IBM POWER9 and IBM POWER8 technology-based systems deliver hardware enhancements

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Overview

Hardware enhancements are available for the IBM(R) POWER8(R) and IBM POWER9™ scale-out and scale-up family of servers, including:

- A new generation of enterprise 2.5-inch solid-state drives (SSD) that provides enhancements in the 387 GB, 775 GB, and 1550 GB capacity point for IBM Power(R) System E980, E950, L922, S914, S922, S924, H922, H924, S812L, S822L, S824L, S814, S812, S822, S824, E870, E870C, E880, E880C, E850, and E850C servers.
- PCIe3 x8 SSD NVMe adapters for IBM i operating system, providing 1.6 TB, 3.2 TB, and 6.4 TB capacity points for Power E980, S914, S924, and H924 servers.
- The Power S924 server delivers a new feature for 11-core or 22-core typical 3.45 - 3.9 GHz (max) configurations in a 19-inch rack-mount, 4U (EIA units) drawer configuration. All the cores are active.

Planned availability date

- November 22, 2019, for all features except:
- October 18, 2019, for features EP1H and EP4H

Description

Power servers are enhanced with the following:

Enterprise 387 GB, 775 GB, and 1550 GB capacity SSDs

The enterprise SAS SSDs are 2.5-inch SFF drives that can be installed either in the POWER9 or POWER8 system unit SAS bays (SFF-3) or in EXP24SX SAS bays (SFF-2) attached to a POWER9 or POWER8 server.

Power enterprise SSDs include the latest 3D NAND technology flash memory, which improves enterprise-class reliability, endurance, and capacity characteristics. The enterprise SSDs build upon a legacy of performance and endurance to provide a better value proposition to users of POWER9 and POWER8 servers.

The POWER9 and POWER8 servers that support the new enterprise SAS SSDs in their system unit are Power E950, L922, S914, S922, S924, H922, H924, S812L, S822L, S824L, S814, S812, S822, S824, E850, and E850C servers. The SFF-3 SAS bay in these servers uses an SFF-3 carrier/tray, on which the SAS drive is mounted.

Other model POWER9 and POWER8 servers E980, E880, E880C, E870, and E870C do not have SAS bays in their system units and therefore cannot support enterprise SFF-3 SSDs. When attached to a POWER9 or a POWER8 server, the EXP24SX I/O drawers can hold up to 24 SAS SSDs. The EXP24SX SAS bays use an SFF-2 carrier/ tray, on which the SAS drive is mounted.

The enterprise SSDs refresh the previously available 387 GB, 775 GB, and 1550 GB capacity points for POWER8 and POWER9 servers. These are 400 GB, 800 GB, and 1600 GB SSDs that are always formatted either to 4224 (4k) byte sectors or to 528 (5xx) byte sectors for additional protection, resulting in 387 GB, 775 GB, and 1550 GB capacities. The 4096 byte or 512 byte sectors or JBOD are not supported. The 4k drives are not supported on servers older than POWER8.

Multiple features are available for ordering SSDs to meet your business requirements.

Four key characteristics are differentiated in these features:

- Capacity: 387 GB, 775 GB, or 1550 GB
- Carrier/tray or SAS bay: SFF-3 or SFF-2
- Sector size: 5xx (528) or 4k (4224) byte
- Type server/OS: Multi-OS for IBM i or IBM AIX(R)/Linux(R)

Multi-OS server feature numbers

SSD	For SFF-3 and 4k	For SFF-3 and 5xx	For SFF-2 and 4k	For SFF-2 and 5xx
387 GB	ESB8 and ESB9[1]	ESB0	ESBA and ESBB[1]	ESB2
775 GB	ESBE and ESBF[1]	ESB4	ESBG and ESBH[1]	ESB6
1550 GB	ESBJ and ESBK[1]	Not applicable[2]	ESBL and ESBM[1]	Not applicable[2]

[1] IBM i supported.

[2] 1550 GB capacity SSD is available as a 4k drive and is not available as a 5xx drive.

Other feature codes order a quantity of 150 of the SFF-2 drives (#ESQ2, #ESQ6, #ESQA, #ESQB, #ESQG, #ESQH, #ESQL, and #ESQM) and no-charge load source specify features (#ESL9, #ESLB, #ESLF, #ESLH, #ESLK, and #ESLM).

The new enterprise SSDs are run either by the integrated SAS controllers in the POWER9 or POWER8 system unit or by PCIe3 SAS adapters.

The SSD configuration rules, maximums, limitations, and capabilities of these PCIe3 SAS adapters and integrated SAS controllers are unchanged, whether new enterprise SSDs are used or earlier SSDs are used. You can mix enterprise SSDs and earlier SSDs under the same controller or adapter, as well as mix them in the same array. This allows existing SSD investments to be leveraged and can provide more flexible growth.

Existing SSD rules are unchanged. For example:

- Do not mix different size capacities such as 387 GB and 775 GB in the same array or mix 775 GB and 1550 GB in the same array.
- Do not mix 4k and 5xx drives in the same array.
- The largest enterprise SSD supported in the 4-core Power S814 or S914 server is 387 GB.
- Do not mix SSDs and HDDs in the same array unless it is an Easy Tier(R) array.
- 4k drives are not supported on servers older than POWER8.

Software requirements (assuming the server supports this software level):

- AIX supported
- Linux supported
- IBM i supported (See each individual feature by MTM for specific OS levels supported by IBM i.)

See the Feature description section of the Sales Manual for specific software requirements.

I/O enhancements

The POWER9 scale-out and scale-up family of servers also support the following new I/O:

PCIe3 x8 NVMe 1.6 TB SSD NVMe Flash Adapter for IBM i (#EC6V, #EC6U)

The PCIe3 1.6 TB SSD NVMe Adapter (#EC6V) is available for Power S924, S914, and H924 servers, and the PCIe3 LP 1.6 TB SSD NVMe Adapter (#EC6U) is available for the Power E980 server.

The PCIe3 1.6 TB SSD NVMe Adapter:

- Features 1.6 TB of low write latency, nonvolatile flash memory on a PCIe Gen3 adapter
- Uses NVMe (nonvolatile memory express), which is a high-performance software interface to read or write this flash memory
- Adapter can be used in a x8 PCIe Gen3 slot in the system unit
- Can provide significantly more read or write IOPS and significantly larger throughput (GB/sec) compared to SAS/SATA SSD
- Can be used to satisfy minimum of SSD/DASD and backplane requirements when specified as a load source

At about 8,760 to 17,000 TB of writes to the adapter, it will be at its maximum projected write capability. 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 closer to the larger value in the range. In the case of a high percentage of random writes, the maximum will be closer to the smaller value in the range. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. 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.

Features EC6V and EC6U are identical cards except that the tailstock bracket is different. Feature EC6U fits a low-profile PCIe slot, and feature EC6V fits a full-high PCIe slot. For a card with more memory, see features EC6X and EC6W.

Limitations:

- The PCIe3 1.6 TB SSD NVMe Adapter is not supported in the PCIe Gen3 I/O drawer. Data protection is not implemented in the card; protection is provided by OS mirroring.
- At least one identical first NVMe Adapter pair is required; subsequent NVMe Adapter pairs can be different than the first pair; one NVMe Adapter of different capacity is allowed; NVMe Adapter in pairs is highly recommended.
- 1.6 TB NVMe Adapter is allowed in maximum of two for a S914 (9009-41A) server with 4-core processor module configuration. Mixing NVMe Adapter for IBM

i and SAS drives is not allowed (ten maximum of SAS drives or two maximum of NVMe Adapters for IBM i).

PCIe3 x8 NVMe 3.2 TB SSD NVMe Flash Adapter for IBM i (#EC6X, #EC6W)

The PCIe3 3.2 TB SSD NVMe Adapter (#EC6X) is available for Power S924, S914, and H924 servers, and the PCIe3 LP 3.2 TB SSD NVMe Adapter (#EC6W) is available for the Power E980 server.

The PCIe3 3.2 TB SSD NVMe Adapter:

- Features 3.2 TB of low write latency, nonvolatile flash memory on a PCIe Gen3 adapter
- Uses NVMe, which is a high-performance software interface to read or write this flash memory
- Adapter can be used in a x8 PCIe Gen3 slot in the system unit
- Can provide significantly more read or write IOPS and significantly larger throughput (GB/sec) compared to SAS/SATA SSD
- Can be used to satisfy minimum of SSD/DASD and backplane requirements when specified as a load source

At about 8,760 to 17,000 TB of writes to the adapter, it will be at its maximum projected write capability. 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 closer to the larger value in the range. In the case of a high percentage of random writes, the maximum will be closer to the smaller value in the range. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. 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.

Features EC6X and EC6W are identical cards except that the tailstock bracket is different. Feature EC6W fits a low-profile PCIe slot, and feature EC6X fits a full-high PCIe slot. For a card with more memory, see features EC6Z and EC6Y.

Limitations:

- The PCIe3 3.2 TB SSD NVMe Adapter is not supported in the PCIe Gen3 I/O drawer. Data protection is not implemented in the card; protection is provided by OS mirroring.
- At least one identical first NVMe Adapter pair is required; subsequent NVMe Adapter pairs can be different than the first pair; one NVMe Adapter of different capacity is allowed; NVMe Adapter in pairs is highly recommended.
- 3.2 TB NVMe Adapter is not allowed for a S914 (9009-41A) server with 4-core processor module configuration.

PCIe3 x8 NVMe 6.4 TB SSD NVMe Flash Adapter for IBM i (#EC6Z, #EC6Y)

The PCIe3 6.4 TB SSD NVMe Adapter (#EC6Z) is available for Power S924, S914, and H924 servers, and the PCIe3 LP 6.4 TB SSD NVMe Adapter (#EC6Y) is available for the Power E980 server.

The PCIe3 6.4 TB SSD NVMe Adapter:

- Features 6.4 TB of low write latency, nonvolatile flash memory on a PCIe Gen3 adapter

- Uses NVMe, which is a high-performance software interface to read or write this flash memory
- Adapter can be used in a x8 PCIe Gen3 slot in the system unit
- Can provide significantly more read or write IOPS and significantly larger throughput (GB/sec) compared to SAS/SATA SSD
- Can be used to satisfy minimum of SSD/DASD and backplane requirements when specified as a load source

At about 8,760 to 17,000 TB of writes to the adapter, it will be at its maximum projected write capability. 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 closer to the larger value in the range. In the case of a high percentage of random writes, the maximum will be closer to the smaller value in the range. Writes past the adapter's maximum write capacity will continue to work for some period of time, but much more slowly. 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.

Features EC6Z and EC6Y are identical cards except that the tailstock bracket is different. Feature EC6Y fits a low-profile PCIe slot, and feature EC6Z fits a full-high PCIe slot.

Limitations:

- The PCIe3 LP 6.4 TB SSD NVMe Adapter is not supported in the PCIe Gen3 I/O drawer. Data protection is not implemented in the card; protection is provided by OS mirroring.
- At least one identical first NVMe Adapter pair is required; subsequent NVMe Adapter pairs can be different than the first pair; one NVMe Adapter of different capacity is allowed; NVMe Adapter in pairs is highly recommended.
- 6.4 TB NVMe Adapter is not allowed for a S914 (9009-41A) server with 4-core processor module configuration.

The IBM Power System S924 server offers new features for IBM POWER9 processor modules to address unique IBM POWER9 scale-out market requirements.

The Power S924 server delivers a new feature for 11-core or 22-core typical 3.45 - 3.9 GHz (max) configurations in a 19-inch rack-mount, 4U (EIA units) drawer configuration. All the cores are active.

The new features for POWER9 processor modules include:

- 11-core typical 3.45 to 3.9 GHz (max) POWER9 Processor (#EP1H)
- One Processor Core Activation for #EP1H (#EP4H)

The 11-core typical 3.45 to 3.9 GHz (max) POWER9 Processor card is available in a quantity of one or two.

This feature is in addition to the existing processor module configurations in a 19-inch rack-mount, 4U (EIA units) form factor:

- 8-core typical 3.8 to 4.0 GHz (max)
- 10-core typical 3.5 to 3.9 GHz (max)
- 12-core typical 3.4 to 3.9 GHz (max)

The IBM i QPRCFEAT value for feature EP1H is EP1H.

Product number

The following are newly announced features on the specific models of the IBM Power Systems 9009 machine type:

New features available on October 18, 2019

Description	Machine type	Model number	Feature number
11-core typical 3.45 to 3.9 GHz (max) POWER9 Processor	9009	42A	EP1H
One Processor Core Activation for EP1H	9009	42A	EP4H

The following are newly announced features on the specific models of the IBM Power Systems 8247, 8284, 8286, 8408, 9008, 9009, 9040, 9080, 9119, 9223 machine type:

New features available November 22, 2019

Description	Machine type	Model number	Feature number
PCIe3 x8 NVMe 1.6 TB SSD NVMe Flash Adapter for IBM i	9080	M9S	EC6U
PCIe3 x8 NVMe 1.6 TB SSD NVMe Flash Adapter for IBM i	9009	41A	EC6V
	9009	42A	
	9223	42H	
PCIe3 x8 NVMe 3.2 TB SSD NVMe Flash Adapter for IBM i	9080	M9S	EC6W
PCIe3 x8 NVMe 3.2 TB SSD NVMe Flash Adapter for IBM i	9009	41A	EC6X
	9009	42A	
	9223	42H	
PCIe3 x8 NVMe 6.4 TB SSD NVMe Flash Adapter for IBM i	9080	M9S	EC6Y
PCIe3 x8 NVMe 6.4 TB SSD NVMe Flash Adapter for IBM i	9009	41A	EC6Z
	9009	42A	
	9223	42H	
188 GB IBM i NVMe Load Source Name Space size	9009	41A	ENS1
	9009	42A	
	9080	M9S	
393 GB IBM i NVMe Load Source Name Space size	9009	41A	ENS2
	9009	42A	
	9080	M9S	
387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux	8247	21L	ESB0
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9223	22H	
	9223	42H	
387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux	8247	21L	ESB2

	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux	8247	21L	ESB4
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9223	22H	
	9223	42H	
775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux	8247	21L	ESB6
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux	8247	21L	ESB8
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9223	22H	
	9223	42H	
387GB Enterprise SAS 4k SFF-3 SSD for IBM i	8284	21A	ESB9

	8286	41A	
	8286	42A	
	9009	41A	
	9009	42A	
	9223	42H	
387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux	8247	21L	ESBA
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
387GB Enterprise SAS 4k SFF-2 SSD for IBM i	8286	41A	ESBB
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	42H	
775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux	8247	21L	ESBE
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9223	22H	
	9223	42H	
775GB Enterprise SAS 4k SFF-3 SSD for IBM i	8286	41A	ESBF
	8286	42A	
	9009	41A	
	9009	42A	
	9223	42H	
775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux	8247	21L	ESBG
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	

	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
775GB Enterprise SAS 4k SFF-2 SSD for IBM i	8286	41A	ESBH
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	42H	
1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux	8247	21L	ESBJ
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9223	22H	
	9223	42H	
1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i	8286	41A	ESBK
	8286	42A	
	9009	41A	
	9009	42A	
	9223	42H	
1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux	8247	21L	ESBL
	8247	22L	
	8247	42L	
	8284	21A	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i	8286	41A	ESBM
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	42H	
ESB9 Load Source Specify (387GB SSD SFF-3)	8284	21A	ESL9
	8286	41A	
	8286	42A	
	9009	41A	
	9009	42A	
ESBB Load Source Specify (387GB SSD SFF-2)	8286	41A	ESLB
	8286	42A	
	9009	41A	

	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
ESBF Load Source Specify (775GB SSD SFF-3)	8286	41A	ESLF
	8286	42A	
	9009	41A	
	9009	42A	
ESBH Load Source Specify (775GB SSD SFF-2)	8286	41A	ESLH
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
ESBK Load Source Specify (1.55TB SSD SFF-3)	8286	41A	ESLK
	8286	42A	
	9009	41A	
	9009	42A	
ESBM Load Source Specify (1.55TB SSD SFF-2)	8286	41A	ESLM
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
Load Source Specify for EC6U (1.6TB SSD NVMe adapter for IBM i)	9080	M9S	ESLU
Load Source Specify for EC6V (NVMe 1.6 TB SSD for IBM i)	9009	41A	ESLV
	9009	42A	
Load Source Specify for EC6W (3.2TB SSD NVMe adapter for IBM i)	9080	M9S	ESLW
Load Source Specify for EC6X (NVMe 3.2 TB SSD for IBM i)	9009	41A	ESLX
	9009	42A	
Load Source Specify for EC6Y (6.4TB SSD NVMe adapter for IBM i)	9080	M9S	ESLY
Load Source Specify for EC6Z (NVMe 6.4 TB SSD for IBM i)	9009	41A	ESLZ
	9009	42A	
Quantity 150 of ESB2 387GB SAS 4k	8247	21L	ESQ2
	8247	22L	
	8247	42L	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
Quantity 150 of ESB6 775GB SAS 4k	8247	21L	ESQ6
	8247	22L	
	8247	42L	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	

	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
Quantity 150 of ESBA 387GB SAS 4k	8247	21L	ESQA
	8247	22L	
	8247	42L	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
Quantity 150 of ESBB 387GB SAS 4k	8286	41A	ESQB
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	42H	
Quantity 150 of ESBG 775GB SAS 4k	8247	21L	ESQG
	8247	22L	
	8247	42L	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
Quantity 150 of ESBH 775GB SAS 4k	8286	41A	ESQH
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	42H	
Quantity 150 of ESBL 1.55TB SAS 4k	8247	21L	ESQL

	8247	22L	
	8247	42L	
	8284	22A	
	8286	41A	
	8286	42A	
	8408	44E	
	8408	E8E	
	9008	22L	
	9009	22A	
	9009	41A	
	9009	42A	
	9040	MR9	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	22H	
	9223	42H	
Quantity 150 of ESBM 1.55TB SAS 4k	8286	41A	ESQM
	8286	42A	
	9009	41A	
	9009	42A	
	9080	M9S	
	9080	MHE	
	9080	MME	
	9119	MHE	
	9119	MME	
	9223	42H	

The following is an existing re-announced feature on the specific model of the IBM Power Systems 7316 machine type:

Feature available on October 8, 2019

Description	Machine type	Model number	Feature number
Cable, USB Conversion Option - 1.5 meters	7316	TF4	4269

Publications

No publications are shipped with the announced product.

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

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided. A large number of publications are available online in various file formats, which can currently be downloaded.

National language support

Not applicable

Services

IBM Systems Lab Services

IBM Systems Lab Services offers a wide array of services available for your enterprise. It brings expertise on the latest technologies from the IBM development community and can help with your most difficult technical challenges.

IBM Systems Lab Services exists to help you successfully implement emerging technologies so as to accelerate your return on investment and improve your satisfaction with your IBM systems and solutions. Services examples include initial implementation, integration, migration, and skills transfer on IBM systems solution capabilities and recommended practices. IBM Systems Lab Services is one of the service organizations of IBM's world-renowned IBM Systems Group development labs.

For details on available services, contact your IBM representative or go to the IBM Systems Lab Services website.

Global Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or go to the IBM Global Technology Services(R) website.

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or go to the Business Resiliency Services website.

Details on education offerings related to specific products can be found on the IBM Skills Gateway website.

Technical information

Planning information

Cable orders

Not applicable

Security, auditability, and control

This product uses the security and auditability features of host hardware, host software, and application software.

The client is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

IBM Systems Lab Services

For details on available services, contact your IBM representative or go to the IBM Systems Lab Services website.

IBM Electronic Services

IBM has transformed its delivery of hardware and software support services to help you achieve higher system availability. Electronic Services is a web-enabled solution that offers an exclusive, no-additional-charge enhancement to the service and support available for IBM servers. These services are designed to provide the opportunity for greater system availability with faster problem resolution and preemptive monitoring. Electronic Services comprises two separate, but

complementary, elements: Electronic Services news page and Electronic Services Agent.

The Electronic Services news page is a single internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. The news page enables you to gain easier access to IBM resources for assistance in resolving technical problems.

The Electronic Service Agent is no-additional-charge software that resides on your server. It monitors events and transmits system inventory information to IBM on a periodic, client-defined timetable. The Electronic Service Agent automatically reports hardware problems to IBM. Early knowledge about potential problems enables IBM to deliver proactive service that may result in higher system availability and performance. In addition, information collected through the Service Agent is made available to IBM service support representatives when they help answer your questions or diagnose problems. Installation and use of IBM Electronic Service Agent for problem reporting enables IBM to provide better support and service for your IBM server.

To learn how Electronic Services can work for you, go to the IBM Electronic Service Agent website.

Terms and conditions

Field-installable feature

Yes, except feature EP1H.

Warranty period

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM. An IBM part or feature installed during the initial installation of an IBM machine is subject to the full warranty period specified by IBM. An IBM part or feature that replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as those for the machine in which it is installed.

New NVMe Flash adapters for IBM i

The IBM NVMe adapter for IBM i is rated at 5 DWPD (Drive Writes Per Day) calculated over a 5-year period. 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.

IBM solid-state device

The IBM SSD 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.

Client setup

Yes, except feature EP1H

Machine code

Same license terms and conditions as base machine

Prices

For all local charges, contact your local IBM representative or IBM Business Partner.

AP distribution

Country/Region	Announced
AP	
ASEAN *	Yes
India/South Asia **	Yes
Australia	Yes
Hong Kong	Yes
Macao SAR of the PRC	Yes
Mongolia	Yes
New Zealand	Yes
People's Republic of China	Yes
South Korea	Yes
Taiwan	Yes

* Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam

** Bangladesh, Bhutan, India, Maldives, Nepal, and Sri Lanka

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