

IBM delivers hardware enhancements for selected IBM POWER9 technology-based servers

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At a glance

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

- New generation of mainstream 2.5-inch solid-state drives (SSD) provides enhancements in the 931 GB, 1.86 TB, 3.72 TB, and 7.44 TB capacity point for IBM Power^(R) Systems E980, E950, S924, S914, S922, L922, H924, and H922 servers.
- New generation of enterprise 2.5-inch SSDs provides enhancements in the 387 GB, 775 GB, and 1550 GB capacity point for Power E980, E950, S924, S914, S922, L922, H924, and H922 servers.
- Enterprise 800 GB SSD PCIe4 Non-Volatile Memory Express (NVMe) U.2 module provides an entry-level device specific to the IBM i operating system for Power S924, S914, and S922 servers.
- New PCIe 4.0 x8 dual-port 32 Gb optical Fibre channel (FC) adapter for Power E980, E950, S924, S914, S922, H924, and H922 servers.
- New Peripheral Component Interconnect^(R) Express (PCIe) 3.0 16 Gb quad-port optical FC adapter for Power E980, E950, S924, S914, S922, H924, and H922 servers.
- Healthcare Solution Edition offers new configuration for Enterprise Cache Protocol (ECP) for the Power S924 server.

Overview

The POWER9 server family delivers several key hardware enhancements.

Mainstream 931 GB, 1.86 TB, 3.72 TB, and 7.44 TB capacity SSDs

New mainstream 931 GB, 1.86 TB, 3.72 TB, and 7.44 TB capacity SSDs are designed to help provide a lower cost per terabyte of SSD storage in a space-efficient footprint. A 2.5-inch serial-attached SCSI (SAS) SSD is mounted on an SFF-3 carrier or tray for a POWER9 system unit or mounted on an SFF-2 for placement in an expansion drawer, such as the EXP24SX drawer, when attached to a POWER9 server. The drive is formatted to use 4224-byte (4k) sectors and does not support the 4k JBOD 4096-byte sector.

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

New enterprise SSDs refresh the previously available 387 GB, 775 GB, and 1550 GB capacity points for 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 sector, the 512-byte sector, and JBOD are not supported. The 4k drives are not supported on servers older than POWER9.

Enterprise 800 GB SSD PCIe4 NVMe U.2 module for IBM i

Enterprise 800 GB NVMe SFF U.2 15mm SSD is a PCIe generation 4 (Gen4) drive. The SSD can be used in any U.2 15mm NVMe slot in the system. NVMe is a high-performance architecture and command protocol that can read and write flash memory. Compared to a SAS or SATA SSD, the NVMe SSD provides more read and write input/output operations per second (IOPS) and larger throughput (GB/sec).

PCIe4 32 Gb dual-port optical FC adapter

The new PCIe 4.0 x8 dual-port 32 Gb optical FC adapter is a high-performance short form adapter based on the Marvell QLE2772 PCIe host bus adapter (6.6 inches x 2.731 inches). The adapter provides two ports of 32 Gb FC capability using SR optics. Each port can provide up to 6,400 MBps bandwidth.

PCIe3 16 Gb quad-port optical FC adapter

The new PCIe 3.0 16 Gb quad-port optical FC adapter is a high-performance x8 short form adapter based on the Marvell QLE2694L PCIe host bus adapter (6.6 inches x 2.371 inches). The adapter provides four ports of 16 Gb FC capability using SR optics. Each port can provide up to 3,200 MBps bandwidth.

Healthcare Solution Edition Enterprise Cache Protocol (ECP) for the Power S924 server

The Healthcare Solution Edition ECP provides a more cost-effective solution for small-to-medium-size hospitals ordering a new Power S924 server. This configuration supports ECP computing to enable local processing and availability.

Feature exchange

Not applicable

Key requirements

Not applicable

Planned availability date

- April 23, 2021, except for features ELG2, ELSG, ES1K, EP5K, and EP6K
- May 7, 2021, for features EP5K and EP6K
- May 14, 2021, for features ELSG and ES1K
- April 13, 2021, for feature ELG2 on 7316-TF5

Description

Mainstream 931 GB, 1.86 TB, 3.72 TB, and 7.44 TB capacity SSDs

The new mainstream 931 GB, 1.86 TB, 3.72 TB, and 7.44 TB capacity SSDs are designed to provide lower cost per terabyte of SSD storage in a space-efficient footprint.

When placed in POWER9 system units with SAS SFF-3 bays, the drive is run by the integrated SAS controller such as found in Power E950, S924, S914, S922, L922,

H922, and H924 servers. When placed in the EXP24SX (SFF-2) storage enclosure, the drive is run by a PCIe3 SAS RAID adapter, such as features EJ0L, EJ14, EJ0J, EJ0M, EL3B, or EL59. These PCIe3 controllers support 4k drives on POWER9 servers. Earlier-generation SAS controllers don't support 4k drives.

When placed in an SSD array of one of these PCIe3 controllers, the array must be all mainstream SSDs or all nonmainstream SSDs. A SAS controller can currently run 4k and 5xx drives, but they must be in separate arrays. Drives in an array should be the same or similar capacity. Hard disk drives (HDDs) and SSDs can only be mixed in the same array when part of an Easy Tier^(R) array (RAID 5TS, RAID 6T2, or RAID 10T2) provided by SAS RAID controllers, such as feature EJ0L, feature EJ14, or POWER9-integrated backplane controllers.

Like all SSDs, the performance of the 931 GB, 1.86 TB, 3.72 TB, and 7.44 TB mainstream SSDs are excellent compared to an HDD. Read performance is on par with higher write endurance SSDs, such as the enterprise SSDs. Write performance, when compared to enterprise SSDs, is somewhat slower but still more than 25 times that of a standard 15K HDD. As with any drive, either HDD or SSD, the number of drives is still a factor in achieving satisfactory performance, especially for IBM i.

These are mainstream drives and are not suitable for write-intensive workloads. Write-intensive workloads are those that write more to the drive each day than its rated capacity. Writes past the drive'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 drive. If the predictive failure message is ignored and writes continue to be sent to the drive, eventually the drive will be unable to accept write commands and will accept only read commands for a period of time. A failed write will result in a more serious error message indicating that the drive must be replaced.

The nature of the workload has a great impact on the maximum write capacity. For example, if a high percentage of more sequentially oriented writes is used instead of random writes, the maximum write capacity can be significantly larger. The user should occasionally check to see what percentage of the drive's write life remains and adjust the workload or drive assignment accordingly. Checking is done by inspecting the SSD Mainstream Fuel Gauge. This capability is available through IBM AIX^(R), IBM i, and Linux^(R). The query or command to view the information varies by operating system. Check the remaining life of the mainstream drives individually, even if all are in the same array.

The Drive Write Per Day (DWPD) rating is 1 and is calculated over a five-year period. See the following table for the approximate lifetime Total Bytes Written (TBW) supported by each drive capacity:

Drive capacity	TBW in TB
931 GB	1,700
1.86 TB	3,399
3.72 TB	6,799
7.44 TB	13,601

To read the warranty and maintenance applicable to mainstream devices on POWER9 servers, see the [Terms and Conditions section](#) or [IBM Knowledge Center](#).

Multiple feature codes are used to identify the proper mainstream SSD characteristics. Key characteristics are:

- Multi-OS server for AIX, Linux, or IBM i
- SFF-3 or SFF-2 carrier or trays

Multi-OS server feature numbers

Mainstream SSD	For SFF-3 4k	For SFF-2 4k
931 GB	#ESKJ ³ and #ESKL ^{1,2}	#ESKK ² and #ESKM ^{1,2}
1.86 TB	#ESKN ² and #ESKQ ^{1,2}	#ESKP ² and #ESKR ^{1,2}
3.72 TB	#ESKS ² and #ESKU ^{1,2}	#ESKT ² and #ESKV ^{1,2}

Mainstream SSD	For SFF-3 4k	For SFF-2 4k
7.44 TB	#ESKW ² and #ESKY ^{1,2}	#ESKX ² and #ESKZ ^{1,2}

¹ IBM i supported

² Only available for POWER9 servers

Feature codes for no-charge load source specify for IBM i features (#ELKL, #ELKM, #ELKQ, #ELKR, #ELKU, #ELKV, #ELKY, and #ELKZ) should be used when SSD for IBM i is ordered.

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

- AIX supported
- Linux supported
- IBM i supported

Limitations:

- IBM i feature code capacities greater than 4 TB, such as features ESKZ and ESKY, are only supported on IBM i 7.4, and later.
- For the Power S914 (MTM 9009-41G) server with the quad-core processor module with IBM i operating system, the only available capacity point from the list above is 931 GB.

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

Enterprise 387 GB, 775 GB, and 1.55 TB capacity SSDs

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

The POWER9 servers that support the new enterprise SAS SSDs in their system units are the Power E950, S924, S914, S922, L922, H922, and H924 servers. The SFF-3 SAS bay in these servers uses an SFF-3 carrier or tray on which the SAS drive is mounted. Other Power E980 server models do not have SAS bays in their system units and therefore cannot support enterprise SFF-3 SSDs. When attached to a POWER9 server, the EXP24SX I/O drawers can hold up to 24 SAS SSDs. The EXP24SX SAS bays use an SFF-2 carrier or tray on which the SAS drive is mounted.

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 AIX/Linux

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	#ESK6 and #ESK7 ¹	#ESK0	#ESK8 and #ESK9 ¹	#ESK1
775 GB	#ESKA and #ESKB ¹	#ESK2	#ESKC and #ESKD ¹	#ESK3

SSD	For SFF-3 and 4k	For SFF-3 and 5xx	For SFF-2 and 4k	For SFF-2 and 5xx
1550 GB	#ESKE and #ESKF ¹	Not applicable ²	#ESKG and #ESKH 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.

Feature codes for no-charge load source specify for IBM i features (#ELU7, #ELU9, #ELUB, #ELUD, #ELUF, and #ELUH) should be used when SSD for IBM i is ordered.

The new enterprise SSDs are run either by the integrated SAS controllers in the POWER9 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 enables 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 quad-core Power S914 server with IBM i operating system is 387 GB.
- Do not mix SSDs and HDDs in the same array unless it is an Easy Tier array.

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

- AIX supported
- Linux supported
- IBM i supported

Note: 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.

Enterprise 800 GB SSD PCIe4 NVMe U.2 module for IBM i (#ES1K)

The enterprise 800 GB NVMe SFF U.2 15mm SSD is supported on the Power S924, S914, and S922 (with the 1-core #EP5Y) servers. Feature ES1K has CCIN number of 5947 and indicates usage by IBM i in which the SSD is formatted in 4160 byte sectors.

This enterprise SSD is rated at 3 DDPD 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 greatly impacts 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 they will 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 OS and system administrator. IBM recommends that you monitor SMART log critical information through 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 SSDs 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 your expense. The device can be configured as the boot drive. Data redundancy on a failed SSD may be provided by OS mirroring or software RAID wherever applicable.

PCIe4 32 Gb dual-port optical FC adapter (#EN1J/#EN1K)

PCIe 4.0 x8 dual-port 32 Gb optical FC adapter is a high-performance short form adapter based on the Marvell QLE2772 PCIe host bus adapter. The adapter provides two ports of 32 Gb FC capability using SR optics, and each port can provide up to 6,400 MBps of bandwidth.

Each port provides single initiator capability over a fiber link, or with N_Port ID Virtualization (NPIV), multiple initiator capability is provided. The adapter ships with 32 Gb SR optical transceivers installed. The ports have LC connectors and utilize shortwave laser optics. The adapter operates at link speeds of 8 Gbps, 16 Gbps, and 32 Gbps and will automatically negotiate to the highest speed possible. The adapter can be used to boot the operating system.

Features EN1J and EN1K are electronically identical. They differ physically only in that #EN1J has a tail stock for full-height PCIe slots and #EN1K has a short tail stock for low-profile PCIe slots.

Cables are the user's responsibility. Use multimode fiber-optic cables with short-wavelength lasers that adhere to the following specifications:

- OM4 - multimode 50/125 micron fiber, 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 fiber, 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 fiber, 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 fiber, 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 hardware cannot detect what length and type of cable is installed. The link will autonegotiate to the speed reported during negotiation by the target. You must manually set the maximum negotiation speed. If too high a speed is selected, bit errors may occur.

There is an optional wrap plug feature available (#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.

PCIe3 16 Gb quad-port optical FC adapter (#EN1E/#EN1F)

The PCIe 3.0 16 Gb quad-port optical FC adapter is a high-performance x8 short form adapter based on the Marvell QLE2694L PCIe host bus adapter. The adapter provides four ports of 16 Gb FC capability using SR optics, and each port can provide up to 3,200 MBps of bandwidth.

Each port provides single initiator capability over a fiber link, or with NPIV, multiple initiator capability is provided. The adapter ships with soldered SFF optical transceivers installed. The ports have LC connectors and use shortwave laser optics. The adapter operates at link speeds of 4 Gbps, 8 Gbps, and 16 Gbps and will automatically negotiate to the highest speed possible. The adapter can be used to boot the operating system.

Features EN1E and EN1F are electronically identical. They differ physically only in that #EN1E has a tail stock for full-height PCIe slots and #EN1F has a short tail stock for low-profile PCIe slots.

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 and off transition that reflects test progress. Users should observe the LED sequence for several seconds to ensure that the operating state is correctly identified.

Cables are the user's responsibility. Use multimode fiber-optic cables with short-wavelength lasers that adhere to the following specifications:

- OM4 - multimode 50/125 micron fiber, 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 fiber, 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 fiber, 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 fiber, 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 hardware cannot detect what length and type of cable is installed. The link will autonegotiate to the speed reported during negotiation by the target. You must manually set the maximum negotiation speed. If too high a speed is selected, bit errors may occur.

There is an optional wrap plug feature available (#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.

IBM Power Solution Editions for healthcare enhancements with Power S924 server

The Power Solution Editions for healthcare provides the following updates for Power S924 server:

The existing POWER9 S924 Solution Edition for Healthcare is renamed to Power S924 Healthcare Solution Edition for Operational Databases (ODB), and a new POWER9 S924 Solution Edition for Healthcare for Enterprise Cache Protocol (ECP) is available. The two configurations are:

- Power S924 Healthcare Solution Edition for ODB: Configuration supports the operation core processing of the healthcare solution.
- Power S924 Healthcare Solution Edition for ECP: Configuration supports ECP computing to enable local processing and availability.

The following features help eligible clients to order and effectively price the configuration:

- POWER9 Solution Edition for Healthcare indicator for 42G (#EHLQ)
- 512 GB Memory DIMMs bundle for Solution Edition for Healthcare (#EM67)

The above features are available only with a new server order. MES orders can use the regular feature numbers with their regular pricing.

The new Power S924 Healthcare Solution Edition for ECP configuration is a 20-core, 22-core, or 24-core, 2-socket server running AIX as the primary operating system. An initial hardware order includes the following components:

Feature	Description	Default	Min	Max	Rules/ Comments
EHLQ	POWER9 Solution Edition for Healthcare indicator for 42G	1	1	1	
EM67	512 GB Memory DIMMs bundle for Solution Edition for Healthcare	1	1	1	Reduce price bundled feature for memory is required. If additional memory is desired on an initial order, only allow quantity 16 of #EM63 (32 Gb).
EP5F	10-core Typical 3.5 to 3.9 Ghz (max) POWER9 Processor	0	0	2	
EP6F	One Processor Core Activation for #EP5F	0	0	20	
EP5H	11-core Typical 3.45 to 3.9 Ghz (max) POWER9 Processor	0	0	2	
EP6H	One Processor Core Activation for #EP5H	0	0	22	
EP5K	12-core Typical 3.4 to 3.9 Ghz (max) POWER9 High Performance Solution Edition processor	2	0	2	
EP6K	One Processor Core Activation for #EP5K	24	0	24	
EJ1C	Base Storage Backplane 12 SFF-3 Bays/RDX Bay	1	0	1	Defaulted but can be replaced with other Storage backplane or NVMe

Feature	Description	Default	Min	Max	Rules/ Comments
					devices. If Boot from SAN (#0837) is on the order, then no drives required.
EJU3	Front IBM Bezel for 12-Bay BackPlane	1	0	1	
ESDB	300GB 15K RPM SAS SFF-3 Disk Drive (AIX/Linux)	2	0	2	
ESB8	387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux	0	0	2	
EJ1T	Storage backplane with two front PCIe Gen4 capable NVMe U.2 drive slots	0	0	1	
EJUK	Front IBM Bezel for 6 SAS + 4 NVMe Bays BackPlane	0	0	1	
EC5X	Mainstream 800 GB SSD PCIe3 NVMe U.2 module for AIX/Linux	0	0	2	
EN0S	PCIe2 4-Port (10Gb +1GbE) SR+RJ45 Adapter	2	2	2	Qty 2 of 10 GB or higher LAN cards are required. Allowed to replace or add other from available 10 GB or higher LAN cards.
EN1G	PCIe3 2-Port 16Gb Fibre Channel Adapter	0	0	2	Not required but allowed to order qty of 2 from available 16 GB or higher Fibre

Feature	Description	Default	Min	Max	Rules/ Comments
					Channel cards.
EC5B	PCIe3 x8 1.6 TB NVMe Flash Adapter for AIX/Linux	0	0	2	Storage backplane is defaulted but allowed to order NVMe devices. If Boot from SAN (#0837) is on the order, then no drives required.
2146	Primary OS -AIX	1	1	1	
EB2M	AC Power Supply - 1400W for Server (200-240 VAC)	4	4	4	
6458	Power Cord 4.3m (14-ft), Drawer to IBM PDU (250V/10A)	4	4	4	
4650	Rack Indicator-Not Factory Integrated	1	1	1	
5000	Software Preload	1	0	1	Defaulted but can be deselected--there is no minimum required.
5228	PowerVM ^(R) Enterprise Edition	24	20	24	
9440	New AIX License Core Counter	24	20	24	
9300	Language Group Specify - US English	1	1	1	
0265	AIX Partition Specify	1	1	1	
EU0B	Operator Panel LCD Display	1	1	1	
ECW0	Optical Wrap Plug	2	0	2	
EU19	Cable Ties & Labels	1	0	1	

Notes:

- Additional hardware components can be added as desired following normal supported configuration rules. The above is the predefined configuration.
- Additional software and maintenance can be added as desired following normal supported configuration rules.

To see if you are eligible to order this solution edition, see the [IBM Power Solution Editions for healthcare](#) website. Also, the sales channel can register each server using this solution edition at this website.

Product number

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

Planned Availability Date April 23, 2021

New Feature

Description	Machine type	Model number	Feature number
ESKL Load Source Specify (931GB SSD SFF-3)	9009	41A	ELKL
	9009	41G	
	9009	42A	
ESKM Load Source Specify (931GB SSD SFF-2)	9009	42G	ELKM
	9009	41A	
	9009	41G	
ESKQ Load Source Specify (1.86TB SSD SFF-3)	9009	42A	ELKQ
	9009	42G	
	9009	41A	
ESKR Load Source Specify (1.86TB SSD SFF-2)	9009	41A	ELKR
	9009	41G	
	9009	42A	
ESKU Load Source Specify (3.72TB SSD SFF-3)	9009	42G	ELKU
	9009	41A	
	9009	41G	
ESKV Load Source Specify (3.72TB SSD SFF-2)	9009	42A	ELKV
	9009	42G	
	9009	41A	
ESKY Load Source Specify (7.44TB SSD SFF-3)	9009	41G	ELKY
	9009	42A	
	9009	42G	
ESKZ Load Source Specify (7.44TB SSD SFF-2)	9009	41A	ELKZ
	9009	41G	
	9009	42A	
ESK7 Load Source Specify (387GB SSD SFF-3)	9009	42G	ELU7
	9009	41A	
	9009	41G	
ESK9 Load Source Specify (387GB SSD SFF-2)	9009	42A	ELU9
	9009	42G	
	9009	41A	
ESKB Load Source Specify (775GB SSD SFF-3)	9009	41G	ELUB
	9009	42A	
	9009	41A	

	9009	42G	
ESKD Load Source Specify (775GB SSD SFF-2)	9009	41A	ELUD
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
ESKF Load Source Specify (1.55TB SSD SFF-3)	9009	41A	ELUF
	9009	41G	
	9009	42A	
	9009	42G	
ESKH Load Source Specify (1.55TB SSD SFF-2)	9009	41A	ELUH
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
PCIe3 16Gb 4-port Fibre Channel Adapter	9009	22G	EN1E
	9009	41G	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22S	
	9223	42S	
PCIe3 LP 16Gb 4-port Fibre Channel Adapter	9009	22G	EN1F
	9080	M9S	
	9223	22S	
PCIe4 32Gb 2-port Optical Fibre Channel Adapter	9009	22G	EN1J
	9009	41G	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22S	
	9223	42S	
PCIe4 LP 32Gb 2-port Optical Fibre Channel Adapter	9009	22G	EN1K
	9080	M9S	
	9223	22S	
387GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux	9008	22L	ESK0
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
387GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux	9008	22L	ESK1
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
775GB Enterprise SAS 5xx SFF-3 SSD for AIX/Linux	9008	22L	ESK2
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
775GB Enterprise SAS 5xx SFF-2 SSD for AIX/Linux	9008	22L	ESK3

	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
387GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux	9008	22L	ESK6
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
387GB Enterprise SAS 4k SFF-3 SSD for IBM i	9009	41A	ESK7
	9009	41G	
	9009	42A	
	9009	42G	
	9223	42H	
	9223	42S	
387GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux	9008	22L	ESK8
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
387GB Enterprise SAS 4k SFF-2 SSD for IBM i	9009	41A	ESK9
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
	9223	42H	
	9223	42S	
775GB Enterprise SAS 4k SFF-3 SSD for AIX/Linux	9008	22L	ESKA
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
775GB Enterprise SAS 4k SFF-3 SSD for IBM i	9009	41A	ESKB
	9009	41G	
	9009	42A	
	9009	42G	
	9223	42H	
	9223	42S	
775GB Enterprise SAS 4k SFF-2 SSD for AIX/Linux	9008	22L	ESKC
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	

	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
775GB Enterprise SAS 4k SFF-2 SSD for IBM i	9009	41A	ESKD
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
	9223	42H	
	9223	42S	
1.55TB Enterprise SAS 4k SFF-3 SSD for AIX/Linux	9008	22L	ESKE
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
1.55TB Enterprise SAS 4k SFF-3 SSD for IBM i	9009	41A	ESKF
	9009	41G	
	9009	42A	
	9009	42G	
	9223	42H	
	9223	42S	
1.55TB Enterprise SAS 4k SFF-2 SSD for AIX/Linux	9008	22L	ESKG
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
1.55TB Enterprise SAS 4k SFF-2 SSD for IBM i	9009	41A	ESKH
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
	9223	42H	
	9223	42S	
931GB Mainstream SAS 4k SFF-3 SSD for AIX/Linux	9008	22L	ESKJ
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
931GB Mainstream SAS 4k SFF-2 SSD for AIX/Linux	9008	22L	ESKK
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	

	9223	22S	
	9223	42H	
	9223	42S	
931GB Mainstream SAS 4k SFF-3 SSD for IBM i	9009	41A	ESKL
	9009	41G	
	9009	42A	
	9009	42G	
	9223	42H	
	9223	42S	
931GB Mainstream SAS 4k SFF-2 SSD for IBM i	9009	41A	ESKM
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
	9223	42H	
	9223	42S	
1.86TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux	9008	22L	ESKN
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
1.86TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux	9008	22L	ESKP
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
1.86TB Mainstream SAS 4k SFF-3 SSD for IBM i	9009	41A	ESKQ
	9009	41G	
	9009	42A	
	9009	42G	
	9223	42H	
	9223	42S	
1.86TB Mainstream SAS 4k SFF-2 SSD for IBM i	9009	41A	ESKR
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
	9223	42H	
	9223	42S	
3.72TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux	9008	22L	ESKS
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
3.72TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux	9008	22L	ESKT
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	

	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
3.72TB Mainstream SAS 4k SFF-3 SSD for IBM i	9009	41A	ESKU
	9009	41G	
	9009	42A	
	9009	42G	
	9223	42H	
	9223	42S	
3.72TB Mainstream SAS 4k SFF-2 SSD for IBM i	9009	41A	ESKV
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
	9223	42H	
	9223	42S	
7.44TB Mainstream SAS 4k SFF-3 SSD for AIX/Linux	9008	22L	ESKW
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
7.44TB Mainstream SAS 4k SFF-2 SSD for AIX/Linux	9008	22L	ESKX
	9009	22A	
	9009	22G	
	9009	41A	
	9009	41G	
	9009	42A	
	9009	42G	
	9040	MR9	
	9080	M9S	
	9223	22H	
	9223	22S	
	9223	42H	
	9223	42S	
7.44TB Mainstream SAS 4k SFF-3 SSD for IBM i	9009	41A	ESKY
	9009	41G	
	9009	42A	
	9009	42G	
	9223	42H	
	9223	42S	
7.44TB Mainstream SAS 4k SFF-2 SSD for IBM i	9009	41A	ESKZ
	9009	41G	
	9009	42A	
	9009	42G	
	9080	M9S	
	9223	42H	
	9223	42S	

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

Planned Availability Date May 7, 2021

New Feature

Description	Machine type	Model number	Feature number
12-core Typical 3.4 to 3.9 Ghz (max) POWER9 High Performance Solution Edition processor	9009	42G	EP5K
One Processor Core Activation for #EP5K	9009	42G	EP6K

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

Planned Availability Date May 14, 2021

New Feature

Description	Machine type	Model number	Feature number
ES1K Load Source Specify (800 GB 4K NVMe U.2 SSD PCIe4 for IBM i)	9009	22G	ELSG
	9009	41G	
	9009	42G	
Enterprise 800GB SSD PCIe4 NVMe U.2 module for IBM i	9009	22G	ES1K
	9009	41G	
	9009	42G	

Planned Availability Date April 13, 2021

New Feature

Description	Machine type	Model number	Feature number
IBM Power Private Cloud Rack Solution Indicator	7316	TF5	ELG2

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBMid).

[BP Attachment for Announcement Letter 121-013](#)

Publications

No publications are shipped with the announced products.

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.

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 [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

No cables required.

Security, auditability, and control

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.

Terms and conditions

Field-installable feature

Yes

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.

IBM Solid State Drive (SSD) and Non-Volatile Memory Express (NVMe) devices identified in this document may have a maximum number of write cycles. IBM SDD and NVMe device failures will be replaced during 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. Individual service life may vary and can be monitored using an operating system command.

Customer setup

Yes

Machine code

The same license terms and conditions as the base machine apply.

Prices

For additional information and current prices, contact your local IBM representative or IBM Business Partner.

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

Description Machine type 9008	Model number	Feature number	Purchase price	Minimum Monthly Maint. charge	Initial/ MES/ Both/ support	RP CSU	MES
387GB Enterprise SAS	5xxSFF3 22L	ESK0			Both	Yes	No
387GB Enterprise SAS	5xxSFF2 22L	ESK1			MES	Yes	No
775GB Enterprise SAS	5xxSFF3 22L	ESK2			MES	Yes	No
775GB Enterprise SAS	5xxSFF2 22L	ESK3			MES	Yes	No
387GB Enterprise SAS	4k SFF3 22L	ESK6			MES	Yes	No
387GB Enterprise SAS	4k SFF2 22L	ESK8			MES	Yes	No
775GB Enterprise SAS	4k SFF3 22L	ESKA			MES	Yes	No
775GB Enterprise SAS	4k SFF2 22L	ESKC			MES	Yes	No
1.55TB Enterprise SAS	4kSFF3 22L	ESKE			MES	Yes	No
1.55TB Enterprise SAS	4kSFF2 22L	ESKG			MES	Yes	No
931GB Mainstream SAS	4k SFF3 22L	ESKJ			MES	Yes	No
931GB Mainstream SAS	4k SFF2 22L	ESKK			MES	Yes	No
1.86TB Mainstream SAS	4kSFF3 22L	ESKN			MES	Yes	No
1.86TB Mainstream SAS	4kSFF2 22L	ESKP			MES	Yes	No
3.72TB Mainstream SAS	4kSFF3 22L	ESKS			MES	Yes	No
3.72TB Mainstream SAS	4kSFF2 22L	ESKT			MES	Yes	No
7.44TB Mainstream SAS	4kSFF3 22L	ESKW			MES	Yes	No
7.44TB Mainstream SAS	4kSFF2 22L	ESKX			MES	Yes	No

Description Machine type 9009	Model number	Feature number	Purchase price	Minimum Monthly Maint. charge	Initial/ MES/ Both/ support	RP CSU	MES
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ESKL Load Source Specify				
41A	ELKL	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKM Load Source Specify				
41A	ELKM	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKQ Load Source Specify				
41A	ELKQ	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKR Load Source Specify				
41A	ELKR	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKU Load Source Specify				
41A	ELKU	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKV Load Source Specify				
41A	ELKV	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKY Load Source Specify				
41A	ELKY	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKZ Load Source Specify				
41A	ELKZ	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ES1K Load Source Specify				
22G	ELSG	Both	Yes	No
41G		Both	Yes	No
42G		Both	Yes	No
ESK7 Load Source Specify				
41A	ELU7	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESK9 Load Source Specify				
41A	ELU9	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKB Load Source Specify				
41A	ELUB	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKD Load Source Specify				
41A	ELUD	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKF Load Source Specify				
41A	ELUF	Both	Yes	No
41G		Both	Yes	No
42A		Both	Yes	No
42G		Both	Yes	No
ESKH Load Source Specify				
41A	ELUH	Both	Yes	No
41G		Both	Yes	No

		42A	Both	Yes	No
		42G	Both	Yes	No
PCIe3 16Gb 4-port FC Adapter		22G	EN1E	Both	Yes No
		41G		Both	Yes No
		42G		Both	Yes No
PCIe3 LP 16Gb 4-port FC Adap		22G	EN1F	Both	Yes No
PCIe4 32Gb 2-port FC Adapter		22G	EN1J	Both	Yes No
		41G		Both	Yes No
		42G		Both	Yes No
PCIe4 LP 32Gb 2-port FC Adap		22G	EN1K	Both	Yes No
12-core POWER9 HPSE proc		42G	EP5K	Both	No No
One Proc Activation for EP5K		42G	EP6K	Both	Yes No
Enterprise 800GB NVMe U.2		22G	ES1K	Both	Yes No
		41G		Both	Yes No
		42G		Both	Yes No
387GB Enterprise SAS 5xxSFF3		22A	ESK0	Both	Yes No
		22G		Both	Yes No
		41A		Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No
387GB Enterprise SAS 5xxSFF2		22A	ESK1	Both	Yes No
		22G		Both	Yes No
		41A		Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No
775GB Enterprise SAS 5xxSFF3		22A	ESK2	Both	Yes No
		22G		Both	Yes No
		41A		Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No
775GB Enterprise SAS 5xxSFF2		22A	ESK3	Both	Yes No
		22G		Both	Yes No
		41A		Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No
387GB Enterprise SAS 4k SFF3		22A	ESK6	Both	Yes No
		22G		Both	Yes No
		41A		Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No
387GB Enterprise SAS 4k SFF3		41A	ESK7	Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No
387GB Enterprise SAS 4k SFF2		22A	ESK8	Both	Yes No
		22G		Both	Yes No
		41A		Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No
387GB Enterprise SAS 4k SFF2		41A	ESK9	Both	Yes No
		41G		Both	Yes No
		42A		Both	Yes No
		42G		Both	Yes No

775GB Enterprise SAS 4k SFF3	22A	ESKA	Both	Yes	No
	22G		Both	Yes	No
	41A		Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
775GB Enterprise SAS 4k SFF3	41A	ESKB	Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
775GB Enterprise SAS 4k SFF2	22A	ESKC	Both	Yes	No
	22G		Both	Yes	No
	41A		Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
775GB Enterprise SAS 4k SFF2	41A	ESKD	Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
1.55TB Enterprise SAS 4kSFF3	22A	ESKE	Both	Yes	No
	22G		Both	Yes	No
	41A		Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
1.55TB Enterprise SAS 4kSFF3	41A	ESKF	Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
1.55TB Enterprise SAS 4kSFF2	22A	ESKG	Both	Yes	No
	22G		Both	Yes	No
	41A		Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
1.55TB Enterprise SAS 4kSFF2	41A	ESKH	Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
931GB Mainstream SAS 4k SFF3	22A	ESKJ	Both	Yes	No
	22G		Both	Yes	No
	41A		Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
931GB Mainstream SAS 4k SFF2	22A	ESKK	Both	Yes	No
	22G		Both	Yes	No
	41A		Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
931GB Mainstream SAS 4k SFF3	41A	ESKL	Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
931GB Mainstream SAS 4k SFF2	41A	ESKM	Both	Yes	No
	41G		Both	Yes	No
	42A		Both	Yes	No
	42G		Both	Yes	No
1.86TB Mainstream SAS 4kSFF3	22A	ESKN	Both	Yes	No

		22G		Both	Yes	No
		41A		Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
1.86TB Mainstream SAS	4kSFF2					
		22A	ESKP	Both	Yes	No
		22G		Both	Yes	No
		41A		Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
1.86TB Mainstream SAS	4kSFF3					
		41A	ESKQ	Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
1.86TB Mainstream SAS	4kSFF2					
		41A	ESKR	Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
3.72TB Mainstream SAS	4kSFF3					
		22A	ESKS	Both	Yes	No
		22G		Both	Yes	No
		41A		Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
3.72TB Mainstream SAS	4kSFF2					
		22A	ESKT	Both	Yes	No
		22G		Both	Yes	No
		41A		Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
3.72TB Mainstream SAS	4kSFF3					
		41A	ESKU	Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
3.72TB Mainstream SAS	4kSFF2					
		41A	ESKV	Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
7.44TB Mainstream SAS	4kSFF3					
		22A	ESKW	Both	Yes	No
		22G		Both	Yes	No
		41A		Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
7.44TB Mainstream SAS	4kSFF2					
		22A	ESKX	Both	Yes	No
		22G		Both	Yes	No
		41A		Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
7.44TB Mainstream SAS	4kSFF3					
		41A	ESKY	Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No
7.44TB Mainstream SAS	4kSFF2					
		41A	ESKZ	Both	Yes	No
		41G		Both	Yes	No
		42A		Both	Yes	No
		42G		Both	Yes	No

Description	Model	Feature	Purchase	Maint.	Minimum Initial/	
					Monthly	RP
					MES/	
					Both/	

Machine type 9040	number	number	price	charge	support	CSU	MES
PCIe3 16Gb 4-port FC Adapter	MR9	EN1E			Both	Yes	No
PCIe4 32Gb 2-port FC Adapter	MR9	EN1J			Both	Yes	No
387GB Enterprise SAS 5xxSFF3	MR9	ESK0			Both	Yes	No
387GB Enterprise SAS 5xxSFF2	MR9	ESK1			Both	Yes	No
775GB Enterprise SAS 5xxSFF3	MR9	ESK2			Both	Yes	No
775GB Enterprise SAS 5xxSFF2	MR9	ESK3			Both	Yes	No
387GB Enterprise SAS 4k SFF3	MR9	ESK6			Both	Yes	No
387GB Enterprise SAS 4k SFF2	MR9	ESK8			Both	Yes	No
775GB Enterprise SAS 4k SFF3	MR9	ESKA			Both	Yes	No
775GB Enterprise SAS 4k SFF2	MR9	ESKC			Both	Yes	No
1.55TB Enterprise SAS 4kSFF3	MR9	ESKE			Both	Yes	No
1.55TB Enterprise SAS 4kSFF2	MR9	ESKG			Both	Yes	No
931GB Mainstream SAS 4k SFF3	MR9	ESKJ			Both	Yes	No
931GB Mainstream SAS 4k SFF2	MR9	ESKK			Both	Yes	No
1.86TB Mainstream SAS 4kSFF3	MR9	ESKN			Both	Yes	No
1.86TB Mainstream SAS 4kSFF2	MR9	ESKP			Both	Yes	No
3.72TB Mainstream SAS 4kSFF3	MR9	ESKS			Both	Yes	No
3.72TB Mainstream SAS 4kSFF2	MR9	ESKT			Both	Yes	No
7.44TB Mainstream SAS 4kSFF3	MR9	ESKW			Both	Yes	No
7.44TB Mainstream SAS 4kSFF2	MR9	ESKX			Both	Yes	No

Description	Model	Feature	Purchase	Minimum	Initial/	MES/	RP
Machine type 9080	number	number	price	Monthly	Both/	support	CSU MES
ESKM Load Source Specify	M9S	ELKM			Both	Yes	No
ESKR Load Source Specify	M9S	ELKR			Both	Yes	No
ESKV Load Source Specify	M9S	ELKV			Both	Yes	No
ESKZ Load Source Specify	M9S	ELKZ			Both	Yes	No
ESK9 Load Source Specify	M9S	ELU9			Both	Yes	No
ESKD Load Source Specify	M9S	ELUD			Both	Yes	No
ESKH Load Source Specify	M9S	ELUH			Both	Yes	No
PCIe3 16Gb 4-port FC Adapter	M9S	EN1E			Both	Yes	No
PCIe3 LP 16Gb 4-port FC Adap	M9S	EN1F			Both	Yes	No
PCIe4 32Gb 2-port FC Adapter	M9S	EN1J			Both	Yes	No
PCIe4 LP 32Gb 2-port FC Adap	M9S	EN1K			Both	Yes	No
387GB Enterprise SAS 5xxSFF2	M9S	ESK1			Both	Yes	No

775GB Enterprise SAS 5xxSFF2 M9S	ESK3	Both	Yes	No
387GB Enterprise SAS 4k SFF2 M9S	ESK8	Both	Yes	No
387GB Enterprise SAS 4k SFF2 M9S	ESK9	Both	Yes	No
775GB Enterprise SAS 4k SFF2 M9S	ESKC	Both	Yes	No
775GB Enterprise SAS 4k SFF2 M9S	ESKD	Both	Yes	No
1.55TB Enterprise SAS 4kSFF2 M9S	ESKG	Both	Yes	No
1.55TB Enterprise SAS 4kSFF2 M9S	ESKH	Both	Yes	No
931GB Mainstream SAS 4k SFF2 M9S	ESKK	Both	Yes	No
931GB Mainstream SAS 4k SFF2 M9S	ESKM	Both	Yes	No
1.86TB Mainstream SAS 4kSFF2 M9S	ESKP	Both	Yes	No
1.86TB Mainstream SAS 4kSFF2 M9S	ESKR	Both	Yes	No
3.72TB Mainstream SAS 4kSFF2 M9S	ESKT	Both	Yes	No
3.72TB Mainstream SAS 4kSFF2 M9S	ESKV	Both	Yes	No
7.44TB Mainstream SAS 4kSFF2 M9S	ESKX	Both	Yes	No
7.44TB Mainstream SAS 4kSFF2 M9S	ESKZ	Both	Yes	No

Description	Model number	Feature number	Purchase price	Minimum Monthly Maint. charge	Initial/ MES/ Both/ support	RP CSU	MES
PCIe3 16Gb 4-port FC Adapter	22S	EN1E			Both	Yes	No
	42S				Both	Yes	No
PCIe3 LP 16Gb 4-port FC Adap	22S	EN1F			Both	Yes	No
PCIe4 32Gb 2-port FC Adapter	22S	EN1J			Both	Yes	No
	42S				Both	Yes	No
PCIe4 LP 32Gb 2-port FC Adap	22S	EN1K			Both	Yes	No
387GB Enterprise SAS 5xxSFF3	22H	ESK0			MES	Yes	No
	22S				Both	Yes	No
	42H				MES	Yes	No
	42S				Both	Yes	No
387GB Enterprise SAS 5xxSFF2	22H	ESK1			MES	Yes	No
	22S				Both	Yes	No
	42H				MES	Yes	No
	42S				Both	Yes	No
775GB Enterprise SAS 5xxSFF3	22H	ESK2			MES	Yes	No
	22S				Both	Yes	No
	42H				MES	Yes	No
	42S				Both	Yes	No
775GB Enterprise SAS 5xxSFF2	22H	ESK3			MES	Yes	No
	22S				Both	Yes	No
	42H				MES	Yes	No
	42S				Both	Yes	No
387GB Enterprise SAS 4k SFF3	22H	ESK6			MES	Yes	No
	22S				Both	Yes	No
	42H				MES	Yes	No
	42S				Both	Yes	No
387GB Enterprise SAS 4k SFF3	42H	ESK7			MES	Yes	No

		42S		Both	Yes	No
387GB Enterprise SAS	4k SFF2	22H	ESK8	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
387GB Enterprise SAS	4k SFF2	42H	ESK9	MES	Yes	No
		42S		Both	Yes	No
775GB Enterprise SAS	4k SFF3	22H	ESKA	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
775GB Enterprise SAS	4k SFF3	42H	ESKB	MES	Yes	No
		42S		Both	Yes	No
775GB Enterprise SAS	4k SFF2	22H	ESKC	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
775GB Enterprise SAS	4k SFF2	42H	ESKD	MES	Yes	No
		42S		Both	Yes	No
1.55TB Enterprise SAS	4kSFF3	22H	ESKE	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
1.55TB Enterprise SAS	4kSFF3	42H	ESKF	MES	Yes	No
		42S		Both	Yes	No
1.55TB Enterprise SAS	4kSFF2	22H	ESKG	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
1.55TB Enterprise SAS	4kSFF2	42H	ESKH	MES	Yes	No
		42S		Both	Yes	No
931GB Mainstream SAS	4k SFF3	22H	ESKJ	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
931GB Mainstream SAS	4k SFF2	22H	ESKK	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
931GB Mainstream SAS	4k SFF3	42H	ESKL	MES	Yes	No
		42S		Both	Yes	No
931GB Mainstream SAS	4k SFF2	42H	ESKM	MES	Yes	No
		42S		Both	Yes	No
1.86TB Mainstream SAS	4kSFF3	22H	ESKN	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
1.86TB Mainstream SAS	4kSFF2	22H	ESKP	MES	Yes	No
		22S		Both	Yes	No
		42H		MES	Yes	No
		42S		Both	Yes	No
1.86TB Mainstream SAS	4kSFF3	42H	ESKQ	MES	Yes	No
		42S		Both	Yes	No
1.86TB Mainstream SAS	4kSFF2	42H	ESKR	MES	Yes	No
		42S		Both	Yes	No
3.72TB Mainstream SAS	4kSFF3					

	22H	ESKS	MES	Yes	No
	22S		Both	Yes	No
	42H		MES	Yes	No
	42S		Both	Yes	No
3.72TB Mainstream SAS	4kSFF2				
	22H	ESKT	MES	Yes	No
	22S		Both	Yes	No
	42H		MES	Yes	No
	42S		Both	Yes	No
3.72TB Mainstream SAS	4kSFF3				
	42H	ESKU	MES	Yes	No
	42S		Both	Yes	No
3.72TB Mainstream SAS	4kSFF2				
	42H	ESKV	MES	Yes	No
	42S		Both	Yes	No
7.44TB Mainstream SAS	4kSFF3				
	22H	ESKW	MES	Yes	No
	22S		Both	Yes	No
	42H		MES	Yes	No
	42S		Both	Yes	No
7.44TB Mainstream SAS	4kSFF2				
	22H	ESKX	MES	Yes	No
	22S		Both	Yes	No
	42H		MES	Yes	No
	42S		Both	Yes	No
7.44TB Mainstream SAS	4kSFF3				
	42H	ESKY	MES	Yes	No
	42S		Both	Yes	No
7.44TB Mainstream SAS	4kSFF2				
	42H	ESKZ	MES	Yes	No
	42S		Both	Yes	No

RP MES = Return parts, miscellaneous equipment specifications

CSU = Customer setup

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