- (#ESB6) -775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux
- (#ESB8) -387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ESB9) -387GB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESBA) -387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ESBB) -387GB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ESBE) -775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ESBF) -775GB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESBG) -775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ESBH) -775GB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ESBJ) -1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ESBK) -1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESBL) -1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ESBM) -1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ESE1) -3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESE2) -3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESE7) -3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESE8) -3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESG5) -387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux
- (#ESG6) -387GB Enterprise SAS 5xx SFF-2 SSD for IBM i
- (#ESG9) -387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux
- (#ESGA) -387GB Enterprise SAS 5xx SFF-3 SSD for IBM i
- (#ESGB) -387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ESGC) -387GB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ESGD) -387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ESGE) -387GB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESGF) -775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux
- (#ESGG) -775GB Enterprise SAS 5xx SFF-2 SSD for IBM i
- (#ESGH) -775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux
- (#ESGJ) -775GB Enterprise SAS 5xx SFF-3 SSD for IBM i
- (#ESGK) -775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ESGL) -775GB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ESGM) -775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ESGN) -775GB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESGP) -1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

- (#ESGQ) -1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i

- (#ESGR) -1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

- (#ESGS) -1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESGT) -387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux
- (#ESGV) -387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux
- (#ESGX) -775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux
- (#ESGZ) -775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux
- (#ESHJ) -931 GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESHK) -931 GB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESHL) -1.86 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESHM) -1.86 TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESHN) -7.45 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESHS) -931 GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESHT) -931 GB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESHU) -1.86 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESHV) -1.86 TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESHW) -7.45 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJ0) -931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJ1) -931GB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJ2) -1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJ3) -1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJ4) -3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJ5) -3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJ6) -7.45TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJ7) -7.45TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJ8) -931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJ9) -931GB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESJA) -1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJB) -1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESJC) -3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJD) -3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESJE) -7.45TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJF) -7.45TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESJJ) -931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJK) -931GB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJL) -1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJM) -1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJN) -3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJP) -3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJQ) -7.44TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESJR) -7.44TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESJS) -931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJT) -931GB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESJU) -1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJV) -1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESJW) -3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJX) -3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESJY) -7.44TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESJZ) -7.44TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESM8) -3.72 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
- (#ESM9) -3.72 TB Mainstream SAS 4k SFF-2 SSD for IBM i
- (#ESMQ) -3.72 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
- (#ESMR) -3.72 TB Mainstream SAS 4k SFF-3 SSD for IBM i
- (#ESNA) -775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ESNB) -775GB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ESNC) -775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ESND) -775GB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESNE) -1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
- (#ESNF) -1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i
- (#ESNG) -1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
- (#ESNH) -1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i
- (#ESQ2) -Quantity 150 of ESB2 387GB SAS 4k
- (#ESQ6) -Quantity 150 of ESB6 775GB SAS 4k
- (#ESQA) -Quantity 150 of ESBA 387GB SAS 4k
- (#ESQB) -Quantity 150 of ESBB 387GB SAS 4k
- (#ESQG) -Quantity 150 of ESBG 775GB SAS 4k
- (#ESQH) -Quantity 150 of ESBH 775GB SAS 4k
- (#ESQL) -Quantity 150 of ESBL 1.55TB SAS 4k
- (#ESQM) -Quantity 150 of ESBM 1.55TB SAS 4k

- Specify Codes
  - (#0040) -Mirrored System Disk Level, Specify Code

- (#0041) -Device Parity Protection-All, Specify Code

- (#0043) -Mirrored System Bus Level, Specify Code

- (#0047) -Device Parity RAID-6 All, Specify Code
- (#0265) -AIX Partition Specify
- (#0266) -Linux Partition Specify
- (#0267) -IBM i Operating System Partition Specify
- (#0296) -Specify Custom Data Protection
- (#0308) -Mirrored Level System Specify Code
- (#0347) -RAID Hot Spare Specify
- (#0728) -EXP24S SFF Gen2 Load Source Specify (#5887 or #EL1S)
- (#0837) -SAN Load Source Specify
- (#0872) -#1948 Load Source Specify (283GB 15k RPM SAS SFF-2 Disk)
- (#0875) -#1962 Load Source Specify (571GB 10k RPM SAS SFF-2 Disk)
- (#0911) -#ESD2 Load Source Specify (1.1TB 10k SFF-2)
- (#5550) -Sys Console On HMC
- (#EB72) -IBM i 7.2 Indicator
- (#EB73) -IBM i 7.3 Indicator
- (#EB74) -IBM i 7.4 Indicator
- (#EHR1) -Boot Drive / Load Source in EXP12SX Specify (in #ESLL or #ELLL)
- (#EHR2) -Boot Drive / Load Source in EXP24SX Specify (in #ESLS or #ELLS)
- (#ELS3) -ES1F Load Source Specify (1.6 TB 4K NVMe U.2 SSD PCIe4 for IBM i)
- (#ELS4) -#ESD4 Load Source Specify (571GB 10K RPM SAS SFF-3 for IBM i)
- (#ELSA) -#ESDA Load Source Specify (283GB 15K RPM SAS SFF-3 for IBM i)
- (#ELSN) -#ESDN Load Source Specify (571GB 15K RPM SFF-2 )
- (#ELSQ) -ES1H Load Source Specify (3.2 TB 4K NVMe U.2 SSD for IBM i)
- (#ELSR) -#ES0R Load Source Specify (387GB SSD SFF-2 4K)
- (#ELST) -#ES0T Load Source Specify (775GB SSD SFF-2 4K)
- (#ELT0) -#ESFU Load Source Specify (1.7TB HDD SFF-3)
- (#ELT1) -#ES81 Load Source Specify (1.9TB SFF-2 SSD)
- (#ELT2) -#ESF2 Load Source Specify (1.1TB HDD SFF-2)
- (#ELT4) -#ESF4 Load Source Specify (571GB HDD SFF-3)
- (#ELT6) -#ES86 Load Source Specify (387GB SFF-2 SSD 4k for IBM i)
- (#ELT8) -#ESF8 Load Source Specify (1.1TB HDD SFF-3)
- (#ELT9) -#ES79 Load Source Specify (387GB SFF-2 SSD 5xx for IBM i)
- (#ELTA) -#ESFA Load Source Specify (283GB 15K RPM SAS SFF-3 4K Block - 4224)
- (#ELTD) -#ES8D Load Source Specify (775GB SFF-2 SSD 4k for IBM i)
- (#ELTE) -#ESFE Load Source Specify (571GB 15K RPM SAS SFF-3 4K Block - 4224)
- (#ELTF) -#ES7F Load Source Specify (775GB SFF-2 SSD 5xx for IBM i)
- (#ELTG) -#ES8G Load Source Specify (1.55TB SFF-2 SSD 4k for IBM i)
- (#ELTK) -#ES8K Load Source Specify (1.9TB SFF-3 SSD)
- (#ELTL) -#ES7L Load Source Specify (387GB SFF-3 SSD 5xx for IBM i)
- (#ELTN) -#ESFN Load Source Specify (571GB 15K RPM SAS SFF-2 4K Block - 4224)
- (#ELTP) -#ES8P Load Source Specify (387GB SFF-3 SSD 4k for IBM i)
- (#ELTQ) -#ES7Q Load Source Specify (775GB SFF-3 SSD 5xx for IBM i)
- (#ELTR) -#ES8R Load Source Specify (775GB SFF-3 SSD 4k for IBM i)
- (#ELTS) -#ESFS Load Source Specify (1.7TB HDD SFF-2)
- (#ELTU) -#ESEU Load Source Specify (571GB HDD SFF-2)
- (#ELTW) -#ES8W Load Source Specify (1.55TB SFF-3 SSD 4k for IBM i)
- (#ELTY) -#ESEY Load Source Specify (283GB 15K RPM SAS SFF-2 4K Block - 4224)
- (#ELUJ) -#ESNJ Load Source Specify (283GB HDD SFF-3)
- (#ELUK) -ESJK Load Source Specify (931GB SSD SFF-2)
- (#ELUL) -#ESNL Load Source Specify (283GB HDD SFF-2)
- (#ELUM) -ESJM Load Source Specify (1.86TB SSD SFF-2)
- (#ELUN) -#ESNN Load Source Specify (571GB HDD SFF-3)
- (#ELUP) -ESJP Load Source Specify (3.72TB SSD SFF-2)
- (#ELUQ) -#ESNQ Load Source Specify (571GB HDD SFF-2)
- (#ELUR) -ESJR Load Source Specify (7.44TB SSD SFF-2)
- (#ELUT) -ESJT Load Source Specify (931GB SSD SFF-3)
- (#ELUV) -ESJV Load Source Specify (1.86TB SSD SFF-3)
- (#ELUW) -EC5W Load Source Specify (6.4 TB 4K NVMe U.2 SSD for IBM i)
- (#ELUX) -ESJX Load Source Specify (3.72TB SSD SFF-3)
- (#ELUZ) -ESJZ Load Source Specify (7.44TB SSD SFF-3)
- (#ELVJ) -EC7J Load Source Specify (1.6TB SSD NVMe adapter for IBM i)
- (#ELVK) -EC7K Load Source Specify (1.6TB SSD NVMe adapter for IBM i)
- (#ELVM) -EC7M Load Source Specify (3.2TB SSD NVMe adapter for IBM i)
- (#ELVP) -EC7P Load Source Specify (6.4TB SSD NVMe adapter for IBM i)
- (#ELZ1) -ES91 Load Source Specify (387GB SSD SFF-3)
- (#ELZ2) -#ESE2 Load Source Specify (3.72TB SSD SFF-3)
- (#ELZ3) -#ES93 Load Source Specify (1.86TB SSD SFF-3)
- (#ELZ4) -#ES84 Load Source Specify (931GB SSD SFF-3)
- (#ELZ5) -ES95 Load Source Specify (387GB SSD SFF-2)

- (#ELZ6) -#ESG6 Load Source Specify (387GB SSD SFF-2)
- (#ELZ7) -#ES97 Load Source Specify (1.86TB SSD SFF-2)
- (#ELZ8) -#ESE8 Load Source Specify (3.72TB SSD SFF-2)
- (#ELZ9) -#ESM9 Load Source Specify (3.72 TB SSD 4k SFF-2)
- (#ELZA) -#ESGA Load Source Specify (387GB SSD SFF-3)
- (#ELZB) -ESNB Load Source Specify (775GB SSD SFF-2)
- (#ELZC) -#ESGC Load Source Specify (387GB SSD SFF-2)
- (#ELZD) -ESND Load Source Specify (775GB SSD SFF-3)
- (#ELZE) -#ESGE Load Source Specify (387GB SSD SFF-3)
- (#ELZF) -ESNF Load Source Specify (1.55TB SSD SFF-2)
- (#ELZG) -#ESGG Load Source Specify (775GB SSD SFF-2)
- (#ELZH) -ESNH Load Source Specify (1.55TB SSD SFF-3)
- (#ELZJ) -#ESGJ Load Source Specify (775GB SSD SFF-3)
- (#ELZK) -#ESHK Load Source Specify (931 GB SSD 4k SFF-2)
- (#ELZL) -#ESGL Load Source Specify (775GB SSD SFF-2)
- (#ELZM) -#ESHM Load Source Specify (1.86 TB SSD 4k SFF-2)
- (#ELZN) -#ESGN Load Source Specify (775GB SSD SFF-3)
- (#ELZQ) -#ESGQ Load Source Specify (1.55TB SSD SFF-2)
- (#ELZR) -#ESMR Load Source Specify (3.72 TB SSD 4k SFF-3)
- (#ELZS) -#ESGS Load Source Specify (1.55TB SSD SFF-3)
- (#ELZT) -#ESHT Load Source Specify (931 GB SSD 4k SFF-3)
- (#ELZV) -#ESHV Load Source Specify (1.86 TB SSD 4k SFF-3)
- (#ELZZ) -#ES8Z Load Source Specify (931GB SSD SFF-2)
- (#ENS1) -188 GB IBM i NVMe Load Source Namespace size
- (#ENS2) -393 GB IBM i NVMe Load Source Namespace size
- (#ENSA) -200 GB IBM i NVMe Load Source Namespace size
- (#ENSB) -400 GB IBM i NVMe Load Source Namespace size
- (#ESL9) -ESB9 Load Source Specify (387GB SSD SFF-3)
- (#ESLB) -ESBB Load Source Specify (387GB SSD SFF-2)
- (#ESLF) -ESBF Load Source Specify (775GB SSD SFF-3)
- (#ESLH) -ESBH Load Source Specify (775GB SSD SFF-2)
- (#ESLK) -ESBK Load Source Specify (1.55TB SSD SFF-3)
- (#ESLM) -ESBM Load Source Specify (1.55TB SSD SFF-2)
- (#ESLV) -Load Source Specify for EC6V (NVMe 1.6 TB SSD for IBM i)
- (#ESLX) -Load Source Specify for EC6X (NVMe 3.2 TB SSD for IBM i)
- (#ESLZ) -Load Source Specify for EC6Z (NVMe 6.4 TB SSD for IBM i)
- (#EU41) -ESJ1 Load Source Specify (931GB SSD SFF-2)
- (#EU43) -ESJ3 Load Source Specify (1.86TB SSD SFF-2)
- (#EU45) -ESJ5 Load Source Specify (3.72TB SSD SFF-2)
- (#EU47) -ESJ7 Load Source Specify (7.45TB SSD SFF-2)
- (#EU49) -ESJ9 Load Source Specify (931GB SSD SFF-3)
- (#EU4B) -ESJB Load Source Specify (1.86TB SSD SFF-3)
- (#EU4D) -ESJD Load Source Specify (3.72TB SSD SFF-3)
- (#EU4F) -ESJF Load Source Specify (7.45TB SSD SFF-3)

- Virtualization Engine
  - (#5228) -PowerVM Enterprise Edition
  - (#EPA0) -Deactivation of LPM (Live Partition Mobility)

## Feature availability matrix

The following feature availability matrix for MT 9009 uses the letter "A" to indicate features that are available and orderable on the specified models. "S" indicates a feature that is supported on the new model during a model conversion; these features will work on the new model, but additional quantities of these features cannot be ordered on the new model; they can only be removed. "N" indicates that the feature is not supported on the new model and must be removed during the model conversion. As additional features are announced, supported, or withdrawn, this list will be updated. Please check with your Marketing Representative for additional information.

```
        |4| A = AVAILABLE  S = SUPPORTED
        |1| N = NOT SUPPORTED, MUST BE REMOVED
        |G|
        | |
FEAT/PN | |        DESCRIPTION
--------|-|------------------------------------------------------------




0010    |A| One CSC Billing Unit
0011    |A| Ten CSC Billing Units
0040    |A| Mirrored System Disk Level, Specify Code
0041    |A| Device Parity Protection-All, Specify Code
0043    |A| Mirrored System Bus Level, Specify Code
0047    |A| Device Parity RAID-6 All, Specify Code
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0205 |A| RISC-to-RISC Data Migration
0265 |A| AIX Partition Specify
0266 |A| Linux Partition Specify
0267 |A| IBM i Operating System Partition Specify
0296 |A| Specify Custom Data Protection
0308 |A| Mirrored Level System Specify Code
0347 |A| RAID Hot Spare Specify
0348 |A| V.24/EIA232 6.1m (20-Ft) PCI Cable
0353 |A| V.35 6.1m (20-Ft) PCI Cable
0359 |A| X.21 6.1m (20-Ft) PCI Cable

0444 |A| CBU Specify
0456 |A| Customer Specified Placement
0551 |A| 19 inch, 1.8 meter high rack
0553 |A| 19 inch, 2.0 meter high rack
0599 |A| Rack Filler Panel Kit
0719 |A| Load Source Not in CEC
0728 |S| EXP24S SFF Gen2 Load Source Specify (#5887 or #EL1S)
0837 |A| SAN Load Source Specify
0872 |A| #1948 Load Source Specify (283GB 15k RPM SAS SFF-2 Disk)
0875 |A| #1962 Load Source Specify (571GB 10k RPM SAS SFF-2 Disk)
0911 |A| #ESD2 Load Source Specify (1.1TB 10k SFF-2)

0983 |A| US TAA Compliance Indicator
0984 |A| Product assembled in USA manufacturing plant

1025 |S| Modem Cable - US/Canada and General Use
1107 |A| USB 500 GB Removable Disk Drive
1140 |A| Custom Service Specify, Rochester Minn, USA
1817 |S| Quantity 150 of #1962
1818 |A| Quantity 150 of #1964
1927 |S| Quantity 150 of #1948
1929 |A| Quantity 150 of #1953
1948 |S| 283GB 15k RPM SAS SFF-2 Disk Drive (IBM i)
1953 |A| 300GB 15k RPM SAS SFF-2 Disk Drive (AIX/Linux)
1962 |S| 571GB 10k RPM SAS SFF-2 Disk Drive (IBM i)
1964 |A| 600GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)
2145 |A| Primary OS - IBM i
2146 |A| Primary OS - AIX
2147 |A| Primary OS - Linux
2319 |A| Factory Deconfiguration of 1-core
2456 |A| 2M LC-SC 50 Micron Fiber Converter Cable
2459 |A| 2M LC-SC 62.5 Micron Fiber Converter Cable
2893 |S| PCIe 2-Line WAN w/Modem

2934 |A| 3M Asynchronous Terminal/Printer Cable EIA-232
2936 |A| Asynchronous Cable EIA-232/V.24 3M
3124 |A| Serial-to-Serial Port Cable for Drawer/Drawer- 3.7M
3125 |A| Serial-to-Serial Port Cable for Rack/Rack- 8M
3632 |S| Widescreen LCD Monitor
3925 |A| 0.3M Serial Port Converter Cable, 9-Pin to 25-Pin
3927 |A| Serial Port Null Modem Cable, 9-pin to 9-pin, 3.7M
3928 |A| Serial Port Null Modem Cable, 9-pin to 9-pin, 10M
3930 |A| System Serial Port Converter Cable
4242 |S| 1.8 M (6-ft) Extender Cable for Displays (15-pin D-shell
| |to 15-pin D-shell)
4256 |A| Extender Cable - USB Keyboards, 1.8M
4276 |A| VGA to DVI Connection Converter
4649 |A| Rack Integration Services
One and only one rack indicator feature is required onall orders (#4650 to #4666).
4650 |A| Rack Indicator- Not Factory Integrated
4651 |A| Rack Indicator, Rack #1
4652 |A| Rack Indicator, Rack #2
4653 |A| Rack Indicator, Rack #3
4654 |A| Rack Indicator, Rack #4
4655 |A| Rack Indicator, Rack #5
4656 |A| Rack Indicator, Rack #6
4657 |A| Rack Indicator, Rack #7
4658 |A| Rack Indicator, Rack #8
4659 |A| Rack Indicator, Rack #9
4660 |A| Rack Indicator, Rack #10
4661 |A| Rack Indicator, Rack #11

4662 |A| Rack Indicator, Rack #12
4663 |A| Rack Indicator, Rack #13
4664 |A| Rack Indicator, Rack #14
4665 |A| Rack Indicator, Rack #15
4666 |A| Rack Indicator, Rack #16
4794 |A| Power Active Memory Expansion Enablement
4927 |A| Solution Edition for IBM i (6-core)
4928 |A| Solution Edition for IBM i (4-core)
5000 |A| Software Preload Required
5228 |A| PowerVM Enterprise Edition
5550 |A| Sys Console On HMC
5557 |A| System Console-Ethernet LAN adapter
5729 |S| PCIe2 8Gb 4-port Fibre Channel Adapter
5735 |S| 8 Gigabit PCI Express Dual Port Fibre Channel Adapter
5748 |A| POWER GXT145 PCI Express Graphics Accelerator
5785 |S| 4 Port Async EIA-232 PCIe Adapter
5887 |S| EXP24S SFF Gen2-bay Drawer
5899 |A| PCIe2 4-port 1GbE Adapter
6068 |A| Opt Front Door for 1.8m Rack
6069 |A| Opt Front Door for 2.0m Rack
6248 |A| 1.8m Rack Acoustic Doors
6249 |A| 2.0m Rack Acoustic Doors
6263 |A| 1.8m Rack Trim Kit
6272 |A| 2.0m Rack Trim Kit
6458 |A| Power Cord 4.3m (14-ft), Drawer to IBM PDU (250V/10A)
6460 |A| Power Cord 4.3m (14-ft), Drawer To OEM PDU (125V, 15A)
6469 |A| Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (250V/15A)
| |U. S.
6470 |A| Power Cord 1.8m (6-ft), Drawer to Wall (125V/15A)
6471 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/10A)
6472 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/16A)
6473 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/10A)
6474 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/13A)
6475 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/16A)
6476 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)
6477 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/16A)
6478 |A| Power Cord 2.7 M(9-foot), To Wall/OEM PDU, (250V, 16A)
6488 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (125V/15A
| |or 250V/10A )
6489 |A| 4.3m (14-Ft) 3PH/32A 380-415V Power Cord
6491 |A| 4.3m (14-Ft) 1PH/63A 200-240V Power Cord
6492 |A| 4.3m (14-Ft) 1PH/48A 200-240V Power Cord
6493 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)
6494 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)
6496 |A| Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 10A)
6577 |A| Power Cable - Drawer to IBM PDU, 200-240V/10A
6580 |A| Optional Rack Security Kit
6651 |A| Power Cord 2.7M (9-foot), To Wall/OEM PDU, (125V, 15A)
6653 |A| 4.3m (14-Ft) 3PH/16A 380-415V Power Cord
6654 |A| 4.3m (14-Ft) 1PH/24A Power Cord
6655 |A| 4.3m (14-Ft) 1PH/24A WR Power Cord
6656 |A| 4.3m (14-Ft) 1PH/32A Power Cord
6657 |A| 4.3m (14-Ft) 1PH/32A Power Cord
6658 |A| 4.3m (14-Ft) 1PH/24A Power Cord-Korea
6659 |A| Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 15A)
6660 |A| Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (125V/15A)
6665 |A| Power Cord 2.8m (9.2-ft), Drawer to IBM PDU, (250V/10A)
6667 |A| 4.3m (14-Ft) 3PH/32A 380-415V Power Cord-Australia
6669 |A| Power Cord 4.3M (14-foot), Drawer to OEM PDU, (250V, 15A)
6671 |A| Power Cord 2.7M (9-foot), Drawer to IBM PDU, 250V/10A
6672 |A| Power Cord 2M (6.5-foot), Drawer to IBM PDU, 250V/10A
6680 |A| Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)
7109 |S| Intelligent PDU+, 1 EIA Unit, Universal UTG0247 Connector
7118 |A| Environmental Monitoring Probe
7188 |A| Power Distribution Unit
7196 |S| Power Distribution Unit (US) - 1 EIA Unit, Universal,
| |Fixed Power Cord
7802 |A| Ethernet Cable, 15m, Hardware Management Console to System
| |Unit
8143 |A| Linux Software Preinstall
8144 |A| Linux Software Preinstall (Business Partners)
8845 |S| USB Mouse
9169 |A| Order Routing Indicator- System Plant
9300 |A| Language Group Specify - US English
9387 |S| Specify mode-1 & CEC SAS port for EXP24 #5887/EL1S
9440 |A| New AIX License Core Counter
9441 |A| New IBM i License Core Counter
9442 |A| New Red Hat License Core Counter
9443 |A| New SUSE License Core Counter
9444 |A| Other AIX License Core Counter
9445 |A| Other Linux License Core Counter
9446 |A| 3rd Party Linux License Core Counter
9447 |A| VIOS Core Counter
9449 |A| Other License Core Counter
9450 |A| Ubuntu Linux License Core Counter
9461 |A| Month Indicator
9462 |A| Day Indicator
9463 |A| Hour Indicator
9464 |A| Minute Indicator
9465 |A| Qty Indicator
9466 |A| Countable Member Indicator
9700 |A| Language Group Specify - Dutch
9703 |A| Language Group Specify - French
9704 |A| Language Group Specify - German
9705 |A| Language Group Specify - Polish
9706 |A| Language Group Specify - Norwegian

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9707    |A| Language Group Specify - Portuguese
9708    |A| Language Group Specify - Spanish
9711    |A| Language Group Specify - Italian
9712    |A| Language Group Specify - Canadian French
9714    |A| Language Group Specify - Japanese
9715    |A| Language Group Specify - Traditional Chinese (Taiwan)
9716    |A| Language Group Specify - Korean
9718    |A| Language Group Specify - Turkish
9719    |A| Language Group Specify - Hungarian
9720    |A| Language Group Specify - Slovakian
9721    |A| Language Group Specify - Russian
9722    |A| Language Group Specify - Simplified Chinese (PRC)
9724    |A| Language Group Specify - Czech
9725    |A| Language Group Specify - Romanian
9726    |A| Language Group Specify - Croatian
9727    |A| Language Group Specify - Slovenian
9728    |A| Language Group Specify - Brazilian Portuguese
9729    |A| Language Group Specify - Thai
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EB27    |A| QSFP+ 40GbE Base-SR Transceiver
EB2B    |A| 1m (3.3-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)
EB2H    |A| 3m (9.8-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)
EB2J    |A| 10m (30.3-ft), IBM Passive QSFP+ MTP Optical Cable
EB2K    |A| 30m (90.3-ft), IBM Passive QSFP+ MTP Optical Cable
EB2L    |A| AC Power Supply - 900W
EB2M    |A| AC Power Supply - 1400W for Server (200-240 VAC)
EB3Z    |A| Lift tool based on GenieLift GL-8 (standard)
EB46    |A| 10GbE Optical Transceiver SFP+ SR
EB47    |A| 25GbE Optical Transceiver SFP28
EB4J    |A| 0.5m SFP28/25GbE copper Cable
EB4K    |A| 1.0m SFP28/25GbE copper Cable
EB4L    |S| 1.5m SFP28/25GbE copper Cable
EB4M    |A| 2.0m SFP28/25GbE copper Cable
EB4P    |A| 2.0m QSFP28/100GbE copper split Cable to SFP28 4x25GbE
EB4Z    |A| Service wedge shelf tool kit for EB3Z
EB50    |S| 0.5m EDR IB Copper Cable QSFP28
EB51    |A| 1.0m EDR IB Copper Cable QSFP28
EB52    |A| 2.0M EDR IB Copper Cable QSFP28
EB54    |A| 1.5M EDR IB Copper Cable QSFP28
EB59    |A| 100GbE Optical Transceiver QSFP28
EB5A    |A| 3M EDR IB Optical Cable QSFP28
EB5B    |A| 5M EDR IB Optical Cable QSFP28
EB5C    |A| 10M EDR IB Optical Cable QSFP28
EB5D    |A| 15M EDR IB Optical Cable QSFP28
EB5E    |A| 20M EDR IB Optical Cable QSFP28
EB5F    |A| 30M EDR IB Optical Cable QSFP28
EB5G    |A| 50M EDR IB Optical Cable QSFP28
EB5H    |A| 100M EDR IB Optical Cable QSFP28
EB5J    |A| 0.5M 100GbE Copper Cable QSFP28
EB5K    |A| 1.0M 100GbE Copper Cable QSFP28
EB5L    |A| 1.5M 100GbE Copper Cable QSFP28
EB5M    |A| 2.0M 100GbE Copper Cable QSFP28
EB5N    |S| 25M EDR IB Optical Cable QSFP28
EB5R    |A| 3M 100GbE Optical Cable QSFP28 (AOC)
EB5S    |A| 5M 100GbE Optical Cable QSFP28 (AOC)
EB5T    |A| 10M 100GbE Optical Cable QSFP28 (AOC)
EB5U    |A| 15M 100GbE Optical Cable QSFP28 (AOC)
EB5V    |A| 20M 100GbE Optical Cable QSFP28 (AOC)
EB5W    |A| 30M 100GbE Optical Cable QSFP28 (AOC)
EB5X    |A| 50M 100GbE Optical Cable QSFP28 (AOC)
EB5Y    |A| 100M 100GbE Optical Cable QSFP28 (AOC)
EB72    |S| IBM i 7.2 Indicator
EB73    |A| IBM i 7.3 Indicator
EB74    |A| IBM i 7.4 Indicator
EC07    |A| Slim Rear Acoustic Door
EC08    |A| Slim Front Acoustic Door
EC2S    |A| PCIe3 2-Port 10Gb NIC&ROCE SR/Cu Adapter
EC2U    |A| PCIe3 2-Port 25/10Gb NIC&ROCE SR/Cu Adapter
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| | | |
|---|---|---|
| EC38 | S | PCIe3 2-port 10GbE NIC&RoCE SFP+ Copper Adapter |
| EC3B | S | PCIe3 2-Port 40GbE NIC RoCE QSFP+ Adapter |
| EC3F | S | PCIe3 2-port 100Gb EDR IB Adapter x16 |
| EC3M | S | PCIe3 2-port 100GbE (NIC&RoCE) QSFP28 Adapter x16 |
| EC3U | S | PCIe3 1-port 100Gb EDR IB Adapter x16 |
| EC46 | S | PCIe2 4-Port USB 3.0 Adapter |
| EC5B | A | PCIe3 x8 1.6 TB NVMe Flash Adapter for AIX/Linux |
| EC5D | A | PCIe3 x8 3.2 TB NVMe Flash Adapter for AIX/Linux |
| EC5F | A | PCIe3 x8 6.4 TB NVMe Flash Adapter for AIX/Linux |
| EC5V | A | Enterprise 6.4 TB SSD PCIe4 NVMe U.2 module for AIX/Linux |
| EC5W | A | Enterprise 6.4 TB SSD PCIe4 NVMe U.2 module for IBM i |
| EC5X | A | Mainstream 800 GB SSD PCIe3 NVMe U.2 module for AIX/Linux |
| EC63 | A | PCIe4 1-port 100Gb EDR IB CAPI adapter |
| EC65 | S | PCIe4 2-port 100Gb EDR IB CAPI adapter |
| EC66 | A | PCIe4 2-port 100Gb ROCE EN adapter |
| EC6K | A | PCIe2 2-Port USB 3.0 Adapter |
| | | Linux |
| EC6V | A | PCIe3 x8 1.6 TB NVMe Flash Adapter for IBM i |
| EC6X | A | PCIe3 x8 3.2 TB NVMe Flash Adapter for IBM i |
| EC6Z | A | PCIe3 x8 6.4 TB NVMe Flash Adapter for IBM i |
| EC7B | A | PCIe4 1.6TB NVMe Flash Adapter x8 for AIX/Linux |
| EC7D | A | PCIe4 3.2TB NVMe Flash Adapter x8 for AIX/Linux |
| EC7F | A | PCIe4 6.4TB NVMe Flash Adapter x8 for AIX/Linux |
| EC7K | A | PCIe4 1.6TB NVMe Flash Adapter x8 for IBM i |
| EC7M | A | PCIe4 3.2TB NVMe Flash Adapter x8 for IBM i |
| EC7P | A | PCIe4 6.4TB NVMe Flash Adapter x8 for IBM i |
| ECBJ | A | SAS X Cable 3m - HD Narrow 6Gb 2-Adapters to Enclosure |
| ECBK | A | SAS X Cable 6m - HD Narrow 6Gb 2-Adapters to Enclosure |
| ECBL | S | SAS X Cable 10m - HD Narrow 6Gb 2-Adapters to Enclosure |
| ECBM | A | SAS X Cable 15m - HD Narrow 3Gb 2-Adapters to Enclosure |
| ECBN | S | 5m (16.4-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC) |
| ECBT | A | SAS YO Cable 1.5m - HD Narrow 6Gb Adapter to Enclosure |
| ECBU | A | SAS YO Cable 3m - HD Narrow 6Gb Adapter to Enclosure |
| ECBV | A | SAS YO Cable 6m - HD Narrow 6Gb Adapter to Enclosure |
| ECBW | A | SAS YO Cable 10m - HD Narrow 6Gb Adapter to Enclosure |
| ECBX | S | SAS YO Cable 15m - HD Narrow 3Gb Adapter to Enclosure |
| ECBY | A | SAS AE1 Cable 4m - HD Narrow 6Gb Adapter to Enclosure |
| ECBZ | A | SAS YE1 Cable 3m - HD Narrow 6Gb Adapter to Enclosure |
| ECC7 | S | 3M Optical Cable Pair for PCIe3 Expansion Drawer |
| ECC8 | S | 10M Optical Cable Pair for PCIe3 Expansion Drawer |
| ECCF | A | System Port Converter Cable for UPS |
| ECCS | A | 3M Copper CXP Cable Pair for PCIe3 Expansion Drawer |
| ECCX | A | 3M Active Optical Cable Pair for PCIe3 Expansion Drawer |
| ECCY | A | 10M Active Optical Cable Pair for PCIe3 Expansion Drawer |
| ECDJ | A | 3.0M SAS X12 Cable (Two Adapter to Enclosure) |
| ECDK | A | 4.5M SAS X12 Active Optical Cable (Two Adapter to Enclosure) |
| ECDL | A | 10M SAS X12 Active Optical Cable (Two Adapter to Enclosure) |
| ECDT | A | 1.5M SAS YO12 Cable (Adapter to Enclosure) |
| ECDU | A | 3.0M SAS YO12 Cable (Adapter to Enclosure) |
| ECDV | A | 4.5M SAS YO12 Active Optical Cable (Adapter to Enclosure) |
| ECDW | A | 10M SAS YO12 Active Optical Cable (Adapter to Enclosure) |
| ECE0 | A | 0.6M SAS AA12 Cable (Adapter to Adapter) |
| ECE3 | A | 3.0M SAS AA12 Cable |
| ECE4 | A | 4.5M SAS AA12 Active Optical Cable (Adapter to Adapter) |
| ECJ5 | A | 4.3m (14-Ft) PDU to Wall 3PH/24A 200-240V Delta-wired Power Cord |
| ECJ7 | A | 4.3m (14-Ft) PDU to Wall 3PH/48A 200-240V Delta-wired Power Cord |
| ECJJ | A | High Function 9xC19 Single-Phase or Three-Phase Wye PDU plus |
| ECJL | A | High Function 9xC19 PDU plus 3-Phase Delta |
| ECJN | A | High Function 12xC13 Single-Phase or Three-Phase Wye PDU plus |
| ECJQ | A | High Function 12xC13 PDU plus 3-Phase Delta |
| ECP0 | A | Cloud Private Solution |
| ECR0 | A | 2.0 Meter Slim Rack |
| ECRF | A | Rack Front Door High-End appearance |
| ECRG | A | Rack Rear Door Black |
| ECRJ | A | Rack Side Cover |
| ECRK | A | Rack Rear Extension 5-In |
| ECRM | A | Rack Front Door for Rack (Black/Flat) |
| ECSF | A | Custom Service Specify, Montpellier, France |
| ECSM | A | Custom Service Specify, Mexico |
| ECSP | A | Custom Service Specify, Poughkeepsie, USA |
| ECSS | A | Integrated Solution Packing |
| ECW0 | A | Optical Wrap Plug |
| EHB1 | A | 1x HW Subscription Increment |
| EHB2 | A | 10x HW Subscription Increment |
| EHB3 | A | 100x HW Subscription Increment |
| EHR1 | A | Boot Drive / Load Source in EXP12SX Specify (in #ESLL or #ELLL) |
| EHR2 | A | Boot Drive / Load Source in EXP24SX Specify (in #ESLS or #ELLS) |
| EHS2 | A | SSD Placement Indicator - #ESLS/#ELLS |
| EJ08 | S | PCIe3 Optical Cable Adapter for PCIe3 Expansion Drawer |
| EJ0J | A | PCIe3 RAID SAS Adapter Quad-port 6Gb x8 |
| EJ0L | S | PCIe3 12GB Cache RAID SAS Adapter Quad-port 6Gb x8 |
| EJ0W | A | SAS Ports/Cabling for Dual IOA BackPlane |
| EJ10 | A | PCIe3 SAS Tape/DVD Adapter Quad-port 6Gb x8 |
| EJ14 | A | PCIe3 12GB Cache RAID PLUS SAS Adapter Quad-port 6Gb x8 |
| EJ1C | A | Base Storage Backplane 12 SFF-3 Bays/RDX Bay |
| EJ1D | A | Expanded Function Storage Backplane 18 SFF-3 Bays/Dual IOA with Write Cache/Opt Ext SAS port |
| EJ1E | A | Split #EJ1C to 6+6 SFF-3 Bays: Add 2nd SAS Controller |
| EJ1M | A | Expanded Function Storage Backplane 12 SFF-3 Bays/RDX Bay/ |

| | |Opt Ext SAS port
EJ1P |S| PCIe1 SAS Tape/DVD Dual-port 3Gb x8 Adapter
EJ1Q |A| NVMe U.2 Passthru adapter Gen4 capable
EJ1S |A| Storage backplane 6 SFF-3 Bays and 2 front PCIe Gen4
| |capable NVMe U.2 drive slots
EJ1T |A| Storage backplane with two front PCIe Gen4 capable NVMe
| |U.2 drive slots
EJ1U |A| Storage backplane with four front PCIe Gen4 capable NVMe
| |U.2 drive slots
EJ20 |A| PCIe x16 to CXP Optical or CU converter Adapter for PCIe3
| |Expansion Drawer
EJ32 |A| PCIe3 Crypto Coprocessor no BSC 4767
EJ33 |S| PCIe3 Crypto Coprocessor BSC-Gen3 4767
EJR1 |S| Specify Mode-1 & (1)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)
EJR2 |S| Specify Mode-1 & (2)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)
EJR3 |S| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (2) X for EXP24S
|S|(#5887/EL1S)
EJR4 |S| Specify Mode-2 & (4)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)
EJR5 |S| Specify Mode-4 & (4)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)
EJR6 |S| Specify Mode-2 & (1)EJ0J/EJ0M/EL3B & (2) YO for EXP24S
| |(#5887/EL1S)
EJR7 |S| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (2) YO for EXP24S
| |(#5887/EL1S)
EJRA |S| Specify Mode-2 & (1)EJ0J/EJ0M/EL3B & (1) YO for EXP24S
| |(#5887/El1S)
EJRB |S| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (1) X for EXP24S
| |(#5887/EL1S)
EJRC |S| Specify Mode-4 & (1)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)
EJRD |S| Specify Mode-4 & (2)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)
EJRE |S| Specify Mode-4 & (3)EJ0J/EJ0M/EL3B for EXP24S (#5888/EL1S)
EJRF |S| Specify Mode-1 & (2)EJ14 for EXP24S (#5887/EL1S)
EJRG |S| Specify Mode-2 & (2)EJ14 & (2) X for EXP24S (#5887/EL1S)
EJRH |S| Specify Mode-2 & (2)EJ14 & (1) X for EXP24S (#5887/EL1S)
EJRJ |S| Specify Mode-2 & (4)EJ14 for EXP24S (#5887/EL1S)
EJRL |A| Non-paired Indicator EJ14 PCIe SAS RAID+ Adapter
EJRP |S| Specify Mode-1 & (2)EJ0L for EXP24S (#5887/EL1S)
EJRR |S| Specify mode-2 & (4) EJ0L for EXP24S #5887/EL1S
EJRS |S| Specify Mode-2 & (2)EJ0L & (2) X for EXP24S (#5887/EL1S)
EJRT |S| Specify Mode-2 & (2)EJ0L & (1) X for EXP24S (#5887/EL1S)
EJRU |A| Non-paired Indicator EJ0L PCIe SAS RAID Adapter
EJTZ |A| Rack-mount Rail Kit
EJU2 |A| Front IBM Bezel for 12-Bay BackPlane
EJU4 |A| Front OEM Bezel for 12-Bay BackPlane
EJU8 |A| Front Door and Covers for 12-Bay BackPlane
EJU9 |A| Front Door and Covers for 18-Bay BackPlane
EJUA |A| Front OEM Door and Covers for 12-Bay BackPlane
EJUB |A| Front OEM Door and Covers for 18-Bay BackPlane
EJUF |A| Front IBM Bezel 18-Bay Backplane
EJUH |A| Front OEM Bezel for 18-Bay BackPlane
EJUJ |A| Front IBM Bezel for 6 SAS + 4 NVMe -Bays BackPlane
EJUL |A| Front OEM Bezel for 6 SAS + 4 NVMe-Bays BackPlane
EJUQ |A| Front IBM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane
EJUR |A| Front OEM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane
EJV0 |A| Specify Mode-1 & CEC SAS Ports & (2)YO12 for EXP12SX #ESLL/
| |ELLL
EJV1 |A| Specify Mode-1 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for
| |EXP12SX #ESLL/ELLL
EJV2 |A| Specify Mode-1 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for
| |EXP12SX #ESLL/ELLL
EJV3 |A| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for
| |EXP12SX #ESLL/ELLL
EJV4 |A| Specify Mode-2 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for
| |EXP12SX #ESLL/ELLL
EJV5 |A| Specify Mode-4 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for
| |EXP12SX #ESLL/ELLL
EJV6 |A| Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for
| |EXP12SX #ESLL/ELLL
EJV7 |A| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for
| |EXP12SX #ESLL/ELLL
EJVA |A| Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for
| |EXP12SX #ESLL/ELLL
EJVB |A| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for
| |EXP12SX #ESLL/ELLL
EJVC |A| Specify Mode-4 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for
| |EXP12SX #ESLL/ELLL
EJVD |A| Specify Mode-4 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for
| |EXP12SX #ESLL/ELLL
EJVE |A| Specify Mode-4 & (3)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for
| |EXP12SX #ESLL/ELLL
EJVF |A| Specify Mode-1 & (2)EJ14 & (2)YO12 for EXP12SX #ESLL/ELLL
EJVP |A| Specify Mode-1 & (2)EJ0L & (2)YO12 for EXP12SX #ESLL/ELLL
EJW0 |A| Specify Mode-1 & CEC SAS Ports & (2)YO12 for EXP24SX #ESLS/
| |ELS
EJW1 |A| Specify Mode-1 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for
| |EXP24SX #ESLS/ELLS
EJW2 |A| Specify Mode-1 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for
| |EXP24SX #ESLS/ELLS
EJW3 |A| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for
| |EXP24SX #ESLS/ELLS
EJW4 |A| Specify Mode-2 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for
| |EXP24SX #ESLS/ELLS
EJW5 |A| Specify Mode-4 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for
| |EXP24SX #ESLS/ELLS
EJW6 |A| Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for
| |EXP24SX #ESLS/ELLS
EJW7 |A| Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for

| | | |
|---|---|---|
| | | EXP24SX #ESLS/ELLS |
| EJWA | A | Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP24SX #ESLS/ELLS |
| EJWB | A | Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS |
| EJWC | A | Specify Mode-4 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS |
| EJWD | A | Specify Mode-4 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS |
| EJWE | A | Specify Mode-4 & (3)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS |
| EJWF | A | Specify Mode-1 & (2)EJ14 & (2)YO12 for EXP24SX #ESLS/ELLS |
| EJWG | A | Specify Mode-2 & (2)EJ14 & (2)X12 for EXP24SX #ESLS/ELLS |
| EJWH | A | Specify Mode-2 & (2)EJ14 & (1)X12 for EXP24SX #ESLS/ELLS |
| EJWJ | A | Specify Mode-2 & (4)EJ14 & (2)X12 for EXP24SX #ESLS/ELLS |
| EJWP | A | Specify Mode-1 & (2)EJ0L & (2)YO12 for EXP24SX #ESLS/ELLS |
| EJWR | A | Specify Mode-2 & (4)EJ0L & (2)X12 for EXP24SX #ESLS/ELLS |
| EJWS | A | Specify Mode-2 & (2)EJ0L & (2)X12 for EXP24SX #ESLS/ELLS |
| EJWT | A | Specify Mode-2 & (2)EJ0L& (1)X12 for EXP24SX #ESLS/ELLS |
| ELC0 | A | PDU Access Cord 0.38m |
| ELC5 | A | Power Cable - Drawer to IBM PDU (250V/10A) |
| ELS3 | A | ES1F Load Source Specify (1.6 TB 4K NVMe U.2 SSD PCIe4 for IBM i) |
| ELS4 | A | #ESD4 Load Source Specify (571GB 10K RPM SAS SFF-3 for IBM i) |
| ELSA | A | #ESDA Load Source Specify (283GB 15K RPM SAS SFF-3 for IBM i) |
| ELSN | A | #ESDN Load Source Specify (571GB 15K RPM SFF-2 ) |
| ELSQ | A | ES1H Load Source Specify (3.2 TB 4K NVMe U.2 SSD for IBM i) |
| ELSR | A | #ES0R Load Source Specify (387GB SSD SFF-2 4K) |
| ELST | A | #ES0T Load Source Specify (775GB SSD SFF-2 4K) |
| ELT0 | A | #ESFU Load Source Specify (1.7TB HDD SFF-3) |
| ELT1 | A | #ES81 Load Source Specify (1.9TB SFF-2 SSD) |
| ELT2 | A | #ESF2 Load Source Specify (1.1TB HDD SFF-2) |
| ELT4 | A | #ESF4 Load Source Specify (571GB HDD SFF-3) |
| ELT6 | S | #ES86 Load Source Specify (387GB SFF-2 SSD 4k for IBM i) |
| ELT8 | A | #ESF8 Load Source Specify (1.1TB HDD SFF-3) |
| ELT9 | S | #ES79 Load Source Specify (387GB SFF-2 SSD 5xx for IBM i) |
| ELTA | S | #ESFA Load Source Specify (283GB 15K RPM SAS SFF-3 4K Block - 4224) |
| ELTD | S | #ES8D Load Source Specify (775GB SFF-2 SSD 4k for IBM i) |
| ELTE | S | #ESFE Load Source Specify (571GB 15K RPM SAS SFF-3 4K Block - 4224) |
| ELTF | S | #ES7F Load Source Specify (775GB SFF-2 SSD 5xx for IBM i) |
| ELTG | S | #ES8G Load Source Specify (1.55TB SFF-2 SSD 4k for IBM i) |
| ELTK | A | #ES8K Load Source Specify (1.9TB SFF-3 SSD) |
| ELTL | S | #ES7L Load Source Specify (387GB SFF-3 SSD 5xx for IBM i) |
| ELTN | S | #ESFN Load Source Specify (571GB 15K RPM SAS SFF-2 4K Block - 4224) |
| ELTP | S | #ES8P Load Source Specify (387GB SFF-3 SSD 4k for IBM i) |
| ELTQ | S | #ES7Q Load Source Specify (775GB SFF-3 SSD 5xx for IBM i) |
| ELTR | S | #ES8R Load Source Specify (775GB SFF-3 SSD 4k for IBM i) |
| ELTS | A | #ESFS Load Source Specify (1.7TB HDD SFF-2) |
| ELTU | A | #ESEU Load Source Specify (571GB HDD SFF-2) |
| ELTW | S | #ES8W Load Source Specify (1.55TB SFF-3 SSD 4k for IBM i) |
| ELTY | S | #ESEY Load Source Specify (283GB 15K RPM SAS SFF-2 4K Block - 4224) |
| ELUJ | A | #ESNJ Load Source Specify (283GB HDD SFF-3) |
| ELUK | A | ESJK Load Source Specify (931GB SSD SFF-2) |
| ELUL | A | #ESNL Load Source Specify (283GB HDD SFF-2) |
| ELUM | A | ESJM Load Source Specify (1.86TB SSD SFF-2) |
| ELUN | A | #ESNN Load Source Specify (571GB HDD SFF-3) |
| ELUP | A | ESJP Load Source Specify (3.72TB SSD SFF-2) |
| ELUQ | A | #ESNQ Load Source Specify (571GB HDD SFF-2) |
| ELUR | A | ESJR Load Source Specify (7.44TB SSD SFF-2) |
| ELUT | A | ESJT Load Source Specify (931GB SSD SFF-3) |
| ELUV | A | ESJV Load Source Specify (1.86TB SSD SFF-3) |
| ELUW | A | EC5W Load Source Specify (6.4 TB 4K NVMe U.2 SSD for IBM i) |
| ELUX | A | ESJX Load Source Specify (3.72TB SSD SFF-3) |
| ELUZ | A | ESJZ Load Source Specify (7.44TB SSD SFF-3) for IBM i) |
| ELVK | A | EC7K Load Source Specify (1.6TB SSD NVMe adapter for IBM i) |
| ELVM | A | EC7M Load Source Specify (3.2TB SSD NVMe adapter for IBM i) |
| ELVP | A | EC7P Load Source Specify (6.4TB SSD NVMe adapter for IBM i) |
| ELZ1 | S | ES91 Load Source Specify (387GB SSD SFF-3) |
| ELZ2 | S | #ESE2 Load Source Specify (3.72TB SSD SFF-3) |
| ELZ3 | S | #ES93 Load Source Specify (1.86TB SSD SFF-3) |
| ELZ4 | S | #ES84 Load Source Specify (931GB SSD SFF-3) |
| ELZ5 | S | ES95 Load Source Specify (387GB SSD SFF-2) |
| ELZ6 | S | #ESG6 Load Source Specify (387GB SSD SFF-2) |
| ELZ7 | S | #ES97 Load Source Specify (1.86TB SSD SFF-2) |
| ELZ8 | S | #ESE8 Load Source Specify (3.72TB SSD SFF-2) |
| ELZ9 | S | #ESM9 Load Source Specify (3.72 TB SSD 4k SFF-2) |
| ELZA | S | #ESGA Load Source Specify (387GB SSD SFF-3) |
| ELZB | S | ESNB Load Source Specify (775GB SSD SFF-2) |
| ELZC | A | #ESGC Load Source Specify (387GB SSD SFF-2) |
| ELZD | S | ESND Load Source Specify (775GB SSD SFF-3) |
| ELZE | S | #ESGE Load Source Specify (387GB SSD SFF-3) |
| ELZF | S | ESNF Load Source Specify (1.55TB SSD SFF-2) |
| ELZG | S | #ESGG Load Source Specify (775GB SSD SFF-2) |
| ELZH | S | ESNH Load Source Specify (1.55TB SSD SFF-3) |
| ELZJ | S | #ESGJ Load Source Specify (775GB SSD SFF-3) |
| ELZK | S | #ESHK Load Source Specify (931 GB SSD 4k SFF-2) |

ELZL |S| #ESGL Load Source Specify (775GB SSD SFF-2)
ELZM |S| #ESHM Load Source Specify (1.86 TB SSD 4k SFF-2)
ELZN |S| #ESGN Load Source Specify (775GB SSD SFF-3)
ELZQ |S| #ESGQ Load Source Specify (1.55TB SSD SFF-2)
ELZR |S| #ESMR Load Source Specify (3.72 TB SSD 4k SFF-3)
ELZS |S| #ESGS Load Source Specify (1.55TB SSD SFF-3)
ELZT |S| #ESHT Load Source Specify (931 GB SSD 4k SFF-3)
ELZV |S| #ESHV Load Source Specify (1.86 TB SSD 4k SFF-3)
ELZZ |S| #ES8Z Load Source Specify (931GB SSD SFF-2)
EM60 |S| 8 GB DDR4 Memory
EM62 |A| 16 GB DDR4 Memory
EM63 |A| 32 GB DDR4 Memory
EM64 |A| 64 GB DDR4 Memory
EM7B |A| 64 GB DDR4 Memory Dimm
EM7C |A| 128 GB DDR4 Memory Dimm
EMX0 |A| PCIe Gen3 I/O Expansion Drawer
EMXA |A| AC Power Supply Conduit for PCIe3 Expansion Drawer
EMXF |S| PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer
EMXG |S| PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer
EMXH |A| PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer
EN01 |A| 1m (3.3-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper
EN02 |A| 3m (9.8-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper
EN03 |A| 5m (16.4-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper
EN0A |A| PCIe3 16Gb 2-port Fibre Channel Adapter
EN0G |S| PCIe2 8Gb 2-Port Fibre Channel Adapter
EN0H |S| PCIe3 4-port (10Gb FCoE & 1GbE) SR&RJ45
EN0K |S| PCIe3 4-port (10Gb FCoE & 1GbE) SFP+Copper&RJ45
EN0S |A| PCIe2 4-Port (10Gb+1GbE) SR+RJ45 Adapter
EN0U |A| PCIe2 4-port (10Gb+1GbE) Copper SFP+RJ45 Adapter
EN0W |A| PCIe2 2-port 10/1GbE BaseT RJ45 Adapter
EN12 |S| PCIe2 8Gb 4-port Fibre Channel Adapter
Not withdrawn in Japan until 2018-08-07
EN13 |S| PCIe 1-port Bisync Adapter
EN15 |A| PCIe3 4-port 10GbE SR Adapter
EN1A |A| PCIe3 32Gb 2-port Fibre Channel Adapter
EN1C |A| PCIe3 16Gb 4-port Fibre Channel Adapter
EN1G |A| PCIe3 2-Port 16Gb Fibre Channel Adapter
EN2A |A| PCIe3 16Gb 2-port Fibre Channel Adapter

ENS1 |A| 188 GB IBM i NVMe Load Source Namespace size
ENS2 |A| 393 GB IBM i NVMe Load Source Namespace size
ENSA |A| 200 GB IBM i NVMe Load Source Namespace size
ENSB |A| 400 GB IBM i NVMe Load Source Namespace size
EP50 |A| 4-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor
EP51 |A| 6-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor
EP52 |A| 8-core Typical 2.8 to 3.8 Ghz (max) POWER9 Processor
EP60 |A| One Processor Core Activation for #EP50
EP61 |A| One Processor Core Activation for #EP51
EP62 |A| One Processor Core Activation for #EP52
EPA0 |A| Deactivation of LPM (Live Partition Mobility)
EPTH |A| Horizontal PDU Mounting Hardware
EPTJ |S| High Function 9xC19 PDU: Switched, Monitoring
EPTL |S| High Function 9xC19 PDU 3-Phase: Switched, Monitoring
EPTN |S| High Function 12xC13 PDU: Switched, Monitoring
EPTQ |S| High Function 12xC13 PDU 3-Phase: Switched, Monitoring
Feature EPZR is not available in People's Republic ofChina, Hong Kong S.A.R. of the PRC, Marco S.A
EPZR |A| One Processor Core Activation for #EP50
Feature #EPZS is not available in People's Republic ofChina, Hong Kong S.A.R. of the PRC, Marco S.
EPZS |A| One Processor Core Activation for #EP51
EQ0Q |S| Quantity 150 of #ES0Q 387GB SFF-2 4k SSD (AIX/Linux)
EQ0R |S| Quantity 150 of #ES0R 387GB SFF-2 4k SSD (IBM i)
EQ0S |S| Quantity 150 of #ES0S 775GB SFF-2 4k SSD (AIX/Linux)
EQ0T |S| Quantity 150 of #ES0T 775GB SFF-2 4k SSD (IBM i)
EQ62 |A| Quantity 150 of #ES62 3.86-4.0 TB 7200 rpm 4k LFF-1 Disk
EQ64 |A| Quantity 150 of #ES64 7.72-8.0 TB 7200 rpm 4k LFF-1 Disk
EQ78 |S| Quantity 150 of #ES78 387GB SFF-2 SSD 5xx
EQ79 |S| Quantity 150 of #ES79 387GB SFF-2 SSD 5xx
EQ7E |S| Quantity 150 of #ES7E 775GB SFF-2 SSD 5xx
EQ7F |S| Quantity 150 of #ES7F 775GB SFF-2 SSD 5xx
EQ80 |S| Quantity 150 of #ES80 1.9TB SFF-2 SSD 4k
EQ81 |S| Quantity 150 of ES81 1.9TB SFF-2 SSD 4k
EQ85 |S| Quantity 150 of #ES85 387GB SFF-2 SSD 4k
EQ86 |S| Quantity 150 of #ES86 387GB SFF-2 SSD 4k
EQ8C |S| Quantity 150 of #ES8C 775GB SFF-2 SSD 4k
EQ8D |S| Quantity 150 of #ES8D 775GB SFF-2 SSD 4k
EQ8F |S| Quantity 150 of #ES8F 1.55TB SFF-2 SSD 4k
EQ8G |S| Quantity 150 of #ES8G 1.55TB SFF-2 SSD 4k
EQ8Y |S| Quantity 150 of #ES8Y 931GB SFF-2 SSD 4k
EQ8Z |S| Quantity 150 of ES8Z 931GB SFF-2 SSD 4k
EQ96 |S| Quantity 150 of ES96 1.86TB SFF-2 SSD 4k
EQ97 |S| Quantity 150 of ES97 1.86TB SFF-2 SSD 4k
EQD2 |S| Quantity 150 of #ESD2 (1.1TB 10k SFF-2)
EQD3 |S| Quantity 150 of #ESD3 (1.2TB 10k SFF-2)
EQDN |S| Quantity 150 of #ESDN (571GB 15K RPM SAS SFF-2 for IBM i)
EQDP |S| Quantity 150 of #ESDP (600GB 15K RPM SAS SFF-2 for AIX/
| |LINUX)
EQE7 |S| Quantity 150 of #ESE7 3.72TB SFF-2 SSD 4k
EQE8 |S| Quantity 150 of ESE8 3.72TB SFF-2 SSD 4k
EQEU |A| Quantity 150 of #ESEU (571GB 10k SFF-2)
EQEV |A| Quantity 150 of #ESEV (600GB 10k SFF-2)
EQEY |S| Quantity 150 of #ESEY (283 GB SFF-2)
EQEZ |S| Quantity 150 of #ESEZ (300GB SFF-2)

| | | |
|---|---|---|
| EQF2 | A | Quantity 150 of #ESF2 (1.1TB 10k SFF-2) |
| EQF3 | A | Quantity 150 of #ESF3 (1.2TB 10k SFF-2) |
| EQFN | S | Quantity 150 of #ESFN (571GB SFF-2) |
| EQFP | S | Quantity 150 of #ESFP (600GB SFF-2) |
| EQFS | A | Quantity 150 of #ESFS (1.7TB 10k SFF-2) |
| EQFT | A | Quantity 150 of #ESFT (1.8TB 10k SFF-2) |
| EQG5 | S | Quantity 150 of #ESG5 (387GB SAS 5xx) |
| EQG6 | S | Quantity 150 of #ESG6 (387GB SAS 5xx) |
| EQGB | S | Quantity 150 of #ESGB (387GB SAS 4k) |
| EQGC | S | Quantity 150 of #ESGC (387GB SAS 4k) |
| EQGF | S | Quantity 150 of #ESGF (775GB SAS 5xx) |
| EQGG | S | Quantity 150 of #ESGG (775GB SAS 5xx) |
| EQGK | S | Quantity 150 of #ESGK (775GB SAS 4k) |
| EQGL | S | Quantity 150 of #ESGL (775GB SAS 4k) |
| EQGP | S | Quantity 150 of #ESGP (1.55TB SAS 4k) |
| EQGQ | S | Quantity 150 of #ESGQ (1.55TB SAS 4k) |
| ER94 | S | Quantity 150 of ES94 387GB SAS 4k |
| ER95 | S | Quantity 150 of ES95 387GB SAS 4k |
| ERF1 | A | RFID Tags for Servers, Compute Nodes, Chassis, Racks, and HMCs |
| ERG0 | A | Rear rack extension |
| ERGV | S | Quantity 150 of ESGV 387GB SSD 4k |
| ERGZ | S | Quantity 150 of ESGZ 775GB SSD 4k |
| ERHJ | S | Quantity 150 of #ESHJ 931 GB SSD 4k SFF-2 |
| ERHK | S | Quantity 150 of #ESHK 931 GB SSD 4k SFF-2 |
| ERHL | S | Quantity 150 of #ESHL 1.86 TB SSD 4k SFF-2 |
| ERHM | S | Quantity 150 of #ESHM 1.86 TB SSD 4k SFF-2 |
| ERHN | S | Quantity 150 of #ESHN 7.45 TB SSD 4k SFF-2 |
| ERJ0 | A | Quantity 150 of ESJ0 931GB SAS 4k |
| ERJ1 | A | Quantity 150 of ESJ1 931GB SAS 4k |
| ERJ2 | A | Quantity 150 of ESJ2 1.86TB SAS 4k |
| ERJ3 | A | Quantity 150 of ESJ3 1.86TB SAS 4k |
| ERJ4 | A | Quantity 150 of ESJ4 3.72TB SAS 4k |
| ERJ5 | A | Quantity 150 of ESJ5 3.72TB SAS 4k |
| ERJ6 | A | Quantity 150 of ESJ6 7.45TB SAS 4k |
| ERJ7 | A | Quantity 150 of ESJ7 7.45TB SAS 4k |
| ERM8 | S | Quantity 150 of #ESM8 3.72 TB SSD 4k SFF-2 |
| ERM9 | S | Quantity 150 of #ESM9 3.72 TB SSD 4k SFF-2 |
| ERNA | S | Quantity 150 of ESNA 775GB SSD 4k |
| ERNB | S | Quantity 150 of ESNB 775GB SSD 4k |
| ERNE | S | Quantity 150 of ESNE 1.55TB SSD 4k |
| ERNF | S | Quantity 150 of ESNF 1.55TB SSD 4k |
| ES0Q | S | 387GB SFF-2 4K SSD for AIX/Linux |
| ES0R | S | 387GB SFF-2 4k SSD for IBM i |
| ES0S | S | 775GB SFF-2 4k SSD for AIX/Linux |
| ES0T | S | 775GB SFF-2 4k SSD for IBM i |
| ES1E | A | Enterprise 1.6 TB SSD PCIe4 NVMe U.2 module for AIX/Linux |
| ES1F | A | Enterprise 1.6 TB SSD PCIe4 NVMe U.2 module for IBM i |
| ES1G | A | Enterprise 3.2 TB SSD PCIe4 NVMe U.2 module for AIX/Linux |
| ES1H | A | Enterprise 3.2 TB SSD PCIe4 NVMe U.2 module for IBM i |
| ES62 | A | 3.86-4.0 TB 7200 RPM 4K SAS LFF-1 Nearline Disk Drive (AIX/Linux) |
| ES64 | A | 7.72-8.0 TB 7200 RPM 4K SAS LFF-1 Nearline Disk Drive (AIX/Linux) |
| ES78 | S | 387GB SFF-2 SSD 5xx eMLC4 for AIX/Linux |
| ES79 | S | 387GB SFF-2 SSD 5xx eMLC4 for IBM i |
| ES7E | S | 775GB SFF-2 SSD 5xx eMLC4 for AIX/Linux |
| ES7F | S | 775GB SFF-2 SSD 5xx eMLC4 for IBM i |
| ES7K | S | 387GB SFF-3 SSD 5xx eMLC4 for AIX/Linux |
| ES7L | S | 387GB SFF-3 SSD 5xx eMLC4 for IBM i |
| ES7P | S | 775GB SFF-3 SSD 5xx eMLC4 for AIX/Linux |
| ES7Q | S | 775GB SFF-3 SSD 5xx eMLC4 for IBM i |
| ES80 | S | 1.9TB Read Intensive SAS 4k SFF-2 SSD for AIX/Linux |
| ES81 | S | 1.9TB Read Intensive SAS 4k SFF-2 SSD for IBM i |
| ES83 | S | 931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ES84 | S | 931GB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ES85 | S | 387GB SFF-2 SSD 4k eMLC4 for AIX/Linux |
| ES86 | S | 387GB SFF-2 SSD 4k eMLC4 for IBM i |
| ES8C | S | 775GB SFF-2 SSD 4k eMLC4 for AIX/Linux |
| ES8D | S | 775GB SFF-2 SSD 4k eMLC4 for IBM i |
| ES8F | S | 1.55TB SFF-2 SSD 4k eMLC4 for AIX/Linux |
| ES8G | S | 1.55TB SFF-2 SSD 4k eMLC4 for IBM i |
| ES8J | S | 1.9TB Read Intensive SAS 4k SFF-3 SSD for AIX/Linux |
| ES8K | S | 1.9TB Read Intensive SAS 4k SFF-3 SSD for IBM i |
| ES8N | S | 387GB SFF-3 SSD 4k eMLC4 for AIX/Linux |
| ES8P | S | 387GB SFF-3 SSD 4k eMLC4 for IBM i |
| ES8Q | S | 775GB SFF-3 SSD 4k eMLC4 for AIX/Linux |
| ES8R | S | 775GB SFF-3 SSD 4k eMLC4 for IBM i |
| ES8V | S | 1.55TB SFF-3 SSD 4k eMLC4 for AIX/Linux |
| ES8W | S | 1.55TB SFF-3 SSD 4k eMLC4 for IBM i |
| ES8Y | S | 931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ES8Z | S | 931GB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ES90 | S | 387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux |
| ES91 | S | 387GB Enterprise SAS 4k SFF-3 SSD for IBM i |
| ES92 | S | 1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ES93 | S | 1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ES94 | S | 387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux |
| ES95 | S | 387GB Enterprise SAS 4k SFF-2 SSD for IBM i |
| ES96 | S | 1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ES97 | S | 1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESB0 | A | 387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux |
| ESB2 | A | 387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux |
| ESB4 | A | 775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux |
| ESB6 | A | 775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux |
| ESB8 | A | 387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux |
| ESB9 | A | 387GB Enterprise SAS 4k SFF-3 SSD for IBM i |

| | | |
|---|---|---|
| ESBA | A | 387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux |
| ESBB | A | 387GB Enterprise SAS 4k SFF-2 SSD for IBM i |
| ESBE | A | 775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux |
| ESBF | A | 775GB Enterprise SAS 4k SFF-3 SSD for IBM i |
| ESBG | A | 775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux |
| ESBH | A | 775GB Enterprise SAS 4k SFF-2 SSD for IBM i |
| ESBJ | A | 1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux |
| ESBK | A | 1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i |
| ESBL | A | 1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux |
| ESBM | A | 1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i |
| ESC0 | A | S&H - No Charge |
| ESC6 | A | S&H-b |
| ESD2 | S | 1.1TB 10K RPM SAS SFF-2 Disk Drive (IBMi) |
| ESD3 | S | 1.2TB 10K RPM SAS SFF-2 Disk Drive (AIX/Linux) |
| ESD4 | S | 571GB 10K RPM SAS SFF-3 Disk Drive (IBM i) |
| ESD5 | A | 600GB 10K RPM SAS SFF-3 Disk Drive (AIX/Linux) |
| ESDA | S | 283GB 15K RPM SAS SFF-3 Disk Drive (IBM i) |
| ESDB | A | 300GB 15K RPM SAS SFF-3 Disk Drive (AIX/Linux) |
| ESDN | S | 571GB 15K RPM SAS SFF-2 Disk Drive - 528 Block (IBM i) |
| ESDP | S | 600GB 15K RPM SAS SFF-2 Disk Drive - 5xx Block (AIX/Linux) |
| ESE1 | S | 3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESE2 | S | 3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ESE7 | S | 3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESE8 | S | 3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESEU | A | 571GB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224 |
| ESEV | A | 600GB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096 |
| ESEY | S | 283GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive |
| ESEZ | S | 300GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive |
| ESF2 | A | 1.1TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224 |
| ESF3 | A | 1.2TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096 |
| ESF4 | A | 571GB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224 |
| ESF5 | A | 600GB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096 |
| ESF8 | A | 1.1TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224 |
| ESF9 | A | 1.2TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096 |
| ESFA | S | 283GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive |
| ESFB | S | 300GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive |
| ESFE | S | 571GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive |
| ESFF | S | 600GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive |
| ESFN | S | 571GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive |
| ESFP | S | 600GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive |
| ESFS | A | 1.7TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224 |
| ESFT | A | 1.8TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096 |
| ESFU | A | 1.7TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224 |
| ESFV | A | 1.8TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096 |
| ESG5 | S | 387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux |
| ESG6 | S | 387GB Enterprise SAS 5xx SFF-2 SSD for IBM i |
| ESG9 | S | 387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux |
| ESGA | S | 387GB Enterprise SAS 5xx SFF-3 SSD for IBM i |
| ESGB | S | 387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux |
| ESGC | S | 387GB Enterprise SAS 4k SFF-2 SSD for IBM i |
| ESGD | S | 387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux |
| ESGE | S | 387GB Enterprise SAS 4k SFF-3 SSD for IBM i |
| ESGF | S | 775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux |
| ESGG | S | 775GB Enterprise SAS 5xx SFF-2 SSD for IBM i |
| ESGH | S | 775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux |
| ESGJ | S | 775GB Enterprise SAS 5xx SFF-3 SSD for IBM i |
| ESGK | S | 775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux |
| ESGL | S | 775GB Enterprise SAS 4k SFF-2 SSD for IBM i |
| ESGM | S | 775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux |
| ESGN | S | 775GB Enterprise SAS 4k SFF-3 SSD for IBM i |
| ESGP | S | 1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux |
| ESGQ | S | 1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i |
| ESGR | S | 1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux |
| ESGS | S | 1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i |
| ESGT | S | 387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux |
| ESGV | S | 387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux |
| ESGX | S | 775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux |
| ESGZ | A | 775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux |
| ESHJ | S | 931 GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESHK | S | 931 GB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESHL | S | 1.86 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESHM | S | 1.86 TB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESHN | S | 7.45 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESHS | S | 931 GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESHT | S | 931 GB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ESHU | S | 1.86 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESHV | S | 1.86 TB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ESHW | S | 7.45 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESJ0 | A | 931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESJ1 | A | 931GB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESJ2 | A | 1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESJ3 | A | 1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESJ4 | A | 3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESJ5 | A | 3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESJ6 | A | 7.45TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESJ7 | A | 7.45TB Mainstream SAS 4k SFF-2 SSD for IBM i |
| ESJ8 | A | 931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESJ9 | A | 931GB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ESJA | A | 1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESJB | A | 1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ESJC | A | 3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESJD | A | 3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ESJE | A | 7.45TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux |
| ESJF | A | 7.45TB Mainstream SAS 4k SFF-3 SSD for IBM i |
| ESJJ | A | 931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux |
| ESJK | A | 931GB Mainstream SAS 4k SFF-2 SSD for IBM i |

ESJL |A| 1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
ESJM |A| 1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i
ESJN |A| 3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
ESJP |A| 3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i
ESJQ |A| 7.44TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
ESJR |A| 7.44TB Mainstream SAS 4k SFF-2 SSD for IBM i
ESJS |A| 931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
ESJT |A| 931GB Mainstream SAS 4k SFF-3 SSD for IBM i
ESJU |A| 1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
ESJV |A| 1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i
ESJW |A| 3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
ESJX |A| 3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i
ESJY |A| 7.44TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
ESJZ |A| 7.44TB Mainstream SAS 4k SFF-3 SSD for IBM i
ESL9 |A| ESB9 Load Source Specify (387GB SSD SFF-3)
ESLA |A| Specify AC Power Supply for EXP12SX/EXP24SX Storage
| |Enclosure
ESLB |A| ESBB Load Source Specify (387GB SSD SFF-2)
ESLF |A| ESBF Load Source Specify (775GB SSD SFF-3)
ESLH |A| ESBH Load Source Specify (775GB SSD SFF-2)
ESLK |A| ESBK Load Source Specify (1.55TB SSD SFF-3)
ESLL |A| EXP12SX SAS Storage Enclosure
ESLM |A| ESBM Load Source Specify (1.55TB SSD SFF-2)
ESLS |A| EXP24SX SAS Storage Enclosure
ESLV |A| Load Source Specify for EC6V (NVMe 1.6 TB SSD for IBM i)
ESLX |A| Load Source Specify for EC6X (NVMe 3.2 TB SSD for IBM i)
ESLZ |A| Load Source Specify for EC6Z (NVMe 6.4 TB SSD for IBM i)
ESM8 |S| 3.72 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux
ESM9 |S| 3.72 TB Mainstream SAS 4k SFF-2 SSD for IBM i
ESMQ |S| 3.72 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux
ESMR |S| 3.72 TB Mainstream SAS 4k SFF-3 SSD for IBM i
ESNA |S| 775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
ESNB |S| 775GB Enterprise SAS 4k SFF-2 SSD for IBM i
ESNC |S| 775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
ESND |S| 775GB Enterprise SAS 4k SFF-3 SSD for IBM i
ESNE |S| 1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux
ESNF |S| 1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i
ESNG |S| 1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux
ESNH |S| 1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i
ESNJ |A| 283GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (IBM i)
ESNK |A| 300GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (AIX/
| |Linux)
ESNL |A| 283GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (IBM i)
ESNM |A| 300GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (AIX/
| |Linux)
ESNN |A| 571GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (IBM i)
ESNP |A| 600GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (AIX/
| |Linux)
ESNQ |A| 571GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (IBM i)
ESNR |A| 600GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (AIX/
| |Linux)
ESPL |A| Quantity 150 of #ESNL (283GB 15k SFF-2)
ESPM |A| Quantity 150 of #ESNM (300GB 15k SFF-2)
ESPQ |A| Quantity 150 of #ESNQ (571GB 15k SFF-2)
ESPR |A| Quantity 150 of #ESNR (600GB 15k SFF-2)
ESQ2 |A| Quantity 150 of ESB2 387GB SAS 4k
ESQ6 |A| Quantity 150 of ESB6 775GB SAS 4k
ESQA |A| Quantity 150 of ESBA 387GB SAS 4k
ESQB |A| Quantity 150 of ESBB 387GB SAS 4k
ESQG |A| Quantity 150 of ESBG 775GB SAS 4k
ESQH |A| Quantity 150 of ESBH 775GB SAS 4k
ESQL |A| Quantity 150 of ESBL 1.55TB SAS 4k
ESQM |A| Quantity 150 of ESBM 1.55TB SAS 4k
EU00 |A| RDX USB Internal Docking Station for Removable Disk
| |Cartridge
EU01 |A| 1TB Removable Disk Drive Cartridge
Not available in US, EMEA, and Japan
EU04 |A| RDX USB External Docking Station for Removable Disk
| |Cartridge
EU08 |S| RDX 320 GB Removable Disk Drive
EU0B |A| Operator Panel LCD Display
EU15 |S| 1.5TB Removable Disk Drive Cartridge
EU19 |A| Cable Ties & Labels
EU29 |A| Order Placed Indicator
EU2C |A| Express Edition 4 core (IBM i)
EU2D |A| Express Edition 6-core (IBM i)
EU2T |A| 2TB Removable Disk Drive Cartridge (RDX)
EU41 |A| ESJ1 Load Source Specify (931GB SSD SFF-2)
EU43 |A| ESJ3 Load Source Specify (1.86TB SSD SFF-2)
EU45 |A| ESJ5 Load Source Specify (3.72TB SSD SFF-2)
EU47 |A| ESJ7 Load Source Specify (7.45TB SSD SFF-2)
EU49 |A| ESJ9 Load Source Specify (931GB SSD SFF-3)
EU4B |A| ESJB Load Source Specify (1.86TB SSD SFF-3)
EU4D |A| ESJD Load Source Specify (3.72TB SSD SFF-3)
EU4F |A| ESJF Load Source Specify (7.45TB SSD SFF-3)

EUA4 |A| RDX USB External Docking Station

EUA5 |A| Standalone USB DVD drive w/cable
EUC6 |A| Core Use HW Feature
EUC7 |A| Core Use HW Feature 10X
SVBP |A| BP Post-Sale Services: 1 Day

```
SVCS    |A| IBM Systems Lab Services Post-Sale Services: 1 Day
SVNN    |A| Other IBM Post-Sale Services: 1 Day
```

## Feature descriptions

Note: Not all of the following features are available in all countries. Check with your country representative for specific feature availability.
The following is a list of all feature codes in numeric order for the IBM Power Systems 9009 machine type.

Attributes, as defined in the following feature descriptions, state the interaction of requirements among features.

Minimums and maximums are the absolute limits for a single feature without regard to interaction with other features. The maximum valid quantity for MES orders may be different than for initial orders. The maximums listed below refer to the largest quantity of these two possibilities.

The order type defines if a feature is orderable only on initial orders, only on MES orders, on both initial and MES orders, or if a feature is supported on a model due to a model conversion. Supported features cannot be ordered on the converted model, only left on or removed from the converted model.

### (#0010) - One CSC Billing Unit

One Billing Unit used by the Customer Solution Center.

- Attributes provided: One CSC Billing Unit
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: Does not apply

### (#0011) - Ten CSC Billing Units

Ten Billing Units used by the Customer Solutions Center.

- Attributes provided: Ten CSC Billing Units
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 100 (Initial order maximum: 100)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: Does not apply

### (#0040) - Mirrored System Disk Level, Specify Code

This code indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration.

- Attributes provided: Device-level mirrored protection
- Attributes required: Minumum of two (2) disk units
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#0041) - Device Parity Protection-All, Specify Code

This code indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration.

- Attributes provided: RAID Data Protection
- Attributes required: RAID-capable disk unit controller
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#0043) - Mirrored System Bus Level, Specify Code

This code indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration.

For new systems: The marketing configurator will error on an order if sufficient disk units, and expansion units are not included on the order to support bus-level mirrored protection for all disk units. New, preloaded systems will be shipped with bus-level mirroring enabled.

- Attributes provided: Bus-level mirrored protection
- Attributes required: Minimum of 2 (Two) disk units
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0047) - Device Parity RAID-6 All, Specify Code

This code indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration.

- Attributes provided: RAID-6 Data Protection
- Attributes required: RAID-6 capable disk unit controller
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0205) - RISC-to-RISC Data Migration

#0205 is used on initial orders to designate that the new server should only recieve a partial load of IBM i in IBM Mfg.

When #0205 is on the order, manufacturing will only load SLIC and up through QSYS of IBM i. Ensure that enough storage is ordered to contain the additional OS code that will be loaded following installation of the system at the Client location. Specify code #0205 is mutually exclusive with #5000, SW Preload Required

The migration process requires that the installed model be at the same version and release level of IBM i and other licensed programs as the new server.

More information, and an updated IBM i Upgrade and Data Migration Road Map (RISC-RISC) are available at

http://publib.boulder.ibm.com/iseries/

- Attributes provided: Partial load of IBM i in IBM Mfg.
- Attributes required: #2145 - Primary OS - IBM i and partition specify code #0267 and RISC to RISC Data Migration from Clients existing system
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#0265) - AIX Partition Specify

This feature indicates customers intend to create a partition on the system that will use the AIX operating system. This feature should be included once for each intended AIX partition. This feature is an indicator and does not deliver parts, software, or services.

- Attributes provided: None
- Attributes required: Customers intend to create a partition on the system that will run the AIX operating system.
- Minimum required: 0
- Maximum allowed: 160 (Initial order maximum: 160)
- OS level required:
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0266) - Linux Partition Specify

This feature indicates customers intend to create a partition on the system that will use the Linux operating system. This feature should be included once for each intended Linux partition. This feature is an indicator and does not deliver parts, software, or services.

- Attributes provided: None
- Attributes required: Customers intend to create a partition on the system that will run the Linux operating system.
- Minimum required: 0
- Maximum allowed: 160 (Initial order maximum: 160)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0267) - IBM i Operating System Partition Specify

This feature indicates customers intend to create a partition on the system that will use the IBM i operating system. This feature should be included once for each intended IBM i partition. This feature is an indicator and does not deliver parts, software, or services.

- Attributes provided: None
- Attributes required: Customers intend to create a partition on the system that will run the IBM i operating system.
- Minimum required: 0
- Maximum allowed: 160 (Initial order maximum: 160)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0296) - Specify Custom Data Protection

#0296 specifies that a system has multiple IBM i partitions and that data protection schemes should be considered separately for each partition instead of only for an overall system level. Each partition's data protection scheme can be different or the same.

- Attributes provided: N/A
- Attributes required: N/A
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0308) - Mirrored Level System Specify Code

This specify code indicates the level of disk protection desired and helps ensure that adequate hardware is in the final configuration.

For new systems, the marketing configurator will show an error if sufficient disk units and disk controllers are not included on the order to support IOA-level mirroring protection. #0308 causes all disk units to be placed into configurations capable of IOA-level mirroring. Each disk unit and its mirrored pair must be on a different disk controller.

Note that the load source disk unit in a new, preloaded system will be device-level mirrored (same protection as provided with feature #0040). This means that the load source is controlled by the first disk unit controller on the first system bus, and will be mirrored with a like disk unit that is also attached to the same first disk controller on the first system bus.

For upgrade orders, #0308 will cause the marketing configurator to show an error if sufficient disk units and disk controllers are not available to provide the capability to enable IOA-level mirrored protection for all DASD.

It is the client's responsibility to start mirroring on their system.

- Attributes provided: IOA level system mirroring
- Attributes required: A minimum of two disk controllers and an even number of disk units (with a minimum of four disk units on a system).
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0347) - RAID Hot Spare Specify

#0347 is a specify code that indicates to IBM configuration tools and to IBM Manufacturing that RAID-5 or RAID-6 disk arrays should be further protected using the IBM i function of RAID hot spare. If specified, IBM will ship a configuration which has at least one stand- by disk drive for each disk controller in the system or designated partition. The customer may alter the hot spare configuration selecting different options once the system is installed.

- Attributes provided: N/A
- Attributes required: Existence of #0041 or #0047
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0348) - V.24/EIA232 6.1m (20-Ft) PCI Cable

This feature provides a 20-foot WAN PCI cable that supports a V.24 or a EIA232 electrical connection interface.

- Attributes provided: N/A
- Attributes required: N/A
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#0353) - V.35 6.1m (20-Ft) PCI Cable

This feature provides a 20-foot WAN PCI cable that supports a V.35 electrical connection interface.

- Attributes provided: N/A
- Attributes required: N/A
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#0359) - X.21 6.1m (20-Ft) PCI Cable

This feature provides a 20-foot WAN PCI cable that supports a X.21 electrical connection interface.

- Attributes provided: N/A
- Attributes required: N/A
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#0444) - CBU Specify

This specify code indicates this system has been properly registered as a Capacity BackUp system and has, through that registration been authorized to temporarily receive IBM i Operating System License Entitlements and either 5250 Processor Enablement entitlements or IBM i user entitlements, from a primary system under the conditions specified at the time the system was registered. This feature is an indicator only, authorization to use this system as a backup is obtained only by registering the system with IBM on the CBU website at: www.ibm.com/systems/power/hardware/cbu

- Attributes provided: Indicates the system has been registered for use as a CBU system for IBM i License entitlement purposes.
- Attributes required: # 2145 Primary OS - IBM i or #0267 IBM i Operating System Partition Specify
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#0456) - Customer Specified Placement

1. Requests that IBM deliver the system to the customer according to the slot in drawer hardware placement defined by the account team.
2. Eliminates the need to have these parts relocated in the customers environment as may happen if the order is placed without this feature code.
3. Client placement specifications are collected using the System Planning Tool (SPT) and processed through the marketing configurator. (Use of the SPT is not required).
4. Requires account team to submit the output of the marketing configurator into IBM manufacturing via the CSP Web site http://www.ibm.com/eserver/power/csp (US Business Partners and Distributors can bypass this step.)
5. Requires account team to assure that the marketing configurator output submitted reflects the actual order placed.

- Attributes provided: I/O component placement
- Attributes required: Marketing Configurator output submitted to the CSP Web site. (US Business Partners and Distributors can bypass this step.)
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#0551) - 19 inch, 1.8 meter high rack

Provides a 19 inch, 1.8 meter high rack with 36 EIA units of total space for installing rack mounted CECs and/or expansion units. Every feature #0551 rack is equipped with a standard rear door and (2x) side covers. #0551 racks, however, do not come equipped with a front door or trim kit. One of the following front door or trim kit features is therefore required with every #0551:

- #6068 - Optional Front Door for 1.8m Rack
- #6263 - 1.8m Rack Trim Kit
- #6248 - 1.8m Rack Acoustic Doors

The following features are also orderable on the #0551:

- #0599 - Rack Filler Panel Kit
- #6580 - Optional Rack Security Kit
- #6586 - Modem Tray

The #0551 can support up to eight PDUs, four mounted vertically and four mounted horizontally. Each PDU mounted horizontally takes up 1 EIA of rack space. The following PDUs are supported:

- #7188 - Power Distribution Unit (12, C-13 sockets)
- #7109 - Power Distribution Unit (12, C-13 sockets)
- #7196 - Power Distribution Unit (6, C-19 sockets)
- #EPTJ - Power Distribution Unit (9, C-19 sockets)
- #EPTL - Power Distribution Unit (9, C-19 sockets)
- #EPTN-Power Distribution Unit (12, C-13 sockets)
- #EPTQ-Power Distribution Unit (12, C-13 sockets)
- #EPAA - HVDC Power Distribution Unit (6, Rong Feng sockets)
- Attributes provided: 19 inch, 1.8M, 36 EIA Rack with standard rear door and (2x) standard side covers.
- Attributes required: #6068 or #6248 or #6263.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#0553) - 19 inch, 2.0 meter high rack

Provides a 19-inch, 2.0 meter high rack with 42 EIA units of total space for installing rack mounted CECs and/or expansion units. Every 0553 rack is equipped with a standard rear door and (2x) side covers. #0553 racks, however, do not come equipped with a front door or trim kit. One of the following front door or trim kit features is therefore required with every #0553:

- #6069 - Optional Front Door for 2.0m Rack
- #6247 - 2.0m Rack Trim Kit (w/d 5/28/2010)
- #6272 - 2.0m Rack Trim Kit
- #6249 - 2.0m Rack Acoustic Doors
- #EC08 - Slim Front Acoustic Door

The following optional features on the #0553 rack:

- #EC07-Slim Rear Acoustic Door
- #6238_ High-End Appearance Side Covers (Note: #6238 is limited to high-end servers).
- # ERG0 - Rear rack extension
- #6580 - Rack Security Kit
- #0599 - Rack Filler Panel Kit
- #6586 - Modem Tray

The #0553 can support up to nine power distribution units (PDU), four mounted vertically and five mounted horizontally. Each PDU mounted horizontally takes up 1 EIA of rack space. The following PDUs are supported:

- #7188 - Power Distribution Unit (12, C13 sockets)
- #7109 - Power Distribution Unit (12, C13 sockets)
- #7196 - Power Distribution Unit (6, C19 sockets)
- #EPTJ - Power Distribution Unit (9, C19 sockets)
- #EPTL - Power Distribution Unit (9, C19 sockets)
- #EPTN-Power Distribution Unit (12, C13 sockets)
- #EPTQ-Power Distribution Unit (12, C13 sockets)
- #EPAA - HVDC Power Distribution Unit (6, Rong Feng sockets)

The manufacturing practice and recommended configuration of the rack is:

- Reserve 2U Rack Space at Bottom of Rack
- Reserve 1U rack horizonal space - 1 EIA. Supports horizontally mounted PDU if needed.
- Attributes provided: 19 inch, 2.0M, 42 EIA Rack, standard rear door and standard side covers.
- Attributes required: #6069 or #6247 or #6272 or #6249 or #EC08.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#0599) - Rack Filler Panel Kit

Provides rack filler panels for IBM 19-inch racks. The #0599 provides three 1-EIA -unit filler panels and one 3-EIA-unit filler panel. These are snap-on panels.

- Attributes provided: Snap on rack filler panels
- Attributes required: 19-inch rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0719) - Load Source Not in CEC

This specify feature indicates to the IBM Marketing configurator tools and IBM manufacturing that disk drives will not be placed in the system unit, but will be placed in I/O drawers or in external SAN attached disk.

- Attributes provided: System unit(s) are shipped with no disk units placed inside.
- Attributes required: Alternate load source specified
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0728) - EXP24S SFF Gen2 Load Source Specify (#5887 or #EL1S)

(No longer available as of December 31, 2020)

Indicates that Load Source DASD are placed in an EXP24S SFF Gen2-bay Drawer.

- Attributes provided: External load source placement specify
- Attributes required: DASD Slot 1 open in drawer
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#0837) - SAN Load Source Specify

Indicates that a SAN drive is being used as the Load Source for the operating system.

- Attributes provided: SAN load source placement specify
- Attributes required: Fiber Channel adapter
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0872) - #1948 Load Source Specify (283GB 15k RPM SAS SFF-2 Disk)

This specify code indicates that a #1948 Disk Unit is being used as the Load Source.

- Attributes provided: None
- Attributes required: Feature #1948
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature 1948
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#0875) - #1962 Load Source Specify (571GB 10k RPM SAS SFF-2 Disk)

This specify code indicates that a #1962 Disk Unit is being used as the Load Source.

- Attributes provided: None
- Attributes required: Feature #1962
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature 1962
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#0911) - #ESD2 Load Source Specify (1.1TB 10k SFF-2)

Indicates that a #ESD2 (1.1 TB 10k rpm SFF-2 disk drive) is being used as the Load Source.

- Attributes provided: None
- Attributes required: Feature #ESD2
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ESD2
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#0983) - US TAA Compliance Indicator

This feature indicates that the product was assembled in a manufacturing plant in the USA or in a country approved under the US Trade Agreement Act. Only valid on U.S. orders.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#0984) - Product assembled in USA manufacturing plant

This feature indicates that the product was assembled in a manufacturing plant in the USA.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: N/A
- Return parts MES: Does not apply

## (#1025) - Modem Cable - US/Canada and General Use

(No longer available as of December 31, 2020)

Modem cable, use with #2893, 6808 and 6833 or similar modem adapters. Maximum of two per adapter. Select this cable for use with your modem if there is not another cable feature that is identified as specific to your country.

- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#1107) - USB 500 GB Removable Disk Drive

Provides an RDX disk drive in a rugged cartridge to be used in an RDX Internal and External docking station such as the #1103, #1104, #1123, #EU03, #EU04, #EU23 or #EU07. 500 GB is uncompressed. With typical 2X compression, capacity would be 1000 GB. Compression/ decompression is provided by the operating system, not the drive itself. Feature 1107 is not entitled under the IBM Maintenance Agreement, if one is purchased.

- Attributes provided: 500 GB RDX rugged disk/cartridge
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#1140) - Custom Service Specify, Rochester Minn, USA

Having #1140 on the order, will cause the order to be routed to Rochester and the machine to be internally routed to the CSC build area in building 114 (Rochester).

- Attributes provided: Customization
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#1817) - Quantity 150 of #1962

This feature ships a quantity of 150 #1962 disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: see feature #1962
- Attributes required: see feature #1962
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required: See feature 1962
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#1818) - Quantity 150 of #1964

This feature ships a quantity of 150 #1964 disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: see feature #1964
- Attributes required: see feature #1964
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature 1964
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#1927) - Quantity 150 of #1948

This feature ships a quantity of 150 #1948 disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: see feature #1948
- Attributes required: see feature #1948
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required: See feature 1948
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#1929) - Quantity 150 of #1953

This feature ships a quantity of 150 #1953 disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: see feature #1953
- Attributes required: see feature #1953
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature 1953
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#1948) - 283GB 15k RPM SAS SFF-2 Disk Drive (IBM i)

283 GB SFF 15k RPM SAS disk drive mounted in a Gen-2 carrier and supported in SFF SAS bay such as provided in the #5887 EXP24S I/O drawer. Disk is formatted for 528 sectors as shipped from IBM Manufacturing. CCIN is 19B1.

Limitations: physical difference in Gen1 and Gen2 carriers prevent usage in SFF-1 bays such as used in the #5802/5803 I/O drawer.

- Attributes provided: 283GB of SFF (2.5-inch) SAS disk storage mounted in Gen-2 carrier.
- Attributes required: one SFF-2 drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#1953) - 300GB 15k RPM SAS SFF-2 Disk Drive (AIX/Linux)

300 GB SFF 15k RPM SAS disk drive mounted in a Gen-2 carrier and supported in SFF SAS bay such as used in the #5887 EXP24S I/O drawer or #ESLS EXP24SX I/O drawer. Disk can be formatted for either 512 bytes or 528 byte sectors and is thus called having 5xx drive sectors. 528 byte sectors provide additional protection. IBM Manufacturing will ship pre-formatted with 528 or with 512 byte sectors. Selection of the formatting is selected by IBM Manufacturing based on manufacturing rules, but the client may change at their location. In the EPX24SX IBM Manufacturing will ship using 528 byte sectors. Capacity is 300GB with 512 byte formatting and is 283GB with 528 byte sector. CCIN is 19B1.

Limitations: physical difference in carriers prevent this drive from being used in SFF-1 bays such as used in the #5802/5803 I/O drawer or in SFF-3 bays such as used in POWER8/POWER9 system units.

- Attributes provided: 300GB/283GB of SFF (2.5-inch) SAS disk storage mounted in Gen-2 carrier.
- Attributes required: one SFF-2 drive bay.
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#1962) - 571GB 10k RPM SAS SFF-2 Disk Drive (IBM i)

571GB SFF 10k rpm SAS drive in gen 1 SFF carrier. Supported in SFF SAS bays such as provided in #5887 EXP24S Gen2 I/O drawer. Disk is formatted for 528 byte sectors.

Limitation: cannot be used in #5802/5803 I/O drawers or in CEC bays due to physical difference in Gen1 and Gen2 carriers.

- Attributes provided: 571GB of Disk Storage mounted in a Gen2 carrier
- Attributes required: one SFF SAS disk drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#1964) - 600GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)

600 GB SFF 10k RPM SAS disk drive mounted in a Gen-2 carrier and supported in SFF SAS bay such as used in the #5887 EXP24S I/O drawer or #ESLS EXP24SX I/O drawer. Disk can be formatted for either 512 bytes or 528 byte sectors and is thus called having 5xx drive sectors. 528 byte sectors provide additional protection. IBM Manufacturing will ship pre-formatted with 528 or with 512 byte sectors. Selection of the formatting is selected by IBM Manufacturing based on manufacturing rules, but the client may change at their location. In the EPX24SX IBM Manufacturing will ship using 528 byte sectors. Capacity is 600GB with 512 byte formatting and is 571GB with 528 byte sector.

Limitation: physical difference in carriers prevent this drive from being used in SFF-1 bays such as used in the #5802/5803 I/O drawer or in SFF-3 bays such as used in POWER8/POWER9 system units.

- Attributes provided: 600GB/571GB of SFF (2.5-inch) SAS disk storage mounted in Gen-2 carrier.
- Attributes required: one SFF-2 drive bay.
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#2145) - Primary OS - IBM i

Indicates clients intend to use the IBM i operating system on the primary system partition. This feature is used as a Manufacturing Routing indicator and does not deliver parts, software or services.

- Attributes provided: None
- Attributes required: Indicates clients intend to use the IBM i operating system on the primary system partition.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#2146) - Primary OS - AIX

Indicates clients intend to use the AIX operating system on the primary system partition. This feature is used as a Manufacturing Routing indicator and does not deliver parts, software or services.

- Attributes provided: None
- Attributes required: Indicates clients intend to use the AIX operating system on the primary system partition.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 1)
- OS level required:
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: VIOS supported. Refer to Software Requirements for specific code levels supported.

## (#2147) - Primary OS - Linux

Indicates clients intend to use the Linux operating system on the primary system partition. This feature is used as a Manufacturing Routing indicator and does not deliver parts, software or services.

- Attributes provided: None
- Attributes required: Indicates clients intend to use the Linux operating system on the primary system partition.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#2319) - Factory Deconfiguration of 1-core

Factory deconfiguration of 1 processor core to assist with optimization of software licensing. The maximum number of this feature that can be ordered is one less than the number of cores on the system, e.g. 7 for an 8-core system and 15 for a 16-core system.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#2456) - 2M LC-SC 50 Micron Fiber Converter Cable

The 50 micron fiber cable is used to convert from LC type to SC type connectors. The 2 meter cable has a male LC type connector on one end and a female SC type connector on the other.

- Attributes provided: Cable with (1X) LC type plug and (1X) SC type receptacle
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#2459) - 2M LC-SC 62.5 Micron Fiber Converter Cable

The 62.5 micron fiber cable is used to convert from LC type to SC type connectors. The 2 meter cable has a male LC type connector on one end and a female SC type connector on the other.

- Attributes provided: Cable with (1X) LC type plug and (1X) SC type receptacle
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#2893) - PCIe 2-Line WAN w/Modem

The #2893 is a 2-line/port WAN w/modem PCIe adapter. This feature is the non-CIM (Complex Impedance Matching) version offered in all countries except Australia and New Zealand.

Port 0 is the modem port and supports V.92 56K Async PPP, V.92 data modem, V.44 data compression, V.34 FAX modem and FAX functions, such as ECM and 2D/1D conversion.

Port 0 does not provide Sync modem capabilities (SDLC and Sync PPP). Port 1 is the RVX port and supports multiple communications protocols, including synchronous operations.

Select one of the following cables to attach to port 0(modem port):

- #1010 Modem Cable - Austria
- #1011 Modem Cable - Belgium
- #1012 Modem Cable - Africa
- #1013 Modem Cable - Israel (supported only, not orderable)
- #1014 Modem Cable - Italy
- #1015 Modem Cable - France
- #1016 Modem Cable - Germany
- #1017 Modem Cable - UK
- #1018 Modem Cable - Iceland/Sweden
- #1020 Modem Cable - HK/NZ
- #1021 Modem Cable - Fin/Nor
- #1022 Modem Cable - Netherlands
- #1023 Modem Cable - Swiss
- #1024 Modem Cable - Denmark
- #1025 Modem Cable - US/Canada

Select one of the following cables to attach to port 1(RVX port):

- #0348 - V.24/EIA232 20-Ft PCI Cable
- #0353 - V.35 20-Ft PCI Cable
- #0359 - X.21 20-Ft PCI Cable
- #0367 - Operations Console PCI Cable (ships with a 25 pin to 9 pin adapter) Multiple #0367 cables can be ordered but only one per #2893) to serve as consoles for secondary partitions when Logical Partitioning is utilized. ECS is supported from both the modem port, and the RVX port.

The following cable is required to support ECS from the RVX port:

- #0348 - V.24/EIA232 20-Ft PCI Cable

The #2893 does not support the remote ring indicate function.

- Attributes provided: One PCIe slot
- Attributes required: Modem
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: Does not apply

## (#2934) - 3M Asynchronous Terminal/Printer Cable EIA-232

The Asynchronous Printer/Terminal Cable is used for attaching printers, plotters, and terminals that support the EIA-232 standard to any asynchronous adapter. This cable is the equivalent of the combination of FC 2936 (modem cable) and FC 2937 (printer/terminal interposer) and replaces this method of printer/terminal attachment.

This cable is 3m (9.8 feet) long, uses DB25 connectors and is supported on all RS/6000 systems using any asynchronous ports.

- Attributes provided: EIA232 device attachment capability
- Attributes required: Any Asynchronous port
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#2936) - Asynchronous Cable EIA-232/V.24 3M

Used to attach a modem to the standard I/O ports with the 10-pin to 25-pin converter cable (#3925), 8-port Cable Assembly, 16-Port Cable Assembly. The cable is 3 meters (9.8 feet) in length.

- Attributes provided: Modem attachment to async or serial port
- Attributes required: Async or serial port
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#3124) - Serial-to-Serial Port Cable for Drawer/Drawer- 3.7M

This 3.7 meter cable is available to provide a null-modem connection between the serial ports of two system drawers that are mounted within the same rack. The cable provides a DB25 female connector at each end.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#3125) - Serial-to-Serial Port Cable for Rack/Rack- 8M

This 8 meter cable is available to provide a null-modem connection between the serial ports of two system drawers that are mounted in separate racks. The cable provides a DB25 female connector at each end.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#3632) - Widescreen LCD Monitor

The Widescreen LCD Monitor has the following general characteristics:

- Black color
- Minimum 533mm (21 inch) diagonal LCD digital screen
- Maximum native resolution of 1680 x 1050 (widescreen format 1.6:1)
- Can display traditional resolutions (1024x768 and 1280x1024) without stretching
- Tilt, swivel, and height stand adjustments
- Industry standard analog input (15-pin D) and a DVI to VGA converter
- Attributes provided: Color Flat-panel Monitor
- Attributes required: Graphics Adapter
- Attributes provided: Color Flat-panel Monitor
- Attributes required: Graphics Adapter
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Not supported in Mainland China.

## (#3925) - 0.3M Serial Port Converter Cable, 9-Pin to 25-Pin

This cable converts the 9-pin serial port on the system to a 25-pin serial port which allows the user to attach 25-pin serial devices to the system.

- Attributes provided: 9-Pin to 25-Pin connectivity
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#3927) - Serial Port Null Modem Cable, 9-pin to 9-pin, 3.7M

This 3.7 meter 9 pin to 9 pin Null modem Serial cable allows two EIA-232 communications ports to exchange data with one another without going through a modem.

- Attributes provided: 9 pin female connector at each end of the cable
- Attributes required: none
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#3928) - Serial Port Null Modem Cable, 9-pin to 9-pin, 10M

This 10 meter 9 pin to 9 pin Null Modem Serial cable allows two EIA-232 communications ports to exchange data with one another without going through a modem.

- Attributes provided: 9 pin female connector at each end of the cable
- Attributes required: none
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#3930) - System Serial Port Converter Cable

This cable is used to connect the System port/UPS Conversion Cable (#1827) to the CEC serial port. Also used to connect an ASCII terminal or modem to the serial port whilch is physically an RJ45 connection on the Power 710/720/730/740 and Power S824/S822/S814/ S822L/S812L systems unit .

- Attributes provided: Attachment of #1827 to CEC serial port; attachment of ASCII terminal or modem to the serial port.
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#4242) - 1.8 M (6-ft) Extender Cable for Displays (15-pin D-shell to 15-pin D-shell)

This cable is required to connect displays with a 15-pin "D" shell connector to the appropriate accelerator connector when it is farther away than the attached monitor cable can reach. Rack mounted systems are likely candidates for this extender cable.

- Attributes provided: 6-foot extension cable
- Attributes required: Supported monitor and adapter with a 15-pin "D" shell connector.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#4256) - Extender Cable - USB Keyboards, 1.8M

This feature provides a 1.8M extension cable for use with USB keyboards.

- Attributes provided: 1.8M Extension Cable
- Attributes required: USB Keyboard
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#4276) - VGA to DVI Connection Converter

This feature is a plug converter that will allow a Video device with a 15 pin D-shell VGA cable plug (such as a KVM switch) to connect to a graphics adapter with a 28 pin D-shell DVI receptacle connector. This device has both a 28 pin D-Shell DVI plug and a 15 pin D-shell VGA receptacle.

- Attributes provided: VGA to DVI connection converter
- Attributes required: VGA device and graphics adapter with DVI connector.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#4649) - Rack Integration Services

#4649 is a prerequisite for #4651-4666.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: No

One and only one rack indicator feature is required onall orders (#4650 to #4666).

## (#4650) - Rack Indicator- Not Factory Integrated

This indicator is used to specify that the rack mountable device in this initial order should not be merged into a rack within IBM Manufacturing. If a device with 4650 is ordered with a rack, the device will not be factory integrated in the ordered rack and will ship uninstalled in the rack.
Note: This "no additional charge" feature will be placed on an initial order for a rack mountable device by the Configuration Tool when the order does not ship from IBM Manufacturing in a Rack. This server is not designed to be rack shippable.

- Attributes provided: System will not be shipped in a rack.
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4651) - Rack Indicator, Rack #1

When added to an initial rack order, this indicator is used to specify the first rack for a multi rack order, or the only rack for a single rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #1.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack Integration/ Rack Specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4652) - Rack Indicator, Rack #2

When added to an initial rack order, this indicator is used to specify the second rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #2 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack Integration/Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4653) - Rack Indicator, Rack #3

When added to an initial rack order, this indicator is used to specify the third rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #3 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4654) - Rack Indicator, Rack #4

When added to an initial rack order, this indicator is used to specify the fourth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #4 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4655) - Rack Indicator, Rack #5

When added to an initial rack order, this indicator is used to specify the fifth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #5 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4656) - Rack Indicator, Rack #6

When added to an initial rack order, this indicator is used to specify the sixth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #6 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4657) - Rack Indicator, Rack #7

When added to an initial rack order, this indicator is used to specify the seventh rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #7 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4658) - Rack Indicator, Rack #8

When added to an initial rack order, this indicator is used to specify the eighth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #8 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4659) - Rack Indicator, Rack #9

When added to an initial rack order, this indicator is used to specify the ninth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #9 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4660) - Rack Indicator, Rack #10

When added to an initial rack order, this indicator is used to specify the tenth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #10 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4661) - Rack Indicator, Rack #11

When added to an initial rack order, this indicator is used to specify the eleventh rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #11 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4662) - Rack Indicator, Rack #12

When added to an initial rack order, this indicator is used to specify the twelfth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #12 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4663) - Rack Indicator, Rack #13

When added to an initial rack order, this indicator is used to specify the thirteenth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #13 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4664) - Rack Indicator, Rack #14

When added to an initial rack order, this indicator is used to specify the fourteenth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #14 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4665) - Rack Indicator, Rack #15

When added to an initial rack order, this indicator is used to specify the fifteenth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #15 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4666) - Rack Indicator, Rack #16

When added to an initial rack order, this indicator is used to specify the sixteenth rack for a multi rack order.

When added to an initial rack mountable device order, this indicator is used to specify that the rack mountable device (such as a system or I/O drawer) is to be mounted in rack #16 of a multi rack order.
Note: For 19" rack mountable device orders: One feature code from the group 4650 to 4666 must be listed on the order. More than one feature code from this group is not allowed. For 19" rack orders: If IBM Mfg. is to assemble a rack mountable device into the rack, one feature code selection from the group 4651 to 4666 must be listed on the order. More than one feature code selection from this group is not allowed. The quantity of this selected feature code on the 19" rack order must equal the number of rack mountable devices to be installed in the rack by IBM Mfg.

- Attributes provided: Rack specify
- Attributes required: Rack
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#4794) - Power Active Memory Expansion Enablement

This feature enables memory expansion on the system. Using compression/decompression of memory content can effectively expand the maximum memory capacity providing additional server workload capacity and performance.

- Attributes provided: None
- Attributes required: An HMC
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i is not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#4927) - Solution Edition for IBM i (6-core)

This feature defines to the configurator a select minimum configuration for a Solution Edition for IBM i (6-core) offerings.

- Attributes provided: Solution Edition for IBM i
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: No

### (#4928) - Solution Edition for IBM i (4-core)

This feature defines to the configurator a select minimum configuration for a Solution Edition for IBM i (4-core) offering.

- Attributes provided: Solution Edition for IBM i
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: No

### (#5000) - Software Preload Required

Indicates that preloaded software and/or consolidated I/O is shipped with the initial order. A maximum of one (#5000) is supported. This feature has country-specific usage.

- Attributes provided: Software Pre-load
- Attributes required: N/A
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#5228) - PowerVM Enterprise Edition

This feature allows the customer to create partitions that are in units of less than 1 CPU (sub-CPU LPARs) and allows the same system I/O to be virtually allocated to these partitions. When PowerVM is installed in the system, all activated processors must have the PowerVM feature. A fully activated 4-core system requires that four of this feature be ordered. An encrypted key is supplied to the customer and is installed on the system, authorizing the partitioning at the sub-processor level. PowerVM Enterprise Edition also includes Live Partition Mobility, which allows for the movement of a logical partition from one Power6, Power7, Power7+ or Power8 server to another Power6, Power7, Power7+, Power8, or POWER9 with no application downtime. Note: If feature 5228 is ordered, the quantity ordered must be equal to the number of active processors.

- Attributes provided: Capability to partition processor
- Attributes required: None
- Minimum required: 1
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#5550) - Sys Console On HMC

With #5550, system console function is driven by the Hardware Management Console (HMC) connected to the system. The HMC is required if the following functions are desired/selected for the system:

- Attributes provided: System Console on Hardware Management Console(HMC)
- Attributes required: Hardware Management Console (HMC)
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#5557) - System Console-Ethernet LAN adapter

Indicates that the system console is driven by an Ethernet LAN adapter. This LAN adapter must be dedicated to console support functions and cannot be used for any other purpose.

- Attributes provided: System Console connection through an Ethernet LAN adapter
- Attributes required: Ethernet LAN adapter
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#5729) - PCIe2 8Gb 4-port Fibre Channel Adapter

PCIe Gen2 8 Gigabit quad port Fibre Channel Adapter is a high- performance 8x short form adapter based on the Emulex LPe12004 PCIe Host Bus Adapter (HBA). Each port provides single initiator capability over a fibre link or with NPIV, multiple initiator capability is provided. The ports have LC type connectors and utilize shortwave laser optics. The adapter operates at link speeds of 2, 4, and 8 Gbps and will automatically negotiate to the highest speed possible. LEDs on each port provide information on the status and link speed of the port.

The adapter connects to a Fibre Channel switch. Direct device attachment has not been tested and is not supported.

N_Port ID Virtualization (NPIV) capability is supported through VIOS.

Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth

Because core sizes are different, OM1 cables can only be connected to other OM1 cables. For best results, OM2 cables should not be connected to OM3 cables. However, if an OM2 cable is connected to an OM3 cable, the characteristics of the OM2 cable apply to the entire length of the cables.

The following table shows the supported distances for the three different cable types at the three different link speeds.

```
Cable | 2.125 Gbps | 4.25 Gbps | 8.5 Gbps |
------|------------|-----------|----------|
OM3   |.5m - 500m  |.5m - 380m |.5m - 150m|
OM2   |.5m - 300m  |.5m - 150m |.5m - 50m |
OM1   |.5m - 150m  |.5m - 70m  |.5m - 21m |
```

#5729 feature indicates a full high adapter. CCIN is 5729.

A Gen2 PCIe slot is required to provide the bandwidth for all four ports to operate at full speed.

Consult with your IBM representative or Business Partner for additional information relative to any third party attachment.

- Attributes provided: Four Port Fibre Channel Adapter
- Attributes required: 1 Empty PCIe Gen2 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported only through VIOS
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#5735) - 8 Gigabit PCI Express Dual Port Fibre Channel Adapter

The 8 Gigabit PCI Express Dual Port Fibre Channel Adapter is a high-performance 8x short form adapter based on the Emulex LPe12002 PCIe Host Bus Adapter (HBA). Each port provides single initiator capability over a fibre link. The ports have LC type connectors and utilize shortwave laser optics. The adapter operates at link speeds of 2, 4, and 8 Gbps and will automatically negotiates to the highest speed possible. LEDs on each port provide information on the status and link speed of the port.

The adapter connects to a Fibre Channel switch (AIX, IBM i, Linux,VIOS). If in an IBM i environment, devices can also be directly attached.

N_Port ID Virtualization (NPIV) capability is supported through VIOS.

Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth

Because core sizes are different, OM1 cables can only be connected to other OM1 cables. For best results, OM2 cables should not be connected to OM3 cables. However, if an OM2 cable is connected to an OM3 cable, the characteristics of the OM2 cable apply to the entire length of the cables.

The following table shows the supported distances for the three different cable types at the three different link speeds.

| Cable | 2.125 Gbps | 4.25 Gbps | 8.5 Gbps |
|---|---|---|---|
| OM3 | .5m - 500m | .5m - 380m | .5m - 150m |
| OM2 | .5m - 300m | .5m - 150m | .5m - 50m |
| OM1 | .5m - 150m | .5m - 70m | .5m - 21m |

#5735 feature indicates a full high adapter. #5273 feature indicates a low profile adapter which is electronically identical. CCIN is 577D. Consult with your IBM representative or Business Partner for additional information relative to any third party attachment.

See also feature #EN0F or #EN0G for a 2-port 8Gb Fibre Channel adapter based on a QLogic adapter.

See also optional wrap plug feature #ECW0 which is: a) Required to run some diagnostic procedures and b) In some cases may speed system boot when placed in empty ports as well as avoid useless messages pointing to a planned empty port.

- Attributes provided: Dual Port Fibre Channel
- Attributes required: 1 Empty PCIe slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#5748) - POWER GXT145 PCI Express Graphics Accelerator

The POWER GXT145 is a versatile, low-priced 2D graphics accelerator. It can be configured to operate in either 8-bit or 24-bit color modes. This adapter supports both analog and digital monitors. The adapter requires a PCI Express slot. If attaching a device that requires a 15 pin D-Shell receptacle for a VGA connection (eg. when the graphic adapter output is routed directly to a 7316-TF3 display or indirectly through a KVM switch), order a VGA to DVI Connection Converter, feature number 4276 to accommodate the attaching device.

- Hardware Description
  - 128-bit graphics processor
  - 8-bit indexed, 8-bit true color, or 24-bit true color
  - 32 MB SDRAM
  - x1 PCI Express interface
  - 2 DVI-I (analog/digital video) connectors
- Features Supported
  - Up to approximately 16.7 million colors
  - Rectangular clipping
  - 1 monitor connected analog at up to 2048 x 1536 resolution
  - 1 monitor connected digital at up to 1280 x 1024 resolution
  - 2nd monitor supported on secondary connecter at up to 1600 x 1200 analog or 1280 x 1024 digital
  - 2nd monitor support in AIX is only in clone mode with an analog connection
- APIs Supported
  - X-Windows and Motif
- Software Requirements
  - The total number of Graphics Adapters in any one partition may not exceed four.
- Attributes provided: 2D Graphics Adapter
- Attributes required: 1 PCI Express Slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - Linux not supported
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Feature #5748 adapter is not supported in the PCIe Gen3 I/O Drawer.

## (#5785) - 4 Port Async EIA-232 PCIe Adapter

Connection for 4 asynchronous EIA-232 devices. Ports are programmable to support EIA-232 protocols, at a line speed of 128K bps. One connector on the rear of the adapter provides attachment for a fan-out cable (provided) which provides four EIA-232 ports.

Note #5785 and # 5277 are physically and electrically identical adapters, except for the type of PCIe slot used (full-high or low profile). Note also the 4-port #5277/5785 is functionally nearly identical to the 2-port #5289/5290 except for the number and type of connectors.

- Attributes provided: 4-Port Asynchronous EIA-232 via 4-Port DB9 DTE Fan-Out Cable 1.2 M (4 ft.), 4 x 9-pin D-Sub (Male DB-9) and 1 x 68-pin D-Sub (HD-68)
- Attributes required: 1 full high PCIe Slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#5887) - EXP24S SFF Gen2-bay Drawer

The EXP24S SFF Gen2-bay Drawer is an expansion drawer with twenty- four 2.5-inch form factor SAS bays. #5887 supports up to 24 hot-swap SFF SAS Hard Disk Drives (HDD). It uses only 2 EIA of space in a 19-inch rack. The EXP24S includes redundant AC power supplies and two power cords. The EXP24S SFF bays use Gen-2 or SFF-2 SAS bays that are not compatible with CEC SFF Gen-1 SAS bays or with #5802/ 5803 SFF SAS bays.

With AIX/Linux/VIOS, the EXP24S can be ordered with four sets of 6 bays, two sets of 12 bays or one set of 24 bays (mode 4, 2 or 1). With IBM i the EXP24S can be ordered as one set of 24 bays (mode 1).

The EXP24S SAS ports are attached to SAS controller(s) which can be a SAS PCI-X or PCIe adapter or pair of adapters. The EXP24S can also be attached to an imbedded SAS controller in a server with an imbedded SAS port. Attachment between the SAS controller and the EXP24S SAS ports is via the appropriate SAS Y or X cables.

Limitations: The mode is set at the IBM factory. The capability to change modes after manufacture is not offered.

- Attributes provided: 24 SFF SAS bays, slot filler panels are provided for empty bays when initially shipped from IBM. #5887 rails have some adjustability for depth - 25.25 to 29.875 inches.
- Attributes required:
  - Available SAS controller (PCI or imbedded server controller)
  - Power System server, POWER6 or later
  - Available 2U 19-inch rack space
  - Appropriate SAS cables for configuration mode selected
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: VIOS/KVM - supported, refer to the Software Requirements for the supported level

## (#5899) - PCIe2 4-port 1GbE Adapter

This short PCIe Gen2 adapter provides four 1Gb Ethernet ports that can be configured to run at 1000, 100 or 10 Mbps. 4-pair CAT-5 Unshielded Twisted Pair (UTP) cables up to 100 meters in length are attached to the copper RJ45 connectors. Each port is independent of one another and supports full-duplex or half-duplex. 1000 Mbps speed is not supported in Half Duplex (HDX) mode.

Feature #5260 and #5899 are electronically identical and have the same CCIN of 576F. #5260 indicates a low profile tail stock while #5899 indicates a full high tail stock.

Details for the ports include: for 5260 & 5899

- AIX NIM support
- IEEE 802.3ab (1 GbE), 802.1p priority, 802.1Q VLAN tagging, 802.3x flow control, 802.3ad load-balancing and failover,
- Link aggregation, IEEE 802.3ad 802.3
- Multiple MAC addresses per interface
- MSI-X, MSI and support of legacy pin interrupts
- Ether II and IEEE 802.3 encapsulated frames
- Jumbo frames up to 9.6 Kbytes
- TCP checksum offload for IPv4 and IPv6
- TCP segmentation Offload (TSO) for IPv4 and IPv6
- UDP checksum offload for IPv4 and IPv6
- AIX, IBM i and Linux provide software iSCSI support through the adapter. Linux can also leverage adapter hardware support including initiator and header & data digest (CRC) generation and checking

- Attributes provided: Four-port 1 Gb Ethernet
- Attributes required: 1 Full High Profile PCIe slot (Gen1 or Gen2)
- Minimum required: 0
- Maximum allowed: 13 (Initial order maximum: 13)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#6068) - Opt Front Door for 1.8m Rack

#6068 provides an attractive black full height rack door on the #0551 19 Inch 1.8m Rack. The door is steel, with a perforated flat front surface. The perforation pattern extends from the bottom to the top of the door to enhance ventilation and provide some visibility into the rack.

- Attributes provided: Front Door
- Attributes required: #0551 19 inch 1.8m Rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#6069) - Opt Front Door for 2.0m Rack

#6069 provides an attractive black full height rack door on the #0553 19 inch 2.0m Rack. The door is steel, with a perforated flat front surface. The perforation pattern extends from the bottom to the top of the door to enhance ventilation and provide some visibility into the rack.

- Attributes provided: Front Door
- Attributes required: #0553 19 inch 2.0 meter Rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#6248) - 1.8m Rack Acoustic Doors

#6248 provides front and rear doors for use with the #0551 19 inch 1.8m Rack. This door kit provides additional acoustic dampening for use where a quieter environment is desired. #6248 results in a larger footprint and requires additional space.

- Attributes provided: Acoustic Door Kit
- Attributes required: #0551 19 inch 1.8m Rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#6249) - 2.0m Rack Acoustic Doors

#6249 provides front and rear doors for use with the #0553 19 inch 2.0m Rack. This door kit provides additional acoustic dampening for use where a quieter environment is desired. #6249 results in a larger footprint and requires additional space.

- Attributes provided: Acoustic Door Kit
- Attributes required: #0553 19 inch 2.0 meter Rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#6263) - 1.8m Rack Trim Kit

This feature provides a decorative trim kit for the front of feature number 0551 (19 inch 1.8m Rack).

- Attributes provided: Decorative trim kit
- Attributes required: #0551 19 inch 1.8m Rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No
  Note: 1x#6263 per #0551

## (#6272) - 2.0m Rack Trim Kit

This feature provides a decorative trim kit for the front of feature number 0553 (19 inch 2.0m Rack).

- Attributes provided: Decorative trim kit
- Attributes required: #0553 19 inch 2.0 meter Rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No
  Note: 1X#6272 per #0553

## (#6458) - Power Cord 4.3m (14-ft), Drawer to IBM PDU (250V/10A)

Standard IBM rack power cable that goes from the system or I/O drawer to the rack power distribution unit (PDU). Cable has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and C14 on the other end (for IBM PDU C13 receptacle). Note for different length C13/C14 cables see #6671 (2.7M) or #6672 (2.0M).

- Attributes provided: Power jumper cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6460) - Power Cord 4.3m (14-ft), Drawer To OEM PDU (125V, 15A)

This power cord goes from the system or I/O drawer to the rack OEM power distribution unit or wall socket outlet. Cable has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and plug type #4 (NEMA 5-15) on the other end.

The following countries/regions use the #6460 power cord to power the system and/or peripheral features requiring a power cord: United States, Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Bonaire, Calicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia, Montserrat, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, St. Kitts/Nevis, St. Martin, Taiwan, Tortola (BVI), Trinidad/Tobago, Venezuela.

- Attributes provided: Power cord.
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6469) - Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (250V/15A) U. S.

This power cord goes from the system or I/O drawer to the wall or rack OEM power distribution unit. Cable has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and plug type #5 (NEMA 6-15) on the other end for wall or OEM PDU.

The following countries/regions use the #6469 power cord to power the system and/or peripheral features requiring a power cord:

United States, Anguilla, Antigua & Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Bonaire, Caicos Is., Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Japan, Micronesia, Montserrat, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, St. Marten NA, Taiwan, Tortola (BVI), Thailand, Venezuela.

- Attributes provided: Power cord.
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6470) - Power Cord 1.8m (6-ft), Drawer to Wall (125V/15A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #4 (NEMA 5-15). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types. 6-foot length.

The following countries/regions use the #6470 power cord to power the system and/or peripheral features requiring a power cord:

United States, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Bonaire, Calicos Islands, Canada, Cayman Islands, Colombia, Costa Rica, Cuba, Curacao, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia, Montserrat, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, St. Kitts/Nevis, St. Martin, Taiwan, Tortola (BVI), Trinidad/Tobago, Venezuela.

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6471) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/10A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #73 (InMetro NBR 14136). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6471 power cord to power the system and/or peripheral features requiring a power cord:

Brazil

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6472) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/16A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #18 (CEE 7 VII). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6472 power cord to power the system and/or peripheral features requiring a power cord:

Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Belarus, Belgium, Benin, Bosnia/Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Croatia, Czech Republic, Dahomey, Djibouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, French Polynesia, French Guyana, Gabon, Georgia, Germany, Greece, Guadeloupe, Guinea, Guinea-Bissau, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Kazakhstan, Kyrgyzstan, Laos, Latvia, Lebanon, Lithuania, Luxembourg, Macau, Macedonia, Mali, Martinique, Mauritania, Mauritius, Mayotte, Moldova, Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, North Korea (C19 only), Norway, Poland, Portugal, Principe, Reunion, Romania, Russia, Rwanda, St. Thomas, Saudi Arabia, Senegal, Serbia, Slovenia, Somalia, South Korea (C19 only), Spain, Surinam, Sweden, Syria, Tahiti, Tajikistan, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis & Futuna, Zaire, Zimbabwe.

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6473) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/10A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #19 (CEE). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6473 power cord to power the system and/or peripheral features requiring a power cord:

Denmark

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6474) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/13A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #23 (BS 1364A). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6474 power cord to power the system and/or peripheral features requiring a power cord:

Abu Dhabi, Bahrain, Botswana, Brunei, Channel Islands, Cyprus, Dominica, Gambia, Grenada, Grenadines, Guyana, Hong Kong, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar, Nigeria, Oman, Qatar, Sierra Leone, Singapore, St. Kitts, St. Lucia, Seychelles, Sudan, Tanzania, Trinidad & Tobago, United Arab Emirates, United Kingdom, Yemen, Zambia

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6475) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/16A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #32 (SII 32-1971). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6475 power cord to power the system and/or peripheral features requiring a power cord:

Israel

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6476) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #24 (SEV 24507). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6476 power cord to power the system and/or peripheral features requiring a power cord:

Lichtenstein, Switzerland

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6477) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/16A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #22 (SABS 164). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6477 power cord to power the system and/or peripheral features requiring a power cord:

Bangladesh, LeSotho, Maceo, Maldives, Nambia, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda.

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6478) - Power Cord 2.7 M(9-foot), To Wall/OEM PDU, (250V, 16A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #25 (CEI 23-16). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types. The following countries/regions use the #6478 power cord to power the system and/or peripheral features requiring a power cord: Chile Italy Libya

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6488) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (125V/15A or 250V/10A )

This power cord goes from the system and/or peripheral features to a wall-type outlet. 125V, 15A or 250V, 10A, Plug Type #2. Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6488 power cord to power the system and/or peripheral features requiring a power cord:

Argentina, Paraguay, Uruguay.

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6489) - 4.3m (14-Ft) 3PH/32A 380-415V Power Cord

#6489 is a 14-FT/4.3m 3PH/32A power cable with a Type 46 plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6491) - 4.3m (14-Ft) 1PH/63A 200-240V Power Cord

#6491 is a 14-FT/4.3m 200-240V/63A power cord with a Type 46 plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6492) - 4.3m (14-Ft) 1PH/60A (48A derated) 200-240V Power Cord

Feature #6492 is a 14-FT/4.3m 200-240V/48-60A power cord with a Type 46 plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: Power Cord PDU to wall
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6493) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #62 (GB 1053). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6493 power cord to power the system and/or peripheral features requiring a power cord:

People's Republic of China.

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6494) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #69 (IS 6538). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6494 power cord to power the system and/or peripheral features requiring a power cord:

India

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6496) - Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 10A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #66 (KETI). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types. The following countries/regions use the #6496 power cord to power the system and/or peripheral features requiring a power cord: North Korea South Korea

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6577) - Power Cable - Drawer to IBM PDU, 200-240V/10A

This feature permits manufacturing to select the optimum PDU power jumper cord length (1.0M, 2.0M, 2.7M, or 4.3M) for rack integration. This feature is mandatory on initial order specifying factory integration with IBM racks (such as with 7014-T00 or T42 racks). Feature is not valid on initial order with non-factory integrated feature 4650. Power jumper cord has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and C14 on the other end (for C13 PDU receptacle).
Note: This feature is not used for MES orders except for bulk orders by SDI clients only. See C13/C14 jumper cord features #6458 (4.3M), #6671 (2.7M), #6672 (2.0M) when not using factory integration.

- Attributes provided: One power jumper cord.
- Attributes required: At least one rack and the absence of #4650.
- Minimum required: 0
- Maximum allowed: 114 (Initial order maximum: 114)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: 1 or 2 per I/O drawer or CEC. MES orderable for SDI's only. The MES order will ship the 14 foot cable equivalent to feature number 6458.

### (#6580) - Optional Rack Security Kit

This feature provides hardware that can be added to a rack to prevent unauthorized access. It includes keyed front and rear locks for the #0551 and #0553 rack doors. It also includes two sliding bars that mount inside the left and right rack side panels. The sliding bars are accessible when the rack rear door is open. They can be moved to a position that disables the external latches on the rack side panels, and prevents removal of the side panels.

- Attributes provided: Locking hardware for rack doors and sidepanels
- Attributes required: #0551 or #0553 19-Inch Rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#6651) - Power Cord 2.7M (9-foot), To Wall/OEM PDU, (125V, 15A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #75 (KETI). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types. The following countries/regions use the #6651 power cord to power the system and/or peripheral features requiring a power cord: Taiwan

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6653) - 4.3m (14-Ft) 3PH/16A 380-415V Power Cord

#6653 is a 14-FT/4.3m 3PH/16A power cord with a Type 46 plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6654) - 4.3m (14-Ft) 1PH/30A (24A derated) Power Cord

Feature #6654 is a 14-FT/4.3m 200-240V/24A-30A locking power cord with a Type 12 plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: Power Cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6655) - 4.3m (14-Ft) 1PH/30A (24A derated) WR Power Cord

Feature #6655 is a 14-FT/4.3m 200-240V/24A-30A water-resistant power cord with a Type 40 plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: Power Cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6656) - 4.3m (14-Ft) 1PH/32A Power Cord

#6656 is a 14-FT/4.3m 200-240V/32A power cord with a Type 46 plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: PDU power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#6657) - 4.3m (14-Ft) 1PH/32A Power Cord-Australia

This power cord provides power to a #5889, #7188 #9188, #7109, #EPTG, #EPTM, #EPTJ, #ECJM, #ECJG, #ECJJ, #ECJN, or #EPTN power distribution unit. It connects to a wall power outlet with a PDL plug.

- Attributes provided: Power connection for a PDU
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6658) - 4.3m (14-Ft) 1PH/30A (24A derated) Power Cord-Korea

This power cord provides power to a #5889, #7188, #9188, #7109, #EPTG, #EPTM, #EPTJ, #ECJM, #ECJG, #ECJJ, #ECJN, or #EPTN power distribution unit. It connects to a wall power outlet with a Korean plug.

- Attributes provided: Power connection for a PDU
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6659) - Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 15A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #76 (KETI). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types. The following countries/regions use the #6659 power cord to power the system and/or peripheral features requiring a power cord: Taiwan

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6660) - Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (125V/15A)

This power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #59 (NEMA 5-15). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types. 14-foot length.

This power cord meets the DENAN marking requirement in Japan.

- Attributes provided: Power Cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6665) - Power Cord 2.8m (9.2-ft), Drawer to IBM PDU, (250V/10A)

Standard IBM rack power jumper cord that goes from the system or I/O drawer to the rack power distribution unit (PDU). Cable has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and C20 on the other end (for IBM PDU C19 receptacle).
Note: For power jumper cord which attach to PDUs with C13 receptacles, use features such as #6577, #6458, #6671, or #6672.

- Attributes provided: Power jumper cord.
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6667) - 4.3m (14-Ft) 3PH/32A 380-415V Power Cord-Australia

#6667 is a 14-FT/4.3m 380-45V/32A power cord with a Type PDL plug which distributes power from a power source to a Power Distribution Unit.

- Attributes provided: PDU power cable
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6669) - Power Cord 4.3M (14-foot), Drawer to OEM PDU, (250V, 15A)

This power cord goes from the system or I/O drawer to the rack power distribution unit. Plug type #57 (NEMA 6-15). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types. 14-foot length. This power cord meets the DENAN marking requirement in Japan.

- Attributes provided: Power Cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6671) - Power Cord 2.7M (9-foot), Drawer to IBM PDU, 250V/10A

Standard IBM rack power cable that goes from the system or I/O drawer to the rack power distribution unit (PDU). Cable has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and C14 on the other end (for IBM PDU C13 receptacle). Note for different length C13/C14 cables see #6458 (4.3M) or #6672 (2.0M).

- Attributes provided: Power jumper cord.
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6672) - Power Cord 2M (6.5-foot), Drawer to IBM PDU, 250V/10A

Standard rack power cable that goes from the system or I/O drawer to the rack power distribution unit (PDU). Cable has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and C14 on the other end (for IBM PDU C13 receptacle). Note for different length C13/C14 cables see #6458 (4.3M) or #6671 (2.7M).

- Attributes provided: Power jumper cord.
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#6680) - Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)

This insulated power cord goes from the system and/or peripheral features to a wall-type outlet. Plug type #6 (AS 3112-1964 NZS 198). Refer to Corporate Bulletin C-B-2-4700-009 for a description of plug types.

The following countries/regions use the #6680 power cord to power the system and/or peripheral features requiring a power cord:

Australia, Fiji Islands, Kiribati, Nauru, New Zealand, Papua New Guinea, W. Samoa.

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#7109) - Intelligent PDU+, 1 EIA Unit, Universal UTG0247 Connector

This feature is for an intelligent AC power distribution unit (PDU+) that will allow the user to monitor the amount of power being used by the devices that are plugged in to this PDU+. This AC power distribution unit provides twelve C13 power outlets. It receives power through a UTG0247 connector. It can be used for many different countries and applications by varying the PDU to Wall Power Cord, which must be ordered separately. Each PDU requires one PDU to Wall Power Cord. Supported power cords include the following features: #6489, #6491, #6492, #6653, #6654, #6655, #6656, #6657, and #6658.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Twelve C13 outlets with Power Monitoring Capability
- Attributes required: none
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: When purchased on an MES order with a feature code rack. This PDU will be mounted in the rear side pockets until all 4 side pockets on the rack have been filled. Any additional PDUs on the order will be mounted in 1 unit of EIA rack space. When purchased as an MES order for addition to a rack in the field. This PDU may not fit in the side pockets of your rack due to a hardware interference with the rack, and may require mounting in 1 unit of rack EIA space. Insure rack space is available before placing the MES order for this PDU when it is being ordered for field installation.

## (#7118) - Environmental Monitoring Probe

The Environmental Monitoring Probe (EMP) enables you to remotely monitor environmental conditions. Using a standard Web browser, you can view the ambient temperature and humidity of the remote environment, as well as the status of two additional contact devices, such as a smoke detector or open-door sensor. The temperature/humidity probe plugs into a RJ45 connector an a PDU+. The EMP can be used with any Powerware UPS equipped with a 10/100 Mb ConnectUPS Web/SNMP Card (firmware 3.01 or higher). The EMP can be located up to 20m (65.6 feet) away.

- Attributes provided: Monitoring of temperature, humidity, and status of two contacts/ sensors. A one meter cat5 Ethernet cable, double sided hook and loop fabric, often called VELCRO(R) tape, two tie-wraps, and screw with wall anchor for mounting.
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Maximum support is 8x 7118 per 0553 rack and 8x 7118 per 0551 rack. Maximum of one 7118 per 7109 is supported.

## (#7188) - Power Distribution Unit

An AC Power Distribution Unit (PDU) which mounts in a 19" rack and provides twelve C13 power outlets. The #7188 has six 16A circuit breakers, with two power outlets per circuit breaker. System units and/or expansion units must use a power cord with a C14 plug to connect to the #7188.

One of the following line cords must be used to distribute power from a wall outlet to the #7188;

- #6489 - 14-Ft 3PH/32A Power Cord
- #6491 - 14-Ft 1PH/63A Power Cord
- #6492 - 14-Ft 1PH/48-60A Power Cord
- #6653 - 14-Ft 3PH/16A Power Cord
- #6654 - 14-Ft 1PH/24-30A Power Cord
- #6655 - 14-Ft 1PH/24-30A WR Power Cord
- #6656 - 14-Ft 1PH/32A Power Cord
- #6657 - 14-Ft 1PH/24A Power Cord
- #6658 - 14-Ft 1PH/24A Power Cord-Korea
- Attributes provided: Power Distribution Unit withTwelve C13 power outlets.
- Attributes required: none
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#7196) - Power Distribution Unit (US) - 1 EIA Unit, Universal, Fixed Power Cord

This AC power distribution unit provides six C19 power outlets. Fixed power cord (IEC309 60A plug (3P+G). This PDU requires 3-phase electrical service.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Six C19 power outlets
- Attributes required: 3 phase electical service
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#7802) - Ethernet Cable, 15m, Hardware Management Console to System Unit

This feature provides a fifteen meter long Ethernet cable for attachment of a Hardware Management Console to the system unit.

- Attributes provided: 15M Ethernet Cable
- Attributes required: Ethernet port on Hardware Management Console
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#8143) - Linux Software Preinstall

This feature indicates that the Linux operating system is to be preinstalled on the system. Requires feature number 5000.

- Attributes provided: Linux preinstall
- Attributes required: Feature number 5000.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#8144) - Linux Software Preinstall (Business Partners)

This feature indicates that the Linux operating system is to be preinstalled on the system. Requires feature number 5000 or 7305. This feature is only available to IBM Business Partner - Solution Providers and IBM Business Partner - Systems Integrators.

- Attributes provided: Linux preinstall
- Attributes required: Feature number 5000 or 7305.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#8845) - USB Mouse

The optical LED USB Mouse has 2 buttons and a scroll wheel that acts as a third button. Mouse cable is 1.8 meters long. OS does not support scrolling with the wheel. Business black with red scroll wheel.

- Attributes provided: 2-Button USB Mouse w/scroll wheel that acts as 3rd button.
- Attributes required: USB attachment Port
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#9169) - Order Routing Indicator- System Plant

This feature will be auto-selected by the Configurator Tool when required. Use of this feature will affect the routing of the order. Selection of this indicator will direct the order to a system plant for fulfillment.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9300) - Language Group Specify - US English

English language group for nomenclature and standard publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9387) - Specify mode-1 & CEC SAS port for EXP24 #5887/EL1S

(No longer available as of December 31, 2020)

Feature indicates that EXP24S SFF Gen2 Drawer (#5887 or EL1S) will be configured by IBM Manufacturing in Mode 1 (One group of 24 drive bays) with the two internal 6G SAS ports on the rear of the system unit. Dual IOA high performance/function storage backplane provides the two SAS ports.

Two YO cables connect the EXP24S to the SAS ports. Use the cable length appropriate to the configuration and select from features such as #ECBT, #ECBU, #ECBV or #ECBW.

IBM does not provide changes to the mode setting after #5887 or EL1S is shipped.

- Attributes provided: Mode 1 configuration define to IBM Manufacturing
- Attributes required: Dual IOA Storage Backplane, two SAS ports on rear of server, two Y0 cables, EXP24S drawer in mode1
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#9440) - New AIX License Core Counter

This feature is used to count the number of cores licensed to run AIX.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9441) - New IBM i License Core Counter

This feature is used to count the number of cores licensed to run IBM i.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9442) - New Red Hat License Core Counter

This feature is used to count the number of cores licensed to run Red Hat Linux.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9443) - New SUSE License Core Counter

This feature is used to count the number of cores licensed to run SUSE Linux.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9444) - Other AIX License Core Counter

This feature is used to count the number of existing AIX licenses transferred from another server.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9445) - Other Linux License Core Counter

This feature is used to count the number of existing Linux licenses transferred from another server.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9446) - 3rd Party Linux License Core Counter

This feature is used to count the number of cores licensed to run 3rd party Linux.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9447) - VIOS Core Counter

This feature is used to count the number of cores licensed to run VIOS (Virtual I/O Server).

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9449) - Other License Core Counter

This feature is used to count the number of other cores licensed.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9450) - Ubuntu Linux License Core Counter

This feature is used to count the number of cores licensed to run Ubuntu Linux.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9461) - Month Indicator

This month indicator is used to create a date stamp to enable CFR splitting and rejoining in order to circumvent the AAS maximum limitation of 30 systems entered on any one order. The quantity ordered for this feature is generated by eConfig.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9462) - Day Indicator

This day indicator is used to create a date stamp to enable CFR splitting and rejoining in order to circumvent the AAS maximum limitation of 30 systems entered on any one order. The quantity ordered for this feature is generated by eConfig.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 31 (Initial order maximum: 31)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9463) - Hour Indicator

This hour indicator is used to create a time stamp to enable CFR splitting and rejoining in order to circumvent the AAS maximum limitation of 30 systems entered on any one order. The quantity ordered for this feature is generated by eConfig.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 24 (Initial order maximum: 24)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9464) - Minute Indicator

This hour indicator is used to create a time stamp to enable CFR splitting and rejoining in order to circumvent the AAS maximum limitation of 30 systems entered on any one order. The quantity ordered for this feature is generated by eConfig.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 60 (Initial order maximum: 60)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9465) - Qty Indicator

This quantity indicator is used to specify the remaining, or N-1 quantity of CFR entities that need to be accumulated for rejoining. The quantity ordered for this feature is generated by eConfig.and is equal to N-1, where 'N' equals the total quantity of CFRs being rejoined.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9466) - Countable Member Indicator

This administrative indicator used to identify each CFR associated with a date/time stamp that is eligible for splitting and rejoining. The quantity ordered for this feature is generated by eConfig.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9700) - Language Group Specify - Dutch

Dutch language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9703) - Language Group Specify - French

French language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9704) - Language Group Specify - German

German language group for Nomenclature and Standard Publications.

- Attributes provided: Language specify
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9705) - Language Group Specify - Polish

Polish language group for Nomenclature and Standard Publications.

- Attributes provided: Language specify
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9706) - Language Group Specify - Norwegian

Norwegian language group for Nomenclature and Standard Publications.

- Attributes provided: Language specify
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9707) - Language Group Specify - Portuguese

Portuguese language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9708) - Language Group Specify - Spanish

Spanish language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9711) - Language Group Specify - Italian

Italian language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9712) - Language Group Specify - Canadian French

Canadian French language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9714) - Language Group Specify - Japanese

Japanese language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9715) - Language Group Specify - Traditional Chinese (Taiwan)

Traditional Chinese language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9716) - Language Group Specify - Korean

Korean language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9718) - Language Group Specify - Turkish

Turkish language group for nomenclature and publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9719) - Language Group Specify - Hungarian

Hungarian language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9720) - Language Group Specify - Slovakian

Slovakian language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#9721) - Language Group Specify - Russian

Russian language group for nomenclature and standard publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9722) - Language Group Specify - Simplified Chinese (PRC)

Simplified Chinese language group for nomenclature and standard publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9724) - Language Group Specify - Czech

Czech language group for nomenclature and standard publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9725) - Language Group Specify - Romanian

Romanian language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9726) - Language Group Specify - Croatian

Croatian language group for Nomenclature and Standard Publications.

- Attributes provided: Language specify
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9727) - Language Group Specify - Slovenian

Slovenian language group for Nomenclature and Standard Publications.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9728) - Language Group Specify - Brazilian Portuguese

Brazilian Portuguese language group for Nomenclature and Standard Publications.

- Attributes provided: Language specify
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#9729) - Language Group Specify - Thai

Thai language group for Nomenclature and Standard Publications.

- Attributes provided: Language specify
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

### (#EB27) - QSFP+ 40GbE Base-SR Transceiver

IBM QSFP+ optical tranceiver required for 40 Gbs ports which are not using copper QSFP+ transceiver.

- Attributes provided: QSFP+ tranceiver for 40 Gbs ports.
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB2B) - 1m (3.3-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)

QSFP+ cable is used for 40Gb-to-40Gb Ethernet connectivity. Clients can use this QSFP+ Direct Attach Cable for Ethenet connectivity. This copper cable has QSFP+ transceivers already attached to each end.

- Attributes provided: 1m QSFP+ to QSFP+ Cable
- Attributes required: QSFP/QSFP+ ports
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB2H) - 3m (9.8-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)

QSFP+ cable is used for 40Gb-to-40Gb Ethernet connectivity. Clients can use this QSFP+ Direct Attach Cable for Ethenet connectivity. This copper cable has QSFP+ transceivers already attached to each end.
Note: Do not use this cable between switches.

- Attributes provided: 3m QSFP+ to QSFP+ Cable
- Attributes required: QSFP/QSFP+ ports
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB2J) - 10m (30.3-ft), IBM Passive QSFP+ MTP Optical Cable

QSFP+ cable is used for 40Gb-to-40Gb Ethernet connectivity. Clients can use this QSFP+ Direct Attach Cable for Ethenet connectivity.

- Attributes provided: 10m QSFP+ to QSFP+ Cable
- Attributes required: QSFP/QSFP+ ports with optical transceivers
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB2K) - 30m (90.3-ft), IBM Passive QSFP+ MTP Optical Cable

QSFP+ cable is used for 40Gb-to-40Gb Ethernet connectivity. Clients can use this QSFP+ Direct Attach Cable for Ethenet connectivity.

- Attributes provided: 30m QSFP+ to QSFP+ Cable
- Attributes required: QSFP/QSFP+ ports with optical transceivers
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB2L) - AC Power Supply - 900W

One 100 - 127V or 200 - 240V, 900 watt AC power supply.

The power supply is configurated in a one plus one or two plus two configuration to provide redundancy. Supported in rack and tower models.

To be operational, a minimum power supply in the CEC base enclosure is required. If there is a power supply failure, any of the power supplies can be exchanged without interrupting the operation of the system.

This power supply is not supported on all models.

- Limitation: Feature EB2L is not available in India.
- Attributes provided: AC Power Supply.
- Attributes required: Supported on Tower or Rack models.
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB2M) - AC Power Supply - 1400W for Server (200-240 VAC)

One 200 - 240V, 1400 watt AC power supply.

The power supply is configurated in a one plus one for a 2U server or two plus two for a 4U server configuration to provide redundancy. Supported in rack models only.

To be operational, a minimum power supply in the CEC base enclosure is required. If there is a power supply failure, any of the power supplies can be exchanged without interrupting the operation of the system.

This power supply is not supported on all models.

- Attributes provided:
  AC Power Supply.
- Attributes required: Supported on rack model only. Requires input voltage of 200 - 240 VAC.
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB3Z) - Lift tool based on GenieLift GL-8 (standard)

This feature delivers the Low-Cost Lift Tool (based on GenieLift GL-8 (standard)) for IBM servers.

Feature #EB3Z is a feature that is available on multiple server types (POWER S812L, S822L, S824L, S814, S824, S812, S822, E850C, E850, E880C, E870C, E880, and E870, also the rack models 7965-S42, 7014-T00, and 7014-T42). Failure to have at least one Lift tool available in a location may result in delayed or prolonged maintenance times.

A lift tool raises and lowers servers and I/O drawers so they can be placed into or removed from standard 19-inch racks. It allows heavier equipment to be handled more safely by fewer people. Lift tool feature EB3Z has a hand crank to lift and position up to 181 kg (400 lbs). The lift tool feature EB3Z operating length and width are 88.3 cm x 62.9 cm (34 3/4 x 24 3/4 in). It has rollers which allow it to be moved to different racks in the data center.

- Attributes provided: Lift Tool
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB46) - 10GbE Optical Transceiver SFP+ SR

One optical transceiver for 10Gb Ethernet adapter such as #EC2S or #EC2R and also #EC2U or #EC2T using SFP+ SP. Does not include cable.

The 10 Gb optical transceiver is capable up to 300 M through the OM3 cable or 82 M through OM2 cable. Either one or both of the adapter's two SFP+ ports can be populated.

- Attributes provided: Optical Transceiver SFP+ SR 10Gb
- Attributes required: SFP+ socket
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB47) - 25GbE Optical Transceiver SFP28

One optical transceiver for 25Gb Ethernet adapter such as #EC2U or #EC2T using SFP28. Does not include cable.

The 25 Gb optical transceiver is capable up to 100 m through the OM4 cable or 70 M through OM3 cable. Either one or both of the adapters two SFP28 ports can be populated. Note: The SFP28 25GbE transceiver only supports 25GbE speeds.

- Attributes provided: SFP28 optical transceiver
- Attributes required: SFP28 socket
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB4J) - 0.5m SFP28/25GbE copper Cable

Feature EB4J is a passive 0,5 meter copper cable that contains a single high-speed copper pair, operating at data rates of up to 25 Gb/s. This cable can be used for either 25Gb Ethernet adapters or switches. Built onto each end of the cable is a passive SFP28 copper cable transceiver. Cables are available in various lengths: 0.5M - #EB4J, 1.0M=#EB4K, 1.5M=#EB4L, 2.0M=#EB4M

- Attributes provided: Copper cable with SFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB4K) - 1.0m SFP28/25GbE copper Cable

Feature EB4K is a passive 1.0 meter copper cable that contains a single high-speed copper pair, operating at data rates of up to 25 Gb/s. This cable can be used for either 25Gb Ethernet adapters or switches. Built onto each end of the cable is a passive SFP28 copper cable transceiver. Cables are available in various lengths: 0.5M - #EB4J, 1.0M=#EB4K, 1.5M=#EB4L, 2.0M=#EB4M

- Attributes provided: Copper cable with SFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB4L) - 1.5m SFP28/25GbE copper Cable

(No longer available as of December 31, 2020)

Feature EB4L is a passive 1.5 meter copper cable that contains a single high-speed copper pair, operating at data rates of up to 25 Gb/s. This cable can be used for either 25Gb Ethernet adapters or switches. Built onto each end of the cable is a passive SFP28 copper cable transceiver. Cables are available in various lengths: 0.5M - #EB4J, 1.0M=#EB4K, 1.5M=#EB4L, 2.0M=#EB4M

- Attributes provided: Copper cable with SFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB4M) - 2.0m SFP28/25GbE copper Cable

Feature EB4M is a passive 2.0 meter copper cable that contains a single high-speed copper pair, operating at data rates of up to 25 Gb/s. This cable can be used for either 25Gb Ethernet adapters or switches. Built onto each end of the cable is a passive SFP28 copper cable transceiver. Cables are available in various lengths: 0.5M - #EB4J, 1.0M=#EB4K, 1.5M=#EB4L, 2.0M=#EB4M

- Attributes provided: Copper cable with SFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB4P) - 2.0m QSFP28/100GbE copper split Cable to SFP28 4x25GbE

Feature EB4P is a 2.0 meter, active optical 100Gb E to 4x25Gb E splitter cable. It provides connectivity between system units with a QSFP28 port on one side and up to four different SFP28 ports on the other side, such as a switch and four servers.

- Attributes provided: Copper splitter cable with QSFP28 and 4x SFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB4Z) - Service wedge shelf tool kit for EB3Z

This feature provides a separate tool kit to replace the flat shelf with a wedge/angle shelf at the client site.
Note: EB4Z wedge shelf is IBM SSR use only (due to safety labels/ instructions/certifications only for IBM and not filed for clients). A client can order feature EB4Z to ensure the tool is conveniently located on site in case an IBM SSR needed to use it and do not want to wait for the SSR to locate and bring in an EB4Z or to schedule additional personnel to manually handle server installation/removal from the rack.

Client is free to use EB3Z (without EB4Z) for their normal work.

- Attributes provided: Wedge/angle shelf
- Attributes required: Feature EB3Z
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

### (#EB50) - 0.5m EDR IB Copper Cable QSFP28

0.5 meter length copper twinax cable, also called a DAC (Direct Attached Copper) cable. The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a passive Quad (4-channel) Small Form-Factor Pluggable (QSFP28) copper cable transceiver. Cable can also be used for FDR IB (56Gb). Cables are available in various lengths: 0.5m = #EB50, 1m = #EB51, 2m = #EB52, 1.5m = #EB54 See also optical fiber cables for longer lengths such as #EB5A through #EB5H.

- Attributes provided: Copper twinax cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EB51) - 1.0m EDR IB Copper Cable QSFP28

1.0 meter length copper twinax cable, also called a DAC (Direct Attached Copper) cable. The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a passive Quad (4-channel) Small Form-Factor Pluggable (QSFP28) copper cable transceiver. Cable can also be used for FDR IB (56Gb). Cables are available in various lengths: 0.5m = #EB50, 1m = #EB51, 2m = #EB52, 1.5m = #EB54 See also optical fiber cables for longer lengths such as #EB5A through #EB5H.

- Attributes provided: Copper twinax cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB52) - 2.0M EDR IB Copper Cable QSFP28

2.0 meter length copper twinax cable, also called a DAC (Direct Attached Copper) cable. The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a passive Quad (4-channel) Small Form-Factor Pluggable (QSFP28) copper cable transceiver. Cable can also be used for FDR IB (56Gb). Cables are available in various lengths: 0.5M = #EB50, 1M = #EB51, 2M = #EB52, 1.5M = #EB54 See also optical fiber cables for longer lengths such as #EB5A through #EB5H.

- Attributes provided: Copper twinax cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB54) - 1.5M EDR IB Copper Cable QSFP28

1.5 meter length copper twinax cable, also called a DAC (Direct Attached Copper) cable. The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a passive Quad (4-channel) Small Form-Factor Pluggable (QSFP28) copper cable transceiver. Cable can also be used for FDR IB (56Gb). Cables are available in various lengths: 0.5M = #EB50, 1M = #EB51, 2M = #EB52, 1.5M = #EB54 See also optical fiber cables for longer lengths such as #EB5A through #EB5H.

- Attributes provided: Copper twinax cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB59) - 100GbE Optical Transceiver QSFP28

One optical transceiver for 100Gb Ethernet adapter such as #EC3L or #EC3M or #EC66 or #EC67 using QSFP28. Does not include cable.

See also AOC fiber cables which include QSFP28 transceivers EB5R - EB5Y.

- Attributes provided: Optical Transceiver QSFP28 100Gb.
- Attributes required: Port on adapter with QSFP28 socket.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB5A) - 3M EDR IB Optical Cable QSFP28

3 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EB5B) - 5M EDR IB Optical Cable QSFP28

5 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5C) - 10M EDR IB Optical Cable QSFP28

10 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5D) - 15M EDR IB Optical Cable QSFP28

15 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5E) - 20M EDR IB Optical Cable QSFP28

20 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5F) - 30M EDR IB Optical Cable QSFP28

30 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5G) - 50M EDR IB Optical Cable QSFP28

50 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5H) - 100M EDR IB Optical Cable QSFP28

100 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver. Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54. Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5J) - 0.5M 100GbE Copper Cable QSFP28

0.5 meter length passive copper cable with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches. Copper cable is also called "copper twinax" or "DAC" (Direct Attach Copper).

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EB5M (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Copper cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5K) - 1.0M 100GbE Copper Cable QSFP28

1.0 meter length passive copper cable with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches. Copper cable is also called "copper twinax" or "DAC" (Direct Attach Copper).

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EB5M (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Copper cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5L) - 1.5M 100GbE Copper Cable QSFP28

1.5 meter length passive copper cable with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches. Copper cable is also called "copper twinax" or "DAC" (Direct Attach Copper).

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EB5M (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Copper cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5M) - 2.0M 100GbE Copper Cable QSFP28

2.0 meter length passive copper cable with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches. Copper cable is also called "copper twinax" or "DAC" (Direct Attach Copper).

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EB5M (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Copper cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5N) - 25M EDR IB Optical Cable QSFP28

(No longer available as of December 31, 2020)

25 meter length optical fiber cable, also called an AOC (Active Optical Cable). The cable can be used for either 100Gb EDR InfiniBand (IB) adapters or IB switches. Built onto each end of the cable is a active Quad (4-channel) Small Form-Factor Pluggable (QSFP28) optical cable transceiver.

Cables are available in various lengths: 3m = #EB5A, 5M = #EB5B, 10M = #EB5C, 15M = #EB5D, 20M = #EB5E, 25M = #EB5N, 30M = #EB5F, and 50M = #EB5G, 100M = #EB5H. See also copper twinax cables for shorter lengths such as #EB50 through #EB54.

Limitation: Adapter and switch must have been manufactured by Mellanox to use this cable. Cable is not supported for FDR IB (56Gb).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5R) - 3M 100GbE Optical Cable QSFP28 (AOC)

3 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5S) - 5M 100GbE Optical Cable QSFP28 (AOC)

5 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5T) - 10M 100GbE Optical Cable QSFP28 (AOC)

10 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5U) - 15M 100GbE Optical Cable QSFP28 (AOC)

15 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5V) - 20M 100GbE Optical Cable QSFP28 (AOC)

20 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5W) - 30M 100GbE Optical Cable QSFP28 (AOC)

30 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5X) - 50M 100GbE Optical Cable QSFP28 (AOC)

50 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB5Y) - 100M 100GbE Optical Cable QSFP28 (AOC)

100 meter length Active Optical fiber Cable (AOC) with QSFP28 tranceivers on each end. The cable used for 100Gb Ethernet adapters or switches.

Cables are available in various lengths. See shorter passive copper cables #EB5J - #EJM (0.5M - 2.0M) or see active optical fiber cables #EJ5R - #EJ5Y (3M - 100M).

- Attributes provided: Optical fiber cable with QSFP28 transceivers
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EB72) - IBM i 7.2 Indicator

This feature is used to indicate the correct level of code when IBM i is specified.

- Attributes provided: IBM i 7.2 Indicator
- Attributes required: IBM i operating system
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EB73) - IBM i 7.3 Indicator

This feature is used to indicate the correct level of code when IBM i is specified.

- Attributes provided: IBM i 7.3 Indicator
- Attributes required: IBM i operating system
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: Does not apply

## (#EB74) - IBM i 7.4 Indicator

This feature is used to indicate the correct level of code when IBM i is specified.

- Attributes provided: IBM i 7.4 Indicator
- Attributes required: IBM i operating system
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required:
  - IBM i 7.4 supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EC07) - Slim Rear Acoustic Door

Slim rear acoustic door for use on the 7014-T42 or server feature #0553 2.0M racks. Depth of this acoustic door is only about 113 mm (4.45 inches).

Physically #EC07 and #EC08 are identical, but have two feature codes to assist IBM sales configurator logic. #EC07 designates a rear door and #EC08 designates a front door.

- Attributes provided: Rear Acoustic door
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EC08) - Slim Front Acoustic Door

Slim front acoustic door for use on the 7014-T42 or server feature #0553 2.0M racks. Depth of this acoustic door is only about 113 mm (4.45 inches).

Physically #EC07 and #EC08 are identical, but have two feature codes to assist IBM sales configurator logic. #EC07 designates a rear door and #EC08 designates a front door.

- Attributes provided: Acoustic front door
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EC2S) - PCIe3 2-Port 10Gb NIC&ROCE SR/Cu Adapter

This PCIe Gen3 Ethernet adapter provides two 10 Gb SFP+ ports. The adapter supports both NIC and IBTA RoCE standards. RoCE is Remote Direct Memory Access (RDMA) over Converged Ethernet. Using RoCE, the adapter can support significantly greater bandwidth with low latency and minimize CPU overhead by more efficiently using memory access. This offloads the CPU from I/O networking tasks, improving performance and scalability.

Cables: For 10GbE, IBM offers Direct Attach (DAC) cables up to 5m. SFP-based transceivers are included on each end of the cables. See features EN01, EN02, EN03.

Transceivers: IBM qualifies and supports SFP+ optical transceiver (FC EB46) to install into the adapter. Customers can also use their own optical cabling and SFP+ optical transceiver for the other end. The 10 Gb optical transceiver is capable up to 300 M through the OM3 cable or 82 M through OM2 cable. Either one or both of the adapter's two SFP+ ports can be populated.

Feature code #EC2R and #EC2S have identical electronics and function and CCIN (58FA), but have different tail stock brackets. #EC2R is low profile and #EC2S is full high. The adapter is based on a Mellanox ConnectX-4 adapter which uses a ConnectX-4 Lx EN Network Controller.

Attributes:

- PCI Express 3.0 (up to 8GT/s) x8
- PCIe Gen 3.0 compliant, 1.1 and 2.0 compatible
- RDMA over Converged Ethernet (RoCE)
- NIC and RoCE are concurrently supported
- RoCE supported on Linux and AIX (7.2 and later)
- NIC supported on all OSes
- IEEE 802.3ae (10Gb Ethernet), IEEE 802.3ad (Link Aggregation & Failover), IEEE 802.3az (Energy Efficient Ethernet), IEEE 802.1Q/P (VLAN Tagging), IEEE 802.10au (Congestion Notification), IEEE 802.1Qbg, IEEE 802.3Qaz D0.2 (ETS), IEEE 802.1Qbb D1.0 (PFC), IEEE 1588v2 (PTP)
- Jumbo frame support up to 9.6KB
- VXLAN and NVGRE Overlay Network offload support
- TCP/UDP/IP stateless offload
- TCP checksum offload
- TCP segmentation offload
- UDP checksum offload
- MSI-X, MSI and support of legacy pin interrup
- NIM boot support
- PowerVM SR-IOV support
- Attributes provided: 2-port 10Gb Ethernet Adapter
- Attributes required: Full high PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 13 (Initial order maximum: 13)
- OS level required:
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - AIX supported
  - IBM i 7.3 TR8, or later
  - IBM i 7.4 TR2, or later

  Notes:
  - IBM i supports dedicated driver for the NIC function.
  - IBM i supports native SR-IOV for the NIC function.
  - IBM i 7.4 also adds support for dedicated ROCE and native SR-IOV ROCE, which is used only by IBM Db2 Mirror for i. 'IBM i native SR-IOV ROCE' and 'IBM i dedicated ROCE' supported.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - PowerVM SR-IOV support for the NIC function.
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC2U) - PCIe3 2-Port 25/10Gb NIC&ROCE SR/Cu Adapter

This PCIe Gen3 Ethernet adapter provides two 25/10 Gb SFP28 ports. The adapter supports both NIC and IBTA RoCE standards. RoCE is Remote Direct Memory Access (RDMA) over Converged Ethernet. Using RoCE, the adapter can support significantly greater bandwidth with low latency and minimize CPU overhead by more efficiently using memory access. This offloads the CPU from I/O networking tasks, improving performance and scalability.

Cables: For 25GbE, IBM offers SFP28 Passive Copper 25Gb Ethernet cables up to 2m. SFP28 based transceivers are included on each end of these cables. See features EB4J, EB4K, EB4L, and EB4M for a 0.5M, 1.0M, 1.5M and 2.0M copper cable.

For 10GbE, IBM offers Direct Attach (DAC) cables up to 5m. SFP-based transceivers are included on each end of the cables. See features EN01, EN02, EN03.

Transceivers: For 25 GbE, IBM qualifies and supports SFP28 optical transceiver (FC EB47) to install into the adapter. Customers can also use their own optical cabling and SFP28 optical transceiver for the other end. The 25 Gb optical transceiver is capable up to 100 m through the OM4 cable or 70 M through OM3 cable. Either one or both of the adapter's two SFP28 ports can be populated.
Note: The (FC EB47) SFP28 25GbE transceiver only supports 25GbE speeds.

For 10 GbE, IBM qualifies and supports SFP+ optical transceiver (FC EB46) to install into the adapter. Customers can also use their own optical cabling and SFP+ optical transceiver for the other end. The 10 Gb optical transceiver is capable up to 300 M through the OM3 cable or 82 m through OM2 cable. Either one or both of the adapter's two SFP28 ports can be populated.

Feature code #EC2T and #EC2U have identical electronics and function and CCIN (58FB), but have different tail stock brackets. #EC2T is low profile and #EC2U is full high. The adapter is based on a Mellanox ConnectX-4 adapter which uses a ConnectX-4 Lx EN Network Controller.

Attributes:

- PCI Express 3.0 (up to 8GT/s) x8
- PCIe Gen 3.0 compliant, 1.1 and 2.0 compatible
- RDMA over Converged Ethernet (RoCE)
- NIC and RoCE are concurrently supported
- RoCE supported on Linux and AIX (7.2 and later)
- NIC supported on all OSes
- IEEE 802.3ae (25Gb or 10Gb Ethernet), IEEE 802.3ad (Link Aggregation & Failover), IEEE 802.3az (Energy Efficient Ethernet), IEEE 802.1Q/P (VLAN Tagging), IEEE 802.10au (Congestion Notification), IEEE 802.1Qbg, IEEE 802.3Qaz D0.2 (ETS), IEEE 802.1Qbb D1.0 (PFC), IEEE 1588v2 (PTP)
- Jumbo frame support up to 9.6KB
- VXLAN and NVGRE Overlay Network offload support
- TCP/UDP/IP stateless offload
- TCP checksum offload
- TCP segmentation offload
- UDP checksum offload
- MSI-X, MSI and support of legacy pin interrup
- NIM boot support
- PowerVM SR-IOV support
- Attributes provided: 2-port 25/10Gb Ethernet Adapter
- Attributes required: Full high PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 13 (Initial order maximum: 13)
- OS level required:
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - AIX supported
  - IBM i 7.3 TR8, or later
  - IBM i 7.4 TR2, or later

  Notes:
  - IBM i supports dedicated driver for the NIC function.
  - IBM i supports native SR-IOV for the NIC function.
  - IBM i 7.4 also adds support for dedicated ROCE and native SR-IOV ROCE, which is used only by IBM Db2 Mirror for i. 'IBM i native SR-IOV ROCE' and 'IBM i dedicated ROCE' supported.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - PowerVM SR-IOV support for the NIC function.
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC38) - PCIe3 2-port 10GbE NIC&RoCE SFP+ Copper Adapter

This PCIe Gen3 adapter provides two 10 Gb SFP+ ports for copper twinax cabling/transceivers. The adapter supports both NIC and IBTA RoCE standards. RoCE is Remote Direct Memory Access (RDMA) over Converged Ethernet. Using RoCE, the adapter can support significantly greater bandwidth with low latency and minimize CPU overhead by more efficiently using memory access. This offloads the CPU from I/O networking tasks, improving performance and scalability.

Active Copper twinax cables up to 5 meter in length are supported such as provided by feature #EN01, #EN02 or #EN03. These cables also include copper transceivers. Active cables differ from passive cables.

Feature code #EC37 and #EC38 have identical electronics and function and CCIN (57BC), but have different tail stocks. #EC37 is low profile and #EC38 is full high. Compared to EC2M/EC2N, the EC37/ EC38 have identical application capability, but different cabling (optical fiber vs copper twinax). The EC37/EC38 is based on the Mellanox ConnectX-3 Pro ASIC and is newer technology than previous features EC27/EC28.

Details for the ports include:

- AIX NIM and Linux Network Install are supported.
- IBTA RoCE v2 support.
- IEEE 802.3ae (10Gb Ethernet), IEEE 802.3ad (Link Aggregation & Failover), IEEE 802.3az (Energy Efficient Ethernet), IEEE 802.1Q/P (VLAN Tagging), IEEE 802.10au (Congestion Notification), IEEE 802.1Qbg, IEEE 802.3Qaz D0.2 (ETS), IEEE 802.1Qbb D1.0 (PFC), IEEE 1588v2 (PTP)

- Jumbo frame support up to 9.6KB
- VXLAN and NVGRE Overlay Network offload support
- TCP/UDP/IP stateless offload
- TCP checksum offload
- TCP segmentation offload
- UDP checksum offload
- MSI-X, MSI and support of legacy pin interrup
- Attributes provided: 2-port 10Gb Ethernet Adapter with NIC and/or RoCE capability
- Attributes required: PCIe Gen3 or Gen2 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 0)
- OS level required:
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - AIX supported
  - IBM i supported only with VIOS. Only virtual ethernet NIC is supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
- Editor note:
  - NIC capability support only.
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC3B) - PCIe3 2-Port 40GbE NIC RoCE QSFP+ Adapter

PCIe Gen3 adapter provides two 40 Gb Ethernet QSFP+ ports. NIC and IBTA RoCE protocols are supported.

RoCE is Remote Direct Memory Access (RDMA) over Converged Ethernet. RoCE can support significantly greater bandwidth with low latency and minimize CPU overhead by more efficiently using memory access. This offloads the CPU from I/O networking tasks, improving performance and scalability.

The #EC3A/EC3B adapter does not include transceivers. Shorter distance copper cables include transceivers on the end of the QSFP+ cable (see #EB2B (1m), #EB2H (3m), #ECBN (5m)). For longer distance use two optical SR transceiver (two #EB27). QSFP+ optical cables to be used with the #EB27 transceiver are #EB2J (10m) or #EB2K (30m). Do not mix copper and optical on the same adapter.

Feature code #EC3A and #EC3B have identical electronics and function and the same CCIN (57BD), but they have different tail stocks. #EC3A is low profile and #EC3B is full height.

AIX NIM and Linux Network Install are supported.

- Attributes provided: 2-Port 40GbE NIC and RoCE (no transceiver)
- Attributes required: PCIe Gen2 or Gen3 slot (Gen3 preferred). Two Transceivers; QSFP+ cabling
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - AIX supported
  - IBM i only supported through VIOS
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported. NIC capability only.

## (#EC3F) - PCIe3 2-port 100Gb EDR IB Adapter x16

The PCIe Gen3 x16 2-port InfiniBand EDR adapter provides high speed connectivity with other servers or IB switches. Each port maximum of 100Gb assumes no other system and/or switch bottlenecks are present. A PCIe Gen3 x16 PCIe slot is required. This adapter is sourced from Mellanox Corporation based on ConnectX-4 technology. The adapter supports the InfiniBand Trade Association (IBTA) specification version 2.

The two 100Gb ports have QSFP+ connections which support EDR cables, either EDR DAC or EDR optical. One adapter can support either or both types of cable. The user can choose to cable up just one port if they desire. Transceivers are included in the cables. IBM cable features EB50-EB54 (copper shorter distance) and #EB5A-EB5H (optical longer distance) are supported or their copper or optical Mellanox equivalents are supported. Other cables are not supported.

#EC3E and #EC3F adapters are electronically and functionally identical with the same CCIN of 2CEA. #EC3E has a low profile tailstock bracket. #EC3F has a full high tailstock bracket. See also #EC3T and #EC3U for a 1-port version of this adapter.

Limitation: Adapter does not fit in x8 PCIe slot. Adapter is not supported in a PCIe Gen3 I/O drawer.

- Attributes provided: EDR InfiniBand PCIe Adapter
- Attributes required: available x16 PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - AIX not supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Limitation: Only supported for rack configuration.
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC3M) - PCIe3 2-port 100GbE (NIC&RoCE) QSFP28 Adapter x16

This PCIe Gen3 Ethernet x16 adapter provides two 100 Gb QSFP28 ports. The adapter supports both NIC and IBTA RoCE standards. RoCE is Remote Direct Memory Access (RDMA) over Converged Ethernet. Using RoCE, the adapter can support significantly greater bandwidth with low latency and minimize CPU overhead by more efficiently using memory access. This offloads the CPU from I/O networking tasks, improving performance and scalability.

IBM offers either passive copper twinax cables up to 2 meter in length or active optical cables up to 100 meters in length. See features #EB5J - #EB5M for a 0.5M, 1.0M, 1.5M and 2.0M copper cable. See features #EB5R - #EB5Y for a 3M, 5M, 10M, 15M, 20M, 30M, 50M or 100M active optical cable. Transceivers are included on each end of these QSFP28 cables. Alternatively to the above supported cables, you may chose to order an IBM qualified and supported QSFP28 optical transceiver (feature #EB59) to put into the adapter and provide your own 100GE optical cabling with your own QSP28 optical transceiver for the other end.

Either one or both of the adapter's two QSP28 ports can be populated. When two ports are filled, both can have copper cables, both can have optical cables, or one can be copper and one can be optical.

Feature code #EC3L and #EC3M have identical electronics and function and CCIN (2CEC), but have different tail stock brackets. #EC3L is low profile and #EC3M is full high. The adapter is based on a Mellanox ConnectX-4 adapter which uses a ConnectX-4 EN Network Controller.

Attributes:

- PCI Express 3.0 (up to 8GT/s) x16
- PCIe Gen 3.0 compliant, 1.1 and 2.0 compatible
- RDMA over Converged Ethernet (RoCE)
- NIC and RoCE are concurrently supported
- RoCE supported on Linux and AIX (7.2 and later)
- NIC supported on all OSes
- TCP/UDP/IP stateless offload
- LSO, LRO, checksum offload
- NIM boot support
- Backward compatible with 40Gb Ethernet when using compatible cables/transceivers.
- Attributes provided: 2-port 100Gb Ethernet Adapter
- Attributes required: x16 PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - AIX supported
  - IBM i 7.4 TR2, or later
  - IBM i 7.3 TR8, or later

  Notes:

  - IBM i supports dedicated driver for the NIC function.
  - IBM i supports native SR-IOV for the NIC function.
  - IBM i 7.4 also adds support for dedicated ROCE and native SR-IOV ROCE, which is used only by IBM Db2 Mirror for i. 'IBM i native SR-IOV ROCE' and 'IBM i dedicated ROCE' supported.
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
- Editor note:
  - PowerVM SR-IOV support for the NIC function.
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC3U) - PCIe3 1-port 100Gb EDR IB Adapter x16

The PCIe Gen3 x16 1-port InfiniBand EDR adapter provides high speed connectivity with other servers or IB switches. The port's maximum of 100Gb assumes no other system and/or switch bottlenecks are present. A PCIe Gen3 x16 PCIe slot is required. This adapter is sourced from Mellanox Corporation based on ConnectX-4 technology. The adapter supports the InfiniBand Trade Association (IBTA) specification version 2.

The 100Gb port has a QSFP+ connection which supports EDR cables, either EDR DAC or EDR optical. Transceivers are included in the cables. IBM cable features EB50-EB54 (copper shorter distance) and #EB5A-EB5H (optical longer distance) are supported or their copper or optical Mellanox equivalents are supported. Other cables are not supported.

#EC3T and #EC3U adapters are electronically and functionally identical with the same CCIN of 2CEB. Feature #EC3T has a low profile tailstock bracket and feature #EC3U has a full high tailstock bracket. See also #EC3E and #EC3F for a 2-port version of this adapter.

Limitation: Adapter does not fit in x8 PCIe slot. Adapter is not supported in a PCIe Gen3 I/O drawer.

- Attributes provided: EDR InfiniBand PCIe Adapter
- Attributes required: available x16 PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - AIX not supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Limitation: Only supported for rack configuration.
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC46) - PCIe2 4-Port USB 3.0 Adapter

(No longer available as of December 31, 2020)

The PCIe Gen2 x8 short 4-port USB 3.0 adapter provides support for USB devices. In applications that require the use of an USB extension cable for keyboards, use one #4256 per port. The #EC45 and #EC46 USB adapters are electroncially identical with the same 58F9 CCIN. They differ physically in their tailstock. #EC45 is low profile and #EC46 is full high.

- Attributes provided: Connectivity with USB 2.0 - 3.0 capable devices
- Attributes required: One available full height PCIe slot.
- Minimum required: 0
- Maximum allowed: 11 (Initial order maximum: 11)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EC5B) - PCIe3 x8 1.6 TB NVMe Flash Adapter for AIX/Linux

The PCIe3 x8 1.6 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 3 (Gen3) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

CCIN is 58FC.

Feature #EC5G and #EC5B are identical cards except that the tailstock bracket is different. #EC5G fits a low profile PCIe slot. #EC5B fits a full high PCIe slot. See also #EC5D/EC5F for a card with more memory.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes are used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.
Note: NVMe Flash adapters #EC5B can be used to meet minimum AIX/ Linux SSD/HDD and backplane requirements.

- Attributes provided: 1.6 TB of low latency flash memory with boot capability
- Attributes required: PCIe slot in system unit
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - Red Hat Enterprise Linux
  - Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - IBM i requires VIOS
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Assignment to the VIOS supported
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC5D) - PCIe3 x8 3.2 TB NVMe Flash Adapter for AIX/Linux

The PCIe3 x8 3.2 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 3 (Gen3) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

CCIN is 58FD.

Feature #EC5C and #EC5D are identical cards except that the tailstock bracket is different. #EC5C fits a low profile PCIe slot. #EC5D fits a full high PCIe slot. See also #EC5F for a card with more memory.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes are used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.
Note: NVMe Flash adapters #EC5D can be used to meet minimum AIX/ Linux SSD/HDD and backplane requirements.

- Attributes provided: 3.2 TB of low latency flash memory with boot capability
- Attributes required: PCIe slot in system unit
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - Red Hat Enterprise Linux
  - Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - IBM i requires VIOS
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Assignment to the VIOS supported
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC5F) - PCIe3 x8 6.4 TB NVMe Flash Adapter for AIX/Linux

The PCIe3 x8 6.4 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 3 (Gen3) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

CCIN is 58FE.

Feature #EC5E and #EC5F are identical cards except that the tailstock bracket is different. #EC5E fits a low profile PCIe slot. #EC5F fits a full high PCIe slot. See also EC5D for a card with less memory.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes are used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.
Note: NVMe Flash adapters #EC5F can be used to meet minimum AIX/ Linux SSD/HDD and backplane requirements.

- Attributes provided: 6.4 TB of low latency flash memory with boot capability
- Attributes required: PCIe slot in system unit
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - Red Hat Enterprise Linux
  - Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - IBM i requires VIOS
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Assignment to the VIOS supported
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC5V) - Enterprise 6.4 TB SSD PCIe4 NVMe U.2 module for AIX/Linux

Enterprise 6.4 TB NVMe SFF U.2 15mm SSD (Solid State Drive) is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) drive. The SSD can be used in any U.2 15mm NVMe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance architecture and command protocol that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features #EC5V and #EC5W are physically identical drives with the same CCIN of 59BA. Different feature codes to help the IBM configuration tools understand how the NVMe is used. Feature EC5V indicates usage by AIX, Linux or VIOS in which the SSD is formatted in 4096 byte sectors. Feature EC5W indicates usage by IBM i in which the SSD is formatted in 4160 byte sectors.

This Enterprise solid-state drive is rated at 3 DWPD (Drive Writes Per Day) calculated over a 5-year period for 100% (4K bytes or larger) random write workloads. Use for workloads within this rating are fully supported and will maintain high reliability and MTBF.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.Writes past the SSD's maximum write capacity will continue to work for some period of time, but perform much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the SSD if enabled by the operating system (OS) and system administrator. Customers are recommended to monitor SMART log critical information via the appropriate OS utility to observe drive life remaining information. IBM NVMe SSD failures will be replaced during the standard warranty and maintenance period for SSD's that have not reached the maximum number of write cycles. SSD's that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Boot supported. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

- Attributes provided: PCIe4 NVMe SSD
- Attributes required: SFF U.2 slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EC5W) - Enterprise 6.4 TB SSD PCIe4 NVMe U.2 module for IBM i

Enterprise 6.4 TB NVMe SFF U.2 15mm SSD (Solid State Drive) is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) drive. The SSD can be used in any U.2 15mm NVMe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance architecture and command protocol that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features #EC5V and #EC5W are physically identical drives with the same CCIN of 59BA. Different feature codes to help the IBM configuration tools understand how the NVMe is used. Feature EC5V indicates usage by AIX, Linux or VIOS in which the SSD is formatted in 4096 byte sectors. Feature EC5W indicates usage by IBM i in which the SSD is formatted in 4160 byte sectors.

This Enterprise solid-state drive is rated at 3 DWPD (Drive Writes Per Day) calculated over a 5-year period for 100% (4K bytes or larger) random write workloads. Use for workloads within this rating are fully supported and will maintain high reliability and MTBF.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.Writes past the SSD's maximum write capacity will continue to work for some period of time, but perform much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the SSD if enabled by the operating system (OS) and system administrator. Customers are recommended to monitor SMART log critical information via the appropriate OS utility to observe drive life remaining information. IBM NVMe SSD failures will be replaced during the standard warranty and maintenance period for SSD's that have not reached the maximum number of write cycles. SSD's that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Boot supported. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

- Attributes provided: PCIe4 NVMe SSD
- Attributes required: SFF U.2 slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EC5X) - Mainstream 800 GB SSD PCIe3 NVMe U.2 module for AIX/Linux

Mainstream 800 GB NVMe SFF U.2 7mm SSD (Solid State Drive) is a Peripheral Component Interconnect Express (PCIe) generation 3 (Gen3) drive. The SSD can be used in any U.2 7mm NVMe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance architecture and command protocol that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Feature #EC5X has CCIN of 59B7. Feature EC5X indicates usage by AIX, Linux or VIOS in which the SSD is formatted in 4096 byte sectors.

This Mainstream solid-state drive is rated at 2.4 DWPD (Drive Writes Per Day) calculated over a 5-year period for 100% (4K bytes or larger) random write workloads. Use for workloads within this rating are fully supported and will maintain high reliability and MTBF.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.Writes past the SSD's maximum write capacity will continue to work for some period of time, but perform much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the SSD if enabled by the operating system (OS) and system administrator. Customers are recommended to monitor SMART log critical information via the appropriate OS utility to observe drive life remaining information. IBM NVMe SSD failures will be replaced during the standard warranty and maintenance period for SSD's that have not reached the maximum number of write cycles. SSD's that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Boot supported. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

- Attributes provided: 800 GB low latency flash memory
- Attributes required: SFF U.2 15mm
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - AIX supported
  - Linux supported
  - IBM i not supported and IBM i not supported via VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EC63) - PCIe4 1-port 100Gb EDR IB CAPI adapter

The PCIe Gen4 x16 1-port InfiniBand EDR adapter provides high speed connectivity with other servers or IB switches. The port's maximum of 100Gb assumes no other system and/or switch bottlenecks are present. A PCIe Gen4 x16 PCIe slot is required. This adapter is sourced from Mellanox Corporation. based on ConnectX-5 technology. The adapter supports the InfiniBand Trade Association (IBTA) specification version 2.

The 100Gb port has a QSFP+ connection which supports EDR cables, either EDR DAC or EDR optical. Transceivers are included in the cables. IBM cable features EB50-EB54 (copper shorter distance) and #EB5A-EB5H (optical longer distance) are supported or their copper or optical Mellanox equivalents are supported. Other cables are not supported.

#EC62 and #EC63 adapters are electronically and functionally identical with the same CCIN of 2CF1. #EC62 is low profile and #EC63 is full high.

Limitation: Adapter does not fit in x8 PCIe slot. Adapter is not supported in a PCIe Gen3 I/O drawer.

- Attributes provided: EDR InfiniBand PCIe Adapter
- Attributes required: available x16 PCIe Gen4 slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - AIX not supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC65) - PCIe4 2-port 100Gb EDR IB CAPI adapter

The PCIe Gen4 x16 2-port InfiniBand EDR adapter provides high speed connectivity with other servers or IB switches. Each port maximum of 100Gb assumes no other system and/or switch bottlenecks are present. A PCIe Gen4 x16 PCIe slot is required. This adapter is sourced from Mellanox Corporation. based on ConnectX-5 technology. The adapter supports the InfiniBand Trade Association (IBTA) specification version 2.

The two 100Gb ports have QSFP+ connections which support EDR cables, either EDR DAC or EDR optical. One adapter can support either or both types of cable. The user can choose to cable up just one port if they desire. Transceivers are included in the cables. IBM cable features EB50-EB54 (copper shorter distance) and #EB5A-EB5H (optical longer distance) are supported or their copper or optical Mellanox equivalents are supported. Other cables are not supported.

#EC64 and #EC65 adapters are electronically and functionally identical with the same CCIN of 2CF2. #EC64 is low profile and #EC65 is full high.

Limitation: Adapter does not fit in x8 PCIe slot. Adapter is not supported in a PCIe Gen3 I/O drawer.

- Attributes provided: EDR InfiniBand PCIe Adapter
- Attributes required: available x16 PCIe Gen4 slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - AIX not supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
- Editor note:
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC66) - PCIe4 2-port 100Gb ROCE EN adapter

This PCIe Gen4 Ethernet x16 adapter provides two 100 GbE QSFP28 ports. The adapter supports both NIC and IBTA RoCE standards. RoCE is Remote Direct Memory Access (RDMA) over Converged Ethernet. Using RoCE, the adapter can support significantly greater bandwidth with low latency and minimize CPU overhead by more efficiently using memory access. This offloads the CPU from I/O networking tasks, improving performance and scalability.

For 100GbE network connectivity, IBM offers either passive copper twinax cables up to 2 meters in length or active optical cables up to 100 meters in length. See features #EB5J - #EB5M for a 0.5M, 1.0M, 1.5M and 2.0M copper cable. See features #EB5R - #EB5Y for a 3M, 5M, 10M, 15M, 20M, 30M, 50M or 100M active optical cable. Transceivers are included on each end of these QSFP28 cables. Alternatively to the above supported cables, you may choose to order an IBM qualified and supported QSFP28 optical transceiver (feature #EB59) to put into the adapter ports and MTP/MPO cable 10M or 20M in length (feature #EB2J #EB2K) optical cabling to use with your own QSP28 optical transceiver for the other end.

For 40GbE network connectivity, IBM offers either passive copper twinax cables up to 3 meters in length. See features #EB2B and EB2H for a 1.0M and 3.0M copper cable. Transceivers are included on each end of these QSFP+ cables. Alternatively to the above supported cables, you may choose to order an IBM qualified and supported QSFP+ 40G BASE-SR optical transceiver (feature #EB27) to put into the adapter ports and MTP/MPO cable 10M or 20M in length (feature #EB2J #EB2K) optical cabling to use with your own QSP28 optical transceiver for the other end.

Either one or both of the adapter's two QSP28 ports can be populated. When two ports are filled, both can have copper cables, both can have optical cables, or one can be copper and one can be optical.

Feature code #EC66 and #EC67 have identical electronics and function and CCIN (2CF3), but have different tail stock brackets. #EC66 is high profile and #EC67 is low profile. The adapter is based on a Mellanox ConnectX-5 adapter which uses a ConnectX-5 EN Network Controller.

Attributes:

- PCI Express 4.0 (up to 16GT/s) x16
- PCIe Gen 4.0 compliant, 1.1, 2.0 and 3.0 compatible
- RDMA over Converged Ethernet (RoCE)
- NIC and RoCE are concurrently supported
- RoCE supported on Linux and AIX
- NIC supported on all OSes
- TCP/UDP/IP stateless offload
- LSO, LRO, checksum offload
- NIM boot support
- Backward compatible with 40Gb Ethernet when using compatible cables/transceivers
- Attributes provided: Dual-port 100 GbE Adapter with RoCE capability
- Attributes required: Available Gen4 PCIe Slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.1, or later, with Mellanox OFED 4.9, or later
  - SUSE Linux Enterprise Server 15, Service Pack 1, or later, with Mellanox OFED 4.9, or later
  - AIX supported
  - IBM i 7.3 TR8, or later
  - IBM i 7.4 TR2, or later

  Notes:
  - IBM i supports dedicated driver for the NIC function.
  - IBM i supports native SR-IOV for the NIC function.
  - IBM i 7.4 also adds support for dedicated ROCE and native SR-IOV ROCE, which is used only by IBM Db2 Mirror for i. 'IBM i native SR-IOV', 'IBM i native SR-IOV ROCE' and 'IBM i dedicated ROCE' supported.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Assignment to the VIOS supported
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC6K) - PCIe2 2-Port USB 3.0 Adapter

The PCIe Gen2 x8 short 2-port USB 3.0 adapter provides support for USB devices. In applications that require the use of an USB extension cable for keyboards, use one #4256 per port. The #EC6J and #EC6K USB adapters are electronically identical with the same 590F CCIN. They differ physically in their tailstock. #EC6J is low profile and #EC6K is full high.

- Attributes provided: Connectivity with USB 2.0 - 3.0 capable devices
- Attributes required: One low profile available PCIe slot
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.3, or later
  - SUSE Linux Enterprise Server 15, Service Pack 2, or later
  - AIX Version 7.2 with the 7200-05 Technology Level or later
  - AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-07-2037 or later
  - AIX Version 7.2 with the 7200-03 Technology Level and Service Pack 7200-03-06-2038 or later (Planned Availability date February 19, 2021)
  - AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-03-2038 or later (Planned Availability date February 19, 2021)
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later

## (#EC6V) - PCIe3 x8 1.6 TB NVMe Flash Adapter for IBM i

The PCIe3 x8 1.6 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 3 (Gen3) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec). Features EC6U, and EC6V are the same adapter with different feature codes. Feature EC6U is low-profile adapter and feature EC6V is full-height adapters. Features EC6U and EC6V are supported by IBM i. CCIN is 58FC. The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used. IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable. This adapter is not supported in the PCIe I/O drawer.

- Attributes provided: PCIe3 x8 NVMe 1.6 TB with full-height tailstock
- Attributes required: PCIe slot
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC6X) - PCIe3 x8 3.2 TB NVMe Flash Adapter for IBM i

The PCIe3 x8 3.2 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 3 (Gen3) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec). Features EC6W, and EC6X are the same adapter with different feature codes. Feature EC6W is low-profile adapter and feature EC6X is full-height adapters. Features EC6W and EC6X are supported by IBM i. CCIN is 58FD. The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used. IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable. This adapter is not supported in the PCIe I/O drawer.

- Attributes provided: PCIe3 x8 NVMe 3.2 TB with full-height tailstock
- Attributes required: PCIe slot
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC6Z) - PCIe3 x8 6.4 TB NVMe Flash Adapter for IBM i

The PCIe3 x8 6.4 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 3 (Gen3) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec). Features EC6Y, and EC6Z are the same adapter with different feature codes. Feature EC6Y is low-profile adapter and feature EC6Z is full-height adapter. Features EC6Y and EC6Z are supported by IBM i. CCIN is 58FE. The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used. IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable. This adapter is not supported in the PCIe I/O drawer.

- Attributes provided: PCIe3 x8 NVMe 6.4 TB with full-height tailstock
- Attributes required: PCIe slot
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC7B) - PCIe4 1.6TB NVMe Flash Adapter x8 for AIX/Linux

The PCIe4 x8 1.6 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

CCIN is 594A.

Feature #EC7A and #EC7B are identical cards except that the tailstock bracket is different. #EC7A fits a low profile PCIe slot. #EC7B fits a full high PCIe slot. See also #EC7C or #EC7D for a card with more memory.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes are used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.
Note: NVMe Flash adapters #EC7A or #EC7B can be used to meet minimum AIX/ Linux SSD/HDD and backplane requirements.

- Attributes provided: NVMe Flash Adapter
- Attributes required: one slot available
  - Assigment to the VIOS requires VIOS 3.1.2.10, or later
  - This adapter is not supported on a tower/deskside 9009-41A model configuration.
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i requires VIOS
  - Red Hat Enterprise Linux 8.2 for Power LE, or later
  - SUSE Linux Enterprise Server 15 Service Pack 2, or later
  - AIX Version 7.2 with the 7200-05 Technology Level or later
  - AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-07-2037 or later
  - AIX Version 7.2 with the 7200-03 Technology Level and Service Pack 7200-03-06-2038 or later (Planned Availability date February 19, 2021)
  - AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-03-2038 or later (Planned Availability date February 19, 2021)
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  - Assigment to the VIOS requires VIOS 3.1.2.10, or later
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later

## (#EC7D) - PCIe4 3.2TB NVMe Flash Adapter x8 for AIX/Linux

The PCIe4 x8 3.2 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

CCIN is 594B.

Feature #EC7C and #EC7D are identical cards except that the tailstock bracket is different. #EC7C fits a low profile PCIe slot. #EC7D fits a full high PCIe slot. See also EC7E or EC7F for a card with more memory.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes are used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.
Note: NVMe Flash adapters #EC7C or #EC7D can be used to meet minimum AIX/ Linux SSD/HDD and backplane requirements.

- Attributes provided: NVMe Flash Adapter
- Attributes required: one slot available
  - Assigment to the VIOS requires VIOS 3.1.2.10, or later
  - This adapter is not supported on a tower/deskside 9009-41A model configuration.
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i requires VIOS
  - Red Hat Enterprise Linux 8.2 for Power LE, or later
  - SUSE Linux Enterprise Server 15 Service Pack 2, or later
  - AIX Version 7.2 with the 7200-05 Technology Level or later
  - AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-07-2037 or later
  - AIX Version 7.2 with the 7200-03 Technology Level and Service Pack 7200-03-06-2038 or later (Planned Availability date February 19, 2021)
  - AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-03-2038 or later (Planned Availability date February 19, 2021)
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  - Assigment to the VIOS requires VIOS 3.1.2.10, or later
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later

## (#EC7F) - PCIe4 6.4TB NVMe Flash Adapter x8 for AIX/Linux

The PCIe4 x8 6.4 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

CCIN is 594C.

Feature #EC7E and #EC7F are identical cards except that the tailstock bracket is different. #EC7E fits a low profile PCIe slot. #EC7F fits a full high PCIe slot.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes are used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.
Note: NVMe Flash adapters #EC7E or #EC7F can be used to meet minimum AIX/ Linux SSD/HDD and backplane requirements.

- Attributes provided: NVMe Flash Adapter
- Attributes required: one slot available
  - Assigment to the VIOS requires VIOS 3.1.2.10, or later
  - This adapter is not supported on a tower/deskside 9009-41A model configuration.
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i requires VIOS
  - Red Hat Enterprise Linux 8.2 for Power LE, or later
  - SUSE Linux Enterprise Server 15 Service Pack 2, or later
  - AIX Version 7.2 with the 7200-05 Technology Level or later
  - AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-07-2037 or later
  - AIX Version 7.2 with the 7200-03 Technology Level and Service Pack 7200-03-06-2038 or later (Planned Availability date February 19, 2021)
  - AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-03-2038 or later (Planned Availability date February 19, 2021)
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  - Assigment to the VIOS requires VIOS 3.1.2.10, or later
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later

## (#EC7K) - PCIe4 1.6TB NVMe Flash Adapter x8 for IBM i

The PCIe4 x8 1.6 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe).

NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features EC7J and EC7K are the same adapter with different feature codes. Feature EC7J is low-profile adapter and feature EC7K is full- height adapters. Features EC7J and EC7K are supported by IBM i. CCIN is 594A.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.

- Attributes provided: NVMe Flash Adapter
- Attributes required: one slot available
  Note: This adapter is not supported on a tower/deskside 9009-41A model configuration.
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i 7.4 TR3, or later
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC7M) - PCIe4 3.2TB NVMe Flash Adapter x8 for IBM i

The PCIe4 x8 3.2 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe).

NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features EC7L and EC7M are the same adapter with different feature codes. Feature EC7L is low-profile adapter and feature EC7M is full- height adapters. Features EC7L and EC7M are supported by IBM i. CCIN is 594B.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.

- Attributes provided: NVMe Flash Adapter
- Attributes required: one slot available
  Note: This adapter is not supported on a tower/deskside 9009-41A model configuration.
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i 7.4 TR3, or later
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EC7P) - PCIe4 6.4TB NVMe Flash Adapter x8 for IBM i

The PCIe4 x8 6.4 TB NVMe Adapter is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) x8 adapter. The adapter can be used in either a x8 or x16 PCIe slot in the system and uses Non-Volatile Memory Express (NVMe).

NVMe is a high performance software interface that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe Flash adapter provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features EC7N and EC7P are the same adapter with different feature codes. Feature EC7N is low-profile adapter and feature EC7P is full- height adapters. Features EC7N and EC7P are supported by IBM i. CCIN is 594C.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger. To extend the life of the device, the application that is using the device must convert small random writes to larger sequential writes. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the adapter if enabled by the system administrator. Customers are recommended to monitor the smart log via their operating system where fuel gauge shows the percentage used.

IBM NVMe adapter failures will be replaced during the standard warranty and maintenance period for adapters that have not reached the maximum number of write cycles. Adapters that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Data protection is not implemented in the card; protection is provided by OS mirroring or software RAID wherever applicable.

This adapter is not supported in the PCIe I/O drawer.

- Attributes provided: NVMe Flash Adapter
- Attributes required: one slot available
  Note: This adapter is not supported on a tower/deskside 9009-41A model configuration.
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - IBM i 7.4 TR3, or later
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#ECBJ) - SAS X Cable 3m - HD Narrow 6Gb 2-Adapters to Enclosure

This 3 meter SAS cable connects two PCIe2 SAS adapters or two PCIe3 SAS adapters to a SAS I/O enclosure. This X cable has four connectors, two Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connectors attach to two SAS adapters such as two #EJ0J or two #EJ0L or two #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

This cable is almost identical to the #3454 3m SAS X cable, except #ECBJ connectors for the SAS adapters are more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBK) - SAS X Cable 6m - HD Narrow 6Gb 2-Adapters to Enclosure

This 3 meter SAS cable connects two PCIe2 SAS adapters or two PCIe3 SAS adapters to a SAS I/O enclosure. This X cable has four connectors, two Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connectors attach to two SAS adapters such as two #EJ0J or two #EJ0L or two #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

This cable is almost identical to the #3454 3m SAS X cable, except #ECBJ connectors for the SAS adapters are more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

This 6 meter SAS cable connects two SAS adapters to a SAS I/O enclosure. This X cable has four connectors, two Mini-SAS HD (High Density) connector and two Mini SAS connectors. The Mini-SAS HD connectors attaches to two SAS adapters such as the #5913 1.8GB RAID SAS Adapter. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapters can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: When this cable is ordered with a system in a rack specifying IBM Plant integration, IBM Manufacturing will ship SAS cables longer than 3 meters in a separate box and not attempt to place the cable in the rack.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBL) - SAS X Cable 10m - HD Narrow 6Gb 2-Adapters to Enclosure

(No longer available as of December 31, 2020)

This 3 meter SAS cable connects two PCIe2 SAS adapters or two PCIe3 SAS adapters to a SAS I/O enclosure. This X cable has four connectors, two Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connectors attach to two SAS adapters such as two #EJ0J or two #EJ0L or two #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

This cable is almost identical to the #3454 3m SAS X cable, except #ECBJ connectors for the SAS adapters are more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

Limitation: When this cable is ordered with a system in a rack specifying IBM Plant integration, IBM Manufacturing will ship SAS cables longer than 3 meters in a separate box and not attempt to place the cable in the rack.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBM) - SAS X Cable 15m - HD Narrow 3Gb 2-Adapters to Enclosure

This 15 meter SAS cable connects two PCIe2 SAS adapters or two PCIe3 SAS adapters to a SAS I/O enclosure. This X cable has four connectors, two Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connectors attach to two SAS adapters such as two #EJ0J or two #EJ0L or two #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

This cable is almost identical to the #3458 15m SAS X cable, except #ECBM connectors for the SAS adapters are more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

Limitation: When this cable is ordered with a system in a rack specifying IBM Plant integration, IBM Manufacturing will ship SAS cables longer than 3 meters in a separate box and not attempt to place the cable in the rack.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBN) - 5m (16.4-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)

QSFP+ cable is used for 40Gb-to-40Gb Ethernet connectivity. clients can use this QSFP+ Direct Attach Cable for Ethernet connectivity. This copper cable has QSFP+ transceivers already attached to each end.

- Attributes provided: 5m QSFP+ to QSFP+ Cable
- Attributes required: QSFP/QSFP+ ports
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ECBT) - SAS YO Cable 1.5m - HD Narrow 6Gb Adapter to Enclosure

This 1.5 meter SAS cable connects a PCIe2 SAS adapter or a PCIe3 SAS adapter to a SAS I/O enclosure. This YO cable has three connectors, one Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connector attaches to a SAS adapter such as the #EJ0J or #EJ0L or #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable.

This cable is almost identical to the #3450 1.5m SAS YO cable, except the #ECBT connector for the SAS adapters is more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.

- Attributes required: available connectors on SAS controller and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBU) - SAS YO Cable 3m - HD Narrow 6Gb Adapter to Enclosure

This 3 meter SAS cable connects a PCIe2 SAS adapter or a PCIe3 SAS adapter to a SAS I/O enclosure. This YO cable has three connectors, one Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connector attaches to a SAS adapter such as the #EJ0J or #EJ0L or #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable.

This cable is almost identical to the #3451 3m SAS YO cable, except the #ECBU connector for the SAS adapters is more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controller and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBV) - SAS YO Cable 6m - HD Narrow 6Gb Adapter to Enclosure

This 6 meter SAS cable connects a PCIe2 SAS adapter or a PCIe3 SAS adapter to a SAS I/O enclosure. This YO cable has three connectors, one Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connector attaches to a SAS adapter such as the #EJ0J or #EJ0L or #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable.

This cable is almost identical to the #3452 6m SAS YO cable, except the #ECBV connector for the SAS adapters is more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

Limitation: When this cable is ordered with a system in a rack specifying IBM Plant integration, IBM Manufacturing will ship SAS cables longer than 3 meters in a separate box and not attempt to place the cable in the rack.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controller and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBW) - SAS YO Cable 10m - HD Narrow 6Gb Adapter to Enclosure

This 10 meter SAS cable connects a PCIe2 SAS adapter or a PCIe3 SAS adapter to a SAS I/O enclosure. This YO cable has three connectors, one Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connector attaches to a SAS adapter such as the #EJ0J or #EJ0L or #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5886 EXP12S or #5887 EXP24S SAS I/O drawer. This cable can support up to 6Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable.

This cable is almost identical to the #3453 10m SAS YO cable, except the #ECBW connector for the SAS adapters is more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

Limitation: When this cable is ordered with a system in a rack specifying IBM Plant integration, IBM Manufacturing will ship SAS cables longer than 3 meters in a separate box and not attempt to place the cable in the rack.

- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controller and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBX) - SAS YO Cable 15m - HD Narrow 3Gb Adapter to Enclosure

(No longer available as of December 31, 2020)

This 15 meter SAS cable connects a PCIe2 SAS adapter or a PCIe3 SAS adapter to a SAS I/O enclosure. This YO cable has three connectors, one Mini-SAS HD (High Density) Narrow connector and two Mini SAS connectors. The Mini-SAS HD Narrow connector attaches to a SAS adapter such as the #EJ0J or #EJ0L or #5913. Both Mini SAS connectors attach to the same I/O drawer (enclosure) such as a #5887 EXP24S SAS I/O drawer. This cable can support up to 3Gb throughput.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/O drawer. See SAS cabling documentation for the length of each leg of the cable.

This cable is almost identical to the #3457 15m SAS YO cable, except the #ECBX connector for the SAS adapters is more narrow allowing it to fit onto the newer PCIe3 SAS adapters.

Limitation

- Does not support 6Gb throughput.
- When this cable is ordered with a system in a rack specifying IBM Plant integration, IBM Manufacturing will ship SAS cables longer than 3 meters in a separate box and not attempt to place the cable in the rack.
- Attributes provided: Connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS I/O drawer with Mini-SAS connectors or between PCIe2 SAS adapter with Mini-SAS HD connectors and a SAS I/O drawer with Mini-SAS connectors.
- Attributes required: available connectors on SAS controller and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBY) - SAS AE1 Cable 4m - HD Narrow 6Gb Adapter to Enclosure

This 4 meter SAS cable connects a PCIe3 SAS adapter to a SAS tape drive or DVD. The tape drive or DVD is probably in an I/O enclosure such as a bridge box or 1U media enclosure or tape library. This AE cable has two connectors, one Mini-SAS HD (High Density) Narrow connector and one Mini-SAS connectors. The Mini-SAS HD Narrow connector attaches to a SAS adapter such as the #EJ0X. The Mini-SAS connector attaches to a SAS tape drive enclosure or DVD. This cable can support up to 6Gb throughput.

Use #ECBY when ordering the cable as a feature code on a Power System. Alternatively the same cable can be ordered using feature code #5507 of the IBM tape enclosure or DVD.

- Attributes provided: connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and a SAS tape drive or DVD with Mini-SAS connectors
- Attributes required: available connectors on SAS controller such as #EJ0X, #EJ10 or #EJ11 for use with an available SAS tape drive or DVD.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECBZ) - SAS YE1 Cable 3m - HD Narrow 6Gb Adapter to Enclosure

This 3 meter SAS cable connects a PCIe3 SAS adapter to one or two SAS tape drives. The tape drive(s) is probably in an I/O enclosure such as a bridge box or 1U media enclosure or tape library. This YO cable has three connectors, one Mini-SAS HD (High Density) Narrow connector and two Mini-SAS connectors. The Mini-SAS HD Narrow connector attaches to a SAS adapter such as the #EJ0X. Each Mini-SAS connector attaches to a different SAS tape drive enclosure. This cable can support up to 6Gb throughput.

Use #ECBZ when ordering the cable as a feature code on a Power System. Alternatively the same cable can be ordered using feature code #5509 of the IBM tape enclosure.

- Attributes provided: connection between PCIe3 SAS adapter with Mini-SAS HD Narrow connectors and one or two SAS tape drives with Mini-SAS connectors.
- Attributes required: available connectors on SAS controller such as #EJ0X, #EJ10 or #EJ11 for use with an available SAS tape drive.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECC7) - 3M Optical Cable Pair for PCIe3 Expansion Drawer

The 3.0 meter active optical cable (AOC) pair connects a PCIe3 module in the PCIe Gen3 I/O Expansion Drawer to a PCIe3 Optical Converter Adapter in the system unit. There are two identical cables in the cable pair, each with two CXP connectors. One of the cables attaches to the top CXP port of the PCIe3 module and to the top CXP port of the PCIe3 Optical Converter Adapter. The other cable attaches to the bottom CXP ports. See also other AOC cable length options such as the feature #ECC8 (10 meter).

- Attributes provided: Pair of 3 meter active optical cables
- Attributes required: CXP ports on a PCIe3 Optical Cable Adapter and on a PCIe3 module iin a PCIe Gen3 Expansion Drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ECC8) - 10M Optical Cable Pair for PCIe3 Expansion Drawer

The 10.0 meter active optical cable (AOC) pair connects a PCIe3 module in the PCIe Gen3 I/O Expansion Drawer to a PCIe3 Optical Converter Adapter in the system unit. There are two identical cables in the cable pair, each with two CXP connectors. One of the cables attaches to the top CXP port of the PCIe3 module and to the top CXP port of the PCIe3 Optical Converter Adapter. The other cable attaches to the bottom CXP ports. See also other AOC cable length options such as the feature #ECC6 (2 meter). The 10 meter length is suggested for cabling to a different rack.

- Attributes provided: Pair of 10 meter active optical cables
- Attributes required: CXP ports on a PCIe3 Optical Cable Adapter (#EJ07) and on a PCIe3 module such as a #EMXF in a PCIe Gen3 Expansion Drawer (#EMX0)
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ECCF) - System Port Converter Cable for UPS

Converter cable allows a serial cable attached to a Uninterruptible Power Supply (UPS) to connect to a USB port on the server's service processor card. Cable's connectors are USB (Male) and 9 PIN D SHELL (Female) and the cable's length is about 1.6m (60 inches). The UPS can provide power status information over the cable to IBM i.

- Attributes provided: Converter Cable
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECCS) - 3M Copper CXP Cable Pair for PCIe3 Expansion Drawer

This 3.0 meter cable pair connects a PCIe3 fan-out module in the PCIe Gen3 I/O Expansion Drawer to a PCIe3 Optical Converter Adapter in the system unit. There are two identical copper cables in the cable pair, each with two CXP connectors. One of the cables attaches to the top CXP port of the PCIe3 fan-out module and to the top CXP port of the PCIe3 Optical Converter Adapter. The other cable attaches to the bottom CXP ports.

"Optical" Converter Adapter features were named when only optical cables were announced and copper cables were not planned. The output of the adapter is a CXP interface which can also be used for this copper cable pair.

See also optical AOC cables features for cables which are much thinner and can be longer such as the feature #ECC8 (10 meter) cable, but are more costly.

Limitation: Cannot mix copper and optical cables on the same PCIe Gen3 I/O drawer. Both fan-out modules use copper cables or both use optical cables.

- Attributes provided: Pair of 3 meter CXP copper cables
- Attributes required:
  - CXP ports on a PCIe3 Optical Cable Adapter (#EJ05 or #EJ08) and on a PCIe3 module such as a #EMXF or EMXG/ELMF or ELMG in a PCIe Gen3 Expansion Drawer (#EMX0/ELMX).
  - Firmware level 8.40 or later.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECCX) - 3M Active Optical Cable Pair for PCIe3 Expansion Drawer

The 3.0 meter active optical cable (AOC) pair connects a PCIe3 module in the PCIe Gen3 I/O Expansion Drawer to a PCIe3 Optical Converter Adapter in the system unit. There are two identical cables in the cable pair, each with two CXP connectors. One of the cables attaches to the top CXP port of the PCIe3 module and to the top CXP port of the PCIe3 Optical Converter Adapter. The other cable attaches to the bottom CXP ports.

- Attributes provided: Pair of 3 meter active optical cables
- Attributes required: CXP ports on a PCIe3 Optical Cable Adapter and on a PCIe3 module iin a PCIe Gen3 Expansion Drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECCY) - 10M Active Optical Cable Pair for PCIe3 Expansion Drawer

The 10.0 meter active optical cable (AOC) pair connects a PCIe3 module in the PCIe Gen3 I/O Expansion Drawer to a PCIe3 Optical Converter Adapter in the system unit. There are two identical cables in the cable pair, each with two CXP connectors. One of the cables attaches to the top CXP port of the PCIe3 module and to the top CXP port of the PCIe3 Optical Converter Adapter. The other cable attaches to the bottom CXP ports.

- Attributes provided: Pair of 10 meter active optical cables
- Attributes required: CXP ports on a PCIe3 Optical Cable Adapter and on a PCIe3 module in a PCIe Gen3 Expansion Drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECDJ) - 3.0M SAS X12 Cable (Two Adapter to Enclosure)

This 3 meter SAS cable connects two SAS adapters to a SAS I/O enclosure. This X cable has four Mini-SAS HD (High Density) connectors. Two of connectors attach to two SAS adapters such as in the PCIe3 SAS Adapter. The other two connectors attach to one SAS I/ O Enclosure such as the EXP12SX (#ESLL/#ELLL ) or EXP24SX (#ESLS/ #ELLS). This cable is designed for high speed (DHS) to support up to 12Gb throughput if the adapter has that capability.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/ O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: This cable cannot be used with the EXP24S I/O drawer (#5887 or# EL1S) which uses Mini-SAS connectors which are not HD.

- Attributes provided: Connection between two SAS adapters with Mini-SAS HD connectors and a SAS I/O drawer with Mini SAS HD connectors
- Attributes required: Available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECDK) - 4.5M SAS X12 Active Optical Cable (Two Adapter to Enclosure)

This 4.5 meter SAS cable connects two SAS adapters to a SAS I/O enclosure. This X cable has four Mini-SAS HD (High Density) connectors. Two of connectors attach to two SAS adapters such as in the PCIe3 SAS Adapter. The other two connectors attach to one SAS I/ O Enclosure such as the EXP12SX (#ESLL/#ELLL ) or EXP24SX (#ESLS/ #ELLS). This cable is designed for high speed (DHS) to support up to 12Gb throughput if the adapter has that capability.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/ O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: This cable cannot be used with the EXP24S I/O drawer (#5887 or# EL1S) which uses Mini-SAS connectors which are not HD.
Note: AOC cables require minimum level of SAS Adapter firmware. Refer to the latest prerequisites at

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

- Attributes provided: Connection between two SAS adapters with Mini-SAS HD connectors and a SAS I/O drawer with Mini SAS HD connectors
- Attributes required: Available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECDL) - 10M SAS X12 Active Optical Cable (Two Adapter to Enclosure)

This 10 meter SAS cable connects two SAS adapters to a SAS I/O enclosure. This X cable has four Mini-SAS HD (High Density) connectors. Two of connectors attach to two SAS adapters such as in the PCIe3 SAS Adapter. The other two connectors attach to one SAS I/ O Enclosure such as the EXP12SX (#ESLL/#ELLL ) or EXP24SX (#ESLS/ #ELLS). This cable is designed for high speed (DHS) to support up to 12Gb throughput if the adapter has that capability.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/ O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: This cable cannot be used with the EXP24S I/O drawer (#5887 or# EL1S) which uses Mini-SAS connectors which are not HD.
Note: AOC cables require minimum level of SAS Adapter firmware. Refer to the latest prerequisites at

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

- Attributes provided: Connection between two SAS adapters with Mini-SAS HD connectors and a SAS I/O drawer with Mini SAS HD connectors
- Attributes required: Available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECDT) - 1.5M SAS YO12 Cable (Adapter to Enclosure)

This 1.5 meter SAS cable connects one SAS adapter to a SAS I/O enclosure. This YO cable has three Mini-SAS HD (High Density) connectors. One of connectors attach to a SAS adapter such as in the PCIe3 SAS Adapter. The other two connectors attach to one SAS I/O Enclosure such as the EXP12SX (#ESLL/#ELLL ) or EXP24SX (#ESLS/ #ELLS). This cable is designed for high speed (DHS) to support up to 12Gb throughput if the adapter has that capability.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/ O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: This cable cannot be used with the EXP24S I/O drawer (#5887 or# EL1S) which uses Mini-SAS connectors which are not HD.

- Attributes provided: Connection between a SAS adapters with Mini-SAS HD connectors and a SAS I/O drawer with Mini SAS HD connectors
- Attributes required: Available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECDU) - 3.0M SAS YO12 Cable (Adapter to Enclosure)

This 3 meter SAS cable connects one SAS adapter to a SAS I/O enclosure. This YO cable has three Mini-SAS HD (High Density) connectors. One of connectors attach to a SAS adapter such as in the PCIe3 SAS Adapter. The other two connectors attach to one SAS I/O Enclosure such as the EXP12SX (#ESLL/#ELLL ) or EXP24SX (#ESLS/ #ELLS). This cable is designed for high speed (DHS) to support up to 12Gb throughput if the adapter has that capability.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/ O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: This cable cannot be used with the EXP24S I/O drawer (#5887 or# EL1S) which uses Mini-SAS connectors which are not HD.

- Attributes provided: Connection between a SAS adapters with Mini-SAS HD connectors and a SAS I/O drawer with Mini SAS HD connectors
- Attributes required: Available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECDV) - 4.5M SAS YO12 Active Optical Cable (Adapter to Enclosure)

This 4.5 meter SAS cable connects one SAS adapter to a SAS I/O enclosure. This YO cable has three Mini-SAS HD (High Density) connectors. One of connectors attach to a SAS adapter such as in the PCIe3 SAS Adapter. The other two connectors attach to one SAS I/O Enclosure such as the EXP12SX (#ESLL/#ELLL ) or EXP24SX (#ESLS/ #ELLS). This cable is designed for high speed (DHS) to support up to 12Gb throughput if the adapter has that capability.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/ O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: This cable cannot be used with the EXP24S I/O drawer (#5887 or# EL1S) which uses Mini-SAS connectors which are not HD.
Note: AOC cables require minimum level of SAS Adapter firmware. Refer to the latest prerequisites at

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

- Attributes provided: Connection between a SAS adapters with Mini-SAS HD connectors and a SAS I/O drawer with Mini SAS HD connectors
- Attributes required: Available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECDW) - 10M SAS YO12 Active Optical Cable (Adapter to Enclosure)

This 10 meter SAS cable connects one SAS adapter to a SAS I/O enclosure. This YO cable has three Mini-SAS HD (High Density) connectors. One of connectors attach to a SAS adapter such as in the PCIe3 SAS Adapter. The other two connectors attach to one SAS I/O Enclosure such as the EXP12SX (#ESLL/#ELLL ) or EXP24SX (#ESLS/ #ELLS). This cable is designed for high speed (DHS) to support up to 12Gb throughput if the adapter has that capability.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the adapter and the I/ O drawer. See SAS cabling documentation for the length of each leg of the cable. The SAS adapters can be in the same or in different PCIe I/O drawers. Or one adapter can be in a supported Power System CEC and the other adapter can be in a PCIe I/O drawer. Or both adapters can be in a supported Power System CEC.

Limitation: This cable cannot be used with the EXP24S I/O drawer (#5887 or# EL1S) which uses Mini-SAS connectors which are not HD.
Note: AOC cables require minimum level of SAS Adapter firmware. Refer to the latest prerequisites at

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

- Attributes provided: Connection between a SAS adapters with Mini-SAS HD connectors and a SAS I/O drawer with Mini SAS HD connectors
- Attributes required: Available connectors on SAS controllers and SAS I/O drawer
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECE0) - 0.6M SAS AA12 Cable (Adapter to Adapter)

This 0.6 meter SAS cable connects a pair of SAS adapters to each other. This AA cable has two Mini-SAS HD (High Density) connectors which connect the top connectors of two PCIe3 SAS adapters with write cachce such as #EJ0L or #EJ14. The cable provides a high performance path of all the dual controller communication including mirroring the write cache and status awareness of each card. This cable is designed for high speed to support up to 12Gb throughput. Note EJ0L/EJ14 support 6Gb.

Two AA cables are always required between a pair of PCIe3 SAS adapters with write cache when just one or two I/O drawers are attached. One AA cable is required if three I/O drawers are attached. If four drawers are attached or if an AA cable fails or is disconnected, then the information it was carrying is then sent over the cables attached to the I/O drawers, sharing their bandwidth. AA cables are not used with SAS adapters with no write cache.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the two adapters.

The 6Gb version of this cable is feature #5918. #5918 and #ECE0 can be mixed on the same PCIe3 adapter pair.

- Attributes provided: Connection between two SAS adapters with Mini-SAS HD connectors
- Attributes required: Available connectors on SAS controllers
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECE3) - 3.0M SAS AA12 Cable

This 3.0 meter SAS cable has two Mini-SAS HD (High Density) connectors, and is designed for high speed to support up to 12Gb throughput. This is a straight cable (in contrast with X or YO cables) that has two distinct uses:

1. For Elastic Storage Server (ESS) solutions that have a 5147-024 I/O drawer, this cable is used to attach the 5147-024 to its controller.
2. For POWER Servers with #5887, #EL1S, #ESLS, #ESLL, #ELLS, or #ELLL I/O drawers driven by paired PCIe controllers with write cache such as #EJ0L or #EJ14, this cable is used to connect the top connectors of the paired controllers. The cable provides a high performance path of all the dual controller communication including mirroring the write cache and status awareness of each card.

Note that X or YO cables are always used to attach I/O drawers #5887, #EL1S, #ESLS, #ESLL, #ELLS, or #ELLL to controllers on POWER Servers. Straight cables (such as #ECE3) are not allowed to directly attach to I/O drawers on POWER Servers.

Two AA cables are always required between a pair of PCIe3 SAS adapters with write cache when just one or two I/O drawers are attached. One AA cable is required if three I/O drawers are attached. If four drawers are attached or if an AA cable fails or is disconnected, then the information it was carrying is then sent over the cables attached to the I/O drawers, sharing their bandwidth. On POWER Servers, AA cables are not used with SAS adapters with no write cache.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the two adapters.

The 6Gb version of this cable is feature #5915. #5915 and #ECE3 can be mixed on the same PCIe3 adapter pair.

- Attributes provided: For ESS solutions, connection between a SAS controller and one 5174-024 I/O drawer. For POWER Systems, connection between two paired SAS controllers with write cache and Mini-SAS HD connectors.
- Attributes required: For ESS solutions, a 5147-024 I/O drawer and appropriate controller. For POWER Systems, available connectors on SAS controllers.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECE4) - 4.5M SAS AA12 Active Optical Cable (Adapter to Adapter)

This 4.5 meter SAS cable connects a pair of SAS adapters to each other. This AA cable has two Mini-SAS HD (High Density) connectors which connect the top connectors of two PCIe3 SAS adapters with write cachce such as #EJ0L or #EJ14. The cable provides a high performance path of all the dual controller communication including mirroring the write cache and status awareness of each card. This cable is designed for high speed to support up to 12Gb throughput. Note EJ0L/EJ14 support 6Gb.

Two AA cables are always required between a pair of PCIe3 SAS adapters with write cache when just one or two I/O drawers are attached. One AA cable is required if three I/O drawers are attached. If four drawers are attached or if an AA cable fails or is disconnected, then the information it was carrying is then sent over the cables attached to the I/O drawers, sharing their bandwidth. AA cables are not used with SAS adapters with no write cache.

Multiple cable length feature codes are available. Choose the cable length that best matches the distance between the two adapters.
Note: AOC cables require minimum level of SAS Adapter firmware. Refer to the latest prerequisites at

http://www-912.ibm.com/e_dir/eServerPrereq.nsf

- Attributes provided: Connection between two SAS adapters with Mini-SAS HD connectors
- Attributes required: Available connectors on SAS controllers
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECJ5) - 4.3m (14-Ft) PDU to Wall 3PH/24A 200-240V Delta-wired Power Cord

This power cord feature ECJ5 contains an amphenol type of connector and only supported on PDUs ECJK or ECJL, and ECJP or ECJQ.

ECJ5 has a 4-pin IEC 60309 style plug, 430P9W. It contains three line conductors and a protective earth, but no neutral. ECJ5 is supported in countries that use a delta electrical distribution. ECJ5 is not supported in China, Hong Kong, and other countries that use a wye electrical distribution.

- Attributes provided: Power cord
- Attributes required: PDU features ECJK or ECJL, and ECJP or ECJQ.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECJ7) - 4.3m (14-Ft) PDU to Wall 3PH/48A 200-240V Delta-wired Power Cord

This power cord feature ECJ7 contains an amphenol type of connector and only supported on PDUs ECJK or ECJL, and ECJP or ECJQ.

ECJ7 has a 4-pin IEC 60309 style plug, 460P9W. It contains three line conductors and a protective earth, but no neutral. ECJ7 is supported in countries that use a delta electrical distribution. ECJ7 is not supported in China, Hong Kong, and other countries that use a wye electrical distribution.

- Attributes provided: Power cord
- Attributes required: PDU features ECJK or ECJL, and ECJP or ECJQ.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECJJ) - High Function 9xC19 Single-Phase or Three-Phase Wye PDU plus

This is an intelligent, switched 200-240 volt single-phase or 380-415/220-240 volt three-phase wye AC Power Distribution Unit (PDU) plus with nine C19 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the nine C19 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Depending on country wiring standards the PDU is single-phase or three-phase wye. Three-phase wye-wired connectors have 5-pins and use three line conductors, a neutral, and a protective earth. The input is 380-415 volt line-to-line and the output is 220-240 volt line-to-neutral for three-phase wye PDUs.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One country-specific wall line cord is also ordered separately and attaches to a UTG524-7 connector on the front of the PDU. Supported line cords include features #6489, #6491, #6492, #6653, #6654, #6655, #6656, #6657, #6658, and #6667.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

There are also three C13 receptacles on the rear of the PDU positioned toward the middle of the rack. These are generally not easily accessed and therefore IBM does not generally recommend their use.

#ECJG and #ECJJ are identical PDUs. Up to one lower price #ECJG can be ordered with a new 7014-T42/T00 rack in place of a no-charge #9188 PDU.

For comparison, this is most similar to the earlier generation #EPTJ PDU.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Nine C19 PDU plus - switched, power monitoring
- Attributes required: PDU wall line cord and space in 19-inch rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECJL) - High Function 9xC19 PDU plus 3-Phase Delta

This is an intelligent, switched 200-240 volt 3-phase delta AC Power Distribution Unit (PDU) plus with nine C19 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the nine C19 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Three-phase delta-wired connectors have 4-pins and use three line conductors and a protective earth. The input is 200-240 volt line-to-line and the output is 200-240 volt line-to-line for three-phase delta PDUs.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One wall line cord is also ordered separately and attaches to the Amphenol inlet connector. Supported line cords include features #ECJ5 and #ECJ7.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

There are also three C13 receptacles on the rear of the PDU positioned toward the middle of the rack. These are generally not easily accessed and therefore IBM does not generally recommend their use.

#ECJK and #ECJL are identical PDUs. Up to one lower price #ECJK can be ordered with a new 7014-T42/T00 rack in place of a no-charge #9188 PDU.

For comparison, this is most similar to the earlier generation #EPTL PDU.

Not supported in China, Hong Kong, and other countries that use a wye electrical distribution.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Nine C19 PDU plus - switched, power monitoring
- Attributes required: space in rack, 3-phase 208V AC delta electrical service
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECJN) - High Function 12xC13 Single-Phase or Three-Phase Wye PDU plus

This is an intelligent, switched 200-240 volt single-phase or 380-415/220-240 volt three-phase wye AC Power Distribution Unit (PDU) plus with twelve C13 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the twelve C13 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Depending on country wiring standards the PDU is single-phase or three-phase wye. Three-phase wye-wired connectors have 5-pins and use three line conductors, a neutral, and a protective earth. The input is 380-415 volt line-to-line and the output is 220-240 volt line-to- neutral for three-phase wye PDUs.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C14 plug connect to C13 PDU receptacles and are ordered separately. One country-specific wall line cord is also ordered separately and attaches to a UTG524-7 connector on the front of the PDU. Supported line cords include features #6489, #6491, #6492, #6653, #6654, #6655, #6656, #6657, #6658, and #6667.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

Feature #ECJM and #ECJN are identical PDUs. Up to one lower price #ECJM can be ordered with a new 7014-T42/T00 rack in place of a no- charge #9188 PDU.

For comparison, this is most similar to the earlier generation #EPTN PDU.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Twelve C13 PDU plus - switched, power monitoring
- Attributes required: PDU wall line cord and space in 19-inch rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECJQ) - High Function 12xC13 PDU plus 3-Phase Delta

This is an intelligent, switched 200-240 volt 3-phase delta AC Power Distribution Unit (PDU) plus with twelve C13 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the twelve C13 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Three-phase delta-wired connectors have 4-pins and use three line conductors and a protective earth. The input is 200-240 volt line-to-line and the output is 200-240 volt line-to-line for three-phase delta PDUs.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One wall line cord is also ordered separately and attaches to the Amphenol inlet connector. Supported line cords include features #ECJ5 and #ECJ7.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

#ECJP and #ECJQ are identical PDUs. Up to one lower price #ECJP can be ordered with a new 7014-T42/T00 rack in place of a no-charge #9188 PDU.

For comparison, this is most similar to the earlier generation #EPTP PDU.

Not supported in China, Hong Kong, and other countries that use a wye electrical distribution.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Twelve C13 PDU plus - switched, power monitoring
- Attributes required: space in rack, 3-phase 208V AC delta electrical service
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECP0) - Cloud Private Solution

This feature indicates that it is a Cloud Private Solution.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: No

## (#ECR0) - 2.0 Meter Slim Rack

Provides a 19-inch, 2.0 meter high rack with 42 EIA units of total space for installing rack mounted CECs and/or expansion units. The ECR0 rack does not come equipped with a standard front door, rear door or side covers. The following features are required for every #ECR0 rack:

- 1x #ECRF (high-end appearance front door ) or ECRM (Basic Front Door)
- 1x #ECRG (Rear Door)
- 2x ECRJ (Side Covers)

The following optional feature is also offered for the ECR0 rack:

- ECRK - Rack Rear Extension.

Up to four vertically mounted Power Distribution Units (PDU) are supported and every vertically mounted PDU requires #ELC0. Each PDU beyond four will consume 1U of rack space.

- Attributes provided: 19 inch, 2.0M, 42 EIA Rack
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No
  Note: One of feature #ECRF, and one of feature #ECRG and two of feature #ECRJ are required per one #ECR0 ordered.

## (#ECRF) - Rack Front Door High-End appearance

This feature provides a front door in High-End appearance with an IBM logo for the S42 rack. A front door such as #ECRF is recommended on the S42 rack. A front door is required on ECR0 rack. IBM ships rack with the handle on the right and hinges on the left viewed facing the front of the rack.

The door comes with a lock which is keyed the same as the rear door. Uniquely keyed locks can be obtained by the client directly from Southco, the vendor from whom IBM purchased the lock.

- Attributes provided: Front Door with lock
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ECRG) - Rack Rear Door Black

This feature provides a rear door in flat black color for the S42 rack.

The door is the full width of the rack and the hinges and lockplate can be moved from side to side allowing the door to be opened on the left or on the right. IBM ships rack with the handle on the right and hinges on the left viewed facing the rear of the rack.

Limitation: If the ruggedized feature #ECRR is installed the door must be hinged on the left with the handle on the right.

The front and rear doors come with a lock which is keyed the same as the front door. Uniquely keyed locks can be obtained by the client directly from Southco, the vendor from whom IBM purchased the lock.

- Attributes provided: Rear Door with lock
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ECRJ) - Rack Side Cover

This feature provides one side panels in black color for the S42 or feature #ECR0 rack. Each side panel can cover either the left or the right side of the rack. These side covers are optional but recommended on S42 rack. 2x ECRJ are required on every ECR0 for optimal airflow through a rack and for physical security.

Each side panel is secured by four screws that are accessible from the top of the rack and four screws that are accessible from inside of the rack.

- Attributes provided: One side panel for rack.
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ECRK) - Rack Rear Extension 5-In

This feature is an optional rear rack extender that can be used for 7965-S42 racks. This extender is installed on the rear of the rack 7965-S42 and provides 130mm (5 in.) of extra space to hold cables on the side of the rack and to keep the center area clear for cooling and service access. Two extenders can be stacked to provide 260mm (10 in.) of additional rear cabling space. The extender has hook-and- loop fasteners to secure cables.

- Attributes provided: Rack Rear Extension
- Attributes required: Maximum one per feature #ECR0 rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ECRM) - Rack Front Door for Rack (Black/Flat)

This feature provides a front door in flat black color with an IBM logo for the S42 rack.

The front and rear doors come with a lock which is keyed the same as the front door. Uniquely keyed locks can be obtained by the client directly from Southco, the vendor from whom IBM purchased the lock.

- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ECSF) - Custom Service Specify, Montpellier, France

Having #ECSF on the order, will cause the order to be routed to France and the machine to be internally routed to the CSC build area.

- Attributes provided: Customization
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ECSM) - Custom Service Specify, Mexico

Having #ECSM on the order, will cause the order to be routed to Mexico and the machine to be internally routed to the CSC build area.

- Attributes provided: Customization
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: Does not apply

## (#ECSP) - Custom Service Specify, Poughkeepsie, USA

Having #ECSP on the order, will cause the order to be routed to Poughkeepsie, USA and the machine to be internally routed to the CSC build area.

- Attributes provided: Customization
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: Does not apply

## (#ECSS) - Integrated Solution Packing

This is a routing indicator for Solution packing.

- Attributes provided: Routing instruction for manufacturing
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#ECW0) - Optical Wrap Plug

A wrap plug is a small connector designed to perform a diagnostic test called a loopback test. This wrap plug is inserted into a SR optical port on a PCIe Fibre Channel adapter or a SR or LR optical port on a PCIe Ethernet adapter

This is a multi-mode LC fiber optic wrap plug with an inside/ outside optics diameter of 50/125. Its IBM part number as of early 2016 is 12R9314. An earlier equivalent function IBM part number which is no longer shipped is 11P3847.

It is strongly recommended that Fibre Channel adapters (HBAs) fill any empty adapter ports with a wrap plug. There is no technical issue leaving a port empty. However, filling all ports with a cable to a device/switch or with a wrap plug can speed the booting/IPLing of a partition and can avoid error messages uselessly pointing to a planned empty port.

There is no technical issue leaving an Ethernet port empty. Whether an Ethernet port is empty or contains a wrap plug should not impact boot/IPL time or impact empty-port messages.

- Attributes provided: Wrap plug
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EHB1) - 1x HW Subscription Increment

This feature allows MES orders and create order for customer usage.

- Attributes provided: None
- Attributes required: RPQ 8A2544
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EHB2) - 10x HW Subscription Increment

This feature allows MES orders and create order for customer usage.

- Attributes provided: None
- Attributes required: RPQ 8A2544
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EHB3) - 100x HW Subscription Increment

This feature allows MES orders and create order for customer usage.

- Attributes provided: None
- Attributes required: RPQ 8A2544
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#EHR1) - Boot Drive / Load Source in EXP12SX Specify (in #ESLL or #ELLL)

Indicates that boot drive (disks or SSDs) are placed in an EXP12SX SAS Storage Enclosure

- Attributes provided: Boot drive location specify
- Attributes required: Available SAS bay and supported disk/SSD
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EHR2) - Boot Drive / Load Source in EXP24SX Specify (in #ESLS or #ELLS)

Indicates that boot drive or load source (disks or SSDs)are placed in an EXP24SX SAS Storage Enclosure

- Attributes provided: Boot drive / load source location specify
- Attributes required: Available SAS bay and supported disk/SSD
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EHS2) - SSD Placement Indicator - #ESLS/#ELLS

This is an IBM internal automatic generated SSD specify indicator for placement and it is not selectable.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJ08) - PCIe3 Optical Cable Adapter for PCIe3 Expansion Drawer

PCIe3 x16 adapter provides two CXP ports for the attachment of two active optical CXP cables (AOC) or two CXP copper cables. One adapter supports the attachment of one PCIe3 fan-out module in a PCIe Gen3 I/O Expansion Drawer. CCIN is 2CE2

EJ08 is similar to EJ05 and EJ07, but has different packaging and different CCIN.

- Attributes provided: PCIe3 adapter with two CXP ports to attach two active optical cables or two CXP copper cables.
- Attributes required:
  PCIe3 x16 slot in system unit plus a pair of CXP cables (one cable pair feature such as #ECC7 or #ECCS). Copper cables require Firmware 8.40 or later.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required:
  - AIX supported
  - IBM i supported
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EJ0J) - PCIe3 RAID SAS Adapter Quad-port 6Gb x8

The PCIe3 RAID SAS Adapter is a high performance SSD/HDD controller using PCIe Gen3 x8 technology. The adapter does not have write cache and thus pairing with another PCIe3 RAID SAS Adapter (#EJ0J or #EJ0M) is optional. Pairing can provide controller redundancy and enhance performance. There are no batteries in the adapter to maintain.

The adapter provides four Mini-SAS HD (high density) narrow connectors for the attachment of SAS drives located in the EXP24S, EXP12SX, or EXP24SX storage enclosures or #5802/5803/EL36 12X PCIe I/ O drawers. X, YO or AT SAS cables with HD narrow connectors are used to attach to these drawers. A max of 4 EXP24S/EXP12SX/EXP24SX can be attached. A maximum of 48 SSD can be attached and a maximum of 96 HDD can be attached per adapter or per adapter pair.

The adapter provides RAID 0, RAID 5, RAID 6 and RAID 10 for AIX and Linux and VIOS. The adapter provides RAID 5 and RAID 6 for all levels of IBM i and also provides RAID 10 for later levels of IBM i. IBM i provides both OS mirroring and data spreading. AIX/Linux/VIOS provide OS mirroring (LVM).

Features #EJ0J and #EJ0M are electronically identical with the same CCIN of 57B4. #EJ0J has a full-high tailstock bracket and air baffle. #EJ0M has a low profile tailstock bracket. #EJ10/#EJ11 are identical with #EJ0J/#EJ0M, but have different feature codes to identify their use as tape/DVD controllers to IBM configurator tools instead of disk/SSD controllers.

Both 5xx and 4k byte sector HDD/SSD are supported for POWER8/POWER9 servers. 5xx byte sector HDD/SSD are supported for earlier generation servers. 5xx and 4k drives cannot be mixed in the same array.

Limitations:

- HDD/SSD workloads which are performance sensitive to WRITES should use the #EJ14 or #EJ0L controller which provides write cache.
- HDD and SSD cannot be mixed on the same SAS port, but can be mixed on the same adapter.
- #5886 3.5-inch SAS Storage Drawer is not supported.
- 177GB SSD are not supported.
- Running SAS bays for both a #5887 EXP24S I/O drawer and a 12X-attached #5802/5803 I/O drawer on the same adapter or adapter pair is not supported. Note mixing EXP24S or EXP12SX or EXP24SX is supported.
- If controlling drives in a #5802/5803/EL36 as a single controller, the #EJ0J must be located in that #5802/5803/EL36. If controlling drives in a #5802/5803/EL36 as a pair of controllers, at least one of the SAS adapter pairs must be located in that #5802/ 5803/EL36.
- Tape/DVD cannot be mixed with disk/SSD on the same adapter.
- Attributes provided: full high PCIe3 four port x8 SAS RAID adapter with no write cache and optional pairing
- Attributes required: One PCIe slot per adapter and Mini-SAS HD narrow connector SAS cables such as #ECBJ-ECBL, #ECBT-ECBV, #ECCO-ECC4 or 12Gb cables such as #ECDJ, ECDT or #ECDU.
- Minimum required: 0
- Maximum allowed: 10 (Initial order maximum: 10)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Assignment to the VIOS supported
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EJ0L) - PCIe3 12GB Cache RAID SAS Adapter Quad-port 6Gb x8

The PCIe3 12GB Cache RAID SAS Adapter provides high performance HDD and/or SSD controller function using PCIe Gen3 technology. A pair of adapters are required to provide mirrored write cache data and adapter redundancy. Integrated flash memory provides protection of the write cache without batteries in case of power failure. Effectively up to 12GB of write cache is provided using compression of 4 GB of physical cache.

The adapter provides four Mini-SAS HD (high density) narrow connectors for the attachment of SAS drives located in the SAS EXP24S or EXP12SX or EXP24SX storage enclosures or#5802/5803/EL36 12X PCIe I/O drawers. X, YO or AT SAS cables with HD narrow connectors are used to attach to these drawers. A max of 4 EXP24S/ EXP12SX/EXP24SX can be attached with a maximum of 96 HDD or a maximum of 48 SSD. Two AA SAS cable with HD narrow connectors are attached to the #EJ0L pair to communicate status and cache content information and are required unless three or four ports are being used to attach HDD/SSD.

The #EJ0L provides RAID 0, RAID 5, RAID 6 and RAID 10 for AIX and Linux and VIOS. The adapter provides RAID 5 and RAID 6 for all levels of IBM i and also provides RAID 10 for later levels of IBM i. IBM i provides both OS mirroring and data spreading. AIX/Linux/VIOS provide OS mirroring (LVM). This adapter can also support the Easy Tier function (RAID 52T, 62T or 102T) for AIX and Linux. The adapter's CCIN is 57CE.

Both 5xx and 4k byte sector HDD/SSD are supported for POWER8 servers. 5xx byte sector HDD/SSD are supported for earlier generation servers. 5xx and 4k drives cannot be mixed in the same array.

Limitations:

- HDD and SSD cannot be mixed on the same SAS port, but can be mixed on the same adapter.
- #5886 3.5-inch SAS I/O Drawer is not supported.
- 177GB SSD are not supported.
- Running SAS bays for both a #5887 EXP24S I/O drawer and a 12X-attached #5802/5803 I/O drawer on the same adapter pair is not supported. Note: Mixing EXP24S or EXP12SX or EXP24SX is supported.
- If controlling drives in a #5802/5803/EL36 at least one of he #EJ0L pairs must be located in that #5802/5803/EL36
- Attributes provided: Full high PCIe3 four port x8 adapter with up to 12GB write cache
- Attributes required: One PCIe slot per adapter and Mini-SAS HD narrow connector SAS cables such as #ECBJ-ECBL, #ECBT-ECBV, #ECCO-ECC4 or 12Gb cables such as ECDT or #ECDU.

- Minimum required: 0
- Maximum allowed: 10 (Initial order maximum: 0)
- OS level required:
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server
  - Red Hat Enterprise Linux
  - Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Assignment to the VIOS supported
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EJ0W) - SAS Ports/Cabling for Dual IOA BackPlane

Two SAS ports on the rear of the 4U server and SAS cables inside the server to the dual IOA SAS controllers in the higher performance storage backplane. An EXP24S SAS storage drawer can be attached to SAS ports using a pair of SAS-mini HD Narrow YO cables. Note that the SAS ports are physically located in the same space as one of the PCIE x8 slots and reduce the total number of PCIe adapter which can be used in the 4U server.

- Attributes provided: Two SAS ports, Internal SAS cables
- Attributes required: 4U POWER8 server with high performance storage backplane such as EJ1D or EJ1M. Available PCIe slot.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJ10) - PCIe3 SAS Tape/DVD Adapter Quad-port 6Gb x8

The PCIe3 SAS Adapter is a high performance SAS tape controller using PCIe Gen3 x8 technology. The adapter supports external SAS tape drives such as the LTO-5, LTO-6, LTO-7, and LTO-8 found in the IBM 7226-1U3 Multimedia drawers, or tape units such as the TS2250, TS2260, TS2270, and TS2280 single External Tape Drive, TS2900, TS3100, TS3200, and TS3310. Other removable media devices supported include IBM SAS/SATA DVD RAM drive features available on the IBM 7226-1U3 Storage Enclosure. The adapter provides four Mini-SAS HD (high density) connectors to which AE1 SAS cables such as #ECBY and/ or YE1 SAS Cables such as #ECBZ with HD narrow connectors can be attached. A max of 4 tape drives per adapter can be attached using four AE1 cables. A max of 8 tape drives can be attached using four YE1 cables.

#EJ10 (full high) and #EJ11 (low profile) are electronically the same adapter with the same 57B4 CCIN, but differ in that their tailstocks fit different size PCIe slots.

#EJ0J and #EJ10 are the same adapter with the same 57B4 CCIN, but have different feature code numbers to indicate different usage to IBM configurator tools. #EJ10 runs SAS LTO-5 or later tape drives and DVD. Support of both tape/DVD and HDD/SSD on the same adapter is not supported.
Note: The original #EJ0X adapter does not support DVD but also has the same CCIN.
Note: Adapter uses a Mini-SAS HD narrow connector and AE1 #ECBZ or YE1 #ECBY SAS cable.

Limitation: LTO-4 or earlier drives are not supported.

- Attributes provided: full high PCIe3 four port x8 SAS adapter
- Attributes required: One PCIe slot per adapter
- Minimum required: 0
- Maximum allowed: 10 (Initial order maximum: 10)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - Assignment to the VIOS supported
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EJ14) - PCIe3 12GB Cache RAID PLUS SAS Adapter Quad-port 6Gb x8

The PCIe3 12GB Cache RAID PLUS SAS Adapter provides high performance HDD and/or SSD controller function using PCIe Gen3 technology. A pair of #EJ14 adapters are required to provide mirrored write cache data and adapter redundancy. Integrated flash memory provides protection of the write cache without batteries in case of power failure. Effectively up to 12GB of write cache is provided using compression of 4 GB of physical cache. The #EJ14 provides four Mini-SAS HD (high density) narrow connectors for the attachment of SAS drives located in the SAS EXP24S, EXP12SX, or EXP24SX storage enclosures. X, YO or AT SAS cables with HD narrow connectors are used to attach to these drawers. A max of 4 EXP24S can be attached with a maximum of 96 HDD or a maximum of 72 SSD per pair of #EJ14. If more than 48 SSD are attached, no HDD can be attached. A mix of EXP24S, EXP12SX or EXP24SX is supported on the same adapter pair. Two AA SAS cable with HD narrow connectors are attached to the #EJ14 pair to communicate status and cache content information and are required unless three or four ports are being used to attach HDD/SSD. Feature #EJ14 provides RAID 0, RAID 5, RAID 6, and RAID 10, RAID 5T2, RAID 6T2, and RAID 10T2 for AIX and Linux and VIOS. Two tier arrays (5T2, 6T2 and 10T2) combine both HDD and SSD into a single array with Easy Tier functionality. AIX/Linux/VIOScan also provide OS mirroring (LVM). On systems that support IBM i, the adapter provides RAID 5 and RAID 6 for IBM i. RAID 10 is supported by IBM i 7.2. IBM i provides both OS mirroring and data spreading. This adapter is very similar to the#EJ0L SAS adapter, but #EJ14 uses a second CPU chip in the card to provide more IOPS capacity and can attach more SSD. The #EJ14 adapter's CCIN is 57B1. Both 5xx and 4k byte sector HDD/SSD are supported. 5xx and 4k drives cannot be mixed in the same array. Limitations:

- Not supported on POWER7/POWER7+ servers.
- HDD and SSD cannot be mixed on the same SAS port, but can be mixed on the same adapter.
- Attributes provided: Full high PCIe3 four port x8 adapter with up to 12 GB write cache
- Attributes required: One PCIe slot per adapter and Mini-SAS HD narrow connector SAS cables such as #ECBJ-ECBL, #ECBT-ECBV, #ECCO-ECC4 or 12Gb cables such as ECDT or #ECDU.
- Minimum required: 0
- Maximum allowed: 10 (Initial order maximum: 10)
- OS level required:
  - AIX supported
  - IBM i supported
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EJ1C) - Base Storage Backplane 12 SFF-3 Bays/RDX Bay

Base Storage backplane with integrated SAS controller for SAS bays in the system unit. SAS bays are 2.5-inch or Small Form Factor (SFF) and used drives mounted on a carrier/tray specific to the system unit (SFF-3).

The high performance SAS controller provides RAID-0, RAID-5, RAID-6 and RAID-10 support for either HDD or SSD. JBOD support for HDD is also supported. Controller has no write cache.

For servers that support split backplane capability add #EJ1E feature. For write cache performance use #EJ1D or #EJ1M Backplane instead of this backplane.

Both 5xx and 4k byte sector HDD/SSD are supported. 5xx and 4k drives cannot be mixed in the same array.

- Attributes provided: Storage backplane with one integrated SAS adapter with no cache running 12 SFF-3 SAS bays in the system unit and one RDX bay in the system unit
- Attributes required: Server without #EJ1D or #EJ1M backplane
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

## (#EJ1D) - Expanded Function Storage Backplane 18 SFF-3 Bays/Dual IOA with Write Cache/Opt Ext SAS port

Expanded Function Storage backplane with dual integrated SAS controllers with write cache and optional external SAS port. High performance controllers run SFF-3 SAS bays in the system unit. Dual controllers (also called dual I/O adapters or paired controllers) and their write cache are placed in integrated slots and do not use PCIe slots. Write cache augments controller's high performance for workloads with writes, especially for HDD. 1.8 GB physical write cache is leveraged with compression to provide up to 7.2 GB cache capacity. The write cache contents are protected against power loss with flash memory and super capacitors removing the need for battery maintenance.

The high performance SAS controllesrs provide RAID-0, RAID-5, RAID-6, RAID-10, RAID-5T2, RAID-6T2, and RAID-10T2 support. Patented Active/Active configurations with at least two arrays is supported.

Easy Tier function is supported so the dual controllers can automatically move hot data to attached SSD and cold data to attached HDD for AIX/Linux/VIOS environments.

Small Form Factor (SFF) or 2.5-inch drives are mounted on a carrier/ tray specific to the system unit (SFF-3). The backplane has 18 SFF-3 bays.

This backplane also enables two SAS ports (#EJ0W) on the rear of the system unit support the attachment of one EXP24S/EXP24SX I/O drawer in mode1 holding HDD or SSD.

Note that #EJ0W is an optional feature with #EJ1M and one x8 PCIe slot is used by EJ0W.

Note this backplane doesn't support split backplane. For split backplane use #EJ1C + #EJ1E backplane features.

Both 5xx and 4k byte sector HDD/SSD are supported. 5xx and 4k drives cannot be mixed in the same array.

- Attributes provided: Storage backplane with a pair of integrated SAS adapters with write cache and optional external SAS port running up to: a) a set of 18 SFF-3 SAS bays in the system unit; b) two SAS ports on the rear of the system unit to connect a single EXP24S/EXP24SX I/O drawer.

- Attributes required: Server without #EJ1C or #EJ1M backplane
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

## (#EJ1E) - Split #EJ1C to 6+6 SFF-3 Bays

Add 2nd SAS Controller

This feature modifies the base Storage backplane cabling and adds a second, high performance SAS controller. The existing 12 SFF-3 SAS bays are cabled to be split into two sets of six bays, each with one SAS controller. Both SAS controllers are located in integrated slots and do not use a PCIe slot.

The high performance SAS controllers each provides RAID-0, RAID-5, RAID-6 and RAID-10 support. JBOD support for HDD is also supported. There is no write cache on either controller.

Both 5xx and 4k byte sector HDD/SSD are supported. 5xx and 4k drives cannot be mixed in the same array.

- Attributes provided: A second integrated SAS adapter with no cache and internal cables to provide two sets of six SFF-3 bays in the system unit.
- Attributes required: #EJ1C backplane
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

## (#EJ1M) - Expanded Function Storage Backplane 12 SFF-3 Bays/RDX Bay/Opt Ext SAS port

Expanded Function Storage backplane with dual integrated SAS controllers with write cache and optional external SAS port. High performance controllers run SFF-3 SAS bays and RDX bay in the system unit. Dual controllers (also called dual I/O adapters or paired controllers) and their write cache are placed in integrated slots and do not use PCIe slots. Write cache augments controller's high performance for workloads with writes, especially for HDD. 1.8 GB physical write cache is leveraged with compression to provide up to 7.2 GB cache capacity. The write cache contents are protected against power loss with flash memory and super capacitors removing the need for battery maintenance.

The high performance SAS controllesrs provide RAID-0, RAID-5, RAID-6, RAID-10, RAID-5T2, RAID-6T2, and RAID-10T2 support. Patented Active/Active configurations with at least two arrays is supported.

Easy Tier function is supported so the dual controllers can automatically move hot data to attached SSD and cold data to attached HDD for AIX/Linux/VIOS environments.

Small Form Factor (SFF) or 2.5-inch drives are mounted on a carrier/ tray specific to the system unit (SFF-3). The backplane has 12 SFF-3 bays.

This backplane also enables two SAS ports (#EJ0W) on the rear of the system unit support the attachment of one EXP24S/EXP24SX I/O drawer in mode1 holding HDD or SSD.

Note that #EJ0W is an optional feature with #EJ1M and one x8 PCIe slot is used by EJ0W.

Note this backplane doesn't support split backplane. For split backplane use #EJ1C + #EJ1E backplane features.

Both 5xx and 4k byte sector HDD/SSD are supported. 5xx and 4k drives cannot be mixed in the same array.

- Attributes provided: Expanded Function Storage backplane with a pair of integrated SAS adapters with write cache and optional external SAS port running up to: a) a set of 12 SFF-3 SAS bays in the system unit: b) one RDX bay in the system unit; c) two SAS ports on the rear of the system unit to connect a single EXP24S/EXP24SX I/O drawer.
- Attributes required: Server without #EJ1C or #EJ1D backplane
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

## (#EJ1P) - PCIe1 SAS Tape/DVD Dual-port 3Gb x8 Adapter

(No longer available as of December 31, 2020)

This is a PCIe Gen1 short x8 form factor adapter. It supports the attachment of SAS tape and DVD using a pair of mini SAS 4x connectors. The PCIe1 can be used for external tape drives which are not supported on the newer and faster 4-port 6Gb PCIe3 adapter (see feature code #EJ10/EJ11/EL60). The adapter supports external SAS tape drives such as the DAT72, DAT160, LTO-4, LTO-5, LTO-6, and LTO-7 found in the IBM multimedia drawers such as the 7226-1U3 or 7214-1U2 or tape units such as the TS2240, TS2340, TS3100, TS3200, and TS3310. Other removable media devices supported include IBM SAS/ SATA DVD-ROM/RAM drives.

SAS adapter-to-enclosure (AE) 3Gb cables with mini-SAS connectors are used to attach these drives. See feature codes #3684 (3 meter) and #3685 (6 meter). The same AE cables can often alternatively be ordered under the tape enclosure or multimedia drawer.

Feature EJ1P and EJ1N are electrically and functionally identical with the same CCIN of 57B3. EJ1P has a full-high tailstock bracket and EJ1N has a low profile tailstock bracket. Feature EJ1P/EJ1N is the same adapter as #5901/5278 but designates to IBM configurator tools that the usage will be tape/DVD and will not be used for disk.

- Attributes provided: Two mini SAS 4x connectors
- Attributes required: One PCIe slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - AIX supported
  - IBM i supported
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server
  - Red Hat Enterprise Linux
  - Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJ1Q) - NVMe U.2 Passthru adapter Gen4 capable

- Attributes provided: NVMe U.2 adapter
- Attributes required: Feature EJ1T or EJ1V
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJ1S) - Storage backplane 6 SFF-3 Bays and 2 front PCIe Gen4 capable NVMe U.2 drive slots

- Attributes provided: Storage Backplane
- Attributes required: Gen4 NVMe U.2 drive
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

## (#EJ1T) - Storage backplane with two front PCIe Gen4 capable NVMe U.2 drive slots

- Attributes provided: Storage Backplane
- Attributes required: Gen4 NVMe U.2 drive
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

## (#EJ1U) - Storage backplane with four front PCIe Gen4 capable NVMe U.2 drive slots

- Attributes provided: Storage Backplane
- Attributes required: Gen4 NVMe U.2 drive
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

## (#EJ20) - PCIe x16 to CXP Optical or CU converter Adapter for PCIe3 Expansion Drawer

PCIe3 x16 adapter provides two CXP ports for the attachment of two active optical CXP cables (AOC) or two CXP copper cables. One adapter supports the attachment of one PCIe3 fan-out module in a PCIe Gen3 I/O Expansion Drawer. CCIN is 2CF5.

Feature EJ20 is a follow on product to the EJ08. Feature EJ20 is only supported on I/O expansion drawer with the PCIe3 6-slot fanout module (feature #EMXH).

- Attributes provided: PCIe3 adapter with two CXP ports to attach two active optical cables or two CXP copper cables.
- Attributes required: PCIe3 x16 slot in system unit plus a pair of CXP cables (one cable pair feature such as optical cable #ECCX, #ECCY or copper cable #ECCS).
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJ32) - PCIe3 Crypto Coprocessor no BSC 4767

Secure-key adapter provides both cryptographic coprocessor and cryptographic accelerator functions in a single PCIe card. The adapter is well suited to applications requiring high-speed, security- sensitive, RSA acceleration, cryptographic operations for data encryption and digital signing, secure management, and use of cryptographic keys, or custom cryptographic applications. It provides secure storage of cryptographic keys in a tamper-resistant hardware security module designed to meet FIPS 140-2 level 4 security requirements. The adapter is a PCIe Gen 3 x4 full height - short card. The adapter runs in dedicated mode only (no PowerVM virtualization).

#EJ32 and #EJ33 are both feature codes representing the same physical card with the same CCIN of 4767. Different feature codes are used to indicate if a blind swap cassette is used and its type. #EJ32 indicates no blind swap cassette. #EJ33 indicates a Gen 3 blind swap cassette.

IBM PCIe Cryptographic Coprocessor adapter highlights

- Integrated Dual processors that operate in parallel for higher reliability, often 2x performance improvement over prior generation crypto cards
- Uses newer level Power Processor (PPC) processor than previous generation cards
- Supports IBM Common Cryptographic Architecture (CCA 5.3) and PKCS#11 standand
- Ability to configure adapter as coprocessor or accelerator
- Support for smart card applications using Europay, MasterCard and Visa
- Cryptographic key generation and random number generation
- PIN processing - generation, verification, translation
- Encrypt/Dectrypt using AES and DES keys

Please refer to the following URL for the latest firmware and software updates http://www-03.ibm.com/security/cryptocards/

- Attributes provided: Cryptographic Coprocessor and Accelerator Functions
- Attributes required: One full-high PCIe Gen3 slot which doesn't use a blind swap cassette
- Minimum required: 0
- Maximum allowed: 7 (Initial order maximum: 7)
- OS level required:
  - AIX supported
  - IBM i supported
  - Linux supported

  Linux software support can be downloaded from the following location:

  http://www-03.ibm.com/security/cryptocards/
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
- Editor note:
  - This adapter is not supported on a tower/deskside 9009-41G model configuration.

## (#EJ33) - PCIe3 Crypto Coprocessor BSC-Gen3 4767

(No longer available as of December 31, 2020)

Secure-key adapter provides both cryptographic coprocessor and cryptographic accelerator functions in a single PCIe card. The adapter is well suited to applications requiring high-speed, security- sensitive, RSA acceleration, cryptographic operations for data encryption and digital signing, secure management, and use of cryptographic keys, or custom cryptographic applications. It provides secure storage of cryptographic keys in a tamper-resistant hardware security module designed to meet FIPS 140-2 level 4 security requirements. The adapter is a PCIe Gen 3 x4 full height - short card. The adapter runs in dedicated mode only (no PowerVM virtualization).

#EJ32 and #EJ33 are both feature codes representing the same physical card with the same CCIN of 4767. Different feature codes are used to indicate if a blind swap cassette is used and its type. #EJ32 indicates no blind swap cassette. #EJ33 indicates a Gen 3 blind swap cassette.

IBM PCIe Cryptographic Coprocessor adapter highlights

- Integrated Dual processors that operate in parallel for higher reliability, often 2x performance improvement over prior generation crypto cards
- Uses newer level Power Processor (PPC) processor than previous generation cards
- Supports IBM Common Cryptographic Architecture (CCA 5.3) and PKCS#11 standand
- Ability to configure adapter as coprocessor or accelerator
- Support for smart card applications using Europay, MasterCard and Visa
- Cryptographic key generation and random number generation
- PIN processing - generation, verification, translation
- Encrypt/Dectrypt using AES and DES keys

Please refer to the following URL for the latest firmware and software updates http://www-03.ibm.com/security/cryptocards/

- Attributes provided: Cryptographic Coprocessor and Accelerator Functions
- Attributes required: One full-high PCIe Gen3 slot which uses a blind swap cassette
- Minimum required: 0
- Maximum allowed: 6 (Initial order maximum: 6)
- OS level required:
  - AIX supported
  - IBM i supported
  - SUSE Linux Enterprise Server
  - Red Hat Enterprise Linux

  Linux software support can be downloaded from the following location:

  http://www-03.ibm.com/security/cryptocards/pciecc2/or dersoftware.shtml
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJR1) - Specify Mode-1 & (1)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 1 and be using one PCIe3 RAID SAS adapter (#EJ0J/ EJ0M/EL3B ) and one 6G YO SAS Cable.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, one PCIe3 RAID SAS adapter, one SAS YO cable
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJR2) - Specify Mode-1 & (2)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 1 and be using two (one pair) PCIe3 RAID SAS adapters (#EJ0J/EJ0M/EL3B) and two 6G YO SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 RAID SAS adapters, two SAS YO cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJR3) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (2) X for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using two (one pair) RAID PCIe3 SAS adapters (#EJ0J/EJ0M/EL3B) and two 6G X SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 RAID SAS adapters, two SAS X cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#EJR4) - Specify Mode-2 & (4)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using four (two pair) PCIe3 RAID SAS adapters (#EJ0J/EJ0M/EL3B) and two 6G X SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, four PCIe3 RAID SAS adapters, two SAS X cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#EJR5) - Specify Mode-4 & (4)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 4 and be using four (unpaired) PCIe3 RAID SAS adapters (#EJ0J/EJ0M/EL3B) and two 6G X SAS Cables

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, four PCIe3 RAID SAS adapters, two SAS X cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#EJR6) - Specify Mode-2 & (1)EJ0J/EJ0M/EL3B & (2) YO for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using one PCIe3 RAID SAS adapter (#EJ0J/ EJ0M/EL3B) and two 6G YO SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawe, one PCIe3 RAID SAS adapter,two SAS YO cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#EJR7) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (2) YO for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using two (nonpaired) PCIe3 RAID SAS adapters (#EJ0J/EJ0M/EL3B) and two 6G YO SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 RAID SAS adapters, two SAS YO cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#EJRA) - Specify Mode-2 & (1)EJ0J/EJ0M/EL3B & (1) YO for EXP24S (#5887/EI1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using one PCIe3 RAID SAS adapter (#EJ0J/ EJ0M/EL3B) and one 6G YO SAS Cables.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24S. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJR7.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, one PCIe3 RAID SAS Adapter, one 6G YO SAS cable
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRB) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B & (1) X for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using two PCIe3 RAID SAS adapters (#EJ0J ) and one 6G X SAS Cable.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24S. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJR4.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 RAID SAS Adapters, one 6G X SAS cable
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRC) - Specify Mode-4 & (1)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 4 and be using one PCIe3 RAID SAS adapter (#EJ0J/ EJ0M/EL3B) and one 6G X SAS Cables. One leg of the X cable is left unattached at the adapter end.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24S. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJR5, #EJRD or #EJRE.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, one PCIe3 RAID SAS Adapter, one 6G X SAS cable
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRD) - Specify Mode-4 & (2)EJ0J/EJ0M/EL3B for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 4 and be using two (nonpaired) PCIe RAID SAS adapters (#EJ0J/EJ0M/EL3B) and one 6G X SAS Cables.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24S. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJR5 or #EJRE.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 RAID SAS Adapters, one 6G X SAS cable
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRE) - Specify Mode-4 & (3)EJ0J/EJ0M/EL3B for EXP24S (#5888/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 4 and be using three (nonpaired) PCIe3 RAID SAS adapter (#EJ0J/EJ0M/EL3B) and two 6G X SAS Cables. One leg of one X cable is left unattached at the adapter end.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24S. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJR5.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, three PCIe3 RAID SAS Adapters, two 6G X SAS cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRF) - Specify Mode-1 & (2)EJ14 for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 1 and be using two PCIe3 12GB Cache RAID PLUS SAS Adapter Quad-port 6Gb x8 (#EJ14) and two 6G YO SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer in mode1, two PCIe3 #EJ14, two SAS YO cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRG) - Specify Mode-2 & (2)EJ14 & (2) X for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using two PCIe3 12GB Cache RAID PLUS SAS Adapter Quad-port 6Gb x8 (#EJ14) and two 6G X SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer in mode 2, two PCIe3 #EJ14, two SAS X cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRH) - Specify Mode-2 & (2)EJ14 & (1) X for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using two PCIe3 12GB Cache RAID PLUS SAS Adapter Quad-port 6Gb x8 (#EJ14) and one 6G X SAS Cable.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24S. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer in mode2, two PCIe3 #EJ14, one SAS X cable
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRJ) - Specify Mode-2 & (4)EJ14 for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using four PCIe3 12GB Cache RAID PLUS SAS Adapter Quad-port 6Gb x8 (#EJ14) and two 6G X SAS Cable.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer in mode2, four PCIe3 #EJ14, two SAS X cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRL) - Non-paired Indicator EJ14 PCIe SAS RAID+ Adapter

Feature EJRL must be added for every instance of a non-paired SAS RAID adapter #EJ14. It identifies a specific high availability configuration supported by AIX or Linux which has one #EJ14 on one system and the paired #EJ14 located on a second system. IBM i does not support paired adapter on different servers.

SAS RAID adapter firmware disables write cache until a second SAS RAID adapter is recognized as its pair. This specify indicates the pairing will not be on just one server.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: Only one #EJ14 on a server and its pair on a different server.
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required: See feature EJ14
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJRP) - Specify Mode-1 & (2)EJ0L for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 1 and be using two PCIe3 12GB Cache RAID SAS adapters (#EJ0L) and two 6G YO SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 12GB Cache SAS RAID adapters, two SAS YO cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRR) - Specify mode-2 & (4) EJ0L for EXP24S #5887/EL1S

(No longer available as of December 31, 2020)

Specify feature EJRR (Specify mode-2 & (4 )EJ0L for EXP24S #5887 or #EL1S) directs manufacturing to configure SFF drawer to mode 2 (two sets of 12 SFF bays) and four PCIe2 12GB Cache RAID SAS Adapter Quad-port 6Gb. Select #EJ0L and two appropriate length HD narrow X cable (#ECBJ -#ECBM). Include two AA cables (#ECCO - #ECC4) between each pair of SAS adapters (total of 4 AA cables). Note: IBM does not provide changes to the mode setting after #5887 or #EL1S is shipped.

- Attributes provided: Configure #5887/EL1S in Mode 2
- Attributes required: Two dual X cables, four AA cables and one port on each of four #EJ0Ls dedicated to the single #5887/EL1S.
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRS) - Specify Mode-2 & (2)EJ0L & (2) X for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using two PCIe3 12GB RAID SAS adapters (#EJ0L) and two 6G X SAS Cables.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 12GB Cache SAS RAID adapters, two SAS X cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRT) - Specify Mode-2 & (2)EJ0L & (1) X for EXP24S (#5887/EL1S)

(No longer available as of December 31, 2020)

This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24S SFF Gen2-bay Drawer (#5887/#EL1S) should be configured in Mode 2 and be using two 12GB Cache RAID SAS adapters (#EJ0L ) and one 6G X SAS Cable.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24S. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: EXP24S Drawer, two PCIe3 12GB Cache SAS RAID adapters, one SAS X cable
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 0)
- OS level required: See feature 5887
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJRU) - Non-paired Indicator EJ0L PCIe SAS RAID Adapter

Feature EJRU must be added for every instance of a non-paired SAS RAID adapter #EJ0L. It identifies a specific high availability configuration supported by AIX or Linux which has one #EJ0L on one system and the paired #EJ0L located on a second system. IBM i does not support paired adapter on different servers.

- Attributes provided: SAS RAID adapter firmware disables write cache until a second SAS RAID adapter is recognized.
- Attributes required: Every #EJ0L requires a 6Gb/s SAS RAID adapter (#EJ0L) on both this server and on another server that will pair up the SAS RAID adapter and enable the onboard caches to function.
- Minimum required: 0
- Maximum allowed: 10 (Initial order maximum: 10)
- OS level required: See feature EJ0L
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJTZ) - Rack-mount Rail Kit

Rack-mount Rail Kit

- Attributes provided: Rails
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJU2) - Front IBM Bezel for 12-Bay BackPlane

Front bezel with IBM logo plus rails for 4U rack mounted system. Bezel fits Storage Backplane and its 12 SAS bays. Rails adjust from approximately 24 to 31 inches in depth.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJU4) - Front OEM Bezel for 12-Bay BackPlane

Front bezel with no IBM logo plus rails for 4U rack mounted system. Bezel fits Storage Backplane and its 12 SAS bays. Rails adjust from approximately 24 to 31 inches in depth.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJU8) - Front Door and Covers for 12-Bay BackPlane

Front bezel with door and IBM logo for 4U Tower system. Bezel fits Storage Backplane and its 12 SAS bays.

- Limitation: Feature EJU8 is not available in India.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJU9) - Front Door and Covers for 18-Bay BackPlane

Front bezel with door and IBM logo for 4U Tower system. Bezel fits Storage Backplane and its 18 SAS bays and optional SSD cage.

- Limitation: Feature EJU9 is not available in India.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUA) - Front OEM Door and Covers for 12-Bay BackPlane

Front bezel with door and no IBM logo for 4U Tower system. Bezel fits Storage Backplane and its 12 SAS bays.

- Limitation: Feature EJUA is not available in India.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUB) - Front OEM Door and Covers for 18-Bay BackPlane

Front bezel with door and no IBM logo for 4U Tower system. Bezel fits Storage Backplane and its 18 SAS bays.

- Limitation: Feature EJUB is not available in India.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUF) - Front IBM Bezel 18-Bay Backplane

Front bezel with IBM logo plus rails for 4U rack mounted system. Bezel fits Storage Backplane and its 18 SAS bays. Rails adjust from approximately 24 to 31 inches in depth.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUH) - Front OEM Bezel for 18-Bay BackPlane

Front bezel with no IBM logo plus rails for 4U rack mounted system. Bezel fits Storage Backplane and its 18 SAS bays. Rails adjust from approximately 24 to 31 inches in depth.

- Attributes provided: Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUJ) - Front IBM Bezel for 6 SAS + 4 NVMe -Bays BackPlane

- Attributes provided: IBM Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUL) - Front OEM Bezel for 6 SAS + 4 NVMe-Bays BackPlane

- Attributes provided: OEM Bezel
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUQ) - Front IBM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane

- Attributes provided: IBM Cover w/door
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJUR) - Front OEM Cover/Door Tower with 6 SAS/4 NVMe Bays BackPlane

- Attributes provided: OEM Cover w/door
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJV0) - Specify Mode-1 & CEC SAS Ports & (2)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 1 (one group of 12 drive bays). It will be connected to the two SAS ports on the rear of the system unit run by the integrated SAS controllers of the high performance/function storage backplane.

Two YO12 cables connect the SAS Storage Enclosure to the systems SAS ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, Integrated SAS controllers and SAS cables as indicated in description
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: Refer to #EJ1D or #EJ1M and #ESLS or #ESLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EJV1) - Specify Mode-1 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 1 (one group of 12 drive bays). It will be connected to one #EJ0J/#EL59/#EJ0M/ #EL36 PCIe3 RAID SAS adapter.

One YO12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJV2) - Specify Mode-1 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 1 (one group of 12 drive bays). It will be connected to two (one pair) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJV3) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 2 (two groups of 6 drive bays). It will be connected to two (one pair) #EJ0J/#EL59/ #EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJV4) - Specify Mode-2 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 2 (two groups of 6 drive bays). It will be connected to four (two pair) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJV5) - Specify Mode-4 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 4 (four groups of 3 drive bays). It will be connected to four (unpaired) #EJ0J/#EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJV6) - Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 2 (two groups of 6 drive bays). It will be connected to one #EJ0J/#EL59/#EJ0M/ #EL36 PCIe3 RAID SAS adapter.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJV7) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 2 (two groups of 6 drive bays). It will be connected to two (nonpaired) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBT, #ECBU, #ECBV or #ECBW.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJVA) - Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 2 (two groups of 6 drive bays). It will be connected to one #EJ0J/#EL59/#EJ0M/ #EL36 PCIe3 RAID SAS adapter.

One YO12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBT, #ECBU, #ECBV or #ECBW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJV7.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJVB) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 2 (two groups of 6 drive bays). It will be connected to two (one pair) #EJ0J/#EL59/ #EJ0M/#EL36 PCIe3 RAID SAS adapters.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJV4.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJVC) - Specify Mode-4 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 4 (four groups of 3 drive bays). It will be connected to one #EJ0J/#EL59/ #EJ0M/#EL36 PCIe3 RAID SAS adapter.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL. One leg of the X12 cable is left unattached at the adapter end.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJV5, #EJVD or #EJVE. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP12SX Drawer (#ESLL/ELLL) should be configured in Mode 4 and be using one PCIe3 RAID SAS adapter (#EJ0J/EL59/EJ0M/EL3B) and one X12 SAS Cables. One leg of the X cable is left unattached at the adapter end.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP12SX. If adapters/ cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJV5, #EJVD or #EJVE.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJVD) - Specify Mode-4 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 4 (four groups of 3 drive bays). It will be connected to Two (nonpaired) #EJ0J/#EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or#ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJV5 or #EJVE.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJVE) - Specify Mode-4 & (3)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 4 (four groups of 3 drive bays). It will be connected to Three (nonpaired) #EJ0J/#EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL. One leg of one of the two X12 cables is left unattached at the adapter end.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJV5.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLL or #ELLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJVF) - Specify Mode-1 & (2)EJ14 & (2)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 1 (one group of 12 drive bays). It will be connected to two #EJ14 PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #EJ14 and #ESLS or #ESLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJVP) - Specify Mode-1 & (2)EJ0L & (2)YO12 for EXP12SX #ESLL/ELLL

Feature indicates that EXP12SX SAS Storage Enclosure (#ESLL or #ELLL) will be configured by IBM Manufacturing in Mode 1 (one group of 12 drive bays). It will be connected to two #EJ0L PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration with a subset of adapters and cables is used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: See feature #ESLL
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJW0) - Specify Mode-1 & CEC SAS Ports & (2)YO12 for EXP24SX #ESLS/ELS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 1 (one group of 24 drive bays). It will be connected to the two SAS ports on the rear of the system unit run by the integrated SAS controllers of the high performance/function storage backplane.

Two YO12 cables connect the SAS Storage Enclosure to the systems SAS ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, Integrated SAS controllers and SAS cables as indicated in description
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: Refer to #EJ1D or #EJ1M and #ESLS or #ESLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJW1) - Specify Mode-1 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 1 (one group of 24 drive bays). It will be connected to one #EJ0J/#EL59/#EJ0M/ #EL36 PCIe3 RAID SAS adapter.

One YO12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJW2) - Specify Mode-1 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 1 (one group of 24 drive bays). It will be connected to two (one pair) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJW3) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to two (one pair) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJW4) - Specify Mode-2 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to four (two pair) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJW5) - Specify Mode-4 & (4)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 4 (four groups of 6 drive bays). It will be connected to four (unpaired) #EJ0J/#EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJW6) - Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to one #EJ0J/#EL59/#EJ0M/ #EL36 PCIe3 RAID SAS adapter.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJW7) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (2)YO12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to two (nonpaired) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBT, #ECBU, #ECBV or #ECBW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWA) - Specify Mode-2 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)YO12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to one #EJ0J/#EL59/#EJ0M/ #EL36 PCIe3 RAID SAS adapter.

One YO12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBT, #ECBU, #ECBV or #ECBW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJW7.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWB) - Specify Mode-2 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to two (one pair) #EJ0J/ #EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or#ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a "partioal" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJW4.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWC) - Specify Mode-4 & (1)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 4 (four groups of 6 drive bays). It will be connected to one #EJ0J/#EL59/ #EJ0M/#EL36 PCIe3 RAID SAS adapter.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL. One leg of the X12 cable is left unattached at the adapter end.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJW5, #EJWD or #EJWE. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing that in this configuration one EXP24SX Drawer (#ESLS/ELLS) should be configured in Mode 4 and be using one PCIe3 RAID SAS adapter (#EJ0J/EL59/EJ0M/ EL3B) and one X12 SAS Cables. One leg of the X cable is left unattached at the adapter end.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the EXP24SX. If adapters/ cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJW5, #EJWD or #EJWE.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWD) - Specify Mode-4 & (2)EJ0J/EJ0M/EL3B/EL59 & (1)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 4 (four groups of 6 drive bays). It will be connected to Two (nonpaired) #EJ0J/#EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJW5 or #EJWE.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWE) - Specify Mode-4 & (3)EJ0J/EJ0M/EL3B/EL59 & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 4 (four groups of 6 drive bays). It will be connected to Three (nonpaired) #EJ0J/#EL59/#EJ0M/#EL36 PCIe3 RAID SAS adapters.

Two X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL. One leg of one of the two X12 cables is left unattached at the adapter end.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJW5.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #ESLS or #ELLS to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWF) - Specify Mode-1 & (2)EJ14 & (2)YO12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 1 (one group of 24 drive bays). It will be connected to two #EJ14 PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #EJ14 and #ESLS or #ESLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWG) - Specify Mode-2 & (2)EJ14 & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to two #EJ14 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #EJ14 and #ESLS or #ESLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWH) - Specify Mode-2 & (2)EJ14 & (1)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to two #EJ14 PCIe3 RAID SAS adapters.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or#ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJWG.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #EJ14 and #ESLS or #ESLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWJ) - Specify Mode-2 & (4)EJ14 & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to four #EJ14 PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: Refer to #EJ14 and #ESLS or #ESLL to find the supported O/S levels.
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EJWP) - Specify Mode-1 & (2)EJ0L & (2)YO12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 1 (one group of 24 drive bays). It will be connected to two #EJ0L PCIe3 RAID SAS adapters.

Two YO12 cables connect the SAS Storage Enclsoure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECDT, #ECDU, #ECDV or #ECDW.

One specify feature should ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: See feature ESLS
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJWR) - Specify Mode-2 & (4)EJ0L & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to four #EJ0L PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: See feature ESLS
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJWS) - Specify Mode-2 & (2)EJ0L & (2)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to two #EJ0L PCIe3 RAID SAS adapters.

Two X12 cables connect the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This specify feature indicates a full set of adapters plus SAS cables is used for the enclosure. A different specify feature code is used to indicate a "partial" configuration when a subset of adapters and cables are used.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: See feature ESLS
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EJWT) - Specify Mode-2 & (2)EJ0L& (1)X12 for EXP24SX #ESLS/ELLS

Feature indicates that EXP24SX SAS Storage Enclosure (#ESLS or #ELLS) will be configured by IBM Manufacturing in Mode 2 (two groups of 12 drive bays). It will be connected to two #EJ0L PCIe3 RAID SAS adapters.

One X12 cable connects the SAS Storage Enclosure to the SAS adapter ports. Use the cable length appropriate to the configuration and select from features such as #ECBJ, #ECBK or #ECBL.

One specify feature should be ordered with each SAS Storage Enclosure. This feature does not order or ship any hardware, but indicates to IBM config tools and to IBM Manufacturing the combination of enclosure mode, SAS adapter and SAS cable type which will be used.

This indicates a "partial" configuration where there are not enough adapters/cables to run all the SAS bays in the SAS Storage Enclosure. If adapters/cables are MES added later to support the rest of the SAS bays, then this specify code should be removed and the appropriate specify feature added to help IBM config tools understand the expanded usage, probably specify feature #EJWG.

- Attributes provided: Communicate configuration information to IBM Manufacturing
- Attributes required: SAS Storage Enclosure, PCIe3 RAID SAS adapter(s) and SAS cable(s) as indicated in description
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: See feature ESLS
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ELC0) - PDU Access Cord 0.38m

This 0.38 meter (14 inch) cord is used with a vertically mounted PDU (Power Distribution Unit) such as a #EPTJ, #EPTN, #7188 or #7109 when the PDU is located in a 7965-S42, 7965-94Y, or #ER05 Slim Rack. One end of this power cord connects to the PDU. The other end of this cord connects to the power cord running to the wall outlet or electrical power source.

One PDU Access Cord is required per vertically mounted PDU. Without a PDU Access Cord, inserting and removing the wall outlet power cord into the PDU can be very difficult in the narrow side pockets of the Slim Rack. A PDU Access Cord is not required for PDUs in wider racks such as the 7014-T42 or #0553.

- Attributes provided: Power cord
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ELC5) - Power Cable - Drawer to IBM PDU (250V/10A)

This feature permits manufacturing to select the optimum PDU power jumper cord length (2.8M or 4.3M) for rack integration. This feature is mandatory for servers that use power supplies with C14 inlets that are going to be factory integrated with IBM racks (such as with 7014-T00 or T42 racks) that contains C19 PDU types.

Feature is not valid on initial order with non-factory integrated feature 4650. Power jumper cord has C13 on one end (for C14 power supply connector on system unit or I/O drawer) and C20 on the other end (for IBM PDU C19 receptacle). MES orders of FC #ELC5 will ship 4.3m length. If MES customers want 2.8m length should order #6665.

- Attributes provided: Power jumper cord (2.8m or 4.3m)
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELS3) - ES1F Load Source Specify (1.6 TB 4K NVMe U.2 SSD PCIe4 for IBM i)

This specify code indicates that a #ES1F Solid State Drive is being used as the Load Source. The IBM i NVMe Load Source Name Space specify codes #ENSA and #ENSB are used with this specify code.

- Attributes provided: Load source specify
- Attributes required: Feature ES1F
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES1F
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELS4) - #ESD4 Load Source Specify (571GB 10K RPM SAS SFF-3 for IBM i)

This specify code indicates that a #ESD4 Solid State Drive is being used as the Load Source.

- Attributes provided: Load source specify
- Attributes required: #ESD4
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESD4
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ELSA) - #ESDA Load Source Specify (283GB 15K RPM SAS SFF-3 for IBM i)

This specify code indicates that a #ESDA Solid State Drive is being used as the Load Source.

- Attributes provided: Load source specify
- Attributes required: #ESDA
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ESDA
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ELSN) - #ESDN Load Source Specify (571GB 15K RPM SFF-2 )

This specify code indicates that a #ESDN disk drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ESDN
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ESDN
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#ELSQ) - ES1H Load Source Specify (3.2 TB 4K NVMe U.2 SSD for IBM i)

This specify code indicates that a #ES1H Solid State Drive is being used as the Load Source. The IBM i NVMe Load Source Name Space specify codes #ENSA and #ENSB are used with this specify code.

- Attributes provided: Load source specify
- Attributes required: Feature ES1H
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES1H
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELSR) - #ES0R Load Source Specify (387GB SSD SFF-2 4K)

This specify code indicates that a #ES0R SSD is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES0R
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES0R
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#ELST) - #ES0T Load Source Specify (775GB SSD SFF-2 4K)

This specify code indicates that a #ES0T SSD is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES0T
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES0T
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#ELT0) - #ESFU Load Source Specify (1.7TB HDD SFF-3)

This specify code indicates that a #ESFU disk drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ESFU
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESFU
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELT1) - #ES81 Load Source Specify (1.9TB SFF-2 SSD)

This specify code indicates that a #ES81 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES81
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES81
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#ELT2) - #ESF2 Load Source Specify (1.1TB HDD SFF-2)

This specify code indicates that a #ESF2 disk drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ESF2
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESF2
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELT4) - #ESF4 Load Source Specify (571GB HDD SFF-3)

This specify code indicates that a #ESF4 disk drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ESF4
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESF4
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELT6) - #ES86 Load Source Specify (387GB SFF-2 SSD 4k for IBM i)

Specify code indicates a #ES86 solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES86
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES86
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELT8) - #ESF8 Load Source Specify (1.1TB HDD SFF-3)

This specify code indicates that a #ESF8 disk drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ESF8
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESF8
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELT9) - #ES79 Load Source Specify (387GB SFF-2 SSD 5xx for IBM i)

Specify code indicates a #ES79 solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES79
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES79
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELTA) - #ESFA Load Source Specify (283GB 15K RPM SAS SFF-3 4K 4224)

This specify code indicates that a #ESFA Solid State Drive is being used as the Load Source.

- Attributes provided: Load source specify
- Attributes required: #ESFA
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESFA
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELTD) - #ES8D Load Source Specify (775GB SFF-2 SSD 4k for IBM i)

Specify code indicates a #ES8D solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES8D
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES8D
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELTE) - #ESFE Load Source Specify (571GB 15K RPM SAS SFF-3 4K 4224)

This specify code indicates that a #ESFE Solid State Drive is being used as the Load Source.

- Attributes provided: Load source specify
- Attributes required: #ESFE
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESFE
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELTF) - #ES7F Load Source Specify (775GB SFF-2 SSD 5xx for IBM i)

Specify code indicates a #ES7F solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES7F
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES7F
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELTG) - #ES8G Load Source Specify (1.55TB SFF-2 SSD 4k for IBM i)

Specify code indicates a #ES8G solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES8G
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES8G
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELTK) - #ES8K Load Source Specify (1.9TB SFF-3 SSD)

This specify code indicates that a #ES8K Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES8K
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES8K
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ELTL) - #ES7L Load Source Specify (387GB SFF-3 SSD 5xx for IBM i)

Specify code indicates a #ES7L solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES7L
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES7L
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELTN) - #ESFN Load Source Specify (571GB 15K RPM SAS SFF-2 4K 4224)

This specify code indicates that a #ESFN Disk Unit is being used as the Load Source.

- Attributes provided: Load source specify
- Attributes required: #ESFN
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESFN
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELTP) - #ES8P Load Source Specify (387GB SFF-3 SSD 4k for IBM i)

Specify code indicates a #ES8P solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES8P
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES8P
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELTQ) - #ES7Q Load Source Specify (775GB SFF-3 SSD 5xx for IBM i)

Specify code indicates a #ES7Q solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES7Q
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ES7Q
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELTR) - #ES8R Load Source Specify (775GB SFF-3 SSD 4k for IBM i)

Specify code indicates a #ES8R solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES8R
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES8R
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELTS) - #ESFS Load Source Specify (1.7TB HDD SFF-2)

This specify code indicates that a #ESF5 disk drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ESFS
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESFS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELTU) - #ESEU Load Source Specify (571GB HDD SFF-2)

This specify code indicates that a #ESEU disk drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ESEU
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESEU
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELTW) - #ES8W Load Source Specify (1.55TB SFF-3 SSD 4k for IBM i)

Specify code indicates a #ES8W solid state drive (SSD) is used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: #ES8W
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES8W
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELTY) - #ESEY Load Source Specify (283GB 15K RPM SAS SFF-2 4K 4224)

This specify code indicates that a #ESEY Disk Unit is being used as the Load Source.

- Attributes provided: Load source specify
- Attributes required: #ESEY
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESEY
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELUJ) - #ESNJ Load Source Specify (283GB HDD SFF-3)

This specify code indicates that a #ESNJ Hard Disk Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESNJ
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ESNJ
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELUK) - ESJK Load Source Specify (931GB SSD SFF-2)

This specify code indicates that a #ESJK Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJK
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELUL) - #ESNL Load Source Specify (283GB HDD SFF-2)

This specify code indicates that a #ESNL Hard Disk Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESNL
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ESNL
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELUM) - ESJM Load Source Specify (1.86TB SSD SFF-2)

This specify code indicates that a #ESJM Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJM
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELUN) - #ESNN Load Source Specify (571GB HDD SFF-3)

This specify code indicates that a #ESNN Hard Disk Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESNN
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ESNN
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELUP) - ESJP Load Source Specify (3.72TB SSD SFF-2)

This specify code indicates that a #ESJP Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJP
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELUQ) - #ESNQ Load Source Specify (571GB HDD SFF-2)

This specify code indicates that a #ESNQ Hard Disk Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESNQ
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ESNQ
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELUR) - ESJR Load Source Specify (7.44TB SSD SFF-2)

This specify code indicates that a #ESJR Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJR
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELUT) - ESJT Load Source Specify (931GB SSD SFF-3)

This specify code indicates that a #ESJT Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJT
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELUV) - ESJV Load Source Specify (1.86TB SSD SFF-3)

This specify code indicates that a #ESJV Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJV
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELUW) - EC5W Load Source Specify (6.4 TB 4K NVMe U.2 SSD for IBM i)

This specify code indicates that a #EC5W Solid State Drive is being used as the Load Source. The IBM i NVMe Load Source Name Space specify codes #ENSA and #ENSB are used with this specify code.

- Attributes provided: Load source specify
- Attributes required: Feature EC5W
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature EC5W
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELUX) - ESJX Load Source Specify (3.72TB SSD SFF-3)

This specify code indicates that a #ESJX Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJX
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELUZ) - ESJZ Load Source Specify (7.44TB SSD SFF-3)

This specify code indicates that a #ESJZ Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJZ
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELVJ) - EC7J Load Source Specify (1.6TB SSD NVMe adapter for IBM i)

Specify code indicates a #EC7J solid state drive (SSD) NVMe adapter is used as the Load Source.

The IBM i NVMe Load Source Namespace specify codes #ENSA and #ENSB are used with this specify code.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #EC7J

### (#ELVK) - EC7K Load Source Specify (1.6TB SSD NVMe adapter for IBM i)

Specify code indicates a #EC7K solid state drive (SSD) NVMe adapter is used as the Load Source.

The IBM i NVMe Load Source Namespace size specify codes #ENSA and #ENSB are used with this specify code.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #EC7K
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature EC7K
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELVM) - EC7M Load Source Specify (3.2TB SSD NVMe adapter for IBM i)

Specify code indicates a #EC7M solid state drive (SSD) NVMe adapter is used as the Load Source.

The IBM i NVMe Load Source Namespace size specify codes #ENSA and #ENSB are used with this specify code.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #EC7M
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature EC7M
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELVP) - EC7P Load Source Specify (6.4TB SSD NVMe adapter for IBM i)

Specify code indicates a #EC7P solid state drive (SSD) NVMe adapter is used as the Load Source.

The IBM i NVMe Load Source Namespace size specify codes #ENSA and #ENSB are used with this specify code.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #EC7P
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature EC7P
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELZ1) - ES91 Load Source Specify (387GB SSD SFF-3)

(No longer available as of December 31, 2020)

This specify code indicates that a #ES91 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ES91
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES91
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELZ2) - #ESE2 Load Source Specify (3.72TB SSD SFF-3)

This specify code indicates that a #ESE2 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESE2
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ESE2
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZ3) - #ES93 Load Source Specify (1.86TB SSD SFF-3)

This specify code indicates that a #ES93 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ES93
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES93
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZ4) - #ES84 Load Source Specify (931GB SSD SFF-3)

This specify code indicates that a #ES84 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ES84
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ES84
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZ5) - ES95 Load Source Specify (387GB SSD SFF-2)

(No longer available as of December 31, 2020)

This specify code indicates that a #ES95 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ES95
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ES95
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELZ6) - #ESG6 Load Source Specify (387GB SSD SFF-2)

This specify code indicates that a #ESG6 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESG6
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ESG6
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZ7) - #ES97 Load Source Specify (1.86TB SSD SFF-2)

This specify code indicates that a #ES97 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ES97
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ES97
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZ8) - #ESE8 Load Source Specify (3.72TB SSD SFF-2)

This specify code indicates that a #ESE8 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESE8
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ESE8
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELZ9) - #ESM9 Load Source Specify (3.72 TB SSD 4k SFF-2)

This specify code indicates that a #ESM9 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESM9
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESM9
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELZA) - #ESGA Load Source Specify (387GB SSD SFF-3)

This specify code indicates that a #ESGA Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGA
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ESGA
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELZB) - ESNB Load Source Specify (775GB SSD SFF-2)

(No longer available as of December 31, 2020)

This specify code indicates that a #ESNB Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESNB
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESNB
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELZC) - #ESGC Load Source Specify (387GB SSD SFF-2)

This specify code indicates that a #ESGC Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGC
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESGC
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ELZD) - ESND Load Source Specify (775GB SSD SFF-3)

(No longer available as of December 31, 2020)

This specify code indicates that a #ESND Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESND
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESND
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ELZE) - #ESGE Load Source Specify (387GB SSD SFF-3)

This specify code indicates that a #ESGE Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGE
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESGE
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZF) - ESNF Load Source Specify (1.55TB SSD SFF-2)

(No longer available as of December 31, 2020)

This specify code indicates that a #ESNF Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESNF
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESNF
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELZG) - #ESGG Load Source Specify (775GB SSD SFF-2)

This specify code indicates that a #ESGG Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGG
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ESGG
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZH) - ESNH Load Source Specify (1.55TB SSD SFF-3)

(No longer available as of December 31, 2020)

This specify code indicates that a #ESNH Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESNH
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESNH
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ELZJ) - #ESGJ Load Source Specify (775GB SSD SFF-3)

This specify code indicates that a #ESGJ Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGJ
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required: See feature ESGJ
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZK) - #ESHK Load Source Specify (931 GB SSD 4k SFF-2)

This specify code indicates that a #ESHK Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESHK
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESHK
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZL) - #ESGL Load Source Specify (775GB SSD SFF-2)

This specify code indicates that a #ESGL Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGL
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESGL
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZM) - #ESHM Load Source Specify (1.86 TB SSD 4k SFF-2)

This specify code indicates that a #ESHM Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESHM
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESHM
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZN) - #ESGN Load Source Specify (775GB SSD SFF-3)

This specify code indicates that a #ESGN Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGN
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESGN
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZQ) - #ESGQ Load Source Specify (1.55TB SSD SFF-2)

This specify code indicates that a #ESGQ Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGQ
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESGQ
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZR) - #ESMR Load Source Specify (3.72 TB SSD 4k SFF-3)

This specify code indicates that a ESMR Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESMR
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESMR
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZS) - #ESGS Load Source Specify (1.55TB SSD SFF-3)

This specify code indicates that a #ESGS Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ESGS
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESGS
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZT) - #ESHT Load Source Specify (931 GB SSD 4k SFF-3)

This specify code indicates that a #ESHT Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESHT
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESHT
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZV) - #ESHV Load Source Specify (1.86 TB SSD 4k SFF-3)

This specify code indicates that a #ESHV Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESHV
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESHV
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ELZZ) - #ES8Z Load Source Specify (931GB SSD SFF-2)

This specify code indicates that a #ES8Z Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature #ES8Z
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ES8Z
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EM60) - 8 GB DDR4 Memory

Provides 8 GB 2666 Mhz DDR4 of system memory.

- Attributes provided: 8 GB RDIMM memory
- Attributes required: Available memory slot
- Minimum required: 0
- Maximum allowed: 16 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EM62) - 16 GB DDR4 Memory

Provides 16 GB of DDR4 system memory.

- Attributes provided: 16 GB DDR4 memory dimm
- Attributes required: Available memory slot
- Minimum required: 0
- Maximum allowed: 16 (Initial order maximum: 16)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX Supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EM63) - 32 GB DDR4 Memory

Provides 32 GB of DDR4 system memory.

- Attributes provided: 32 GB DDR4 memory dimm
- Attributes required: Available memory slot
- Minimum required: 0
- Maximum allowed: 16 (Initial order maximum: 16)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX Supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EM64) - 64 GB DDR4 Memory

Provides 64 GB of DDR4 system memory.

- Attributes provided: 64 GB DDR4 memory dimm
- Attributes required: Available memory slot
- Minimum required: 0
- Maximum allowed: 16 (Initial order maximum: 16)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX Supported
  - IBM i supported
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#EM7B) - 64 GB DDR4 Memory Dimm

Provides 64 GB running at 2666Mhz 16Gbit DDR4 system memory.

- Attributes provided: 64GB Memory Dimm
- Attributes required: Available memory slot
- Minimum required: 0
- Maximum allowed: 16 (Initial order maximum: 16)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EM7C) - 128 GB DDR4 Memory Dimm

Provides 128 GB running at 2666Mhz 16Gbit DDR4 system memory.

- Attributes provided: 128 GB Memory Dimm
- Attributes required: Available memory slot

### (#EMX0) - PCIe Gen3 I/O Expansion Drawer

This 19-inch, 4U (4 EIA) enclosure provides PCIe Gen3 slots outside of the system unit. It has two module bays. One 6-Slot Fanout Module (#EMXF or #EMXG) can be placed in each module bay. Two 6-slot modules provide a total of 12 PCIe Gen3 slots. Each fanout module is connected to a PCIe3 Optical Cable Adapter located in the system unit over an active optical CXP cable (AOC) pair or CXP copper cable pair.

The PCIe Gen3 I/O Expansion Drawer has two redundant, hotplug power supplies. Each power supply has its own separately ordered power cord. The two power cords plug into a Power supply conduit which connects to the power supply. The single-phase AC power supply is rated at 1030 Watt and can use 100-120V or 200-240V. If using 100-120V, then the maximum is 950 Watt. It's recommended the power supply connect to a PDU in the rack. Power Systems PDUs are designed for 200-240V electrical source.

The drawer has fixed rails which can accommodate racks with depths from 27.5 inches to 30.5 inches.

Limitations:

- #EMX0 has a cable management bracket located at the rear of the drawer which swings up to provide service access to the PCIe adapters. 2U (2 EIA) of space is required to swing up the bracket. Thus the drawer cannot be placed in the very top 2U of a rack.
- There is a power cord access consideration with vertically mounted PDUs on the right hand side of the rack when viewed from the rear of the rack. The #EMX0 cable management bracket makes accessing some of the PDU outlets located at the same rack height as the #EMX0 drawer more challenging. Using a horizontally mounted PDU or locating the PDU or #EMX0 at a different vertical location is recommended.
- Attributes provided: 19-inch 4U (4 EIA) PCIe Gen3 I/O Expansion Drawer
- Attributes required: One or two PCIe Optical Cable Adapters (#EJ07/#EJ05/#EJ08), one or two PCIe3 fanout modules (#EMXF), one or two CXP cable pairs (such as #ECC6 or #ECC8 or #ECCS), one power supply conduit (such as #EMXA).
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX Supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EMXA) - AC Power Supply Conduit for PCIe3 Expansion Drawer

Provides two 320-C14 inlet electrical connections for two separately ordered AC power cords with C13 connector plugs. Conduit provides electrical power connection between two power supplies located in the front of a PCIe Gen3 I/O Expansion Drawer (#EMX0) and two power cords which connect on the rear of the PCIe Gen3 I/O Expansion Drawer.

- Attributes provided: Two AC Power Supply connections
- Attributes required: PCIe Gen3 I/O Expansion Drawer and two AC power cords
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EMXF) - PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer

PCIe3 fanout module for PCIe Gen3 I/O Expansion Drawer. Provides six PCIe Gen3 full high, full length slots (two x16 and four x8). The PCIe slots are hot plug.

The module has two CXP ports which are connected two CXP ports on a PCIe Optical Cable Adapter #EJ05 or #EJ07 or #EJ08 depending on the server selected. A pair of active optical CXP cables (AOC) or a pair of CXP copper cables are used for this connection. The top CXP port of the fanout module is cabled to the top CXP port of the PCIe3 Optical Cable Adapter. The bottom CXP port of the fanout module is cabled to the bottom CXP port of the same PCIe3 Optical Cable Adapter.

- Attributes provided: PCIe3 6-slot fanout module for PCIe Gen3 I/O Expansion Drawer
- Attributes required: Available bay in PCIe Gen3 I/O Expansion Drawer. Firmware 8.40 or later for copper CXP cables.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX Supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EMXG) - PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer

PCIe3 fanout module for PCIe Gen3 I/O Expansion Drawer. Provides six PCIe Gen3 full high, full length slots (two x16 and four x8). The PCIe slots are hot plug. With firmware 8.4 or later, the fanout module supports concurrent maintenance, though obviously while off- line all its PCIe slots are also off-line. Blind swap cassettes (BSC) are used for the PCIe slots. The BSC are interchangeable with the #5802/5877/5803/5873 12X PCIe I/O Drawer BSC.

The module has two CXP ports which are connected two CXP ports on a PCIe Optical Cable Adapter #EJ05 or #EJ07 or #EJ08 depending on the server selected. A pair of active optical CXP cables (AOC) or a pair of CXP copper cables are used for this connection. The top CXP port of the fanout module is cabled to the top CXP port of the PCIe3 Optical Cable Adapter. The bottom CXP port of the fanout module is cabled to the bottom CXP port of the same PCIe3 Optical Cable Adapter.

EMXG is a follow-on to the original EMXF fanout module. EMXG and EMXF are functionally identical but EMXG implements a small physical change to enable a larger set of potential PCIe adapters to be housed. EMXG and EMXF can be intermixed in the same drawer. There is no difference in firmware or software prerequisites for the EMXF and EMXG. EMXG and for EMXF use the same BSC.

- Attributes provided: PCIe3 6-slot fanout module for PCIe Gen3 I/O Expansion Drawer
- Attributes required: Available bay in PCIe Gen3 I/O Expansion Drawer. Firmware 8.40 or later for copper CXP cables.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX Supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EMXH) - PCIe3 6-Slot Fanout Module for PCIe3 Expansion Drawer

PCIe3 fanout module for PCIe Gen3 I/O Expansion Drawer. Provides six PCIe Gen3 full high, full length slots (two x16 and four x8). The PCIe slots are hot plug.

The module has two CXP ports which are connected two CXP ports on a PCIe Optical Cable Adapter (only allowed to connect to #EJ19, or #EJ20, or #EJ1R PCIe3 Optical Cable Adapter). A pair of active optical CXP cables (AOC) or a pair of CXP copper cables are used for this connection. The top CXP port of the fanout module is cabled to the top CXP port of the PCIe3 Optical Cable Adapter. The bottom CXP port of the fanout module is cabled to the bottom CXP port of the same PCIe3 Optical Cable Adapter.

Limitations:

- Mixing of prior PCIe3 fanout modules (#EMXF, #EMXG, #ELMF, #ELMG) with PCIe3 fanout module (feature #EMXH) in the same I/O Expansion Drawer is not allowed
- Mixing of I/O Expansion Drawer with prior PCIe3 fanout modules (#EMXF, #EMXG, #ELMF, #ELMG) and I/O Expansion Drawer with PCIe3 fanout modules #EMXH in same configuration is allowed
- Prior PCIe3 fanout modules (#EMXF, #EMXG, #ELMF, #ELMG) are only allowed to connect with prior PCIe3 Optical Cable Adapter (#EJ05, #EJ08, or #EJ07)
- PCIe3 Optical Cable Adapters (#EJ19, #EJ20, or #EJ1R) requires to use Optical Cables (#ECCR, #ECCX, ECCY, or #ECCZ, or copper cable #ECCS)
- Attributes provided: PCIe3 6-slot fanout module for PCIe Gen3 I/O Expansion Drawer
- Attributes required: Available bay in PCIe Gen3 I/O Expansion Drawer.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Firmware 9.30, or later for copper CXP cables

## (#EN01) - 1m (3.3-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper

1m (3.3-ft) copper active twinax Ethernet cable which supports Ethernet data transfer rates up to 10 Gb/s. The cable has a copper twinax transceiver on each end which is placed in an SFP+ port of an adapter and/or a switch. This cabling option can be a cost effective alternative to optical cable for short reach link high-speed connection.

- Attributes provided: 10Gb/s copper active twinax Ethernet cable
- Attributes required: One available SFP+ 10Gb/s Ethernet Port
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EN02) - 3m (9.8-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper

3m (9.8-ft) copper active twinax Ethernet cable which supports Ethernet data transfer rates up to 10 Gb/s. The cable has a copper twinax transceiver on each end which is placed in an SFP+ port of an adapter and/or a switch. This cabling option can be a cost effective alternative to optical cable for short reach link high-speed connection.

- Attributes provided: 10Gb/s copper active twinax Ethernet cable
- Attributes required: One available SFP+ 10Gb/s Ethernet Port
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EN03) - 5m (16.4-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper

5m (16.4-ft) copper active twinax Ethernet cable which supports Ethernet data transfer rates up to 10 Gb/s. The cable has a copper twinax transceiver on each end which is placed in an SFP+ port of an adapter and/or a switch. This cabling option can be a cost effective alternative to optical cable for short reach link high-speed connection.

- Attributes provided: 10Gb/s copper active twinax Ethernet cable
- Attributes required: One available SFP+ 10Gb/s Ethernet Port
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EN0A) - PCIe3 16Gb 2-port Fibre Channel Adapter

PCIe Gen3 16 Gigabit dual-port Fibre Channel (FC) Adapter is a high-performance 8x short form adapter based on the Emulex LPe16002B PCIe Host Bus Adapter (HBA). The adapter provides two ports of 16Gb Fibre Channel capability using SR optics. Each port can provide up to 16Gb Fibre Channel functions simultaneously. The adapter was initially announced as PCIe Gen2, but upgrades to the adapter firmware and introduction of POWER8/POWER9 servers have enabled PCIe Gen3.

Each port provides single initiator capability over a fibre link or with NPIV, multiple initiator capability is provided. The ports are SFP+ and include an optical SR transceiver. The ports have LC type connectors and utilize shortwave laser optics. The adapter operates at link speeds of 4, 8 and 16 Gbps and will automatically negotiate to the highest speed possible. LEDs on each port provide information on the status and link speed of the port.

The adapter connects to a Fibre Channel switch at 4Gb, 8Gb or 16Gb. It can directly attach to a device without a switch at 16Gb. Attachment without a switch is not supported at 4Gb or 8Gb

N_Port ID Virtualization (NPIV) capability is supported through VIOS.

Feature #EN0A and #EN0B are electronically identical. They differ physically only that EN0A has a tail stock for full high PCIe slots and #EN0B has a tail stock for low profile PCIe slots. CCIN is 577F for both features.

Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM4 - multimode 50/125 micron fibre, 4700 MHz*km bandwidth
- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth

The maximum cable lengths at the three different link speeds are:

| Cable | 4 Gbps | 8 Gbps | 16 Gbps |
|---|---|---|---|
| OM4 | 400m | 190m | 125m |
| OM3 | 380m | 150m | 100m |
| OM2 | 150m | 50m | 35m |
| OM1 | 70m | 21m | 15m |

- Attributes provided: Two 16Gb FC ports (with LC connectors)
- Attributes required: Available PCIe Gen2 or Gen3 slot in supported server
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EN0G) - PCIe2 8Gb 2-Port Fibre Channel Adapter

This feature ships a two-port, 8 Gb PCIe Gen2 Fibre Channel Adapter based on the QLogic QLE2562 Host Bus Adapter (HBA). Each port provides single initiator capability over a fibre link. The ports have LC type connectors and utilize shortwave laser optics. The adapter operates at link speeds of 2, 4, and 8 Gbps and will automatically negotiates to the highest speed possible. LEDs on each port provide information on the status and link speed of the port. The adapter connects to a Fibre Channel switch or can directly attach to a Fibre Channel port on a supported storage unit. N_Port ID Virtualization (NPIV) capability is supported through VIOS. Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth

Because core sizes are different, OM1 cables can only be connected to other OM1 cables. For best results, OM2 cables should not be connected to OM3 cables. However, if an OM2 cable is connected to an OM3 cable, the characteristics of the OM2 cable apply to the entire length of the cables. The following table shows the supported distances for the three different cable types at the three different link speeds.

| Cable | 2.125 Gbps | 4.25 Gbps | 8.5 Gbps |
|---|---|---|---|
| OM3 | .5m - 500m | .5m - 380m | .5m - 150m |
| OM2 | .5m - 300m | .5m - 150m | .5m - 50m |
| OM1 | .5m - 150m | .5m - 70m | .5m - 21m |

#EN0F and #EN0F are electronically identical with the same CCIN of 578D. #EN0F has a low profile tailstock bracket. #EN0G has a full high tailstock bracket.

See also feature #5273 or #5735 for a 2-port 8Gb Fibre Channel adapter based on an Emulex adapter.

See also optional wrap plug feature #ECW0 which is a) required to run some diagnostic procedures and b) in some cases may speed system boot when placed in empty ports.

- Attributes provided: Dual port Fibre Channel adapter
- Attributes required: Full High PCIe slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - AIX supported
  - IBM i requires VIOS
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server
  - Red Hat Enterprise Linux
  - Red Hat Enterprise Linux for SAP with Red Hat Enterprise Linux
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EN0H) - PCIe3 4-port (10Gb FCoE & 1GbE) SR&RJ45

(No longer available as of December 31, 2020)

This PCIe Gen3 Converged Network Adapter (CNA) supports both Ethernet NIC (Network Interface Card) and Fibre Channel over Ethernet (FCoE). The adapter provides two 10 Gb SR optical ports and two 1 Gb RJ45 ports in a PCIe 8x short form adapter. The 10Gb ports have CNA functionality. The 1Gb ports have Ethernet capability. The adapter was initially announced as PCIe Gen2, but upgrades to the adapter firmware and introduction of POWER8/POWER9 servers have enabled PCIe Gen3.

SR-IOV capability for the NIC function is supported on specific servers with the appropriate firmware and OS level for any of the four ports.

The 10Gb ports are SFP+ and include an optical SR transceiver. The ports have LC Duplex type connectors and utilize shortwave laser optics and MMF-850nm fiber cabling. With 62.5 micron OM1, up to 33 meter length fiber cables are supported. With 50 micron OM2, up to 82 meter fiber cable lengths are supported. With 50 micron OM3 or OM4, up to 300 meter fiber cable lengths are supported. Note that an FCoE switch is required for any FCoE traffic.

For the 1Gb RJ45 ports, 4-pair CAT-5 Unshielded Twisted Pair (UTP) cable or higher is supported for distances of up to 100 meters. In addition to 1Gb (1000 Mb) networks, 100 Mb networks are also supported, but 10Mb networks are not supported.

#EN0H and #EN0J adapters are electronically identical. They are physically identical except #EN0H has a tail stock for full high PCIe slots and #EN0J has a tail stock for low profile slots. The CCIN is 2B93 for both features.

Details for the ports include:

- AIX NIM support
- IEEE 802.3ae (10 GbE), 802.3ab (1 GbE), 802.1p priority, 802.1Q VLAN tagging, 802.3x flow control, 802.3ad load-balancing and failover,
- Link aggregation, IEEE 802.3ad 802.3
- Multiple MAC addresses per interface
- MSI-X, MSI and support of legacy pin interrupts
- Ether II and IEEE 802.3 encapsulated frames
- Jumbo frames up to 9.6 Kbytes
- TCP checksum offload for IPv4 and IPv6
- TCP segmentation Offload (TSO) for IPv4 and IPv6
- UDP checksum offload for IPv4 and IPv6
- AIX, IBM i and Linux provide software iSCSI support through the adapter. Linux can also leverage adapter hardware support including initiator and header & data digest (CRC) generation and checking

Important: There is no FCoE support on POWER9 systems.

- Attributes provided: Four ports - two 10Gb CNA and two 1Gb E
- Attributes required: PCIe Gen2 or Gen3 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supports native SR-IOV -- IBM i supported through VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EN0K) - PCIe3 4-port (10Gb FCoE & 1GbE) SFP+Copper&RJ45

(No longer available as of December 31, 2020)

This PCIe Gen3 Converged Network Adapter (CNA) supports both Ethernet NIC (Network Interface Card) and Fibre Channel over Ethernet (FCoE). The adapter provides two 10 Gb ports for active copper twinax cables and two 1 Gb RJ45 ports in a PCIe 8x short form adapter. The 10Gb ports have CNA (both NIC and FCoE) functionality. The 1Gb ports have Ethernet capability. The adapter was initially announced as PCIe Gen2, but upgrades to the adapter firmware and introduction of POWER8/POWER9 servers have enabled PCIe Gen3.

SR-IOV capability for the NIC function is supported on specific servers with the appropriate firmware and OS level for any of the four ports.

The 10Gb ports are SFP+ and do not include a transceiver. Active Copper twinax cables up to 5 meter in length are supported such as provided by feature #EN01, #EN02 or #EN03. A transceiver is included with these cables. Note that SFP+ twinax copper is NOT AS/400 5250 twinax or CX4 or 10 GBase-T. Active cables differ from passive cables. Note that an FCoE switch is required for any FCoE traffic.

For the 1Gb RJ45 ports, 4-pair CAT-5 Unshielded Twisted Pair (UTP) cable or higher is supported for distances of up to 100 meters. In addition to 1Gb (1000 Mb) networks, 100 Mb networks are also supported, but 10Mb networks are not supported.

#EN0K and #EN0L adapters are electronically identical. They are physically identical except #EN0K has a tail stock for full high PCIe slots and #EN0L has a tail stock for low profile slots. The CCIN is 2CC1 for both features.

#EN0K/EN0L are very similar to the #EN0H/#EN0J adapters except the #EN0H/EN0K use SR optical cabling and has a different CCIN.

Details for the ports include:

- AIX NIM support
- IEEE 802.3ae (10 GbE), 802.3ab (1 GbE), 802.1p priority, 802.1Q VLAN tagging, 802.3x flow control, 802.3ad load-balancing and failover,
- Link aggregation, IEEE 802.3ad 802.3
- Multiple MAC addresses per interface
- MSI-X, MSI and support of legacy pin interrupts
- Ether II and IEEE 802.3 encapsulated frames
- Jumbo frames up to 9.6 Kbytes
- TCP checksum offload for IPv4 and IPv6
- TCP segmentation Offload (TSO) for IPv4 and IPv6
- UDP checksum offload for IPv4 and IPv6
- AIX and Linux provide software iSCSI support through the adapter. Linux can also leverage adapter hardware support including initiator and header & data digest (CRC) generation and checking

Important: There is no FCoE support on POWER9 systems.

- Attributes provided: Four ports - two 10Gb CNA and two 1Gb E
- Attributes required: PCIe Gen2 or Gen3 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supports native SR-IOV -- IBM i supported through VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EN0S) - PCIe2 4-Port (10Gb+1GbE) SR+RJ45 Adapter

PCIe Gen2 x8 short Ethernet adapter supports Ethernet NIC (Network Interface Card) traffic. The adapter provides two 10 Gb SR optical ports and two 1 Gb RJ45 ports in a PCIe 8x short form adapter.

The 10Gb ports are SFP+ and include optical SR transceivers. The ports have LC Duplex type connectors and utilize shortwave laser optics and MMF-850nm fiber cabling. With 62.5 micron OM1, up to 33 meter length fiber cables are supported. With 50 micron OM2, up to 82 meter fiber cable lengths are supported. With 50 micron OM3 or OM4, up to 300 meter fiber cable lengths are supported.

For the 1Gb RJ45 ports, 4-pair CAT-5 Unshielded Twisted Pair (UTP) cable or higher is supported for distances of up to 100 meters. In addition to 1Gb (1000 Mb) networks, 100 Mb networks are also supported, but 10Mb networks are not supported.

#EN0S and #EN0T adapters are electronically identical. They are physically identical except #EN0S has a tail stock for full high PCIe slots and #EN0T has a tail stock for low profile slots. The CCIN is 2CC3 for both features.

Details for the ports include:

- VIOS NIM and LINUX NETWORK INSTALL are supported.
- IEEE 802.3ae (10GBASE-SR), IEEE 802.3ab (1000BASE-T GbE), IEEEu 802.3u (100BASE-T), 802.1p priority, 802.1Q VLAN tagging, 802.3x flow control, 802.3ad load-balancing and failover,
- Link aggregation, IEEE 802.3ad 802.3
- Multiple MAC addresses/promiscuous mode (for PowerVM/VIOS) per interface
- Message Signalling Interrupt MSI-X, MSI and support of legacy pin interrupts
- Ether II and IEEE 802.3 encapsulated frames
- Jumbo frames up to 9.6 Kbytes
- TCP checksum offload for IPv4 and IPv6
- TCP segmentation Offload (TSO) RSS (Receive Side Scaling) support for IPv4, IPv6 and UDP for IPv4 and IPv6
- UDP checksum offload for IPv4 and IPv6
- AIX, IBM i, and Linux provide software iSCSI support through the adapter.
- Attributes provided: Four ports - two 10Gb and two 1Gb E
- Attributes required: PCIe Gen2 or Gen3 slot - full high
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#EN0U) - PCIe2 4-port (10Gb+1GbE) Copper SFP+RJ45 Adapter

PCIe Gen2 x8 short Ethernet adapter supports Ethernet NIC (Network Interface Card) traffic. The adapter provides two 10 Gb twinax copperl ports and two 1 Gb RJ45 ports in a PCIe 8x short form adapter.

The 10Gb ports are SFP+ and do not include a transceiver. Active Copper twinax cables up to 5 meter in length are supported such as provided by feature #EN01, #EN02 or #EN03. A transceiver is included with these cables. Note that SFP+ twinax copper is NOT AS/400 5250 twinax or CX4 or 10 GBase-T. Active cables differ from passive cables.

For the 1Gb RJ45 ports, 4-pair CAT-5 Unshielded Twisted Pair (UTP) cable or higher is supported for distances of up to 100 meters. In addition to 1Gb (1000 Mb) networks, 100 Mb networks are also supported, but 10Mb networks are not supported.

#EN0U and #EN0V adapters are electronically identical. They are physically identical except #EN0U has a tail stock for full high PCIe slots and #EN0V has a tail stock for low profile slots. The CCIN is 2CC3 for both features.

Details for the ports include:

- AIX NIM and Linux Network Install are supported.
- IEEE 802.3ae (10 GbE),IEEE 802.3ab (1000BASE-T GbE), 100BASE-T IEEEu, 802.1p priority, 802.1Q VLAN tagging, 802.3x flow control, 802.3ad load-balancing and failover,
- Link aggregation, IEEE 802.3ad 802.3
- Multiple MAC addresses/promiscuous mode (for PowerVM/VIOS) per interface
- Message Signalling Interrupt MSI-X, MSI and support of legacy pin interrupts
- Ether II and IEEE 802.3 encapsulated frames
- Jumbo frames up to 9.6 Kbytes
- TCP checksum offload for IPv4 and IPv6
- TCP segmentation Offload (TSO) for IPv4 and IPv6
- UDP checksum offload for IPv4 and IPv6
- AIX, IBM i and Linux provide software iSCSI support through the adapter.
- Attributes provided: Four ports - two 10Gb and two 1Gb E
- Attributes required: PCIe Gen2 or Gen3 slot - full high
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#EN0W) - PCIe2 2-port 10/1GbE BaseT RJ45 Adapter

PCIe Gen2 short x8 adapter which provides two 10G-BaseT ports. The ports are RJ45. The ports default to auto negotiate the highest speed either 10Gb (10GBaseT), 1Gb (1000BaseT) or 100Mb (100BaseT) full duplex. Each RJ45 port's configuration is independent of the other. The adapter supports Ethernet NIC (Network Interface Card) traffic.

The RJ45 ports use 4-pair CAT-6A cabling for distances of up to 100 meters or CAT-6 cabling for distances up to 37 meters. CAT5 cabling is not tested and is not supported.

Features #EN0W and #EN0X are electronically identical with the same CCIN of 2CC4. #EN0W has a full high tail stock and #EN0X has a low profile tail stock.

Details for the ports include:

- NIM install supported for VIOS, AIX, and Linux
- IEEE 802.3an (10GBASE-T), IEEE 802.3ab (1000BASE-T GbE), IEEEu (100BASE-T), 802.1p priority, 802.1Q VLAN tagging, 802.3x flow control, 802.3ad load-balancing and failover, Link aggregation, IEEE 802.3ad 802.3
- Multiple MAC addresses / promiscuous mode (for PowerVM/VIOS) per interface
- Message Signalling Interrupt (MSI-X, MSI) support of legacy pin interrupts
- Ether II and IEEE 802.3 encapsulated frames
- Jumbo frames up to 9.6 Kbytes
- TCP checksum offload for IPv4 and IPv6
- TCP segmentation Offload (TSO)
- RSS (Receive Side Scaling) support for IPv4, IPv6 and UDP
- UDP checksum offload for IPv4 and IPv6
- AIX, IBM i, and Linux provide software iSCSI support through the adapter
- Attributes provided: Two 10G-BaseT ports
- Attributes required: PCIe Gen2 or Gen3 slot - full high
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#EN12) - PCIe2 8Gb 4-port Fibre Channel Adapter

PCIe Gen2 8 Gigabit quad port Fibre Channel Adapter is a high- performance 8x short form Host Bus Adapter (HBA). Each port provides single initiator capability over a fiber link or with NPIV, multiple initiator capability is provided. The ports have LC type connectors and use shortwave laser optics. The adapter operates at link speeds of 2, 4, and 8 Gbps and will automatically negotiate to the highest speed possible. LEDs on each port provide information on the status and link speed of the port. This adapter based on the QLogic QLE2564 PCIe Host Bus Adapter (HBA).

- The adapter connects to a Fibre Channel switch. Direct device attachment has not been tested and is not supported.
- N_Port ID Virtualization (NPIV) capability is supported through VIOS.
- Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:
  - OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth
  - OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth
  - OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth
- Because core sizes are different, OM1 cables can only be connected to other OM1 cables. For best results, OM2 cables should not be connected to OM3 cables. However, if an OM2 cable is connected to an OM3 cable, the characteristics of the OM2 cable apply to the entire length of the cables.
- The following table shows the supported distances for the three different cable types at the three different link speeds.

| Cable | 2.125 Gbps | 4.25 Gbps | 8.5 Gbps |
|---|---|---|---|
| OM3 | .5m - 500m | .5m - 380m | .5m - 150m |
| OM2 | .5m - 300m | .5m - 150m | .5m - 50m |
| OM1 | .5m - 150m | .5m - 70m | .5m - 21m |

- The EN12 and EN0Y adapters are electronically and functionally identical with the same CCIN of EN0Y. # EN12 indicates a full high tailstock bracket. #EN0Y indicates a low profile tailstock bracket.
- Consult with your IBM representative or Business Partner for additional information relative to any third party attachment.
- Attributes provided: 4-port 8Gb Fibre Channel Adapter
- Attributes required: Available PCIe Gen3 slot in #EMX0 Expansion Drawer
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

Not withdrawn in Japan until 2018-08-07

## (#EN13) - PCIe 1-port Bisync Adapter

The #EN13 is a full high PCIe adapter which provides 1 RVX port for Bisync capability. This RVX port is labeled "Port 1". Its CCIN = 576C Bisync functionality identical to #2893 PCIe adapter is provided.

Select one of the following cables to attach to port 1 (RVX port):

- #0348 - V.24/EIA232 20-Ft PCI Cable
- #0353 - V.35 20-Ft PCI Cable
- #0359 - X.21 20-Ft PCI Cable

Limitations

- The #2893 does not support the remote ring indicate function.
- There is a second port on the card with an integrated modem, but Bisync is not supported on this port (labeled "Port 0").
- Attributes provided: One full-high PCIe adapter with 1 port for Bisync communications
- Attributes required: PCIe full high slot, external modem, cable for the modem.
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EN15) - PCIe3 4-port 10GbE SR Adapter

This PCIe Gen3 supports Ethernet NIC (Network Interface Card) traffic and also supports SR-IOV capability. The adapter provides four 10 Gb SR optical ports in a PCIe 8x short form adapter. SR-IOV capability for the NIC function is supported with the appropriate firmware and OS level for any of the four ports. Enabling SR-IOV function requires an HMC.

The four 10Gb ports are SFP+ and include four optical SR transceivers. The ports have LC Duplex type connectors and utilize shortwave laser optics and MMF-850nm fiber cabling. With 62.5 micron OM1, up to 33 meter length fiber cables are supported. With 50 micron OM2, up to 82 meter fiber cable lengths are supported. With 50 micron OM3 or OM4, up to 300 meter fiber cable lengths are supported.

#EN15 and #EN16 adapters are electronically identical. They are physically identical except #EN15 has a tail stock for full high PCIe slots and #EN16 has a tail stock allowing it to fit in a Power E870/E880 or Power E870C/E880C system node PCIe slot. The CCIN is 2CE3 for both features.

Details for the ports include:

- AIX NIM support
- IEEE 802.3ae (10 GbE), 802.1p priority, 802.1Q VLAN tagging, 802.3x flow control, 802.3ad load-balancing and failover,
- Link aggregation, IEEE 802.3ad 802.3
- Multiple MAC addresses per interface
- MSI-X, MSI and support of legacy pin interrupts
- Ether II and IEEE 802.3 encapsulated frames
- TCP checksum offload for IPv4 and IPv6
- TCP segmentation Offload (TSO) for IPv4 and IPv6
- UDP checksum offload for IPv4 and IPv6
- AIX, IBM i and Linux provide software iSCSI support through the adapter. Linux can also leverage adapter hardware support including initiator and header & data digest (CRC) generation and checking
- Attributes provided: Four 10GbE ports
- Attributes required: full high PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - IBM i supported
  - Red Hat Enterprise Linux supported
  - SUSE Linux Enterprise Server supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EN1A) - PCIe3 32Gb 2-port Fibre Channel Adapter

PCIe Gen3 32 Gigabit dual-port Optical Fibre Channel (FC) Adapter is a high-performance 8x short form adapter based on the Broadcom LPe32000-series PCIe Host Bus Adapter (HBA). The adapter provides two ports of 32Gb Fibre Channel capability using SR optics. Each port can provide up to 32Gb Fibre Channel functions simultaneously.

Each port provides single initiator capability over a fibre link or with NPIV, multiple initiator capability is provided. The ports are SFP+ and include an optical SR transceiver. The ports have LC type connectors and utilize shortwave laser optics. The adapter operates at link speeds of 8, 16, and 32Gbps and will automatically negotiate to the highest speed possible.

Feature #EN1A and #EN1B are electronically identical. They differ physically only that EN1A has a tail stock for full high PCIe slots and #EN1B has a short tail stock for low profile PCIe slots.

CCIN is 578F for both features.

Each port has two LED indicators located on the bracket next to each connector. These LEDs communicate boot status and give a visual indication of the operating state. The LEDs have five defined states; solid on, solid off, slow blink, fast blink, and flashing. The slow blink rate is 1Hz, the fast blink is 4Hz, and the flashing refers to an irregular on/off transition that reflects test progress. The operator should observe the LED sequence for several seconds to ensure that the operating state is correctly identified.

Cables:

Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM4 - multimode 50/125 micron fibre, 4700 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 400m o 8GFC: 0.5m - 190m o 16GFC: 0.5m - 125m o 32GFC: 0.5m - 100m
- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 380m o 8GFC: 0.5m - 150m o 16GFC: 0.5m - 100m o 32GFC: 0.5m - 70m
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 150m o 8GFC: 0.5m - 50m o 16GFC: 0.5m - 35m o 32GFC: 0.5m - 20m
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 70m o 8GFC: 0.5m - 21m o 16GFC: 0.5m - 15m o 32GFC: N/A

Note: The H/W cannot detect what length and type of cable is installed. The link will auto-negotiate to the speed reported during negotiation by the Target. The user must manually set the maximum negotiation speed. If too high of speed is selected, bit errors may occur.
See also optional wrap plug feature #ECW0 which is: a) Required to run some diagnostic procedures and b) In some cases may speed system boot when placed in empty ports as well as avoid useless messages pointing to a planned empty port.

- Attributes provided: 2-port 32Gb Optical FC
- Attributes required: Full high profile PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - Red Hat Enterprise Linux
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: VIOS supported

## (#EN1C) - PCIe3 16Gb 4-port Fibre Channel Adapter

PCIe Gen3 16 Gigabit quad-port Optical Fibre Channel (FC) Adapter is a high-performance x8 short form PCIe adapter based on the Emulex LPe31004 PCIe Host Bus Adapter (HBA). The adapter provides four ports of 16Gb Fibre Channel capability using SR optics. Each port can provide up to 16Gb Fibre Channel functions simultaneously.

Each port provides single initiator capability over a fibre link or with NPIV, multiple initiator capability is provided. The ports are SFP+ and include an optical SR transceiver. The ports have LC type connectors and utilize shortwave laser optics. The adapter operates at link speeds of 4, 8 and 16 Gbps and will automatically negotiate to the highest speed possible.

Feature #EN1C and #EN1D are electronically identical. They differ physically only that EN1C has a tail stock for full high PCIe slots and #EN1D has a tail stock for low profile PCIe slots.

CCIN is 578E for both features.

Each port has two LED indicators located on the bracket next to each connector. These LEDs communicate boot status and give a visual indication of the operating state. The LEDs have five defined states; solid on, solid off, slow blink, fast blink, and flashing. The slow blink rate is 1Hz, the fast blink is 4Hz, and the flashing refers to an irregular on/off transition that reflects test progress. The operator should observe the LED sequence for several seconds to ensure that the operating state is correctly identified.

Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM4 - multimode 50/125 micron fibre, 4700 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 400m o 8GFC: 0.5m - 190m o 16GFC: 0.5m - 125m o 32GFC: 0.5m - 100m
- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 380m o 8GFC: 0.5m - 150m o 16GFC: 0.5m - 100m o 32GFC: 0.5m - 70m
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 150m o 8GFC: 0.5m - 50m o 16GFC: 0.5m - 35m o 32GFC: 0.5m - 20m
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 70m o 8GFC: 0.5m - 21m o 16GFC: 0.5m - 15m o 32GFC: N/A

Note: The H/W cannot detect what length and type of cable is installed. The link will auto-negotiate to the speed reported during negotiation by the Target. The user must manually set the maximum negotiation speed. If too high of speed is selected, bit errors may occur.
See also optional wrap plug feature #ECW0 which is: a) Required to run some diagnostic procedures and b) In some cases may speed system boot when placed in empty ports as well as avoid useless messages pointing to a planned empty port.

- Attributes provided: 4-port 16Gb Optical FC
- Attributes required: Full high profile PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - SUSE Linux Enterprise Server
  - SUSE Linux Enterprise Server for SAP with SUSE Linux Enterprise Server
  - Red Hat Enterprise Linux
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: VIOS supported

## (#EN1G) - PCIe3 2-Port 16Gb Fibre Channel Adapter

The PCIe3 x8 dual-port Fibre Channel (16 Gb/s) adapter is a PCI Express (PCIe) generation 3 (Gen3) x8 adapter. This PCIe adapter is based on the Marvell QLE2692 PCIe host bus adapter 15.2 cm x 7 cm (6.6 inches x 2.7 inches). The adapter provides two ports of 16 Gb Fibre Channel capability by using SR optics. Each port can provide up to 3,200 Mbps bandwidth per port. Each port provides single initiator capability over a fiber optic link or with N_Port ID Virtualization (NPIV) it provides multiple initiator capabilities. The ports are SFP+ and include an optical SR transceiver. The ports have LC type connectors and use shortwave laser optics. The adapter operates at link speeds of 4, 8, and 16 Gbps and it automatically negotiates to the highest speed possible. The adapter supports start up on IBM Power Systems with FCode.

Feature #EN1G and #EN1H are electronically identical. They differ physically only that the #EN1G has a tail stock for full height PCIe slots and the #EN1H has a low profile tail stock.

CCIN is 579B for both features.

Each port has two LED indicators located on the bracket next to each connector. These LEDs communicate boot status and give a visual indication of the operating state. The LEDs have five defined states; solid on, solid off, slow blink, fast blink, and flashing. The slow blink rate is 1Hz, the fast blink is 4Hz, and the flashing refers to an irregular on/off transition that reflects test progress. The operator should observe the LED sequence for several seconds to ensure that the operating state is correctly identified.

Cables:

Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM4 - multimode 50/125 micron fibre, 4700 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 400m o 8GFC: 0.5m - 190m o 16GFC: 0.5m - 125m o 32GFC: 0.5m - 100m
- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 380m o 8GFC: 0.5m - 150m o 16GFC: 0.5m - 100m o 32GFC: 0.5m - 70m
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 150m o 8GFC: 0.5m - 50m o 16GFC: 0.5m - 35m o 32GFC: 0.5m - 20m
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 70m o 8GFC: 0.5m - 21m o 16GFC: N/A o 32GFC: N/A

Note: The hardware cannot detect the type and length of cable that is installed. The link auto-negotiates to the speed that is reported during negotiation by the target. You must manually set the maximum negotiation speed. If the speed value is set higher than the supported cable value, bit errors can occur.
See also optional wrap plug feature #ECW0 which is: a) Required to run some diagnostic procedures and b) In some cases may speed system boot when placed in empty ports as well as avoid useless messages pointing to a planned empty port.

Limitations: This adapter is not supported in India.

- Attributes provided: Enhanced diagnostics and manageability, Unparalleled performance and more efficient port utilization, Single initiator capability over a fiber optic link or with NPIV, 16 Gb/s of throughput per port, Multiple initiator capabilities.

- Attributes required: Full high profile PCIe Gen3 slot
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-02-2028, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS requires VIOS 3.1.1.25, or later

## (#EN2A) - PCIe3 16Gb 2-port Fibre Channel Adapter

PCIe Gen3 16 Gigabit dual-port Optical Fibre Channel (FC) Adapter is a high-performance 8x short form adapter PCIe Host Bus Adapter (HBA). The adapter provides two ports of 16Gb Fibre Channel capability using SR optics. Each port can provide up to 16Gb Fibre Channel functions simultaneously.

Each port provides single initiator capability over a fibre link or with NPIV, multiple initiator capability is provided. The ports are SFP+ and include an optical SR transceiver. The ports have LC type connectors and utilize shortwave laser optics. The adapter operates at link speeds of 8 and 16Gbps and will automatically negotiate to the highest speed possible.

Feature #EN2A and #EN2B are electronically identical. They differ physically only that EN2A has a tail stock for full high PCIe slots and #EN2B has a short tail stock for low profile PCIe slots.

CCIN is 579D for both features.

Each port has two LED indicators located on the bracket next to each connector. These LEDs communicate boot status and give a visual indication of the operating state. The LEDs have five defined states; solid on, solid off, slow blink, fast blink, and flashing. The slow blink rate is 1Hz, the fast blink is 4Hz, and the flashing refers to an irregular on/off transition that reflects test progress. The operator should observe the LED sequence for several seconds to ensure that the operating state is correctly identified.

Cables:

Cables are the responsibility of the customer. Use multimode fibre optic cables with short-wave lasers that adhere to the following specifications:

- OM4 - multimode 50/125 micron fibre, 4700 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 400m o 8GFC: 0.5m - 190m o 16GFC: 0.5m - 125m o 32GFC: 0.5m - 100m
- OM3 - multimode 50/125 micron fibre, 2000 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 380m o 8GFC: 0.5m - 150m o 16GFC: 0.5m - 100m o 32GFC: 0.5m - 70m
- OM2 - multimode 50/125 micron fibre, 500 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 150m o 8GFC: 0.5m - 50m o 16GFC: 0.5m - 35m o 32GFC: 0.5m - 20m
- OM1 - multimode 62.5/125 micron fibre, 200 MHz*km bandwidth with LC connectors o 4GFC: 0.5m - 70m o 8GFC: 0.5m - 21m o 16GFC: 0.5m - 15m o 32GFC: N/A

Note: The H/W cannot detect what length and type of cable is installed. The link will auto-negotiate to the speed reported during negotiation by the Target. The user must manually set the maximum negotiation speed. If too high of speed is selected, bit errors may occur.
See also optional wrap plug feature #ECW0 which is: a) Required to run some diagnostic procedures and b) In some cases may speed system boot when placed in empty ports as well as avoid useless messages pointing to a planned empty port.

- Attributes provided: 2-port 16Gb Optical FC
- Attributes required: Full high profile PCIe Gen3 slot
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
- Minimum required: 0
- Maximum allowed: 12 (Initial order maximum: 12)
- OS level required:
  - Red Hat Enterprise Linux 8, for POWER LE, version 8.2, or later
  - SUSE Linux Enterprise Server 15, Service Pack 2, or later
  - SUSE Linux Enterprise Server 12, Service Pack 5, or later
  - AIX Version 7.2 with the 7200-05 Technology Level or later
  - AIX Version 7.1 with the 7100-05 Technology Level and Service Pack 7100-05-07-2037 or later
  - AIX Version 7.2 with the 7200-03 Technology Level and Service Pack 7200-03-06-2038 or later (Planned Availability date February 19, 2021)
  - AIX Version 7.2 with the 7200-04 Technology Level and Service Pack 7200-04-03-2038 or later (Planned Availability date February 19, 2021)
  - IBM i 7.4 TR3, or later
  - IBM i 7.3 TR9, or later
  - IBM i 7.2 requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later
  Note: Assigment to the VIOS requires VIOS 3.1.2.10, or later

## (#ENS1) - 188 GB IBM i NVMe Load Source Namespace size

Specify code indicates a Namespace Size when an IBM i NVMe Load Source device specify feature code is on the order.

- Attributes provided: Load Source Namespace size
- Attributes required: IBM i NVMe Load Source device specify feature
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ENS2) - 393 GB IBM i NVMe Load Source Namespace size

Specify code indicates a Namespace Size when an IBM i NVMe Load Source device specify feature code is on the order.

- Attributes provided: Load Source Namespace size
- Attributes required: IBM i NVMe Load Source device specify feature
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ENSA) - 200 GB IBM i NVMe Load Source Namespace size

Specify code indicates a Namespace Size when an IBM i NVMe Load Source device specify feature code is on the order.

- Attributes provided: Load Source Namespace size
- Attributes required: IBM i NVMe Load Source device specify feature
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ENSB) - 400 GB IBM i NVMe Load Source Namespace size

Specify code indicates a Namespace Size when an IBM i NVMe Load Source device specify feature code is on the order.

- Attributes provided: Load Source Namespace size
- Attributes required: IBM i NVMe Load Source device specify feature
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EP50) - 4-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor

4-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor card. Available in quantity of one.

- Attributes provided: 4-core processor card
- Attributes required: One processor card slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i 7.4 TR2, or later
  - IBM i 7.3 TR8, or later
  - IBM i 7.2 with 7.2 Licensed Machine Code - RS 720-Q, or later
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

### (#EP51) - 6-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor

6-core Typical 2.3 to 3.8 Ghz (max) POWER9 Processor card. Available in quantity of one.

- Attributes provided: 6-core processor card
- Attributes required: One processor card slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i 7.4 TR2, or later
  - IBM i 7.3 TR8, or later
  - IBM i 7.2 with 7.2 Licensed Machine Code - RS 720-Q, or later
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

### (#EP52) - 8-core Typical 2.8 to 3.8 Ghz (max) POWER9 Processor

8-core Typical 2.8 to 3.8 Ghz (max) POWER9 Processor card. Available in quantity of one.

- Attributes provided: 8-core processor card
- Attributes required: One processor card slot
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i 7.4 TR2, or later
  - IBM i 7.3 TR8, or later
  - IBM i 7.2 with 7.2 Licensed Machine Code - RS 720-Q, or later
- Initial Order/MES/Both/Supported: Both
- CSU: No
- Return parts MES: No

### (#EP60) - One Processor Core Activation for #EP50

Entitlement for one processor core activation.

- Attributes provided: Processor core activation for #EP50
- Attributes required: Feature #EP50
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature EP50
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EP61) - One Processor Core Activation for #EP51

Entitlement for one processor core activation.

- Attributes provided: Processor core activation for #EP51
- Attributes required: Feature #EP51
- Minimum required: 0
- Maximum allowed: 6 (Initial order maximum: 6)
- OS level required: See feature EP51
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EP62) - One Processor Core Activation for #EP52

Entitlement for one processor core activation.

- Attributes provided: Processor core activation for #EP52
- Attributes required: Feature #EP52
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: See feature EP52
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EPA0) - Deactivation of LPM (Live Partition Mobility)

This feature codes provides firmware commands to deactivate LPM.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 8 (Initial order maximum: 8)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EPTH) - Horizontal PDU Mounting Hardware

This feature ships the hardware required to properly horizontally mount one #EPTG/EPTJ, #EPTK/EPTL, #EPTM/EPTN or #EPTP/EPTQ PDU in a 1U 19-inch rack. A 1U blank panel for the front of the rack for air-flow control is included.

Without this hardware, the PDU can be mounted vertically in the rack's side pockets, but can only be poorly mounted horizontally. The front end of the PDU will be firmly attached to the rear of the rack. But the front of the PDU will be unsupported toward the middle of the rack. Without this hardware, the unsupported end of the PDU will rest on the hardware mounted immediately below it. If that underlying hardware is removed from the rack there is no support for the PDU.

Important Note: This feature code is typically used for an MES order and not for an original order of a new rack with #EPTn PDUs. As part of factory integration, IBM Manufacturing automatically adds this hardware without a feature code and at no additional charge when its #EPTn PDU placement logic calls for horizontally mounted PDUs. Use this feature code when (1) converting an existing vertically mounted #EPTn PDU to horizontal mounting or (2) separately ordering a #EPTn PDU for horizontal field installation.

- Attributes provided: mounting hardware
- Attributes required: High Function PDU (#EPT*) and space in 19-inch rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EPTJ) - High Function 9xC19 PDU

Switched, Monitoring

This is an intelligent, switched 200-240 volt AC Power Distribution Unit (PDU) with nine C19 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the nine C19 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Depending on country wiring standards the PDU is single-phase or three-phase wye. See three-phase #EPTK/EPTL for countries which do not use wye wiring.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One country-specific wall line cord is also ordered separately and attaches to a UTG524-7 connector on the front of the PDU. Supported line cords include features #6489, #6491, #6492, #6653, #6654, #6655, #6656, #6657, #6658, and #6667.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

There are also three C13 receptacles on the rear of the PDU positioned toward the middle of the rack. These are generally not easily accessed and therefore IBM does not generally recommend their use.

#EPTG and #EPTJ are identical PDUs. Up to one lower price #EPTG can be ordered with a new 7014-T42/T00 rack in place of a no-charge #9188 PDU.

For comparison, this is most similar to the earlier generation #7189 PDU.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Nine C19 PDU - switched, power monitoring
- Attributes required: PDU wall line cord & space in 19-inch rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EPTL) - High Function 9xC19 PDU 3-Phase

Switched, Monitoring

This is an intelligent, switched 208 volt 3-phase AC Power Distribution Unit (PDU) with nine C19 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the nine C19 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C20 plug connect to C19 PDU receptacles and are ordered separately. One wall line cord is provided with the PDU (no separate feature code) and has a IEC60309 60A plug (3P+G). The PDU supports up to 48 amps.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

There are also three C13 receptacles on the rear of the PDU positioned toward the middle of the rack. These are generally not easily accessed and therefore IBM does not generally recommend their use.

#EPTK and #EPTL are identical PDUs. Up to one lower price #EPTK can be ordered with a new 7014-T42/T00 rack in place of a no-charge #9188 PDU.

For comparison, this is most similar to the earlier generation #7196 PDU.

Not orderable in China and Hong Kong.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Nine C19 PDU - switched, power monitoring
- Attributes required: space in rack, 3-phase 208V AC delta electrical service
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EPTN) - High Function 12xC13 PDU

Switched, Monitoring

This is an intelligent, switched 200-240 volt AC Power Distribution Unit (PDU) with twelve C13 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the twelve C13 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker. Depending on country wiring standards the PDU is single- phase or three-phase wye. See three-phase #EPTK/EPTL for countries which do not use wye wiring.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C14 plug connect to C13 PDU receptacles and are ordered separately. One country-specific wall line cord is also ordered separately and attaches to a UTG524-7 connector on the front of the PDU. Supported line cords include features #6489, #6491, #6492, #6653, #6654, #6655, #6656, #6657, #6658, and #6667.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

#EPTM and #EPTN are identical PDUs. Up to one lower price #EPTM can be ordered with a new 7014-T42/T00 rack in place of a no-charge #9188 PDU.

For comparison, this is most similar to the earlier generation #7109 PDU.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Twelve C13 PDU - switched, power monitoring
- Attributes required: PDU wall line cord & space in 19-inch rack
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EPTQ) - High Function 12xC13 PDU 3-Phase

Switched, Monitoring

This is an intelligent, switched 208 volt 3-phase AC Power Distribution Unit (PDU) with twelve C13 receptacles on the front of the PDU. The PDU is mounted on the rear of the rack making the twelve C13 receptacles easily accessible. Each receptacle has a 20 amp circuit breaker.

The PDU can be mounted vertically in rack side pockets or it can be mounted horizontally. If mounted horizontally, it uses 1 EIA (1U) of rack space. See feature #EPTH for horizontal mounting hardware.

Device power cords with a C14 plug connect to C13 PDU receptacles and are ordered separately. One wall line cord is provided with the PDU (no separate feature code) and has a IEC60309 60A plug (3P+G). The PDU supports up to 48 amps.

Two RJ45 ports on the front of the PDU enable the client to monitor each receptacle's electrical power usage and to remotely switch any receptacle on or off. The PDU is shipped with a generic PDU password and IBM strongly urges clients to change it upon installation.

#EPTP and #EPTQ are identical PDUs. Up to one lower price #EPTP can be ordered with a new 7014-T42/T00 rack in place of a no-charge #9188 PDU.

For comparison, this is most similar to the earlier generation #7196 PDU, but offers C13 receptacles.

Not orderable in China and Hong Kong.

Limitation: Some configurations of the Elastic Storage Server (ESS) are delivered with a Intelligent PDU. At this time, the intelligent management capabilities of this PDU are not configured or used by the ESS system. If the ESS Customer would like to use this capability, it is the Customers responsibility to configure this PDU. In any case the ethernet port on the Intelligent PDU must not be connected to the ESS Management switch.

- Attributes provided: Twelve C13 PDU - switched, power monitoring
- Attributes required: space in rack, 3-phase 208V AC delta electrical service
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

Feature EPZR is not available in People's Republic ofChina, Hong Kong S.A.R. of the PRC, Marco S.A.R. ofthe PRC and Taiwan.

## (#EPZR) - One Processor Core Activation for #EP50

Entitlement for one processor core activation.

- Attributes provided: Processor core activation for #EP50
- Attributes required: Feature #EP50
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature EP50
- Initial Order/MES/Both/Supported: Initial
- CSU: Yes
- Return parts MES: No

Feature #EPZS is not available in People's Republic ofChina, Hong Kong S.A.R. of the PRC, Marco S.A.R. ofthe PRC and Taiwan.

## (#EPZS) - One Processor Core Activation for #EP51

Entitlement for one processor core activation.

- Attributes provided: Processor core activation for #EP51
- Attributes required: Feature #EP51
- Minimum required: 0
- Maximum allowed: 6 (Initial order maximum: 6)
- OS level required: See feature EP51
- Initial Order/MES/Both/Supported: Initial
- CSU: Yes
- Return parts MES: No

## (#EQ0Q) - Quantity 150 of #ES0Q 387GB SFF-2 4k SSD (AIX/Linux)

This feature ships a quantity 150 of #ES0Q SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records

- Attributes provided: Quantity of 150 #ES0Q
- Attributes required: See #ES0Q
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES0Q
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQ0R) - Quantity 150 of #ES0R 387GB SFF-2 4k SSD (IBM i)

This feature ships a quantity 150 of #ES0R SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: Quantity of 150 #ES0R
- Attributes required: See #ES0R
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES0R
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQ0S) - Quantity 150 of #ES0S 775GB SFF-2 4k SSD (AIX/Linux)

This feature ships a quantity 150 of #ES0S SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: Quantity of 150 #ES0S
- Attributes required: See #ES0S
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES0S
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ0T) - Quantity 150 of #ES0T 775GB SFF-2 4k SSD (IBM i)

This feature ships a quantity 150 of #ES0T SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: Quantity of 150 #ES0T
- Attributes required: See #ES0T
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES0T
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ62) - Quantity 150 of #ES62 3.86-4.0 TB 7200 rpm 4k LFF-1 Disk

This feature ships a quantity of 150 #ES62 drives. The configurator may either generate this feature or allow users to select this feature as they would any other single drive feature. This feature remains on the inventory records.

- Attributes provided: 150 enterprise nearline drives
- Attributes required: 150 open LFF (3.5-inch) bays in EXP12SX Storage Enclosure
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES62
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EQ64) - Quantity 150 of #ES64 7.72-8.0 TB 7200 rpm 4k LFF-1 Disk

This feature ships a quantity of 150 #ES64 drives. The configurator may either generate this feature or allow users to select this feature as they would any other single drive feature. This feature remains on the inventory records.

- Attributes provided: 150 enterprise nearline drives
- Attributes required: 150 open LFF (3.5-inch) bays in EXP12SX Storage Enclosure
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES64
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EQ78) - Quantity 150 of #ES78 387GB SFF-2 SSD 5xx

This feature ships a quantity of 150 #ES78 solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES78
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES78
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ79) - Quantity 150 of #ES79 387GB SFF-2 SSD 5xx

This feature ships a quantity of 150 #ES79 solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES79
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES79
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ7E) - Quantity 150 of #ES7E 775GB SFF-2 SSD 5xx

This feature ships a quantity of 150 #ES7E solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES7E
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES7E
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ7F) - Quantity 150 of #ES7F 775GB SFF-2 SSD 5xx

This feature ships a quantity of 150 #ES7F solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES7F
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES7F
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ80) - Quantity 150 of #ES80 1.9TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES80 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: see feature #ES80
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES80
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ81) - Quantity 150 of ES81 1.9TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES81 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: see feature #ES81
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ES81
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ85) - Quantity 150 of #ES85 387GB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES85 solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES85
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES85
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ86) - Quantity 150 of #ES86 387GB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES86 solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES86
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES86
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ8C) - Quantity 150 of #ES8C 775GB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES8C solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES8C
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES8C
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ8D) - Quantity 150 of #ES8D 775GB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES8D solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES8D
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES8D
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ8F) - Quantity 150 of #ES8F 1.55TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES8F solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES8F
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES8F
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ8G) - Quantity 150 of #ES8G 1.55TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES8G solid state drives (SSDs). The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: Ships 150 SSDs
- Attributes required: See feat #ES8G
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES8G
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ8Y) - Quantity 150 of #ES8Y 931GB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES8Y SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ES8Y
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES8Y
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ8Z) - Quantity 150 of ES8Z 931GB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES8Z SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ES8Z
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES8Z
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ96) - Quantity 150 of ES96 1.86TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES96 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ES96
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES96
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQ97) - Quantity 150 of ES97 1.86TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ES97 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ES97
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES97
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQD2) - Quantity 150 of #ESD2 (1.1TB 10k SFF-2)

This feature ships a quantity of 150 #ESD2 disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature #ESD2
- Attributes required: 150 SFF-2 SAS bays in EXP24S drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required: See feature ESD2
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQD3) - Quantity 150 of #ESD3 (1.2TB 10k SFF-2)

This feature ships a quantity of 150 #ESD3 1.2TB SAS 10K SFF-2 disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESD3
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required: See feature ESD3
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQDN) - Quantity 150 of #ESDN (571GB 15K RPM SAS SFF-2 for IBM i)

This feature ships a quantity 150 of #ESDN drive. The configurator may either generate this feature or allow users to select this feature as they would any other single disk drive feature. This feature remains on the inventory records.

- Attributes provided: Quantity 150 of #ESDN
- Attributes required: See #ESDN
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required: See feature ESDN
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQDP) - Quantity 150 of #ESDP (600GB 15K RPM SAS SFF-2 for AIX/LINUX)

This feature ships a quantity 150 of #ESDP drive. The configurator may either generate this feature or allow users to select this feature as they would any other single disk drive feature. This feature remains on the inventory records.

- Attributes provided: Quantity 150 of #ESDP
- Attributes required: See #ESDP
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 0)
- OS level required: See feature ESDP
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQE7) - Quantity 150 of #ESE7 3.72TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ESE7 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESE7
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESE7
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQE8) - Quantity 150 of ESE8 3.72TB SFF-2 SSD 4k

This feature ships a quantity of 150 #ESE8 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESE8
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESE8
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQEU) - Quantity 150 of #ESEU (571GB 10k SFF-2)

This feature ships a quantity of 150 #ESEU 571GB 10K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESEU
- Attributes required: 150 SFF-2 SAS bays in EXP24S drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESEU
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EQEV) - Quantity 150 of #ESEV (600GB 10k SFF-2)

This feature ships a quantity of 150 #ESEV, 600GB 10K RPM 4K SAS SFF-2 Disk, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESEV
- Attributes required: 150 SFF-2 SAS bays in EXP24S drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESEV
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EQEY) - Quantity 150 of #ESEY (283 GB SFF-2)

This feature ships a quantity 150 of #ESEY disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records

- Attributes provided: Quantity 150 of #ESEY
- Attributes required: See #ESEY
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESEY
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQEZ) - Quantity 150 of #ESEZ (300GB SFF-2)

This feature ships a quantity of 150 #ESEZ disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records

- Attributes provided: Quantity of 150 #ESEZ
- Attributes required: See #ESEZ
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESEZ
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQF2) - Quantity 150 of #ESF2 (1.1TB 10k SFF-2)

This feature ships a quantity of 150 #ESF2 1.14TB 10K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESF2
- Attributes required: 150 SFF-2 SAS bays in EXP24S drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESF2
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EQF3) - Quantity 150 of #ESF3 (1.2TB 10k SFF-2)

This feature ships a quantity of 150 #ESF3, 1.2TB 10K RPM 4K SAS SFF-2 Disk, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESF3
- Attributes required: 150 SFF-2 SAS bays in EXP24S drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESF3
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EQFN) - Quantity 150 of #ESFN (571GB SFF-2)

This feature ships a quantity 150 of #ESFN disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records

- Attributes provided: Quantity 150 of #ESFN
- Attributes required: See #ESFN
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESFN
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQFP) - Quantity 150 of #ESFP (600GB SFF-2)

This feature ships a quantity 150 of #ESFP disk units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records

- Attributes provided: Quantity 150 of #ESFP
- Attributes required: See #ESFP
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESFP
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQFS) - Quantity 150 of #ESFS (1.7TB 10k SFF-2)

This feature ships a quantity of 150 #ESFS 1.71TB 10K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESFS
- Attributes required: 150 SFF-2 SAS bays in EXP24S drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESFS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EQFT) - Quantity 150 of #ESFT (1.8TB 10k SFF-2)

This feature ships a quantity of 150 #ESFT 1.8TB 10K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESFT
- Attributes required: 150 SFF-2 SAS bays in EXP24S drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: See feature ESFT
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EQG5) - Quantity 150 of #ESG5 (387GB SAS 5xx)

This feature ships a quantity of 150 #ESG5 387 GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESG5
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESG5
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQG6) - Quantity 150 of #ESG6 (387GB SAS 5xx)

This feature ships a quantity of 150 #ESG6 387GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESG6
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ESG6
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQGB) - Quantity 150 of #ESGB (387GB SAS 4k)

This feature ships a quantity of 150 #ESGB 387 GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGB
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGB
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQGC) - Quantity 150 of #ESGC (387GB SAS 4k)

This feature ships a quantity of 150 #ESGC 387 GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGC
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGC
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EQGF) - Quantity 150 of #ESGF (775GB SAS 5xx)

This feature ships a quantity of 150 #ESGF 775 GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGF
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGF
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQGG) - Quantity 150 of #ESGG (775GB SAS 5xx)

This feature ships a quantity of 150 #ESGG 775 GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGG
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 0)
- OS level required: See feature ESGG
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQGK) - Quantity 150 of #ESGK (775GB SAS 4k)

This feature ships a quantity of 150 #ESGK 775 GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGK
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGK
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQGL) - Quantity 150 of #ESGL (775GB SAS 4k)

This feature ships a quantity of 150 #ESGL 775 GB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGL
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGL
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQGP) - Quantity 150 of #ESGP (1.55TB SAS 4k)

This feature ships a quantity of 150 #ESGP 1.55 TB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGP
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGP
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#EQGQ) - Quantity 150 of #ESGQ (1.55TB SAS 4k)

This feature ships a quantity of 150 #ESGQ 1.55 TB, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

- Attributes provided: See feature#ESGQ
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGQ
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ER94) - Quantity 150 of ES94 387GB SAS 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ES94 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ES94
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES94
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ER95) - Quantity 150 of ES95 387GB SAS 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ES95 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ES95
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ES95
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ERF1) - RFID Tags for Servers, Compute Nodes, Chassis, Racks, and HMCs

The specify feature attaches one Radio Frequency Identification Device (RFID) tag to a Server CEC, rack, HMC, compute node, or chassis enclosure. This can be used with MTM (machine type model) rack such as a 7953-94X or 7014-T42, not a feature code rack such as a #0553. It applies to newly shipped MTM servers, racks, HMCs, compute nodes, and chassis enclosures, not MES orders with one exception. POWER5 CECs being upgraded to a POWER6 CEC or POWER6 CECs being upgraded to a POWER 7 CEC can order this feature. The RFID tag meets the Financial Services Technology Consortium (FSTC) specifications for IT Data Center Asset Tracking.

- Attributes provided: RFIDs
- Attributes required: Server CEC, Compute Node, Chassis, MTM Rack, or HMC
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#ERG0) - Rear rack extension

Extends the rear of a 2.0M enterprise rack (#0553) eight inches or 20.3 cm. The extra depth provides extra space for cable management helping to keep the center of the rack more open for airflow and access to the rear of the equipment mounted in the rack. This rear extension does not increase or decrease the rack's 42 EIA (42U) vertical size. The extension does increase the floor footprint.

- Attributes provided: Adds eight inches or 20.3 cm to the rear of a 2.0M rack.
- Attributes required: 42U 2m enterprise rack such as #0553
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#ERGV) - Quantity 150 of ESGV 387GB SSD 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ESGV SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESGV
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGV
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ERGZ) - Quantity 150 of ESGZ 775GB SSD 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ESGZ SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESGZ
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESGZ
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ERHJ) - Quantity 150 of #ESHJ 931 GB SSD 4k SFF-2

This feature ships a quantity of 150 #ESHJ SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESHJ
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESHJ
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ERHK) - Quantity 150 of #ESHK 931 GB SSD 4k SFF-2

This feature ships a quantity of 150 #ESHK SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESHK
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESHK
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ERHL) - Quantity 150 of #ESHL 1.86 TB SSD 4k SFF-2

This feature ships a quantity of 150 #ESHL SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESHL
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESHL
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ERHM) - Quantity 150 of #ESHM 1.86 TB SSD 4k SFF-2

This feature ships a quantity of 150 #ESHM SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESHM
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESHM
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ERHN) - Quantity 150 of #ESHN 7.45 TB SSD 4k SFF-2

This feature ships a quantity of 150 #ESHN SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESHN
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESHN
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ERJ0) - Quantity 150 of ESJ0 931GB SAS 4k

This feature ships a quantity of 150 #ESJ0 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ0
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ0
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ERJ1) - Quantity 150 of ESJ1 931GB SAS 4k

This feature ships a quantity of 150 #ESJ1 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ1
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ1
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ERJ2) - Quantity 150 of ESJ2 1.86TB SAS 4k

This feature ships a quantity of 150 #ESJ2 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ2
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ2
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ERJ3) - Quantity 150 of ESJ3 1.86TB SAS 4k

This feature ships a quantity of 150 #ESJ3 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ3
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ3
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERJ4) - Quantity 150 of ESJ4 3.72TB SAS 4k

This feature ships a quantity of 150 #ESJ4 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ4
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ4
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERJ5) - Quantity 150 of ESJ5 3.72TB SAS 4k

This feature ships a quantity of 150 #ESJ5 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ5
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ5
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERJ6) - Quantity 150 of ESJ6 7.45TB SAS 4k

This feature ships a quantity of 150 #ESJ6 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ6
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ6
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERJ7) - Quantity 150 of ESJ7 7.45TB SAS 4k

This feature ships a quantity of 150 #ESJ7 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESJ7
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature #ESJ7
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERM8) - Quantity 150 of #ESM8 3.72 TB SSD 4k SFF-2

This feature ships a quantity of 150 #ESM8 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESM8
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESM8
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ERM9) - Quantity 150 of #ESM9 3.72 TB SSD 4k SFF-2

This feature ships a quantity of 150 #ESM9 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESM9
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESM9
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

### (#ERNA) - Quantity 150 of ESNA 775GB SSD 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ESNA SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESNA
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESNA
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERNB) - Quantity 150 of ESNB 775GB SSD 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ESNB SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESNB
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESNB
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERNE) - Quantity 150 of ESNE 1.55TB SSD 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ESNE SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESNE
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESNE
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ERNF) - Quantity 150 of ESNF 1.55TB SSD 4k

(No longer available as of December 31, 2020)

This feature ships a quantity of 150 #ESNF SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESNF
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: See feature ESNF
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES0Q) - 387GB SFF-2 4K SSD for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 3875GB capacity formatted with 4K byte sectors (4224 bytes). The drive is supported in Gen2 SAS bays (SFF-2) provided in an EXP24S drawer (#5887).

#ES0Q (for AIX/LInux/VIOS) and #ES0R (for IBM i) are identica and have the same CCINI, but have different feature numbers to help IBM configuration tools understand their planned usage.

Limitations: This drive cannot be placed in the same array with a drive formatted with 528 byte sectors. Also JBOD mode (4096 byte sectors) is not supported.

- Attributes provided: 4K byte formatted 387GB SFF Gen2 SSD eMLC
- Attributes required: Available GEN2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES0R) - 387GB SFF-2 4k SSD for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 3875GB capacity formatted with 4K byte sectors (4224 bytes). The drive is supported in Gen2 SAS bays (SFF-2) provided in an EXP24S drawer (#5887).

#ES0Q (for AIX/LInux/VIOS) and #ES0R (for IBM i) are identical and have the same CCIN, but have different feature numbers to help IBM configuration tools understand their planned usage.

Limitations: This drive cannot be placed in the same array with a drive formatted with 528 byte sectors. Also JBOD mode (4096 byte sectors) is not supported.

- Attributes provided: 4K byte formatted 387GB SFF Gen2 SSD eMLC
- Attributes required: One GEN2 SFF SAS disk drive bay slot
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES0S) - 775GB SFF-2 4k SSD for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 7755GB capacity formatted with 4K byte sectors (4224 bytes). The drive is supported in Gen2 SAS bays (SFF-2) provided in an EXP24S drawer (#5887).

#ES0S (for AIX/LInux/VIOS) and #ES0T (for IBM i) are identical and have the same CCIN, but have different feature numbers to help IBM configuration tools understand their planned usage.

Limitations: This drive cannot be placed in the same array with a drive formatted with 528 byte sectors. Also JBOD mode (4096 byte sectors) is not supported.

- Attributes provided: 4K byte formatted 775GB SFF Gen2 SSD eMLC
- Attributes required: Available SFF GEN2 bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES0T) - 775GB SFF-2 4k SSD for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 7755GB capacity formatted with 4K byte sectors (4224 bytes). The drive is supported in Gen2 SAS bays (SFF-2) provided in an EXP24S drawer (#5887).

#ES0S (for AIX/LInux/VIOS) and #ES0T (for IBM i) are identical and have the same CCIN, but have different feature numbers to help IBM configuration tools understand their planned usage.

Limitations: This drive cannot be placed in the same array with a drive formatted with 528 byte sectors. Also JBOD mode (4096 byte sectors) is not supported.

- Attributes provided: 4K byte formatted 775GB SFF Gen2 SSD eMLC
- Attributes required: One GEN2 SFF SAS disk drive bay slot
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES1E) - Enterprise 1.6 TB SSD PCIe4 NVMe U.2 module for AIX/Linux

Enterprise 1.6 TB NVMe SFF U.2 15mm SSD (Solid State Drive) is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) drive. The SSD can be used in any U.2 15mm NVMe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance architecture and command protocol that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features #ES1E and #ES1F are physically identical drives with the same CCIN of 59B8. Different feature codes to help the IBM configuration tools understand how the NVMe is used. Feature ES1E indicates usage by AIX, Linux or VIOS in which the SSD is formatted in 4096 byte sectors. Feature ES1F indicates usage by IBM i in which the SSD is formatted in 4160 byte sectors.

This Enterprise solid-state drive is rated at 3 DWPD (Drive Writes Per Day) calculated over a 5-year period for 100% (4K bytes or larger) random write workloads. Use for workloads within this rating are fully supported and will maintain high reliability and MTBF.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.Writes past the SSD's maximum write capacity will continue to work for some period of time, but perform much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the SSD if enabled by the operating system (OS) and system administrator. Customers are recommended to monitor SMART log critical information via the appropriate OS utility to observe drive life remaining information. IBM NVMe SSD failures will be replaced during the standard warranty and maintenance period for SSD's that have not reached the maximum number of write cycles. SSD's that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Boot supported. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

- Attributes provided: PCIe4 NVMe SSD
- Attributes required: SFF U.2 slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES1F) - Enterprise 1.6 TB SSD PCIe4 NVMe U.2 module for IBM i

Enterprise 1.6 TB NVMe SFF U.2 15mm SSD (Solid State Drive) is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) drive. The SSD can be used in any U.2 15mm NVMe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance architecture and command protocol that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features #ES1E and #ES1F are physically identical drives with the same CCIN of 59B8. Different feature codes to help the IBM configuration tools understand how the NVMe is used. Feature ES1E indicates usage by AIX, Linux or VIOS in which the SSD is formatted in 4096 byte sectors. Feature ES1F indicates usage by IBM i in which the SSD is formatted in 4160 byte sectors.

This Enterprise solid-state drive is rated at 3 DWPD (Drive Writes Per Day) calculated over a 5-year period for 100% (4K bytes or larger) random write workloads. Use for workloads within this rating are fully supported and will maintain high reliability and MTBF.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.Writes past the SSD's maximum write capacity will continue to work for some period of time, but perform much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the SSD if enabled by the operating system (OS) and system administrator. Customers are recommended to monitor SMART log critical information via the appropriate OS utility to observe drive life remaining information. IBM NVMe SSD failures will be replaced during the standard warranty and maintenance period for SSD's that have not reached the maximum number of write cycles. SSD's that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Boot supported. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

- Attributes provided: PCIe4 NVMe SSD
- Attributes required: SFF U.2 slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES1G) - Enterprise 3.2 TB SSD PCIe4 NVMe U.2 module for AIX/Linux

Enterprise 3.2 TB NVMe SFF U.2 15mm SSD (Solid State Drive) is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) drive. The SSD can be used in any U.2 15mm NVMe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance architecture and command protocol that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features #ES1G and #ES1H are physically identical drives with the same CCIN of 59B9. Different feature codes to help the IBM configuration tools understand how the NVMe is used. Feature ES1G indicates usage by AIX, Linux or VIOS in which the SSD is formatted in 4096 byte sectors. Feature ES1H indicates usage by IBM i in which the SSD is formatted in 4160 byte sectors.

This Enterprise solid-state drive is rated at 3 DWPD (Drive Writes Per Day) calculated over a 5-year period for 100% (4K bytes or larger) random write workloads. Use for workloads within this rating are fully supported and will maintain high reliability and MTBF.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.Writes past the SSD's maximum write capacity will continue to work for some period of time, but perform much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the SSD if enabled by the operating system (OS) and system administrator. Customers are recommended to monitor SMART log critical information via the appropriate OS utility to observe drive life remaining information. IBM NVMe SSD failures will be replaced during the standard warranty and maintenance period for SSD's that have not reached the maximum number of write cycles. SSD's that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Boot supported. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

- Attributes provided: PCIe4 NVMe SSD
- Attributes required: SFF U.2 slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES1H) - Enterprise 3.2 TB SSD PCIe4 NVMe U.2 module for IBM i

Enterprise 3.2 TB NVMe SFF U.2 15mm SSD (Solid State Drive) is a Peripheral Component Interconnect Express (PCIe) generation 4 (Gen4) drive. The SSD can be used in any U.2 15mm NVMe slot in the system and uses Non-Volatile Memory Express (NVMe). NVMe is a high performance architecture and command protocol that can read/write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read/write input/output operations per second (IOPS) and larger throughput (GB/sec).

Features #ES1G and #ES1H are physically identical drives with the same CCIN of 59B9. Different feature codes to help the IBM configuration tools understand how the NVMe is used. Feature ES1G indicates usage by AIX, Linux or VIOS in which the SSD is formatted in 4096 byte sectors. Feature ES1H indicates usage by IBM i in which the SSD is formatted in 4160 byte sectors.

This Enterprise solid-state drive is rated at 3 DWPD (Drive Writes Per Day) calculated over a 5-year period for 100% (4K bytes or larger) random write workloads. Use for workloads within this rating are fully supported and will maintain high reliability and MTBF.

The nature of the workload has a great impact on the maximum write capacity. If a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity will be larger.Writes past the SSD's maximum write capacity will continue to work for some period of time, but perform much more slowly. Whether the application uses sequential or random reads from the device does not affect the life of the device. A Predictive Failure Analysis message will indicate that it is time to replace the SSD if enabled by the operating system (OS) and system administrator. Customers are recommended to monitor SMART log critical information via the appropriate OS utility to observe drive life remaining information. IBM NVMe SSD failures will be replaced during the standard warranty and maintenance period for SSD's that have not reached the maximum number of write cycles. SSD's that reach this limit may fail to operate according to specifications and must be replaced at the client's expense. Boot supported. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

- Attributes provided: PCIe4 NVMe SSD
- Attributes required: SFF U.2 slot
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES62) - 3.86-4.0 TB 7200 RPM 4K SAS LFF-1 Nearline Disk Drive (AIX/Linux)

3.86 TB 3.5-inch (Large Form Factor (LFF)) 7200 rpm SAS disk drive on Gen-1 carrier/tray. Supported in LFF-1 SAS bays such as found in EXP12SX Storage Enclosure. CCIN is 5B1D.

IBM Manufacturing ships the drive formatted with 4224 byte sectors for additional data integrity protection which results in 3.86 TB capacity. The drive can be reformatted to 4096 byte sectors by the client which which results in 4 TB capacity, but with less protection.
Note: Reformatting large, 7200 rpm drives takes very significant time.

Limitation: Cannot be in the same array as a 10k or 15k rpm drive

- Attributes provided: One enterprise nearline drive.
- Attributes required: One LFF (3.5-inch) bay in EXP12SX Storage Enclosure
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES64) - 7.72-8.0 TB 7200 RPM 4K SAS LFF-1 Nearline Disk Drive (AIX/Linux)

7.72 TB 3.5-inch (Large Form Factor (LFF)) 7200 rpm SAS disk drive on Gen-1 carrier/tray. Supported in LFF-1 SAS bays such as found in EXP12SX Storage Enclosure. CCIN is 5B1F.

IBM Manufacturing ships the drive formatted with 4224 byte sectors for additional data integrity protection which results in 7.72 TB capacity. The drive can be reformatted to 4096 byte sectors by the client which which results in 8 TB capacity, but with less protection.
Note: Reformatting large, 7200 rpm drives takes very significant time.

Limitation: Cannot be in the same array as a 10k or 15k rpm drive.

- Attributes provided: One enterprise nearline drive.
- Attributes required: One LFF (3.5-inch) bay in EXP12SX Storage Enclosure
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES78) - 387GB SFF-2 SSD 5xx eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B16

- ES78 and ES79 are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES78 indicates usage by AIX, Linux or VIOS. ES79 indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887 EXP24S or #ESLS EXP24SX drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8/POWER9 system units (SFF-3) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 387GB SFF-2 5xx SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES79) - 387GB SFF-2 SSD 5xx eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B16

- ES78 and ES79 are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES78 indicates usage by AIX, Linux or VIOS. ES79 indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887/#EL1S EXP24S drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8 system units (SFF-3) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

- Attributes provided: one 387GB SFF-2 5xx SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES7E) - 775GB SFF-2 SSD 5xx eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B17

- ES7E and ES7F are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES7E indicates usage by AIX, Linux or VIOS. ES7F indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887 EXP24S or #ESLS EXP24SX drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8/POWER9 system units (SFF-3) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 775GB SFF-2 5xx SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES7F) - 775GB SFF-2 SSD 5xx eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B17

- ES7E and ES7F are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES7E indicates usage by AIX, Linux or VIOS. ES7F indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887/#EL1S EXP24S drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8 system units (SFF-3) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 775GB SFF-2 5xx SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES7K) - 387GB SFF-3 SSD 5xx eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B19

- ES7K and ES7L are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES7K indicates usage by AIX, Linux or VIOS. ES7L indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

- Attributes provided: one 387GB SFF-3 5xx SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES7L) - 387GB SFF-3 SSD 5xx eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B19

- ES7K and ES7L are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES7K indicates usage by AIX, Linux or VIOS. ES7L indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 387GB SFF-3 5xx SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES7P) - 775GB SFF-3 SSD 5xx eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B1A

- ES7P and ES7Q are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES7P indicates usage by AIX, Linux or VIOS. ES7Q indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 775GB SFF-3 5xx SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES7Q) - 775GB SFF-3 SSD 5xx eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B1A

- ES7P and ES7Q are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES7P indicates usage by AIX, Linux or VIOS. ES7Q indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

- Attributes provided: one 775GB SFF-3 5xx SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES80) - 1.9TB Read Intensive SAS 4k SFF-2 SSD for AIX/Linux

1.9 TB SAS 2.5-inch (SFF) read intensive solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24S. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors. CCIN is 5B21. Actual capacity is 1.86 TB but is rounded up for convenience.

Drive is designed for read intensive workloads with light write activity. Approximately 3,394 TB of data can be written over the life of the drive, but depending on the nature of the workload may be somewhat larger. After the warranty period, if the maximum write capability is achieved, the drive's replacement is not covered under IBM maintenance.

#ES80 and #ES81 are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. #ES80 indicates usage by AIX, Linux or VIOS. #ES81 indicates usage by IBM i.

Limitations: The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.9 TB Read Intensive SSD
- Attributes required: Open SFF-2 SAS bay in an EXP24S controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES81) - 1.9TB Read Intensive SAS 4k SFF-2 SSD for IBM i

1.9 TB SAS 2.5-inch (SFF) read intensive solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24S. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors. CCIN is 5B21. Actual capacity is 1.86 TB but is rounded up for convenience.

Drive is designed for read intensive workloads with light write activity. Approximately 3,394 TB of data can be written over the life of the drive, but depending on the nature of the workload may be somewhat larger. After the warranty period, if the maximum write capability is achieved, the drive's replacement is not covered under IBM maintenance.

#ES80 and #ES81 are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. #ES80 indicates usage by AIX, Linux or VIOS. #ES81 indicates usage by IBM i.

Limitations: The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.9 TB Read Intensive SSD
- Attributes required: Open SFF-2 SAS bay in an EXP24S controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES83) - 931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ES83 and #ES84 are physically identical drives with the same 5B28 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES83 indicates usage by AIX, Linux or VIOS. #ES84 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES84) - 931GB Mainstream SAS 4k SFF-3 SSD for IBM i

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ES83 and #ES84 are physically identical drives with the same 5B28 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES83 indicates usage by AIX, Linux or VIOS. #ES84 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES85) - 387GB SFF-2 SSD 4k eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B10

- ES85 and ES86 are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES85 indicates usage by AIX, Linux or VIOS. ES86 indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887/#EL1S EXP24S drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8/POWER9 system units (SFF-3) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 387GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES86) - 387GB SFF-2 SSD 4k eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B10

- ES85 and ES86 are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES85 indicates usage by AIX, Linux or VIOS. ES86 indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887/#EL1S EXP24S drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8 system units (SFF-3) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 387GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8C) - 775GB SFF-2 SSD 4k eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B11

- ES8C and ES8D are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8C indicates usage by AIX, Linux or VIOS. ES8D indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887/#EL1S EXP24S drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8/POWER9 system units (SFF-3) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES8D) - 775GB SFF-2 SSD 4k eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays. CCIN is 5B11

- ES8C and ES8D are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8C indicates usage by AIX, Linux or VIOS. ES8D indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in #5887/#EL1S EXP24S drawers (SFF-2). It does not fit in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) or POWER8 system units (SFF-3) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

- Attributes provided: one 775GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8F) - 1.55TB SFF-2 SSD 4k eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 1.55TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) I/O drawer. CCIN is 5B12

- ES8G and ES8F are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8F indicates usage by AIX, Linux or VIOS. ES8G indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in the EXP24S drawers (SFF-2 SAS bays). It cannot be used in POWER8/POWER9 system units (SFF-3) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives can not be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES8G) - 1.55TB SFF-2 SSD 4k eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) I/O drawer. CCIN is 5B12

- ES8G and ES8F are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8F indicates usage by AIX, Linux or VIOS. ES8G indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in the EXP24S drawer (SFF-2 SAS bays). It cannot be used in POWER8 system units (SFF-3) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 1.55TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8J) - 1.9TB Read Intensive SAS 4k SFF-3 SSD for AIX/Linux

1.9 TB SAS 2.5-inch (SFF) read intensive solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray to fit in a POWER8/POWER9 system unit. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors. CCIN is 5B20. Actual capacity is 1.86 TB but is rounded up for convenience.

Drive is designed for read intensive workloads with light write activity. Approximately 3,394 TB of data can be written over the life of the drive, but depending on the nature of the workload may be somewhat larger. After the warranty period, if the maximum write capability is achieved, the drive's replacement is not covered under IBM maintenance.

#ES8J and #ES8K are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. #ES8J indicates usage by AIX, Linux or VIOS. #ES8K indicates usage by IBM i.

Limitations: The drive is mounted on a SFF-3 carrier/tray and does not physically fit into an expansion unit such as the EXP24S's SFF-2 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array.

- Attributes provided: 1.9 TB Read Intensive SSD
- Attributes required: Open SFF-3 SAS bay in a POWER8/POWER9 system unit and controlled by the internal SAS control unit.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES8K) - 1.9TB Read Intensive SAS 4k SFF-3 SSD for IBM i

1.9 TB SAS 2.5-inch (SFF) read intensive solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray to fit in a POWER8 system unit. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors. CCIN is 5B20. Actual capacity is 1.86 TB but is rounded up for convenience.

Drive is designed for read intensive workloads with light write activity. Approximately 3,394 TB of data can be written over the life of the drive, but depending on the nature of the workload may be somewhat larger. After the warranty period, if the maximum write capability is achieved, the drive's replacement is not covered under IBM maintenance.

#ES8J and #ES8K are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. #ES8J indicates usage by AIX, Linux or VIOS. #ES8K indicates usage by IBM i.

Limitations: The drive is mounted on a SFF-3 carrier/tray and does not physically fit into an expansion unit such as the EXP24S's SFF-2 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array.

- Attributes provided: 1.9 TB Read Intensive SSD
- Attributes required: Open SFF-3 SAS bay in a POWER8 system unit and controlled by the internal SAS control unit.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8N) - 387GB SFF-3 SSD 4k eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B13

- ES8N and ES8P are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8N indicates usage by AIX, Linux or VIOS. ES8P indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES8P) - 387GB SFF-3 SSD 4k eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B13

- ES8N and ES8P are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8N indicates usage by AIX, Linux or VIOS. ES8P indicates usage by IBM i.

- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 387GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8Q) - 775GB SFF-3 SSD 4k eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B14

- ES8Q and ES8R are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8Q indicates usage by AIX, Linux or VIOS. ES8R indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES8R) - 775GB SFF-3 SSD 4k eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B14

- ES8Q and ES8R are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8Q indicates usage by AIX, Linux or VIOS. ES8R indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array.
- Attributes provided: one 775GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8V) - 1.55TB SFF-3 SSD 4k eMLC4 for AIX/Linux

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B15

- ES8V and ES8W are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8V indicates usage by AIX, Linux or VIOS. ES8W indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ES8W) - 1.55TB SFF-3 SSD 4k eMLC4 for IBM i

This SFF (2.5") SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. CCIN is 5B15

- ES8V and ES8W are physically identical drives which have different feature codes to help the IBM configuration tools understand how the SSD is used. ES8V indicates usage by AIX, Linux or VIOS. ES8W indicates usage by IBM i.
- Limitation: Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. Note 4k and 5xx byte sector drives cannot be mixed in the same array. 4k drives cannot be reformatted to 5xx drives (or vice versa).
- Attributes provided: one 1.55TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8Y) - 931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ES8Y and #ES8Z are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES8Y indicates usage by AIX, Linux or VIOS. #ES8Z indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES8Z) - 931GB Mainstream SAS 4k SFF-2 SSD for IBM i

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ES8Y and #ES8Z are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES8Y indicates usage by AIX, Linux or VIOS. #ES8Z indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES90) - 387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ES90 and #ES91 are physically identical drives with the same CCIN of 5B13. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ES90 indicates usage by AIX, Linux or VIOS. Feature ES91 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux Supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES91) - 387GB Enterprise SAS 4k SFF-3 SSD for IBM i

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ES90 and #ES91 are physically identical drives with the same CCIN of 5B13. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ES90 indicates usage by AIX, Linux or VIOS. Feature ES91 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES92) - 1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ES92 and #ES93 are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES92 indicates usage by AIX, Linux or VIOS. #ES93 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES93) - 1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ES92 and #ES93 are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES92 indicates usage by AIX, Linux or VIOS. #ES93 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES94) - 387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ES94 and #ES95 are physically identical drives with the same CCIN of 5B10. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ES94 indicates usage by AIX, Linux or VIOS. Feature ES95 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES95) - 387GB Enterprise SAS 4k SFF-2 SSD for IBM i

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ES94 and #ES95 are physically identical drives with the same CCIN of 5B10. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ES94 indicates usage by AIX, Linux or VIOS. Feature ES95 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ES96) - 1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

#ES96 and #ES97 are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES96 indicates usage by AIX, Linux or VIOS. #ES97 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ES97) - 1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

#ES96 and #ES97 are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ES96 indicates usage by AIX, Linux or VIOS. #ES97 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESB0) - 387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESB0 CCIN is 5B19. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESB0 indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESB2) - 387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESB2 CCIN is 5B16. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESB2 indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 5xx SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESB4) - 775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Feature #ESB4 CCIN is 5B1A. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESB4 indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESB6) - 775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESGZ CCIN is 5B17. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESGZ indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 5xx SSD
- Attributes required: SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESB8) - 387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESB8 and #ESB9 are physically identical drives with the same CCIN of 5B13. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESB8 indicates usage by AIX, Linux or VIOS. Feature ESB9 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24SX drawers (SFF-2) or in #5802/ #5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - AIX supported
  - Linux Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESB9) - 387GB Enterprise SAS 4k SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESB8 and #ESB9 are physically identical drives with the same CCIN of 5B13. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESB8 indicates usage by AIX, Linux or VIOS. Feature ESB9 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24SX drawers (SFF-2) or in #5802/ #5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. The 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBA) - 387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBA and #ESBB are physically identical drives with the same CCIN of 5B10. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBA indicates usage by AIX, Linux or VIOS. Feature ESBB indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - AIX Supported
  - Linux Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBB) - 387GB Enterprise SAS 4k SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBA and #ESBB are physically identical drives with the same CCIN of 5B10. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBA indicates usage by AIX, Linux or VIOS. Feature ESBB indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. The 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBE) - 775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBE and #ESBF are physically identical drives with the same CCIN of 5B14. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBE indicates usage by AIX, Linux or VIOS. Feature ESBF indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24SX drawers (SFF-2) or in #5802/ #5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - AIX Supported
  - Linux Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBF) - 775GB Enterprise SAS 4k SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBE and #ESBF are physically identical drives with the same CCIN of 5B14. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBE indicates usage by AIX, Linux or VIOS. Feature ESBF indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24SX drawers (SFF-2) or in #5802/ #5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. The 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with

4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBG) - 775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBG and #ESBH are physically identical drives with the same CCIN of 5B11. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBG indicates usage by AIX, Linux or VIOS. Feature ESBH indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - AIX Supported
  - Linux Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBH) - 775GB Enterprise SAS 4k SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBG and #ESBH are physically identical drives with the same CCIN of 5B11. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBG indicates usage by AIX, Linux or VIOS. Feature ESBH indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. The 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBJ) - 1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBJ and #ESBK are physically identical drives with the same CCIN of 5B15. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBJ indicates usage by AIX, Linux or VIOS. Feature ESBK indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24SX drawers (SFF-2) or in #5802/ #5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - AIX Supported
  - Linux Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBK) - 1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBJ and #ESBK are physically identical drives with the same CCIN of 5B15. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBJ indicates usage by AIX, Linux or VIOS. Feature ESBK indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24SX drawers (SFF-2) or in #5802/ #5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. The 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBL) - 1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBL and #ESBM are physically identical drives with the same CCIN of 5B12. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBL indicates usage by AIX, Linux or VIOS. Feature ESBM indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - AIX Supported
  - Linux Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESBM) - 1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESBL and #ESBM are physically identical drives with the same CCIN of 5B12. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESBL indicates usage by AIX, Linux or VIOS. Feature ESBM indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. The 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESC0) - S&H - No Charge

No charge shipping and handling

- Attributes provided: None
- Attributes required: Sales Preapproval Required
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: Does not apply

## (#ESC6) - S&H-b

Shipping and handling

- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#ESD2) - 1.1TB 10K RPM SAS SFF-2 Disk Drive (IBMi)

1.14TB SFF 10K RPM SAS disk drive in Gen2 carrier. Supported in SFF-2 SAS bays such as provided in #5887 EXP24S I/O drawer. Disk is formatted for 528 byte sectors. CCIN is 59CD

The drive can be reformatted to 512 byte sectors and used by AIX/ Linux/VIOS

Limitation: cannot be used in #5802/5803 I/O drawers or in CEC bays due to physical difference in Gen1 and Gen2 carriers.

- Attributes provided: 1.14TB 10K RPM 2.5-inch SAS disk drive mounted on Gen-2 carrier (SFF-2)
- Attributes required: one SFF-2 SAS bay in EXP24S drawer
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 0)
- OS level required:
  - Linux not supported
  - AIX not supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESD3) - 1.2TB 10K RPM SAS SFF-2 Disk Drive (AIX/Linux)

1.20TB SFF 10K RPM SAS disk drive in Gen2 carrier. Supported in SFF-2 SAS bay such as used in the #5887 EXP24S I/O drawer. Disk is formatted for 512 byte sectors as shipped from IBM Manufacturing. CCIN is 59CD.

The drive can be reformatted to 528 byte sectors and used by AIX/ IBM i/Linux/VIOS.

Limitations: physical difference in Gen1 and Gen2 carriers prevent usage in SFF-1 bays such as used in the #5802/5803 I/O drawer

- Attributes provided: 1.20TB 10K RPM 2.5-inch SAS disk drive mounted on Gen-2 carrier (SFF-2)
- Attributes required: one SFF-2 SAS bay in EXP24S drawer
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESD4) - 571GB 10K RPM SAS SFF-3 Disk Drive (IBM i)

571 GB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 528 byte sectors. If reformatted to 512 byte sectors, capacity would be 600 GB. IBM i does not support 512 byte sectors.

CCIN is 59D0.

Limitation: cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

- Attributes provided: 571 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESD5) - 600GB 10K RPM SAS SFF-3 Disk Drive (AIX/Linux)

600 GB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 512 byte sectors. If reformatted to 528 byte sectors, capacity would be 571 GB.

CCIN is 59D0.

Limitation: cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size

- Attributes provided: 600 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESDA) - 283GB 15K RPM SAS SFF-3 Disk Drive (IBM i)

283 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 528 byte sectors. If reformatted to 512 byte sectors, capacity would be 300 GB. IBM i does not support 512 byte sectors.

CCIN is 59E0

Limitation: cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

- Attributes provided: 283 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESDB) - 300GB 15K RPM SAS SFF-3 Disk Drive (AIX/Linux)

300 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 512 byte sectors. If reformatted to 528 byte sectors, capacity would be 283 GB.

CCIN is 59E0

Limitation: cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

- Attributes provided: 300 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESDN) - 571GB 15K RPM SAS SFF-2 Disk Drive - 528 Block (IBM i)

2.5-inch (Small Form Factor (SFF)) 15k RPM SAS disk drive mounted in a Gen-2 carrier and supported in SAS SFF-2 bays. With 512 byte sectors (JBOD) drive capacity is 600GB. With 528 byte sectors (RAID) drive capacity is 571GB and the drive has additional data integrity protection. #ESDN and #ESDP are physically identical drives with the same CCIN. However, IBM Manufacturing always formats the #ESDN with 528 byte sectors. Depending on how the drive is ordered, IBM Manufacturing will ship #ESDP with either 512 or 528 byte formatting. Reformatting a disk drive can take significant time, especially on larger capacity disk drives.

- Attributes provided: One 571GB SFF SAS disk drive in Gen-2 carrier/ tray (SFF-2)
- Attributes required: Available Gen-2 drive bay (SFF-2) in EXP24S drawer (such as #5887)
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESDP) - 600GB 15K RPM SAS SFF-2 Disk Drive - 5xx Block (AIX/Linux)

2.5-inch (Small Form Factor (SFF)) 15k RPM SAS disk drive mounted in a Gen-2 carrier and supported in SAS SFF-2 bays. With 512 byte sectors (JBOD) drive capacity is 600GB. With 528 byte sectors (RAID) drive capacity is 571GB and the drive has additional data integrity protection. #ESDN and #ESDP are physically identical drives with the same CCIN. However, IBM Manufacturing always formats the #ESDN with 528 byte sectors. Depending on how the drive is ordered, IBM Manufacturing will ship #ESDP with either 512 or 528 byte formatting. Reformatting a disk drive can take significant time, especially on larger capacity disk drives.

- Attributes provided: One 600GB (571GB with 528 byte sectors) SFF SAS disk drive in Gen-2 carrier/ tray (SFF-2)
- Attributes required: Available Gen-2 drive bay (SFF-2) in EXP24S drawer (such as #5887)
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESE1) - 3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESE1 and #ESE2 are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESE1 indicates usage by AIX, Linux or VIOS. #ESE2 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESE2) - 3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESE1 and #ESE2 are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESE1 indicates usage by AIX, Linux or VIOS. #ESE2 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESE7) - 3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

#ESE7 and #ESE8 are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESE7 indicates usage by AIX, Linux or VIOS. #ESE8 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESE8) - 3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

#ESE7 and #ESE8 are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESE7 indicates usage by AIX, Linux or VIOS. #ESE8 indicates usage by IBM i. Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESEU) - 571GB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224

571 GB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays such as found in EXP24S storage drawer. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, its capacity would be 500 GB and it would not have the 4224 byte additional data integrity protection. Reformatting large drives takes significant time. Limitations: - Can not be combined in the same array as a drive using different sector size - Physically does not fit in a SFF-1 or SFF-3 bay due to carrier/ tray differences

- Attributes provided: 571GB 10K RPM SFF-2 Disk 4K
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESEV) - 600GB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096

600 GB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays such as found in EXP24S storage drawer. IBM Manufacturing may ship formatted with 4224 byte sectors or with 4096 sectors. With 4096 byte sectors the drive's capacity is 600 GB or with 4224 byte sectors the capacity is 571 GB. Using 4224 byte sectors provides additional data integrity protection. Reformatting large drives takes significant time.

Limitations:

- Cannot be combined in the same array as a drive using different sector size
- Physically does not fit in a SFF-1 or SFF-3 bay due to carrier/ tray differences

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: 571GB 10K RPM SFF-2 Disk 4K
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESEY) - 283GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive

283 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays of EXP24S drawer. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 300 GB. IBM i does not support 4096 byte sectors.

CCIN is 59C9

Limitation: cannot be used in POWER8 System unit SFF Gen3-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

- Attributes provided: 283 GB Disk Drive - SFF-2 4K block
- Attributes required: one SFF-2 drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESEZ) - 300GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive

300 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays of EXP24S drawer. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 283 GB.

CCIN is 59C9

Limitations:

- Cannot be used in POWER8/POWER9 System unit SFF Gen3-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: 300 GB Disk Drive - SFF-2 4K block
- Attributes required: one SFF-2 drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESF2) - 1.1TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224

1.14 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays such as found in EXP24S storage drawer. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, its capacity would be 1.2 TB and it would not have the 4224 byte additional data integrity protection. Reformatting large drives takes significant time. Limitations: - Can not be combined in the same array as a drive using different sector size - Physically does not fit in a SFF-1 or SFF-3 bay due to carrier/ tray differences

- Attributes provided: 1.1TB 10K RPM SFF-2 Disk 4K
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESF3) - 1.2TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096

1.2 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays such as found in EXP24S storage drawer. IBM Manufacturing may ship formatted with 4224 byte sectors or with 4096 sectors. With 4096 byte sectors the drive's capacity is 1.2 TB or with 4224 byte sectors the capacity is 1.14TB. Using 4224 byte sectors provides additional data integrity protection. Reformatting large drives takes significant time.

Limitations:

- Cannot be combined in the same array as a drive using different sector size
- Physically does not fit in a SFF-1 or SFF-3 bay due to carrier/ tray differences

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: 1.2TB 10K RPM SFF-2 Disk 4K
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESF4) - 571GB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224

571 GB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays such as found in POWER8 servers. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, its capacity would be 600 GB and it would not have the 4224 byte additional data integrity protection. Limitations: - Cannot be combined in the same array as a drive using different sector size - Physically does not fit in a SFF-1 or SFF-2 bay due to carrier/ tray differences

- Attributes provided: 571GB 10K RPM SFF-3 Disk 4K
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESF5) - 600GB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096

600 GB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays such as found in POWER8/POWER9 servers. IBM Manufacturing may ship formatted with 4224 byte sectors or with 4096 sectors. With 4096 byte sectors the drive's capacity is 600 GB or with 4224 byte sectors the capacity is 571 GB. Using 4224 byte sectors provides additional data integrity protection. Reformatting large drives takes significant time.

Limitations:

- Cannot be combined in the same array as a drive using different sector size.
- Physically does not fit in a SFF-1 or SFF-2 bay due to carrier/ tray differences.

Note : As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: 600GB 10K RPM SFF-3 Disk 4K
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESF8) - 1.1TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224

1.14 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays such as found in POWER8 servers. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, its capacity would be 1.2 TB and it would not have the 4224 byte additional data integrity protection. Reformatting large drives takes significant time. Limitations: - Can not be combined in the same array as a drive using different sector size - Physically does not fit in a SFF-1 or SFF-2 bay due to carrier/ tray differences

- Attributes provided: 1.1TB 10K RPM SFF-3 Disk 4K
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESF9) - 1.2TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096

1.2 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays such as found in EXP24S storage drawer. IBM Manufacturing may ship formatted with 4224 byte sectors or with 4096 sectors. With 4096 byte sectors the drive's capacity is 1.2 TB or with 4224 byte sectors the capacity is 1.14TB. Using 4224 byte sectors provides additional data integrity protection. Reformatting large drives takes significant time.

Limitations:

- Cannot be combined in the same array as a drive using different sector size
- Physically does not fit in a SFF-1 or SFF-2 bay due to carrier/ tray differences

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: 1.2TB 10K RPM SFF-3 Disk 4K
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESFA) - 283GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive

283 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 300 GB. IBM i does not support 4096 byte sectors.

CCIN is 59E1

Limitation: cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

- Attributes provided: 283 GB Disk Drive - SFF-3 4K block
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESFB) - 300GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive

300 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 283 GB.

CCIN is 59E1

Limitations:

- Cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: 300 GB Disk Drive - SFF-3 4K block
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESFE) - 571GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive

571 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 600 GB. IBM i does not support 4096 byte sectors.

CCIN is 59E5

Limitation: cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

- Attributes provided: 571 GB Disk Drive - SFF-3 4K block
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESFF) - 600GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive

600 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 571 GB.

CCIN is 59E5

Limitations:

- Cannot be used in EXP24S SFF Gen2-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: 600 GB Disk Drive - SFF-3 4K block
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESFN) - 571GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive

571 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays of EXP24S drawer. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 600 GB. IBM i does not support 4096 byte sectors.

CCIN is 59CC

Limitation: cannot be used in POWER8 System unit SFF Gen3-bay Drawer because of physical difference of carrier/tray.

Limitation: Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

- Attributes provided: 571 GB Disk Drive - SFF-2 4K block
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESFP) - 600GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive

600 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays of EXP24S drawer. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 571 GB.

CCIN is 59CC

Limitation:

- Cannot be used in POWER8/POWER9 System unit SFF Gen3-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size.

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: 600 GB Disk Drive - SFF-2 4K block
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESFS) - 1.7TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4224

1.71 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays such as found in EXP24S storage drawer. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, its capacity would be 1.8 TB and it would not have the 4224 byte additional data integrity protection. Reformatting large drives takes significant time. Limitations: - Can not be combined in the same array as a drive using different sector size - Physically does not fit in a SFF-1 or SFF-3 bay due to carrier/ tray differences

- Attributes provided: 1.7TB 10K RPM SFF-2 Disk 4K
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESFT) - 1.8TB 10K RPM SAS SFF-2 Disk Drive 4K Block - 4096

1.8 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays such as found in EXP24S storage drawer. IBM Manufacturing may ship formatted with 4224 byte sectors or with 4096 sectors. With 4096 byte sectors the drive's capacity is 1.8 TB or with 4224 byte sectors the capacity is 1.71TB. Using 4224 byte sectors provides additional data integrity protection. Reformatting large drives takes significant time.

Limitations:

- Cannot be combined in the same array as a drive using different sector size
- Physically does not fit in a SFF-1 or SFF-3 bay due to carrier/ tray differences

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: 1.8TB 10K RPM SFF-2 Disk 4K
- Attributes required: one SFF-2 SAS bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESFU) - 1.7TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4224

1.71 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays such as found in POWER8 system. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, its capacity would be 1.8 TB and it would not have the 4224 byte additional data integrity protection. Reformatting large drives takes significant time. Limitations: - Can not be combined in the same array as a drive using different sector size - Physically does not fit in a SFF-1 or SFF-3 bay due to carrier/ tray differences

- Attributes provided: 1.7TB 10K RPM SFF-3 Disk 4K
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESFV) - 1.8TB 10K RPM SAS SFF-3 Disk Drive 4K Block - 4096

1.8 TB 2.5-inch (Small Form Factor (SFF)) 10k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays such as found in POWER8/POWER9 system. IBM Manufacturing may ship formatted with 4224 byte sectors or with 4096 sectors. With 4096 byte sectors the drive's capacity is 1.8 TB or with 4224 byte sectors the capacity is 1.71TB. Using 4224 byte sectors provides additional data integrity protection. Reformatting large drives takes significant time.

Limitations:

- Cannot be combined in the same array as a drive using different sector size
- Physically does not fit in a SFF-1 or SFF-2 bay due to carrier/ tray differences

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: 1.8TB 10K RPM SFF-3 Disk 4K
- Attributes required: one SFF-3 SAS bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: Assignment to the VIOS supported

## (#ESG5) - 387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESG5 and #ESG6 are physically identical drives with the same CCIN of 5B16. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESG5 indicates usage by AIX, Linux or VIOS. ESG6 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 5xx SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESG6) - 387GB Enterprise SAS 5xx SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESG5 and #ESG6 are physically identical drives with the same CCIN of 5B16. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESG5 indicates usage by AIX, Linux or VIOS. ESG6 indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives can not be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 5xx SSD
- Attributes required: SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESG9) - 387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESG9 and #ESGA are physically identical drives with the same CCIN of 5B19. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESG9 indicates usage by AIX, Linux or VIOS. ESGA indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGA) - 387GB Enterprise SAS 5xx SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESG9 and #ESGA are physically identical drives with the same CCIN of 5B19. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESG9 indicates usage by AIX, Linux or VIOS. ESGA indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGB) - 387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGB and #ESGC are physically identical drives with the same CCIN of 5B10. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGB indicates usage by AIX, Linux or VIOS. ESGC indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGC) - 387GB Enterprise SAS 4k SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGB and #ESGC are physically identical drives with the same CCIN of 5B10. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGB indicates usage by AIX, Linux or VIOS. ESGC indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives can not be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGD) - 387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGD and #ESGE are physically identical drives with the same CCIN of 5B13. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGD indicates usage by AIX, Linux or VIOS. ESGE indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGE) - 387GB Enterprise SAS 4k SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGD and #ESGE are physically identical drives with the same CCIN of 5B13. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGD indicates usage by AIX, Linux or VIOS. ESGE indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGF) - 775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGF and #ESGG are physically identical drives with the same CCIN of 5B17. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGF indicates usage by AIX, Linux or VIOS. ESGG indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 5xx SSD
- Attributes required: SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGG) - 775GB Enterprise SAS 5xx SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGF and #ESGG are physically identical drives with the same CCIN of 5B17. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGF indicates usage by AIX, Linux or VIOS. ESGG indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives can not be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 5xx SSD
- Attributes required: SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGH) - 775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGH and #ESGJ are physically identical drives with the same CCIN of 5B1A. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGH indicates usage by AIX, Linux or VIOS. ESGJ indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGJ) - 775GB Enterprise SAS 5xx SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGH and #ESGJ are physically identical drives with the same CCIN of 5B1A. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGH indicates usage by AIX, Linux or VIOS. ESGJ indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGK) - 775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGK and #ESGL are physically identical drives with the same CCIN of 5B11. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGK indicates usage by AIX, Linux or VIOS. ESGL indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGL) - 775GB Enterprise SAS 4k SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGK and #ESGL are physically identical drives with the same CCIN of 5B11. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGK indicates usage by AIX, Linux or VIOS. ESGL indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives can not be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGM) - 775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGM and #ESGN are physically identical drives with the same CCIN of 5B14. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGM indicates usage by AIX, Linux or VIOS. ESGN indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGN) - 775GB Enterprise SAS 4k SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGM and #ESGN are physically identical drives with the same CCIN of 5B14. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGM indicates usage by AIX, Linux or VIOS. ESGN indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGP) - 1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGP and #ESGQ are physically identical drives with the same CCIN of 5B12. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGP indicates usage by AIX, Linux or VIOS. ESGQ indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGQ) - 1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGP and #ESGQ are physically identical drives with the same CCIN of 5B12. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGP indicates usage by AIX, Linux or VIOS. ESGQ indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives can not be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGR) - 1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGR and #ESGS are physically identical drives with the same CCIN of 5B15. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGR indicates usage by AIX, Linux or VIOS. ESGS indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGS) - 1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

Features #ESGR and #ESGS are physically identical drives with the same CCIN of 5B15. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGR indicates usage by AIX, Linux or VIOS. ESGS indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESGT) - 387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESGT CCIN is 5B19. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGT indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESGV) - 387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 387 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESGV CCIN is 5B16. Different feature codes to help the IBM configuration tools understand how the SSD is used. ESGV indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 387 GB SFF-2 5xx SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESGX) - 775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESGX CCIN is 5B1A. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESGX indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 5xx SSD
- Attributes required: SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux Supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESGZ) - 775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 5xx (528) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESGZ CCIN is 5B17. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESGZ indicates usage by AIX, Linux or VIOS.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 512 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 5xx SSD
- Attributes required: SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESHJ) - 931 GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHJ and #ESHK are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHJ indicates usage by AIX, Linux or VIOS. #ESHK indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - AIX supported
  - Red Hat Enterprise Linux
  - SUSE Enterprise Linux

  Note: Please install the latest iprutils software available in the IBM Power Tool Repository: http://www14.software.ibm.com/support/customercare/sa s/f/lopdiags/home.html
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHK) - 931 GB Mainstream SAS 4k SFF-2 SSD for IBM i

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHJ and #ESHK are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHJ indicates usage by AIX, Linux or VIOS. #ESHK indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHL) - 1.86 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHL and #ESHM are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHL indicates usage by AIX, Linux or VIOS. #ESHM indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHM) - 1.86 TB Mainstream SAS 4k SFF-2 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHL and #ESHM are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHL indicates usage by AIX, Linux or VIOS. #ESHM indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHN) - 7.45 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

7.45 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

#ESHN has 5B2F CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHN indicates usage by AIX, Linux or VIOS.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 7.45 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHS) - 931 GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHS and #ESHT are physically identical drives with the same 5B2B CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHS indicates usage by AIX, Linux or VIOS. #ESHT indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHT) - 931 GB Mainstream SAS 4k SFF-3 SSD for IBM i

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHS and #ESHT are physically identical drives with the same 5B2B CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHS indicates usage by AIX, Linux or VIOS. #ESHT indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHU) - 1.86 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHU and #ESHV are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHU indicates usage by AIX, Linux or VIOS. #ESHV indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHV) - 1.86 TB Mainstream SAS 4k SFF-3 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHU and #ESHV are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHU indicates usage by AIX, Linux or VIOS. #ESHV indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESHW) - 7.45 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

7.45 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESHW has 5B2E CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESHW indicates usage by AIX, Linux or VIOS.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 7.45 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESJ0) - 931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ0 and #ESJ1 are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ0 indicates usage by AIX, Linux or VIOS. #ESJ1 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ1) - 931GB Mainstream SAS 4k SFF-2 SSD for IBM i

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ0 and #ESJ1 are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ0 indicates usage by AIX, Linux or VIOS. #ESJ1 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ2) - 1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ2 and #ESJ3 are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ2 indicates usage by AIX, Linux or VIOS. #ESJ3 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ3) - 1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ2 and #ESJ3 are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ2 indicates usage by AIX, Linux or VIOS. #ESJ3 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ4) - 3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ4 and #ESJ5 are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ4 indicates usage by AIX, Linux or VIOS. #ESJ5 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ5) - 3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ4 and #ESJ5 are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ4 indicates usage by AIX, Linux or VIOS. #ESJ5 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ6) - 7.45TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

7.45 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ6 and #ESJ7 are physically identical drives with the same 5B2F CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ6 indicates usage by AIX, Linux or VIOS. #ESJ7 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 7.45 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ7) - 7.45TB Mainstream SAS 4k SFF-2 SSD for IBM i

7.45 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ6 and #ESJ7 are physically identical drives with the same 5B2F CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ6 indicates usage by AIX, Linux or VIOS. #ESJ7 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 7.45 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ8) - 931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJ8 and #ESJ9 are physically identical drives with the same 5B2B CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJ8 indicates usage by AIX, Linux or VIOS. #ESJ9 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJ9) - 931GB Mainstream SAS 4k SFF-3 SSD for IBM i

- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJA) - 1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJA and #ESJB are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJA indicates usage by AIX, Linux or VIOS. #ESJB indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJB) - 1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJA and #ESJB are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJA indicates usage by AIX, Linux or VIOS. #ESJB indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJC) - 3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJC and #ESJD are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJC indicates usage by AIX, Linux or VIOS. #ESJD indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJD) - 3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJC and #ESJD are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJC indicates usage by AIX, Linux or VIOS. #ESJD indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJE) - 7.45TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

7.45 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJE and #ESJF are physically identical drives with the same 5B2E CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJE indicates usage by AIX, Linux or VIOS. #ESJF indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 7.45 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJF) - 7.45TB Mainstream SAS 4k SFF-3 SSD for IBM i

7.45 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJE and #ESJF are physically identical drives with the same 5B2E CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJE indicates usage by AIX, Linux or VIOS. #ESJF indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 7.45 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i 7.4 TR2, or later
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJJ) - 931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJJ and #ESJK are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJJ indicates usage by AIX, Linux or VIOS. #ESJK indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJK) - 931GB Mainstream SAS 4k SFF-2 SSD for IBM i

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJJ and #ESJK are physically identical drives with the same 5B29 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJJ indicates usage by AIX, Linux or VIOS. #ESJK indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJL) - 1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJL and #ESJM are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJL indicates usage by AIX, Linux or VIOS. #ESJM indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJM) - 1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJL and #ESJM are physically identical drives with the same 5B21 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJL indicates usage by AIX, Linux or VIOS. #ESJM indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJN) - 3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJN and #ESJP are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJN indicates usage by AIX, Linux or VIOS. #ESJP indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJP) - 3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJN and #ESJP are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJN indicates usage by AIX, Linux or VIOS. #ESJP indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJQ) - 7.44TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

7.44 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.44 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJQ and #ESJR are physically identical drives with the same 5B2F CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJQ indicates usage by AIX, Linux or VIOS. #ESJR indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 7.44 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJR) - 7.44TB Mainstream SAS 4k SFF-2 SSD for IBM i

7.44 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.44 TB 13601
```

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJQ and #ESJR are physically identical drives with the same 5B2F CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJQ indicates usage by AIX, Linux or VIOS. #ESJR indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 7.44 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - IBM i 7.4, or later
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJS) - 931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJS and #ESJT are physically identical drives with the same 5B2B CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJS indicates usage by AIX, Linux or VIOS. #ESJT indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJT) - 931GB Mainstream SAS 4k SFF-3 SSD for IBM i

931 GB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJS and #ESJT are physically identical drives with the same 5B2B CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJS indicates usage by AIX, Linux or VIOS. #ESJT indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 931 GB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJU) - 1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJU and #ESJV are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJU indicates usage by AIX, Linux or VIOS. #ESJV indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJV) - 1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i

1.86 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJU and #ESJV are physically identical drives with the same 5B20 CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJU indicates usage by AIX, Linux or VIOS. #ESJV indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 1.86 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJW) - 3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJW and #ESJX are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJW indicates usage by AIX, Linux or VIOS. #ESJX indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJX) - 3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJW and #ESJX are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJW indicates usage by AIX, Linux or VIOS. #ESJX indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJY) - 7.44TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

7.44 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.44 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJY and #ESJZ are physically identical drives with the same 5B2E CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJY indicates usage by AIX, Linux or VIOS. #ESJZ indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 7.44 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESJZ) - 7.44TB Mainstream SAS 4k SFF-3 SSD for IBM i

7.44 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.44 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESJY and #ESJZ are physically identical drives with the same 5B2E CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESJY indicates usage by AIX, Linux or VIOS. #ESJZ indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitations:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives can not be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.

- Attributes provided: 7.44 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter, or later
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i 7.4, or later
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESL9) - ESB9 Load Source Specify (387GB SSD SFF-3)

This specify code indicates that a #ESB9 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESB9
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESB9
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLA) - Specify AC Power Supply for EXP12SX/EXP24SX Storage Enclosure

No-charge specify for AC power supply for an EXP12SX or EXP24SX SAS Storage Enclosure.

The power supply has a 320-C14 inlet electrical connection for a separately ordered power cord. It is rated 800 Watts Output Power and 100 / 240 VAC (RMS) input voltage.

- Attributes provided: communicates to IBM Manufacturing an AC Power Supply is to be used
- Attributes required: EXP12SX or EXP24SX Storage Enclosure and AC power cord
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLB) - ESBB Load Source Specify (387GB SSD SFF-2)

This specify code indicates that a #ESBB Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESBB
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: see feature ESBB
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLF) - ESBF Load Source Specify (775GB SSD SFF-3)

This specify code indicates that a #ESBF Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESBF
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESBF
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLH) - ESBH Load Source Specify (775GB SSD SFF-2)

This specify code indicates that a #ESBH Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESBH
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESBH
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLK) - ESBK Load Source Specify (1.55TB SSD SFF-3)

This specify code indicates that a #ESBK Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESBK
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESBK
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLL) - EXP12SX SAS Storage Enclosure

The EXP12SX is a storage expansion enclosure with twelve 3.5-inch large form factor (LFF) SAS bays. It supports up to 12 hot-swap Hard Disk Drives (HDD) in only 2 EIA of space in a 19-inch rack. The EXP12SX SFF bays use LFF gen1 (LFF-1) carriers/trays. 4k byte sector drives (4096 or 4224) are supported.

With AIX/Linux/VIOS, the EXP12SX can be ordered with four sets of 3 bays (mode 4), two sets of 6 bays (mode 2) or one set of 12 bays (mode 1). The mode setting can be changed in the field using software commands along with a specificly documented procedure. IMPORTANT NOTE: when changing mode, it is very important that you follow the documented procedures and that there is no data on the drives before the change. Improperly changing modes can potentially destroy existing RAID sets, prevent access to existing data, or allow other partitions to access another partition's existing data. Hire an expert to assist if you are not familiar with this type of re- configuration work.

The EXP12SX has redundant SAS paths to all drives via two redundant Enclosure Services Modules (ESMs). Four mini-SAS HD narrow ports are attached to PCIe Gen3 SAS adapters such as the #EJ0J/EJ0M or #EJ0L or #EJ14, or attached to an imbedded SAS controller in a POWER8/POWER9 Scale-out server such as the Power S814, S822, S824, S914, S922, S924, H922, or H924. Attachment between the SAS controller and the storage enclosure SAS ports is via the appropriate SAS YO12 or X12 cables. The PCIe Gen3 SAS adapters support 6Gb throughput. The EXP12SX has been designed to support up to 12Gb throughput if future SAS adapters support that capability.

The EXP12SX uses redundant power supplies and two power cords. Order two feature #ESLA for AC power supplies. The enclosure is shipped with adjustable depth rails and can accommodate rack depths from 59.5 - 75 cm (23.4 - 29.5 inches). Slot filler panels are provided for empty bays when initially shipped from IBM.

See also the 24-bay Small Form Factor (SFF) EXP24SX SAS Storage Enclosure (feature #ESLS) for higher performance drives with lower capacity.

Limitations: Not supported by IBM i. Does not support SSDs.

- Attributes provided: 12 LFF-1 SAS bays in a 2U enclosure
- Attributes required: PCIe Gen3 SAS adapter/controller; Power System (at least POWER8/ POWER9 generation); 2U 19-inch rack space; Appropriate SAS cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
  - IBM i not supported with VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLM) - ESBM Load Source Specify (1.55TB SSD SFF-2)

This specify code indicates that a #ESBM Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESBM
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature ESBM
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLS) - EXP24SX SAS Storage Enclosure

The EXP24SX is a storage expansion enclosure with 24 2.5-inch small form factor (SFF) SAS bays. It supports up to 24 hot-swap Hard Disk Drives (HDD) or Solid State Drives (SSD) in only 2 EIA of space in a 19-inch rack. The EXP24SX SFF bays use SFF gen2 (SFF-2) carriers/ trays identical to the carrier/trays in the previous EXP24S Drawer .

With AIX/Linux/VIOS, the EXP24SX can be ordered with four sets of 6 bays (mode 4), two sets of 12 bays (mode 2) or one set of 24 bays (mode 1). With IBM i one set of 24 bays (mode 1) is supported. The mode setting can be changed in the field using software commands along with a specificly documented procedure. IMPORTANT NOTE: when changing mode, it is very important that you follow the documented procedures and that there is no data on the drives before the change. Improperly changing modes can potentially destroy existing RAID sets, prevent access to existing data, or allow other partitions to access another partition's existing data. Hire an expert to assist if you are not familiar with this type of re-configuration work.

The EXP24SX has redundant SAS paths to all drives via two redundant Enclosure Services Modules (ESMs). Four mini-SAS HD narrow ports are attached to PCIe Gen3 SAS adapters such as the #EJ0J/EJ0M or #EJ0L or #EJ14, or attached to an imbedded SAS controller in a POWER8/POWER9 Scale-out server such as the Power S814, S822, S824, S914, S922, S924, H922, or H924. Attachment between the SAS controller and the storage enclosure SAS ports is via the appropriate SAS YO12 or X12 cables. The PCIe Gen3 SAS adapters support 6Gb throughput. The EXP24SX has been designed to support up to 12Gb throughput if future SAS adapters support that capability.

The EXP24SX uses redundant power supplies and two power cords. Order two feature #ESLA for AC power supplies. The enclosure is shipped with adjustable depth rails and can accommodate rack depths from 59.5 - 75 cm (23.4 - 29.5 inches). Slot filler panels are provided for empty bays when initially shipped from IBM.

See also the 12-bay Large Form Factor (LFF) EXP12SX SAS Storage Enclosure (feature #ESLL) for higher capacity drives with lower performance.

- Attributes provided: 24 SFF-2 SAS bays in a 2U enclosure
- Attributes required: PCIe Gen3 SAS adapter/controller; Power System (at least POWER8/ POWER9 generation); 2U 19-inch rack space; Appropriate SAS cables
- Minimum required: 0
- Maximum allowed: 28 (Initial order maximum: 28)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLV) - Load Source Specify for EC6V (NVMe 1.6 TB SSD for IBM i)

This specify code indicates that a #EC6V is being used as the Load Source. The IBM i NVMe Load Source Name Space specify codes #ENS1 and #ENS2 are used with this specify code.

- Attributes provided: None
- Attributes required: Feature EC6V
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature EC6V
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLX) - Load Source Specify for EC6X (NVMe 3.2 TB SSD for IBM i)

This specify code indicates that a #EC6X is being used as the Load Source. The IBM i NVMe Load Source Name Space specify codes #ENS1 and #ENS2 are used with this specify code.

- Attributes provided: None
- Attributes required: Feature EC6X
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature EC6X
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESLZ) - Load Source Specify for EC6Z (NVMe 6.4 TB SSD for IBM i)

This specify code indicates that a #EC6Z is being used as the Load Source. The IBM i NVMe Load Source Name Space specify codes #ENS1 and #ENS2 are used with this specify code.

- Attributes provided: None
- Attributes required: Feature EC6Z
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature EC6Z
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESM8) - 3.72 TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

```
Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
```

1.86 TB 3399
3.72 TB 6799
7.45 TB 13601

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESM8 and #ESM9 are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESM8 indicates usage by AIX, Linux or VIOS. #ESM9 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESM9) - 3.72 TB Mainstream SAS 4k SFF-2 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-2 carrier/tray to fit an expansion drawer such as the EXP24SX. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESM8 and #ESM9 are physically identical drives with the same 5B2D CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESM8 indicates usage by AIX, Linux or VIOS. #ESM9 indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-2 carrier/tray and does not physically fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive can not be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-2 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESMQ) - 3.72 TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

Drive Capacity Total Bytes Written (TBW) in (TB)
931 GB 1700
1.86 TB 3399
3.72 TB 6799
7.45 TB 13601

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESMQ and #ESMR are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESMQ indicates usage by AIX, Linux or VIOS. #ESMR indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESMR) - 3.72 TB Mainstream SAS 4k SFF-3 SSD for IBM i

3.72 TB SAS 2.5-inch (SFF) Mainstream solid state drive (SSD) formatted in 4224 byte sectors (4k). The drive is mounted on a 2.5-inch SFF-3 carrier/tray. Drive is rated at 6Gb/s though actual performance is dependent upon multiple factors.

DWPD (Drive Write Per Day) rating is 1 calculated over a 5 year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

| Drive Capacity | Total Bytes Written (TBW) in (TB) |
|---|---|
| 931 GB | 1700 |
| 1.86 TB | 3399 |
| 3.72 TB | 6799 |
| 7.45 TB | 13601 |

Depending on the nature of the workload, the lifetime TBW may be somewhat larger. To read the warranty and maintenance applicable to mainstream devices on POWER8 and POWER9 servers, see the Terms and Conditions section or IBM Knowledge Center for additional detail.

Features #ESMQ and #ESMR are physically identical drives with the same 5B2C CCIN. Different feature codes help the IBM configuration tools understand how the SSD is used. #ESMQ indicates usage by AIX, Linux or VIOS. #ESMR indicates usage by IBM i.
Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

Limitation:

- The drive is mounted on a SFF-3 carrier/tray to fit into a POWER8/POWER9 system unit's SFF-3 bays. JBOD formatting of 4096 byte sectors is not tested or supported. Drive cannot be reformatted to 5xx byte sectors. 5xx and 4k drives cannot be mixed in the same array. Older SAS adapters such as PCIe2 or earlier do not support 4k drives.
- Attributes provided: 3.72 TB Mainstream SSD
- Attributes required: Open SFF-3 SAS bay controlled by PCIe Gen3 PCIe SAS adapter or later.
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 0)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#ESNA) - 775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNA and #ESNB are physically identical drives with the same CCIN of 5B11. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNA indicates usage by AIX, Linux or VIOS. Feature ESNB indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNB) - 775GB Enterprise SAS 4k SFF-2 SSD for IBM i

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNA and #ESNB are physically identical drives with the same CCIN of 5B11. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNA indicates usage by AIX, Linux or VIOS. Feature ESNB indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNC) - 775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNC and #ESND are physically identical drives with the same CCIN of 5B14. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNC indicates usage by AIX, Linux or VIOS. Feature ESND indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESND) - 775GB Enterprise SAS 4k SFF-3 SSD for IBM i

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 775 GB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNC and #ESND are physically identical drives with the same CCIN of 5B14. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNC indicates usage by AIX, Linux or VIOS. Feature ESND indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 775 GB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX Supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNE) - 1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNE and #ESNF are physically identical drives with the same CCIN of 5B12. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNE indicates usage by AIX, Linux or VIOS. Feature ESNF indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNF) - 1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-2 SAS bays in the EXP24S (#5887) or EXP24SX (#ESLS) I/O drawer. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNE and #ESNF are physically identical drives with the same CCIN of 5B12. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNE indicates usage by AIX, Linux or VIOS. Feature ESNF indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in SFF-2 bays such as found in EXP24SX storage enclosure and cannot be used in POWER8/POWER9 system units (SFF-3) or in older SFF-1 SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-2 4k SSD
- Attributes required: one SFF-2 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 336 (Initial order maximum: 250)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNG) - 1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNG and #ESNH are physically identical drives with the same CCIN of 5B15. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNG indicates usage by AIX, Linux or VIOS. Feature ESNH indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure

compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i requires VIOS
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNH) - 1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i

(No longer available as of December 31, 2020)

This SFF (2.5") Enterprise SAS Solid State Drive (SSD) is shipped from IBM with 1.55 TB capacity formatted with 4k (4224) byte sectors. The drive is supported in SFF-3 SAS bays. This drive is rated at 10 DWPD (Drive Writes Per Day) calculated over a 5-year period.

IBM solid state device failures will be replaced during the standard warranty and maintenance period for devices that have not reached the maximum number of write cycles. Devices that reach this limit may fail to operate according to specifications and must be replaced at the client's expense.

Features #ESNG and #ESNH are physically identical drives with the same CCIN of 5B15. Different feature codes to help the IBM configuration tools understand how the SSD is used. Feature ESNG indicates usage by AIX, Linux or VIOS. Feature ESNH indicates usage by IBM i.

Limitations:

- Due to physical differences in the carrier/tray on which the drive is mounted, the SSD only fits in POWER8/POWER9 system unit SAS bays (SFF-3). It does not fit in EXP24S or EXP24SX drawers (SFF-2) or in #5802/#5803 I/O drawers (SFF-1) or in POWER7 system units (SFF-1) SAS bays. Also the drive was not tested with 4096 byte sectors and thus JBOD mode for AIX/Linux is not supported. 4k drives cannot be reformatted to 5xx drives (or vice versa).

Note: As part of a larger industry transition, IBM Power Systems is in the process of gradually shifting away from offering 5xx (512/ 528) byte sector SAS drives (HDD or SSD) to 4K byte sector drives. Most AIX/Linux applications access SAS drives through a file system and experience no effect of this sector size transition. In much less common cases, an AIX/Linux application may access the disk drive directly through the raw device interface and may still require only 5xx byte sectors drives. If there are 4k usage concerns, check with the application provider to ensure compatibility with 4K byte sector drives.

- Attributes provided: one 1.55 TB SFF-3 4k SSD
- Attributes required: one SFF-3 SAS bay, PCIe3 SAS controller
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Linux supported
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNJ) - 283GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (IBM i)

283 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 300 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B41.

Limitations:

- Cannot be used in EXP24S or EXP24SX SFF Gen2-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.
- Attributes provided: 283 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNK) - 300GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (AIX/Linux)

300 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 283 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B41.

Limitations:

- Cannot be used in EXP24S or EXP24SX SFF Gen2-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.
- Attributes provided: 300 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ESNL) - 283GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (IBM i)

283 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 300 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B43.

Limitations:

- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.
- This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).
- Attributes provided: 283 GB Disk Drive - SFF-2
- Attributes required: one SFF-2 drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ESNM) - 300GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (AIX/Linux)

300 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 283 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B43.

Limitations:

- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.
- This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).
- Attributes provided: 300 GB Disk Drive - SFF-2
- Attributes required: one SFF-2 drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ESNN) - 571GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (IBM i)

571 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 600 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B45.

Limitations:

- Cannot be used in EXP24S or EXP24SX SFF Gen2-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.

- Attributes provided: 571 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNP) - 600GB 15K RPM SAS SFF-3 4k Block Cached Disk Drive (AIX/Linux)

600 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-3 carrier/tray. Supported in SFF-3 SAS bays. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 571 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B45.

Limitations:

- Cannot be used in EXP24S or EXP24SX SFF Gen2-bay Drawer because of physical difference of carrier/tray.
- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.
- Attributes provided: 600 GB Disk Drive - SFF-3
- Attributes required: one SFF-3 drive bay
- Minimum required: 0
- Maximum allowed: 18 (Initial order maximum: 18)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNQ) - 571GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (IBM i)

571 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays. Disk is formatted for 4224 byte sectors. If reformatted to 4096 byte sectors, capacity would be 600 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B47.

Limitations:

- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.
- This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).
- Attributes provided: 571 GB Disk Drive - SFF-2
- Attributes required: one SFF-2 drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - IBM i supported
  - AIX not supported
  - Linux not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESNR) - 600GB 15K RPM SAS SFF-2 4k Block Cached Disk Drive (AIX/Linux)

600 GB 2.5-inch (Small Form Factor (SFF)) 15k rpm SAS disk drive on Gen-2 carrier/tray. Supported in SFF-2 SAS bays. Disk is formatted for 4096 byte sectors. If reformatted to 4224 byte sectors, capacity would be 571 GB. Drive includes enhanced caching capability with 256MB DRAM which may improve performance somewhat compared to previous disk drives without the cache.

CCIN is 5B47.

Limitations:

- Cannot be combined in the same array as a drive of the same capacity, but using different sector size. However, can be combined with non-cached drives of same capacity in the same array.

- This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).
- Attributes provided: 600 GB Disk Drive - SFF-2
- Attributes required: one SFF-2 drive bay
- Minimum required: 0
- Maximum allowed: 672 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i not supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ESPL) - Quantity 150 of #ESNL (283GB 15k SFF-2)

This feature ships a quantity of 150 #ESNL 283GB 15K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

Limitation: This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).

- Attributes provided: See feature#ESNL
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: see feature ESNL
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ESPM) - Quantity 150 of #ESNM (300GB 15k SFF-2)

This feature ships a quantity of 150 #ESNM 300GB 15K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

Limitation: This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).

- Attributes provided: See feature#ESNM
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: see feature ESNM
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ESPQ) - Quantity 150 of #ESNQ (571GB 15k SFF-2)

This feature ships a quantity of 150 #ESNQ 571GB 15K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

Limitation: This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).

- Attributes provided: See feature#ESNQ
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: see feature ESNQ
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#ESPR) - Quantity 150 of #ESNR (600GB 15k SFF-2)

This feature ships a quantity of 150 #ESNR 600GB 15K RPM 4K SAS SFF-2, units. The configurator may either generate this feature or allow users to select this feature as they would any other single disk unit feature. This feature remains on the inventory records.

Limitation: This HDD feature is not supported in the EXP24S drawer (#5887 or #EL1S).

- Attributes provided: See feature#ESNR
- Attributes required: 150 SFF-2 SAS bays in EXP24S or EXP24SX drawers
- Minimum required: 0
- Maximum allowed: 4 (Initial order maximum: 4)
- OS level required: see feature ESNR
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQ2) - Quantity 150 of ESB2 387GB SAS 4k

This feature ships a quantity of 150 #ESB2 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESB2
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESB2
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQ6) - Quantity 150 of ESB6 775GB SAS 4k

This feature ships a quantity of 150 #ESB6 SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESB6
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESB6
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQA) - Quantity 150 of ESBA 387GB SAS 4k

This feature ships a quantity of 150 #ESBA SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESBA
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESBA
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQB) - Quantity 150 of ESBB 387GB SAS 4k

This feature ships a quantity of 150 #ESBB SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESBB
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESBB
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQG) - Quantity 150 of ESBG 775GB SAS 4k

This feature ships a quantity of 150 #ESBG SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESBG
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESBG
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQH) - Quantity 150 of ESBH 775GB SAS 4k

This feature ships a quantity of 150 #ESBH SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESBH
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESBH
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQL) - Quantity 150 of ESBL 1.55TB SAS 4k

This feature ships a quantity of 150 #ESBL SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESBL
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESBL
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#ESQM) - Quantity 150 of ESBM 1.55TB SAS 4k

This feature ships a quantity of 150 #ESBM SSD. The configurator may either generate this feature or allow users to select this feature as they would any other single SSD feature. This feature remains on the inventory records.

- Attributes provided: see feature #ESBM
- Attributes required: 150 SFF-2 SAS bays in expansion drawers
- Minimum required: 0
- Maximum allowed: 2 (Initial order maximum: 2)
- OS level required: see feature ESBM
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU00) - RDX USB Internal Docking Station for Removable Disk Cartridge

USB Internal Docking Station accommodates RDX removable disk cartridge of any capacity. The disk are in a protective rugged cartridge enclosure that plug into the docking station. The docking station holds one removable rugged disk drive/cartridge at a time. The rugged removable disk cartridge and docking station provides saves, restores and backs up similar to tape drive. This can be an excellent alternative to DAT72, DAT160, 8mm, and VXA-2 and VXA-320 tapes. The drive is controlled by an internal USB port in the system unit. CCIN: 632C-0D4

#EU00 is a follow on product to the #EU03 RDX docking station. #EU00 has identical function and performance to the external #EUA4 RDX docking station.

#EU00 is controlled by an internal USB port in the system unit.

- Attributes provided: USB RDX Internal Docking Station
- Attributes required: Available RDX bay and at least one Removable Disk Drive Cartridge such as the #EU01, #1107 or #EU08.
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU01) - 1TB Removable Disk Drive Cartridge

1TB Removable Disk Drive Cartridge (#EU01) provides a RDX disk drive in a rugged cartridge to be used in an RDX Internal and External Docking Station such as the (#1103, #1104 or #1123, #EU03, #EU04 ,#EU23, or #EU07 1TB is uncompressed. docking station. 1TB is uncompressed. Compression/decompression is provided by the operating system, not the drive itself. Feature EU01 is not entitled under the IBM Maintenance Agreement, if one is purchased.

- Attributes provided: 1TB RDX rugged disk cartridge
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

Not available in US, EMEA, and Japan

## (#EU04) - RDX USB External Docking Station for Removable Disk Cartridge

USB Eternal Docking Station accommodates RDX removable disk cartridge of any capacity. The disk are in a protective rugged cartridge enclosure that plug into the docking station. The docking station holds one removable rugged disk drive/cartridge at a time. The rugged removable disk cartridge and docking station backs up similar to tape drive. This can be an excellent alternative to DAT72, DAT160, 8mm, and VXA-2 and VXA-320 tapes. CCIN: 632C-0D4

Feature #EU04 is a follow on product to the #1104 RDX docking station. #EU04 has identical function and performance to the internal #EU03 RDX docking station.

Limitation: Feature #EU04 is not available in US, EMEA, and Japan.

- Attributes provided: USB RDX External Docking Station, 3M USB cable, 1M power cord with universal adapter 100-240 VAC, 50-60Hz input providing 15W DC to the docking station.
- Attributes required: One USB port and at least one #1106, #1107, #EU01, #EU08, #EU15, or follow-on Removable Disk Drive Cartridge
- Minimum required: 0
- Maximum allowed: 5 (Initial order maximum: 5)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - IBM i supported
  - AIX supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU08) - RDX 320 GB Removable Disk Drive

Provides a RDX disk drive in a rugged cartridge to be used in an RDX docking station such as #EU03, #EU04, #EU23, #1123, #1103, #1104 or #EU07. Capacity is 320 GB is uncompressed. Compression/ decompression is provided by the operating system, not the drive itself. Feature EU08 is not entitled under the IBM Maintenance Agreement, if one is purchased.

- Attributes provided: 320 GB RDX rugged disk/cartridge
- Attributes required: One docking station
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EU0B) - Operator Panel LCD Display

This feature provides a cable that connects the system's Operator Panel to the DASD backplane. Used on a Rack-mount drawer with 3.5" DASD.

- Attributes provided: LCD Display
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
  - AIX supported
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU15) - 1.5TB Removable Disk Drive Cartridge

The 1.5 TB Removable Disk Drive Cartridge provides a RDX disk drive in a rugged cartridge to be used in an RDX Internal and External Docking Station such as (#1103, #1104 or #1123, #EU03, #EU04 ,#EU23, or #EU07. 1.5TB is uncompressed. Compression/ decompression is provided by the operating system, not the drive itself. Feature EU015 is not entitled under the IBM Maintenance Agreement, if one is purchased.

- Attributes provided: 1.5TB RDX rugged disk cartridge
- Attributes required: RDX docking station
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 0)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Supported
- CSU: Yes
- Return parts MES: No

## (#EU19) - Cable Ties & Labels

Set of 10 hook and loop fabric, often called VELCRO(R) ties 35.5 cm (14-inch) in length to conveniently attach cables or cords to rack or other cables. Set of 16 labels 2x4 inches (5x10 cm) in sizet to identify cables when installing or moving or servicing equipment.

- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU29) - Order Placed Indicator

This feature is use to identify ORDER PLACED for administrative purposes within manufacturing to Facilitate processing.

- Attributes provided: ORDER PLACED INDICATOR FOR ADMINISTRATIVE TRACKING
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 1)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU2C) - Express Edition 4 core (IBM i)

Specify Express Edition 4-core (IBM i) to invoke configuration feature defaults.

- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#EU2D) - Express Edition 6-core (IBM i)

Specify Express Edition 6-core (IBM i) to invoke configuration feature defaults.

- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - IBM i supported
- Initial Order/MES/Both/Supported: Initial
- CSU: N/A
- Return parts MES: Does not apply

## (#EU2T) - 2TB Removable Disk Drive Cartridge (RDX)

The 2.0TB Removable Disk Drive Cartridge provides a RDX disk drive in a rugged cartridge to be used in an RDX Internal and External Docking Station such as (#1103, #1104 or #1123, #EU03, #EU04 ,#EU23, or #EU07. 2.0TB is uncompressed. Compression/ decompression is provided by the operating system, not the drive itself. Feature EU2T is not entitled under the IBM Maintenance Agreement, if one is purchased.

- Attributes provided: 2.0TB RDX rugged disk cartridge
- Attributes required: None.
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EU41) - ESJ1 Load Source Specify (931GB SSD SFF-2)

This specify code indicates that a #ESJ1 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJ1
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJ1
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EU43) - ESJ3 Load Source Specify (1.86TB SSD SFF-2)

This specify code indicates that a #ESJ3 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJ3
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJ3
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EU45) - ESJ5 Load Source Specify (3.72TB SSD SFF-2)

This specify code indicates that a #ESJ5 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJ5
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJ5
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EU47) - ESJ7 Load Source Specify (7.45TB SSD SFF-2)

This specify code indicates that a #ESJ7 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJ7
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJ7
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#EU49) - ESJ9 Load Source Specify (931GB SSD SFF-3)

This specify code indicates that a #ESJ9 Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJ9
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJ9
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU4B) - ESJB Load Source Specify (1.86TB SSD SFF-3)

This specify code indicates that a #ESJB Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJB
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJB
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU4D) - ESJD Load Source Specify (3.72TB SSD SFF-3)

This specify code indicates that a #ESJD Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJD
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJD
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EU4F) - ESJF Load Source Specify (7.45TB SSD SFF-3)

This specify code indicates that a #ESJF Solid State Drive is being used as the Load Source.

- Attributes provided: Communicate location of load source to IBM Manufacturing
- Attributes required: Feature ESJF
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required: See feature #ESJF
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EUA4) - RDX USB External Docking Station

USB External Docking Station which accommodates RDX removable disk cartridge of any capacity. The disk is in a protective rugged cartridge enclosure that plug into the docking station. The docking station holds one removable rugged disk drive/cartridge at a time. The rugged removable disk cartridge and docking station can be used similar to a tape drive. This can be an excellent entry system save/ restore option and a good alternative to DAT72, DAT160, 8mm, and VXA-2 and VXA-320 tapes. CCIN: 63B8-005.

#EUA4 attaches to a Power server via a USB cable which carries data and control information. It is not powered by the USB port on the Power System or Power System USB adapter, but has a separate electrical line cord. Physically the #EUA4 docking station is a standalone enclosure about 2.0 x 7.0 x 4.25 inches in size which can sit on a shelf or on top of equipment in a rack.

#EUA4 is a follow on product to the #EU04 RDX docking station. #EUA4 has identical performance and identical application function to:

- Previously announced #EU04 and #1104 USB external docking stations
- Top mount #EUA3 USB docking station used in the Power S814 tower configuration
- #EU03 USB internal docking stations used in Power 720 system units
- #EU03 USB docking station available in the rack mounted IBM 7226-1U3 Multimedia Drawer

The RDX USB External Docking Station (Feature EUA4) is only orderable in the following countries/regions:

United States.

- Attributes provided:
  - USB 3.0 RDX External Docking Station
  - USB 3.0 Cable (2.7 meter or 8.8 foot)
  - Four line cords (1.85 meter or 6 foot) with type A, G, F or I plug (see http://www.iec.ch/worldplugs for type definition and country- specific usage)
  - One power jumper cord as an alternative to using one of the four power line cords above. This would draw power from a PDU in a rack.
  - Power Adapter using single phase 110-250V 50-60Hz power source
- Attributes required:
  - One USB port on server or server's USB adapter
  - At least one Removable Disk Drive Cartridge such as #EU01 or #1107
  - Firmware version 860.20, or higher
- Minimum required: 0
- Maximum allowed: 5 (Initial order maximum: 5)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## (#EUA5) - Standalone USB DVD drive w/cable

The Standalone USB DVD drive (FC EUA5) is an optional, standalone external USB-DVD device. It requires high current at 5V and must use the front USB 3.0 port on the 9008-22L, 9009-22A, 9009-41A, 9009-42A, 9223-22H, and 9223-42H systems.

- Custom card identification number (CCIN): 6331 model 005
- Media: Reads CD-ROM, CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-ROM, and DVD-RAM discs; Writes 4.7 GB DVD-RAM discs; CD read speed at 24X; DVD-ROM read speed at 8X; DVD-RAM at 5X; DVD-RAM has a write speed of 5X; The buffer size is 0.75 MB and cannot be disabled.
- Interface: USB
- Connector: USB 2.0
- Loading tray: supports 12 cm and 8 cm discs floor) Note: A USB extension cable is included (P/N 32N1311). The USB extension cable is to be used when there are no safe, flat spots available in the rack. This cable allows the drive to reach the floor. Alternate or additional extension cables are not supported as the total USB cable length can be no longer than 3 meters.
- Form factor: standalone USB DVD drive
- DVD video: not supported
- Attributes provided: USB DVD drive
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 1 (Initial order maximum: 1)
- OS level required:
  - Red Hat Enterprise Linux
  - SUSE Linux Enterprise Server
  - AIX supported
  - IBM i supported
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No
  Note: If using #EUA5 on this system's integrated USB 3.0 ports, it must be connected to the front USB 3.0 port. #EUA5 is not supported on the rear USB 3.0 ports.

## (#EUC6) - Core Use HW Feature

A Service Provider (SP) under a "revenue payment" contract with IBM pays IBM a percentage of revenue generated on their infrastructure used to deliver cloud services. The contract stipulates that each quarter the service provider calculates the amount due IBM and then purchases a quantity of features that satisfies the required payment. Each occurrence of this feature represents one billing unit.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 250 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

## (#EUC7) - Core Use HW Feature 10X

A Service Provider (SP) under a "revenue payment" contract with IBM pays IBM a percentage of revenue generated on their infrastructure used to deliver cloud services. The contract stipulates that each quarter the service provider calculates the amount due IBM and then purchases a quantity of features that satisfies the required payment. Each occurrence of this feature represents ten billing units.

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 250 (Initial order maximum: 0)
- OS level required: None
- Initial Order/MES/Both/Supported: MES
- CSU: Yes
- Return parts MES: No

### (#SVBP) - BP Post-Sale Services

1 Day

BP Post-Sale Services: 1 Day

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#SVCS) - IBM Systems Lab Services Post-Sale Services

1 Day

IBM Systems Lab Services Post-Sale Services: 1 Day

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

### (#SVNN) - Other IBM Post-Sale Services

1 Day

Other IBM Post-Sale Services: 1 Day

- Attributes provided: None
- Attributes required: None
- Minimum required: 0
- Maximum allowed: 9999 (Initial order maximum: 250)
- OS level required: None
- Initial Order/MES/Both/Supported: Both
- CSU: Yes
- Return parts MES: No

## Feature exchanges

Not applicable.

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# Accessories

Not applicable.

## Customer replacement parts

Not applicable.

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# Supplies

Not applicable.

## Supplemental media

Not applicable.

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