IBM Power System S824 server delivers improved performance and unmatched price/performance value for integrated Linux applications

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At a glance

The IBM® Power® S824 (8286-42A) server is a powerful 2-socket server that ships with up to 24 activated cores and I/O configuration flexibility to meet today's growth and tomorrow's processing needs. The server features:

- The following fully activated IBM POWER8™ dual-chip module (DCM) processor configurations in a 4U rack-mount form factor:
  - 6-core or 12-core 3.89 GHz
  - 8-core or 16-core 4.15 GHz
  - 24-core 3.52 GHz
- High-performance 1600 Mbps DDR3 ECC memory
  - 16 GB (#EM8B), 32 GB (#EM8C), or 64 GB (#EM8D) memory features
  - Up to 1 TB memory with two Power Systems™ processor DCMs
  - Up to 512 GB memory with one Power Systems processor DCM
- Choice of storage features:
  - Twelve SFF-3 Bays/DVD Bay
  - Eighteen SFF-3 Bays/ eight 1.8-inch SSD bays/DVD Bay/Dual IOA with Write Cache
  - Split feature to 6+6 SFF-3 Bays: Add a second SAS Controller
- Hot-swap PCIe Gen 3 Slots
- Integrated:
  - Service processor
  - EnergyScale™ technology
  - Hot-swap and redundant cooling
  - Four USB 3.0 ports for general use
  - Two USB 2.0 ports for non-general use
  - Two HMC 1GbE RJ45 ports
  - One system port with RJ45 connector
- Four hot plug, redundant power supplies
- 19-inch rack-mount hardware (4U)

For ordering, contact your IBM representative, an IBM Business Partner, or IBM Americas Call Centers at 800-IBM-CALL (Reference: YE001).

Overview

The new IBM Power S824 server is designed to put data to work. With a strong commitment to optimizing AIX® and IBM i workloads, these new systems deliver improved performance compared to the prior generation of systems and additionally offer unmatched price/performance value for integrated Linux™ applications.

IBM Power Systems based 1-socket and 2-socket servers provide the ideal foundation for private and public cloud infrastructure. The new Power S824 server, based on POWER8 processors, delivers superior throughput compared to Intel™ based offerings for comparable workloads and provides superior economics for scale-out deployments. For customers looking to deploy advanced analytics, Power can now deliver superior response time for sorting and querying unstructured big data sets and can deliver a superior number of business reports per hour for typical business analytics over competing solutions. For Java™ workloads, the new systems deliver unprecedented performance. Other scenarios for use of the Power S824 include:

- Consolidating of UNIX™, IBM i, and Linux workloads
- Running analytics and small to midsize database applications on the same server
- Gaining faster insights with the POWER8 processor and smart acceleration enabled by Coherent Accelerator Processor Interface (CAPI) technologies
- Reducing energy consumption by utilizing advanced energy control

The Power S824 server (8286-42A) supports two processor sockets, offering 6-core or 12-core 3.89 GHz, 8-core or 16-core 4.15 GHz, or 24-core 3.52 GHz configurations in a 19-inch rack-mount, 4U (EIA units) drawer configuration. All the cores are active.

The Power S824 server supports a maximum of 16 DDR3 CDIMM slots. Memory supported are 16 GB, 32 GB, and 64 GB and run at speeds of 1600 Mbps, allowing for a maximum system memory of 1024 GB.

- Rich I/O options in the system unit include:
  - Four PCIe G3 x16 full-height, full-length slots (one CAPI controller per socket at direct PCIe x16 slot from each socket)
  - Six PCIe G3 x8 full-height, half-length slots (1 of 4 PCIe G3 x8 LP slots will not be available if the high-function RAID controller installed.)
  - Eighteen 2.5-in. HDD SFF bays and eight 1.8-in. SSDs
  - RAID 0, 5, 6, 10, 5T2, 6T2, and 10T2 support
  - One DVD
  - One PCIe G3 x8 slot for 1GbE 4-port LAN controller integrated
- Two front and two rear USB 3.0 ports; one rear system port
- Service processor
- 2+2 Redundant hot-swap ac power supplies in each enclosure
- 19-inch rack-mount 4U configuration
- PowerVM®
- Red Hat Enterprise Linux (RHEL) 6.5, or later; SUSE Linux Enterprise Server (SLES) 11 Service Pack 3, or later; AIX 6.1, 7.1, or later; or IBM i 7.1, 7.2, or later, operating system support

Key prerequisites

- Red Hat Enterprise Linux 6.5, or later
- SUSE Linux Enterprise Server 11 Service Pack 3, or later
- AIX 6.1, 7.1, or later
- IBM i 7.1, 7.2, or later

Refer to the Hardware requirements section and Software requirements section for details.

Planned availability date

- June 10, 2014, for all features except ESDS, ELSS, ESDU, ELSU, and EJ12
- July 25, 2014, for the following features:
  - ESDS (283 GB 10k RPM SAS SFF-3 Disk Drive (IBM i))
  - ELSS (#ESDS Load Source Specify (283 GB 10k SAS SFF3 for IBM i))
  - ESDU (139 GB 15k RPM SAS SFF-3 Disk Drive (IBM i))
  - ELSU (#ESDU Load Source Specify (139 GB 15k SAS SFF3 for IBM i))
  - EJ12 (PCIe3 FPGA Accelerator Adapter)

Note: Feature EJ0N is required to be combined with feature EJ0S (Split #EJ0N to 6+6 SFF-3 Bays: Adds Second SAS Controller).

Description

Summary of standard features for Power S824:

- Power Systems server built with POWER8 processor modules
  - 6-core or 12-core 3.89 GHz
  - 8-core or 16-core 4.15 GHz
  - 24-core 3.52 GHz
- High-performance 1600 Mbps DDR3 ECC memory
  - 16 GB (#EM8B), 32 GB (#EM8C), or 64 GB (#EM8D) memory features
  - Up to 1 TB memory with two Power System processor DCMs
  - Up to 512 GB memory with one Power System processor DCM
- Choice of two storage features
  - Choice one: twelve SFF bays, one DVD bay, one integrated SAS controller without cache, and JBOD, RAID 0, 5, 6, or 10
    - -- Optionally, split the above SFF bays and add a second integrated SAS controller without cache.
  - Choice two: eighteen SFF bays; one DVD bay, a pair of integrated SAS controllers with cache, RAID 0, 5, 6, 10, 5T2, 6T2, and 10T2; and a 8-bay 1.8-inch SSD cage
    - -- Optionally, attach an EXP24S SAS HDD/SSD Expansion Drawer to the dual IOA.
- Hot-swap PCIe Gen 3 Slots
  - Eleven[1] slots with two Power Systems processor DCMs: four x16 slots and seven[2] x8 slots
  - Seven[1] slots with one Power Systems processor DCM: two x16 slots and five[2] x8 slots
- Integrated:

  - Service processor
  - EnergyScale technology
  - Hot-swap and redundant cooling
  - Four USB 3.0 ports for general use
  - Two USB 2.0 ports for non-general use
  - Two HMC 1GbE RJ45 ports
  - One system port with RJ45 connector
- Four hot plug, redundant power supplies
- 19-inch rack-mount hardware (4U)

[1] One fewer PCIe slot is available with the dual IOA storage backplane feature EJ0U.

[2] One x8 PCIe slot is used for integrated LAN adapter.

PowerVM

IBM PowerVM, which delivers industrial-strength virtualization for IBM AIX, IBM i, and Linux environments on IBM POWER® processor-based systems, has been enhanced with 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.

Capacity backup

The Power S824 server's 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/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 along with the proposed primary and the configuration is approved, you can temporarily move your optional IBM i processor license entitlement and IBM i enterprise enablement (#5250) 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.

Before you can temporarily transfer 5250 entitlements, you must have more than one 5250 Enterprise Enablement entitlement on the primary server and at least one 5250 Enterprise Enablement entitlement on the CBU system. You can then transfer the entitlements that are not required on the primary server during the time of transfer and that are above the minimum of one entitlement. The minimum number of permanent entitlements on the CBU is one however you are required license all permanent workload such as replication workload. If for example, the replication workload consumes four processor cores at peak workload, then you are required to permanently license four cores on the CBU.

For example, if you have a 12-core Power 740 as your primary system with six IBM i processor license entitlements (five above the minimum) and two 5250 Enterprise Enablement entitlements (one above the minimum), you can temporarily transfer up to five IBM i entitlements and one 5250 Enterprise Enablement entitlement. During the temporary transfer, the CBU system's internal records of its total number of IBM i processor entitlements are not updated, and you may see IBM i license noncompliance warning messages from the CBU system.

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 5250 enterprise enablement 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.

The servers with P20 or higher software tiers do not have user entitlements that can be transferred, and only processor license entitlements can be transferred.

- 760 (9109-RMD)
- 770 (9117-MMB)
- 770 (9117-MMC)
- 770 (9117-MMD)
- 750 (8408-E8D)
- 740 (8205-E6B)
- 740 (8205-E6C)
- 740 (8205-E6D)
- 750 (8233-E8B)
- 730 (8231-E2D)
- S824 (8286-42A)

Power S824 system configuration

The minimum Power S824 initial order must include a processor module, 32 GB of memory, a storage backplane, one HDD or SSD DASD device, a PCIe2 4-port 1GbE controller, four power supplies and line cords, an operating system indicator, a cover set indicator, and a Language Group Specify.

The minimum defined initial order configuration, if no choice is made, when AIX or Linux is the primary operating system, is as follows:

Feature number	Description
EPXE	6-core 3.89 GHz POWER8 Processor module
EPYE	Processor core entitlement activations for EPYE to equal total processor cores ordered
EM8B x 2	16 GB DDR3 Memory
EJ0N	Storage Backplane: 12 SFF-3 Bays and DVD Bay, JBOD, RAID 0, 5, 6, 10
ESDT x 1	146 GB 15k RPM SAS SFF-3 Disk Drive for AIX/Linux
EB2L x 4	CEC AC Power Supply - 900W
5899 x 1	PCIe2 4-port 1GbE Adapter
6458 x 4	Power Cord 4.3m (14-ft), Drawer to Wall/IBM PDU (250V/10A)
9300/97xx	Language Group Specify
EJTC	Front Bezel for 12-Bay BackPlane
2146	Primary Operating System Indicator - AIX
2147	Primary Operating System Indicator - Linux

Notes :

- The racking approach for the initial order must be either a 7014-T00, 7014-T42, 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.
- No internal HDD or SSD is required if feature 0837 (Boot from SAN) is selected. A Fibre Channel adapter must be ordered if feature 0837 is selected.
- Feature EJ0N is required to be combined with feature EJ0S.
- AIX is small tier licensing

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

Feature number	Description
EPXE	6-core 3.89 GHz POWER8 Processor card
EPYE	Processor core entitlement activations for EPYE to equal total processor cores ordered
EM8B x 2	16 GB DDR3 Memory
EJ0N	Storage Backplane: 12 SFF-3 Bays and DVD Bay, JBOD, RAID 0, 5, 6, 10
ESDU x 2	139 GB 15k RPM SAS SFF-3 Disk Drive for IBM i
EB2L x 4	CEC AC Power Supply - 900W
5899 x 1	PCIe2 4-port 1GbE Adapter
6458 x 4	Power Cord 4.3m (14-ft), Drawer to Wall/IBM PDU (250V/10A)
9300/97xx	Language Group Specify
EJTC	Front Bezel for 12-Bay BackPlane
2145	Primary Operating System Indicator - IBM i
0040	Mirrored System Disk Level Specify Code
0567 or EB72	IBM i 7.1 indicator or IBM i 7.2 indicator
5550 or 5557	System Console on HMC Indicator or System Console-Ethernet No IOP

Notes :

- The racking approach for the initial order must be either a 7014-T00, 7014-T42, 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.
- No internal HDD or SSD is required if feature 0837 (Boot from SAN) is selected. A Fibre Channel adapter must be ordered if feature 0837 is selected.
- When IBM i is the primary operating system (#2145), a DVD device is not required to be ordered. A DVD device will be needed for normal system operations, but not required on all systems.
- Feature EJ0N is required to be combined with feature EJ0S.
- IBM i operating system performance: Clients with write-sensitive disk/HDD workloads should upgrade from the EJ0N backplane to the EJ0P backplane to gain the performance advantage of write cache.
- IBM i is tier 20 licensing, which does not have user based licensing and includes the 5250 features.

Processor modules

- A minimum of one processor is required on an order with six, eight, or twelve processor cores on the processor. A maximum of two processors is allowed on an order. A quantity of one or two of the processor features EPXE, EPXF, or EPXH can be ordered.
- All processor cores must be activated. The following defines the allowed quantities of processor activation entitlements:
  - One 6-core, 3.89 GHz processor (#EPXE) requires that six processor activation codes be ordered. A maximum of six processor activation code feature EPYE is required.

- Two 6-core, 3.89 GHz processors (#EPXE) require that twelve processor activation codes be ordered. A maximum of twelve processor activation code feature EPYE is required.
- One 8-core, 4.15 GHz processor (#EPXF) requires that eight processor activation codes be ordered. A maximum of eight processor activation code feature EPYE is required.
- Two 8-core, 4.15 GHz processors (#EPXF) require that sixteen processor activation codes be ordered. A maximum of sixteen processor activation code feature EPYE is required.
- Two 12-core, 3.52 GHz processor (#EPXH) requires that twenty-four processor activation codes be ordered. A maximum of twenty-four processor activation code feature EPYE is required.

System memory

- A minimum 32 GB of memory is required on the Power S824 system.
- Memory is required to be ordered in pairs. Base memory is two 16 GB, 1600 Mbps DDR3 memory modules (#EM8B).

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.

Memory features

Feature	Feature number	Minimum DIMM quantity	Maximum DIMM quantity
16 GB 1600 Mbps	EM8B	0	16
32 GB 1600 Mbps	EM8C	0	16
64 GB 1600 Mbps	EM8D	0	16

Power supply

Four power supplies: 2+2 900 Watt 100-127 V ac or 200-240 V ac options (4 x #EB2L)

Redundant fans

Redundant fans are standard.

Power cords

Four power cords are required. A maximum of four feature 6458 cords are allowed on the system unless a valid I/O drawer or tower is attached to the system. The Power S824 supports power cord 4.3m (14-ft), Drawer to Wall/IBM PDU (250V/10A) in the base shipment group. Refer to the feature listing for other options.

I/O support

PCIe slots

The Power S824 has up to 11 PCIe hot plug Gen 3 slots, providing excellent configuration flexibility and expandability. For even more PCIe slots, see the Statement of general direction section for an I/O drawer with PCIe slots.

With two POWER8 processor DCMs, 11 PCIe Gen 3 slots are available. Four are x16 full-height and full-length slots. Seven are x8 Gen 3 full-height, half-length slots.

With one POWER8 processor DCM, seven PCIe Gen 3 slots are available. Two are x16 full-height and full-length slots. Five are x8 Gen 3 full-height, half-length slots.

Four other PCIe slots are physically present, but are not available for use until a second processor DCM is installed.

The x16 slots can provide up to twice the bandwidth of x8 slots because they offer twice as many PCIe lanes. PCIe Gen 3 slots can support up to twice the bandwidth of a PCIe Gen 2 slot and up to four times the bandwidth of a PCIe Gen 1 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, identified as the C10 slot.

The new servers are smarter about energy efficiency for 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. In contrast, POWER7® servers required the user to enter a "non-acoustic mode" command to speed up the fans. Note that faster fans increase the sound level of the server. Higher wattage PCIe adapters include the PCIe3 SAS adapters, PCIe2 SAS adapters, and SSD/flash PCIe adapters (#EJ0J, #EJ0M, #EL3B, #EJ0L, #ESA1, #ESA2, #ESA3, and #5913).

IBM is also introducing a gzip acceleration adapter (#EJ12). This PCIe adapter incorporates the latest in FPGA technology to provide significant performance improvements for customers running workloads such as IBM WebSphere®, which require frequent gzip compressions and decompressions. Customers running Java workloads using java/util/gzip will also see impressive performance improvements. This feature is particularly effective for workloads requiring transfer of large buffers. Utilizing this adapter can reduce both storage requirements and network congestion in a customer's environment. This feature is only supported in AIX.

SAS bays and storage backplane options

Three backplane options provide a great deal of flexibility and capability. One of these three must be configured:

- Storage Backplane 12 SFF-3 Bays/DVD Bay (#EJ0N)
- Features EJ0N and EJ0S (split backplane)
- Storage Backplane 18 SFF-3 Bays/eight 1.8-inch SSD bays/DVD Bay/Dual IOA with Write Cache and Easy Tier® functionality (#EJ0P)

Each of the three backplane options provides 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 Gen 3 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.

Each of the three backplane options uses 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 industry-leading RAID 5 and RAID 6 performance levels, especially for SSD. Internally, 13 (no cache) or 16 (with cache) 6Gb SAS ports are implemented and provide plenty of bandwidth. Similar SAS RAID technology was first introduced with the PCIe Gen 3 SAS controllers, features EJ0J and EJ0L. The integrated SAS controllers are placed in dedicated slots and do not reduce the number of available PCIe slots.

The feature EJ0N storage backplane option provides twelve SFF-3 bays, one SAS controller with zero write cache, and a DVD drive bay.

By optionally adding the feature EJ0S split backplane feature, 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.

The feature EJ0P storage backplane option has expanded function compared to the feature EJ0N backplane. Feature EJ0P provides eighteen SSF-3 bays; a pair

of integrated SAS controllers, each with 1.8 GB physical (effectively up to 7.2 GB with compression) write cache; a DVD bay; two SAS ports enabled for attaching an external feature 5887 EXP24S Disk Drawer; an eight-bay, 1.8-inch SSD Cage; and Easy Tier functionality. The SAS ports are indicated by the EJ0Z feature and must be ordered with feature EJ0P. The SAS ports are physically mounted on the rear of the server and use up one PCIe x8 slot. The SSD cage is indicated by feature EJTM feature and must also be ordered with feature EJ0P.

The dual SAS controllers provide both performance and protection advantages. Patented Active-Active capabilities enhance performance when there is more than one array configured. Each of the dual controllers has access to all the backplane SAS bays and can back up the other controller if there were to be a problem with the other controller. Each controller mirrors the other's write cache, providing redundancy protection. Integrated flash memory for the write cache content provides protection against electrical power loss to the server and avoids the need for write cache battery protection and battery maintenance.

All three of these backplane options support HDDs or SSDs or a mixture of HDDs and SSDs in the SFF-3 bays. If mixing HDDs and SSDs, they must be in separate arrays (unless using Easy Tier function).

All three of these backplane options 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. The high-performance, expanded-function dual-IOA backplane also proves Easy Tier functionality, which is also called RAID 5T2 (2-tiered RAID 5), RAID 6T2 (2-tiered RAID 6), and RAID 10T2 (2-tiered RAID 10).

Note: I/O performance-sensitive workloads with an appreciable percentage of writes should strongly consider using the feature EJ0P backplane with SAS controllers with write cache or use PCIe SAS controllers with write cache, especially for HDD. Note also that RAID 5 and RAID 6 result in more drive write activity than mirroring or than unprotected drives.

All three of these backplane options are supported by AIX, IBM i, Linux, and VIOS. If used by IBM i, to be a supported configuration, the drives must be protected by methods such as RAID 5, RAID 6, or mirroring. If used by AIX, Linux, or VIOS, it is highly recommended that the drives be protected, but not required.

If the client needs a change after the server is already installed, the backplane option can be changed. For example, the feature EJ0S split backplane can be added to an existing feature EJ0N backplane. Or the feature EJ0N can be removed and replaced by the expanded-function dual IOA feature EJ0P backplane. Or a feature EJ0P backplane could be replaced by a feature EJ0N and EJ0S 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.

SSD cage

In addition to supporting HDDs and SSDs in the SFF-3 SAS bays, the expanded-function feature EJ0P supports a mandatory 8-bay, 1.8-inch SSD Cage (#EJTM). All eight bays are accessed by both of the integrated SAS controllers. The bays support concurrent maintenance (hot plug). SSD 1.8-inch drives such as the 387 GB capacity feature ES16 or ES17 are supported.

DVD drive bay

Included in the feature EJ0N or EJ0P backplanes is a slimline media bay that can optionally house a SATA DVD-RAM (#5771). The DVD drive is run by the integrated SAS controllers, and a separate PCIe controller is not required.

Storage Backplane Integrated Easy Tier function

The Easy Tier function is provided with the dual IOA, high-performance storage backplane (#EJ0P). Conceptually, this function is like the Easy Tier function found in the IBM Storage products such as the DS8000®, Storwize® V7000, or SVC, but implemented just within the integrated Power Systems SAS controllers, the integrated SAS bays, and, optionally, an EXP24S I/O drawer. Hot data is automatically moved to SSDs, and cold data is automatically moved to disk (HDD) in an AIX, Linux, or VIOS environment. No user application coding is required.

Clients commonly have this hot/cold characteristic for their data. It is typical for 10% - 20% of the data to be accessed 80% - 90% of the time. This is called the *hot data* . If you can get the hot data onto SSDs, it can dramatically improve the performance of I/O-bound applications. And by keeping the cold data on HDDs, the total cost per gigabyte of the solution can be minimized. You can end up with high I/O performance at a very reasonable price. By avoiding the need for lots of HDD arms for performance, you can reduce the number of I/O drawers, maintenance, rack/floor space, and energy.

On a 4U server, up to 26 internal HDD/SSD SAS bays, and, optionally, with the EXP24S drawer, an additional 24 SAS bays are supported with the integrated Easy Tier function. In addition or alternatively on 4U servers, the previously announced PCIe Gen 3 large cache SAS controllers (#EJOL) can provide additional capacity or configuration options for the Easy Tier function.

Easy Tier function is configured using RAID 5T2 (2-tiered RAID 5), RAID 6T2 (2-tiered RAID 6), or RAID 10T2 (2-tiered RAID 10). HDD and SSD are combined in the same array and the controller or adapter swaps 1M or 2M bands of data between HDD and SSD, automatically moving the hot data to SSD and the cold data to SSD. The HDD and SSD can be different capacities in this array. If an array has multiple capacity points, for example, 300 GB HDD and 600 GB HDD, only 300 GB of the larger 600 GB HDD will be used. Similarly, if the array has 387 GB SSD and 775 GB SSD, only 387 GB of the 775 GB will be used. Note that the block size of the drives in the array must match. All drives must be 5xx byte sectors or all must be 4k byte sectors.

Easy Tier function requires AIX V7.1 TL3 SP3, or later; AIX V6.1 TL9 SP3, or later; RHEL 6.5, or later; SLES 11 SP3, or later; or VIOS 2.2.3.3, or later.

I/O drawer attachment

The EXP24S SAS HDD/SSD Expansion Drawer (#5887) is attached to SAS ports on either a PCIe SAS adapter located in the server or to the SAS ports on the rear of the server. Two SAS ports on the rear of the server are enabled with the expanded-function storage backplane with dual IOA support.

- One feature 5887 EXP24S drawer in mode 1 can be attached to the two SAS ports on the rear of the server using two SAS YO cables such as feature ECBT, ECBU, ECBV, or ECBW. Either SSDs or HDDs can be placed in this drawer, but SSDs and HDDs cannot be mixed in this drawer.
- The feature 5887 EXP24S drawer can be attached to SAS ports of PCIe SAS adapters using SAS YO or X cables. Up to 14 EXP24S drawers can be attached. The specific SAS cables used will depend on the specific adapter selected and drawer mode selected. Either SSDs or HDDs can be placed in the drawer, depending on the capabilities of the adapter running the bays. Note that longer distance SAS cables are thicker and can fill the Cable Management Arm more quickly.

Clients migrating from earlier generation servers may have been using I/O drawers such as the GX++ attached feature 5802 or 5877 PCIe 12X I/O Drawers with PCIe Gen 1 slots. Though most PCIe adapters in the feature 5802 or 5877 drawers can be moved to this server, and its disk drives converted and moved to the feature 5887 EXP24S drawer, the feature 5802 and 5877 drawers are not supported on this newer Power Systems technology-based server. Similarly, the GX++ attached EXP30 Ultra SSD Drawer (#EDR1 or #5888) is not supported.

The older 3.5-inch-based feature 5886 EXP12S SAS Disk Drawer and feature 5786 EXP24 SCSI Disk Drawer are not supported.

IBM offers a 1U multimedia drawer that can hold one or more DVDs, tape drive, or RDX docking stations. The 7226-1U3 is the most current offering. The earlier 7216-1U2 and 7214-1U2 are also supported. Up to six of these multimedia drawers can be attached.

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 or 3 feet of cord/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 six USB ports. The two HMC ports are RJ45 supporting 1Gb 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 a 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.

Four USB-3 ports available for general client use and two USB-2 ports are available for limited client use. Two USB-3 ports are located on the front of the server, and the other four USB ports (two USB-3 and two USB-2) are on the rear. The USB-2 ports are on the service processor card and there primarily for IBM use; however, IBM i can use one of the USB-2 ports for communicating the status of a UPS (uninterruptible power supply). A converter cable, feature ECCF, provides a USB-to-9-pin D-Shell connection for this function. Connection to a serial port for this UPS communication function for IBM i is not supported.

Accessibility by people with disabilities

A US Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Section 508 of the US Rehabilitation Act

IBM Power S824 server is capable as of June 10, 2014, when used in accordance with associated IBM 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 requested at

http://www-03.ibm.com/able/product_accessibility/index.html

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.

In addition, a spare DRAM per rank on each memory port provides for dynamic DRAM device replacement during runtime operation. Also, dynamic lane sparing on the DMI link allows for repair of a faulty data lane.

Other memory protection features include retry capabilities for certain faults detected at both the memory controller and the memory buffer. Memory is also periodically scrubbed to allow for soft errors to be corrected and for solid single-cell errors reported to the hypervisor, which supports operating system deallocation of a page associated with a hard single-cell 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 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.

Availability enhancement functions

The Power Systems family continues to offer and introduce significant enhancements designed to increase system availability.

POWER8 processor functions

As in POWER6®, POWER7, and POWER7+™, the POWER8 processor has the ability to do processor instruction retry for some transient errors and alternate processor recovery for a number of core-related faults. This significantly reduces exposure to both hard (logic) and soft (transient) errors in the processor core. Soft failures in the processor core are transient (intermittent) errors, often due to cosmic rays or other sources of radiation, and generally are not repeatable. When an error is encountered in the core, the POWER8 processor will first automatically retry the instruction. If the source of the error was truly transient, the instruction will succeed and the system will continue as before. On IBM systems prior to POWER6, this error would have caused a checkstop.

Hard failures are more difficult, being true logical errors that will be replicated each time the instruction is repeated. Retrying the instruction will not help in this situation. As in POWER6, POWER7, and POWER7+ technology, processors have the ability to extract the failing instruction from the faulty core and retry it elsewhere in the system for a number of faults, after which the failing core is dynamically deconfigured and called out for replacement in the PowerVM environment. These features are designed to avoid a full system outage.

As in POWER6 and POWER7+, the POWER8 processor includes single processor check stopping for certain faults that cannot be handled by the availability enhancements described in the preceding section. This significantly reduces the probability of any one processor affecting total system availability.

Partition availability priority

Also available is the ability to assign availability priorities to partitions. In the PowerVM environment if an alternate processor recovery event requires spare processor resources in order to protect a workload, when no other means of obtaining the spare resources is available, the system will determine which partition has the lowest priority and attempt to claim the needed resource. On a properly configured POWER8 processor-based server, this allows that capacity to be first obtained from, for example, a test partition instead of a financial accounting system.

Cache availability

The L2 and L3 caches in the POWER8 processor and L4 cache 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 PowerVM environment. In addition, the L3 cache has the ability to dynamically substitute a spare bit-line for a faulty bit-lane, allowing an entire faulty "column" of cache, impacting multiple cache lines, to be repaired. An ECC uncorrectable error detected in these caches can also trigger a purge and delete of cache lines. This results in no loss of operation if the cache lines contained data unmodified from what was stored in system memory.

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.

Predictive failure and dynamic component deallocation

Servers with Power processors have long had the capability to perform predictive failure analysis on certain critical components such as processors and memory. When these components exhibit certain symptoms that may indicate a failure is imminent, the system can dynamically deallocate and call home, when enabled, about the failing part before the error is propagated system-wide. In many cases, the system will first attempt to reallocate resources in such a way that will avoid unplanned outages. In the event that insufficient resources exist to maintain full system availability, these servers will attempt to maintain partition availability by user-defined priority.

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 customer, an IBM representative, or an authorized warranty service provider.

The serviceability features delivered in this system 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)
- 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
  - 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). An HMC attached to the system allows support personnel (with client authorization) to remotely log in to review error logs and perform remote maintenance if required.

The POWER8 processor-based platforms support two main service environments:

- Attachment to one or more HMCs 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.
- No HMC. There are two service strategies 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.
  - Partitioned system with PowerVM : In this configuration, the system can have more than one partition and can be running more than one operating system. In this environment, partitions are managed by the Integrated Virtualization Manager (IVM), which provides some of the functions provided by the HMC.

Service interface

The service interface allows support personnel to communicate with the service support applications in a server using a console, an interface, or a terminal. Delivering a clear, concise view of available service applications, the service interface allows 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 with PowerVM
- Service Focal Point Lite on IVM 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 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.

Stand-alone diagnostics with PowerVM

As the name implies, stand-alone 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, hot plugging of PCIe adapters is supported with PowerVM. Concurrent maintenance of the Operator Panel is supported through ASMI.

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.

Packing for service

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

- Color coding (touch points): Terracotta-colored touch points indicate that a component (FRU/CRU) can be concurrently maintained. Blue-colored touch points delineate components that are not concurrently maintained -- those that require the system to be turned off for removal or repair.
- 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 OS to report platform recoverable errors and errors associated with PCI adapters/devices.

In the IVM environment, call home is supported through an IVM partition.

In the HMC managed environment, a call home service request will be initiated 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, Linux, 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 customer 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 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. Refer to 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 customers. 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 customer'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 customer and the IBM support team. As part of an increased focus to provide even better service to IBM customers, 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, go to the "Security" section at

http://www.ibm.com/support/esa

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

Benefits: increased uptime

Electronic Service Agent is designed to enhance the warranty and maintenance service by 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 customer personnel when errors are encountered in the middle of the night.

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

For additional information, refer to IBM Electronic Service Agent

http://www-01.ibm.com/support/esa/

More accurate reporting

Because system information and error logs are automatically uploaded to the IBM Support Center in conjunction with the service request, customers 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

Using the IBM ID entered during activation, customers 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 customers 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 customer's IBM ID. 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, customers 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, visit the following website or contact an IBM Systems Services Representative

http://www.ibm.com/support/electronic

Product positioning

IBM Power S824 server solutions and services, designed for midsized businesses, help your business capitalize on new opportunities, manage business risk while meeting high service levels, and keep within tight budget constraints.

Mobile

Worklight® on Power provides a mobile application platform to speed development and ongoing management of mobile applications, enabling our clients to extend their business to mobile devices. It includes a comprehensive development environment, mobile-optimized runtime middleware, a private enterprise application store, and an integrated management and analytics console. Worklight on Power enables clients to:

- Simplify operations and reduce complexity by co-locating applications on a more scalable and reliable server
- Streamline access to data and applications, with secure, high-performance virtual networking
- Grow seamlessly and accelerate deployment of new applications and services
- Reduce overhead by leveraging existing production and disaster recovery infrastructure

Analytics

IBM Power Analytics solutions give organizations with high volumes of data the building blocks they need to implement capabilities that enable them to quickly make data-driven business decisions. Each solution can be implemented separately or in combination to deliver a reliable and high-performance infrastructure for business intelligence (BI) and predictive analytics. The software is installed and configured on the server before being shipped, reducing the time and effort required to gain the benefits of the solution. These analytics solutions are available for any new POWER8 processor-based system:

- IBM Solution for Analytics Power Systems Edition
- IBM BLU Acceleration Power Systems Edition

IBM Solution for Analytics Power Systems Edition is a flexible, integrated solution that provides options to preload and configure one or more IBM analytics applications with data warehouse acceleration. IBM Solution for Analytics Power Systems Edition delivers Cognos® Business Intelligence capabilities on POWER8 processor-based servers running AIX or Linux. Cognos Business Intelligence is designed to help business users, executives, and analysts in an organization understand the business and make smarter decisions. The solution offers a full range of BI capabilities, including reports, analysis, dashboards, scorecards, mobile BI, and more.

IBM Solution for Analytics Power Systems Edition also delivers SPSS® predictive analytics combined with business rules capabilities on a Power server platform running AIX. SPSS Modeler, SPSS Collaboration and Deployment Services, and Analytical Decision Management help empower organizations to make the right decision each time for high-demand, mission-critical business requirements. This solution combines and integrates predictive analytics, rules, scoring, and optimization techniques into an organization's processes to deliver recommended actions at the point of impact.

BLU Acceleration Power Systems Edition is updated to deliver DB2® dynamic in-memory, columnar data warehouse acceleration on a POWER8 processor-based server running AIX. BLU Acceleration is an integral part of DB2 Advanced Workgroup Edition and Advanced Enterprise Edition, enabling organizations to use both row-based and columnar data storage simultaneously. With BLU Acceleration, organizations can dramatically reduce the time to get analytic query results and reports from existing data warehouses. Time and effort to set up analytics is reduced by eliminating the need for aggregates, indexes, tuning, and partitions. InfoSphere® DataStage® is also a preload option for providing extract, transform, and load (ETL) capabilities from an existing data warehouse to the BLU Acceleration warehouse. A separate purchase of the DB2 and InfoSphere software is required to meet license use requirements.

For details, refer to Software Announcement 114-057, dated April 28, 2014.

POWER8 I/O Planning Insights:

IBM plans to introduce an I/O drawer which will expand the number of PCIe Gen3/ Gen2 slots available on POWER8 processor-based Power Systems

FPGA CAPI Capability:

IBM plans to enable Coherent Accelerator Processor Interface (CAPI) technology capabilities for all POWER8 processor-based Power Systems using industry standard accelerator technologies as a priced feature. IBM intends to build solutions with its partners in order to further increase performance through faster computational efficiency and by requiring fewer resources to accomplish tasks through direct integration of workload accelerator(s) in the system.

IBM intends to continue working with Red Hat to support the Power S822, Power S814, Power S824, Power S822L, and Power S812L servers with an upcoming Red Hat Enterprise Linux 7 release. For additional questions about the availability of this release and supported Power servers, consult the Red Hat Hardware Catalog at

https://hardware.redhat.com

IBM intends to continue working with SUSE to support the Power S822, Power S814, Power S824, Power S822L, and Power S812L servers with an upcoming SUSE Linux Enterprise Server V12 release. For additional questions about the availability of this release and supported Power servers, consult

https://www.suse.com/

Enterprise Power :

IBM plans to bring POWER8 capability to the full Power Systems portfolio, with the intent to deliver the most scalable, highest performing enterprise-class Power System with an advanced version of the POWER8 processor. These enterprise systems are designed to deliver the industry's best per-core performance and will support AIX, Linux and IBM i applications, concurrently. The new system architecture incorporates the resiliency characteristics of IBM's Power 795 with the intent to drive substantial improvements in energy efficiency and floor space utilization for mid-sized and large enterprises. These systems will use IBM's modular design to enable clients to leverage the innovations in POWER8 processor technology and the latest advancements in enterprise-class systems and Capacity on Demand, to help enable growth seamlessly and affordably.

IBM also plans to provide upgrade paths from the current POWER7+ Power 770 and 780 servers to enterprise-class POWER8 processor-based servers. It is intended that clients with multiple systems can leverage PowerVM Live Partition Mobility to help maintain application availability during the upgrade process.

IBM plans to preserve client investment in Power Systems by enabling POWER8 processor-based Power Systems to interoperate and share Mobile Capacity on Demand (COD) resources with POWER7 and POWER7+ processor-based Power Systems servers in a single Power Enterprise Pool, at no additional charge. IBM also plans to offer clients an option to permanently transfer their Mobile CoD processor and memory activation features from a Power 770, 780 or 795 to a designated POWER8 processor-based Power System within the same Power Enterprise Pool.

Standard Red Hat Disclaimer

Information concerning Red Hat Enterprise Linux was obtained from Red Hat. Questions concerning Red Hat Enterprise Linux should be directed to Red Hat, as Red Hat Enterprise Linux is not an IBM product. Red Hat Enterprise Linux is sold or licensed, as the case may be, to users under Red Hat's terms and conditions. Availability and support is the responsibility of Red Hat. IBM IS NOT LIABLE

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IBM's statements regarding its plans, directions, and intent are subject to change or withdrawal without notice at IBM's sole discretion. Information regarding potential future products is intended to outline our general product direction and it should not be relied on in making a purchasing decision. The information mentioned regarding potential future products is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. Information about potential future products may not be incorporated into any contract. The development, release, and timing of any future features or functionality described for our products remains at our sole discretion.

Product number

The following are newly announced features on the specific models of the IBM Power Systems 8286 machine type:

Description	Machine type	Model	Feature number
IBM Power System S824	8286	42A	
One CSC Billing Unit	8286	42A	0010
Ten CSC Billing Units	8286	42A	0011
Mirrored System Disk Level, Specify Code	8286	42A	0040
Device Parity Protection-All, Specify Code	8286	42A	0041
Mirrored System Bus Level, Specify Code	8286	42A	0043
Device Parity RAID-6 All, Specify Code	8286	42A	0047
RISC-to-RISC Data Migration	8286	42A	0205
AIX Partition Specify	8286	42A	0265
Linux Partition Specify	8286	42A	0266
IBM i Operating System Partition Specify	8286	42A	0267
Specify Custom Data Protection	8286	42A	0296
Mirrored Level System Specify Code	8286	42A	0308

RAID Hot Spare Specify	8286	42A	0347
V.24/EIA232 6.1m (20-Ft) PCI Cable	8286	42A	0348
V.35 6.1m (20-Ft) PCI Cable	8286	42A	0353
X.21 6.1m (20-Ft) PCI Cable	8286	42A	0359
CBU Specify	8286	42A	0444
Customer Specified Placement	8286	42A	0456
SSD Placement Indicator - 5887, EL1S	8286	42A	0465
19 inch, 1.8 meter high rack	8286	42A	0551
19 inch, 2.0 meter high rack	8286	42A	0553
IBM i 7.1 Specify Code	8286	42A	0567
Rack Filler Panel Kit	8286	42A	0599
Load Source Not in CEC	8286	42A	0719
Specify #5887 or #EL1S Load Source placement	8286	42A	0728
SAN Load Source Specify	8286	42A	0837
#1947 Load Source Specify (139GB 15k RPM SAS SFF-2 Disk Drive for IBM i)	8286	42A	0871
#1948 Load Source Specify (283GB 15k RPM SAS SFF-2 Disk)	8286	42A	0872
#1956 Load Source Specify (283GB 10k RPM SAS SFF-2 Disk)	8286	42A	0874
#1962 Load Source Specify (571GB 10k RPM SAS SFF-2 Disk)	8286	42A	0875
#1738 Load Source Specify (856GB 10k RPM SAS SFF-2 Disk)	8286	42A	0880
#ES0D Load Source Specify (387GB SFF-2 SSD for IBM i)	8286	42A	0894
#ESD2 Load Source Specify (1.1TB 10k SFF-2)	8286	42A	0911
US TAA Compliance Indicator	8286	42A	0983
Modem Cable - US/Canada and General Use	8286	42A	1025
USB 500 GB Removable Disk Drive	8286	42A	1107
Custom Service Specify, Rochester Minn, USA	8286	42A	1140
900GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8286	42A	1752
Quantity 150 of #1962	8286	42A	1817
Quantity 150 of #1964	8286	42A	1818
Quantity 150 of #1956	8286	42A	1844
Quantity 150 of #1917	8286	42A	1866
Quantity 150 of #1947	8286	42A	1868
Quantity 150 of #1925	8286	42A	1869
146GB 15k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8286	42A	1917
300GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8286	42A	1925
Quantity 150 of #1948	8286	42A	1927
Quantity 150 of #1953	8286	42A	1929
139GB 15k RPM SAS SFF-2 Disk Drive (IBM i)	8286	42A	1947
283GB 15k RPM SAS SFF-2 Disk Drive (IBM i)	8286	42A	1948
300GB 15k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8286	42A	1953
283GB 10k RPM SAS SFF-2 Disk Drive (IBM i)	8286	42A	1956
571GB 10k RPM SAS SFF-2 Disk Drive (IBM i)	8286	42A	1962
600GB 10k RPM SAS SFF-2 Disk Drive (AIX/Linux)	8286	42A	1964
Primary OS - IBM i	8286	42A	2145
Primary OS - AIX	8286	42A	2146
Primary OS - Linux	8286	42A	2147
Factory Deconfiguration of 1-core	8286	42A	2319
2M LC-SC 50 Micron Fiber Converter Cable	8286	42A	2456
2M LC-SC 62.5 Micron Fiber Converter Cable	8286	42A	2459
PCIe 2-Line WAN w/Modem	8286	42A	2893
3M Asynchronous Terminal/Printer Cable EIA-232	8286	42A	2934
Asynchronous Cable EIA-232/V.24 3M	8286	42A	2936
Serial-to-Serial Port Cable for Drawer/Drawer-3.7M	8286	42A	3124
Serial-to-Serial Port Cable for Rack/Rack- 8M	8286	42A	3125
1m, (3.3-ft) IB 40G Copper Cable QSFP/QSFP	8286	42A	3287
3m, (9.8-ft.) IB 40G Copper Cable QSFP/QSFP	8286	42A	3288
5m QDR IB/E'Net Copper Cable QSFP/QSFP	8286	42A	3289
10 meter Quad Data Rate InfiniBand Optical Cable, QSFP/QSFP	8286	42A	3290
30 meter Quad Data Rate InfiniBand Optical Cable, QSFP/QSFP	8286	42A	3293
Widescreen LCD Monitor	8286	42A	3632
SAS Cable (X) Adapter to SAS Enclosure, Dual			

Controller/Dual Path 3M:	8286	42A	3661	
SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 6M:	8286	42A	3662	
SAS Cable (X) Adapter to SAS Enclosure, Dual Controller/Dual Path 15M:	8286	42A	3663	
3M SAS CABLE, ADPTR TO ADPTR (AA)	8286	42A	3681	
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 1.5 M	8286	42A	3691	
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 3 M	8286	42A	3692	
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 6 M	8286	42A	3693	
SAS Cable (YO) Adapter to SAS Enclosure, Single Controller/Dual Path 15 M	8286	42A	3694	
0.3M Serial Port Converter Cable, 9-Pin to 25-Pin	8286	42A	3925	
Serial Port Null Modem Cable, 9-pin to 9-pin, 3.7M	8286	42A	3927	
Serial Port Null Modem Cable, 9-pin to 9-pin, 10M	8286	42A	3928	
System Serial Port Converter Cable	8286	42A	3930	
1.8 M (6-ft) Extender Cable for Displays (15-pin D-shell to 15-pin D-shell)	8286	42A	4242	
Extender Cable - USB Keyboards, 1.8M	8286	42A	4256	
VGA to DVI Connection Converter	8286	42A	4276	
Rack Integration Services: BP only	8286	42A	4648	
Rack Integration Services	8286	42A	4649	
Rack Indicator- Not Factory Integrated	8286	42A	4650	
Rack Indicator, Rack #1	8286	42A	4651	
Rack Indicator, Rack #2	8286	42A	4652	
Rack Indicator, Rack #3	8286	42A	4653	
Rack Indicator, Rack #4	8286	42A	4654	
Rack Indicator, Rack #5	8286	42A	4655	
Rack Indicator, Rack #6	8286	42A	4656	
Rack Indicator, Rack #7	8286	42A	4657	
Rack Indicator, Rack #8	8286	42A	4658	
Rack Indicator, Rack #9	8286	42A	4659	
Rack Indicator, Rack #10	8286	42A	4660	
Rack Indicator, Rack #11	8286	42A	4661	
Rack Indicator, Rack #12	8286	42A	4662	
Rack Indicator, Rack #13	8286	42A	4663	
Rack Indicator, Rack #14	8286	42A	4664	
Rack Indicator, Rack #15	8286	42A	4665	
Rack Indicator, Rack #16	8286	42A	4666	
Power Active Memory™ Expansion Enablement	8286	42A	4794	
PCIe Crypto Coprocessor No BSC 4765-001	8286	42A	4807	
One Processor of 5250 Enterprise Enablement	8286	42A	4970	
Full 5250 Enterprise Enablement	8286	42A	4974	
Software Preload Required	8286	42A	5000	
PowerVM Standard Edition	8286	42A	5227	
PowerVM Enterprise Edition	8286	42A	5228	
PCIe2 2-Port 4X IB QDR Adapter 40Gb	8286	42A	5285	
PCIe2 2-port 10GbE SR Adapter	8286	42A	5287	
2 Port Async EIA-232 PCIe Adapter	8286	42A	5289	(No Longer Available)
Sys Console On HMC	8286	42A	5550	
System Console-Ethernet No IOP	8286	42A	5557	
PCIe2 8Gb 4-port Fibre Channel Adapter	8286	42A	5729	
8 Gigabit PCI Express® Dual Port Fibre Channel Adapter	8286	42A	5735	
PCIe2 4-Port 10GbE&1GbE SR&RJ45 Adapter	8286	42A	5744	
POWER GXT145 PCI Express Graphics Accelerator	8286	42A	5748	
SATA Slimline DVD-RAM Drive	8286	42A	5771	
10 Gigabit Ethernet-LR PCI Express Adapter	8286	42A	5772	
EXP24S SFF Gen2-bay Drawer	8286	42A	5887	
PCIe2 4-port 1GbE Adapter	8286	42A	5899	
PCIe Dual-x4 SAS Adapter	8286	42A	5901	
SAS AA Cable 3m - HD 6Gb Adapter to Adapter	8286	42A	5915	
SAS AA Cable 6m - HD 6Gb Adapter to Adapter	8286	42A	5916	
SAS AA Cable 1.5m - HD 6Gb Adapter to Adapter	8286	42A	5917	
SAS AA Cable 0.6m - HD 6Gb Adapter to Adapter	8286	42A	5918	
Opt Front Door for 1.8m Rack	8286	42A	6068	
Opt Front Door for 2.0m Rack	8286	42A	6069	
1.8m Rack Acoustic Doors	8286	42A	6248	
2.0m Rack Acoustic Doors	8286	42A	6249	
1.8m Rack Trim Kit	8286	42A	6263	

2.0m Rack Trim Kit	8286	42A	6272
Power Cord 4.3m (14-ft), Drawer to Wall/IBM PDU (250V/10A)	8286	42A	6458
Power Cord 4.3m (14-ft), Drawer To OEM PDU (125V, 15A)	8286	42A	6460
Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (250V/15A) U. S.	8286	42A	6469
Power Cord 1.8m (6-ft), Drawer to Wall (125V/15A)	8286	42A	6470
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (125V/15A)	8286	42A	6471
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/16A)	8286	42A	6472
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU (250V/10A)	8286	42A	6473
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/13A)	8286	42A	6474
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/16A)	8286	42A	6475
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)	8286	42A	6476
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/16A)	8286	42A	6477
Power Cord 2.7 M(9-foot), To Wall/OEM PDU, (250V, 16A)	8286	42A	6478
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (125V/15A or 250V/10A)	8286	42A	6488
4.3m (14-Ft) 3PH/24A 380-415V Power Cord	8286	42A	6489
4.3m (14-Ft) 1PH/48A 200-240V Power Cord	8286	42A	6491
4.3m (14-Ft) 1PH/48-60A 200-240V Power Cord	8286	42A	6492
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)	8286	42A	6493
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)	8286	42A	6494
Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 10A)	8286	42A	6496
Power Cable - Drawer to IBM PDU, 200-240V/10A	8286	42A	6577
Optional Rack Security Kit	8286	42A	6580
Modem Tray for 19-Inch Rack	8286	42A	6586
Power Cord 2.7M (9-foot), To Wall/OEM PDU, (125V, 15A)	8286	42A	6651
4.3m (14-Ft) 3PH/16A 380-415V Power Cord	8286	42A	6653
4.3m (14-Ft) 1PH/24-30A Pwr Cord	8286	42A	6654
4.3m (14-Ft) 1PH/24-30A WR Pwr Cord	8286	42A	6655
4.3m (14-Ft)1PH/24A Power Cord	8286	42A	6656
4.3m (14-Ft) 1PH/24A Power Cord	8286	42A	6657
4.3m (14-Ft) 1PH/24A Pwr Cd-Korea	8286	42A	6658
Power Cord 2.7M (9-foot), To Wall/OEM PDU, (250V, 15A)	8286	42A	6659
Power Cord 4.3m (14-ft), Drawer to Wall/OEM PDU (125V/15A)	8286	42A	6660
Power Cord 2.8m (9.2-ft), Drawer to Wall/IBM PDU, (250V/10A)	8286	42A	6665
4.3m (14-Ft) 3PH/32A 380-415V Power Cord-Australia	8286	42A	6667
Power Cord 4.3M (14-foot), Drawer to OEM PDU, (250V, 15A)	8286	42A	6669
Power Cord 2.7M (9-foot), Drawer to IBM PDU, 250V/10A	8286	42A	6671
Power Cord 1.5M (5-foot), Drawer to IBM PDU, 250V/10A	8286	42A	6672
Power Cord 2.7m (9-ft), Drawer to Wall/OEM PDU, (250V/10A)	8286	42A	6680
Intelligent PDU+, 1 EIA Unit, Universal UTG0247 Connector	8286	42A	7109
Environmental Monitoring Probe	8286	42A	7118
Power Distribution Unit	8286	42A	7188
SDI Software Pre-Install Indicator	8286	42A	7305
Ethernet Cable, 15m, Hardware Management Console to System Unit	8286	42A	7802
Linux Software Preinstall	8286	42A	8143
Linux Software Preinstall (Business Partners)	8286	42A	8144
USB Mouse	8286	42A	8845
Order Routing Indicator- System Plant	8286	42A	9169
Language Group Specify - US English	8286	42A	9300

specify mode-1 & (1)5901/5278 for EXP24S #5887/ EL1S	8286	42A	9359
Specify mode-1 & (2)5901/5278 for EXP24S #5887/ EL1S	8286	42A	9360
Specify mode-2 & (2)5901/5278 for EXP24S #5887/ EL1S	8286	42A	9361
Specify mode-4 & (4)5901/5278 for EXP24S #5887/ EL1S	8286	42A	9365
Specify mode-2 & (4)5901/5278 for EXP24S #5887/ EL1S	8286	42A	9366
Specify mode-1 & CEC SAS port for EXP24 #5887/ EL1S	8286	42A	9387
New AIX License Core Counter	8286	42A	9440
New IBM i License Core Counter	8286	42A	9441
New Red Hat License Core Counter	8286	42A	9442
New SUSE License Core Counter	8286	42A	9443
Other AIX License Core Counter	8286	42A	9444
Other Linux License Core Counter	8286	42A	9445
3rd Party Linux License Core Counter	8286	42A	9446
VIOS Core Counter	8286	42A	9447
Other License Core Counter	8286	42A	9449
Month Indicator	8286	42A	9461
Day Indicator	8286	42A	9462
Hour Indicator	8286	42A	9463
Minute Indicator	8286	42A	9464
Qty Indicator	8286	42A	9465
Countable Member Indicator	8286	42A	9466
Language Group Specify - Dutch	8286	42A	9700
Language Group Specify - French	8286	42A	9703
Language Group Specify - German	8286	42A	9704
Language Group Specify - Polish	8286	42A	9705
Language Group Specify - Norwegian	8286	42A	9706
Language Group Specify - Portuguese	8286	42A	9707
Language Group Specify - Spanish	8286	42A	9708
Language Group Specify - Italian	8286	42A	9711
Language Group Specify - Canadian French	8286	42A	9712
Language Group Specify - Japanese	8286	42A	9714
Language Group Specify - Traditional Chinese (Taiwan)	8286	42A	9715
Language Group Specify - Korean	8286	42A	9716
Language Group Specify - Turkish	8286	42A	9718
Language Group Specify - Hungarian	8286	42A	9719
Language Group Specify - Slovakian	8286	42A	9720
Language Group Specify - Russian	8286	42A	9721
Language Group Specify - Simplified Chinese (PRC)	8286	42A	9722
Language Group Specify - Czech	8286	42A	9724
Language Group Specify -- Romanian	8286	42A	9725
Language Group Specify - Croatian	8286	42A	9726
Language Group Specify -- Slovenian	8286	42A	9727
Language Group Specify - Brazilian Portuguese	8286	42A	9728
Language Group Specify - Thai	8286	42A	9729
QSFP+ 40GBase-SR Transceiver	8286	42A	EB27
1m (3.3-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)	8286	42A	EB2B
3m (9.8-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)	8286	42A	EB2H
10m (30.3-ft), IBM Passive QSFP+ MTP Optical Cable	8286	42A	EB2J
30m (90.3-ft), IBM Passive QSFP+ MTP Optical Cable	8286	42A	EB2K
AC Power Supply - 900W	8286	42A	EB2L
IBM i 7.2 Indicator	8286	42A	EB72
Rack Front Door (Black)	8286	42A	EC01
Rack Rear Door	8286	42A	EC02
Rack Side Cover	8286	42A	EC03
Rack Suite Attachment Kit	8286	42A	EC04
Rear Door Heat Exchanger for 2.0 Meter Slim Rack	8286	42A	EC15
PCIe2 2-port 10GbE SFN6122F Adapter	8286	42A	EC2J
PCIe2 2-Port 10GbE RoCE SR Adapter	8286	42A	EC30
PCIe3 2-Port 40GbE NIC RoCE QSFP+ Adapter	8286	42A	EC3B
PCIe2 4-Port USB 3.0 Adapter	8286	42A	EC46
SAS X Cable 3m - HD Narrow 6Gb 2-Adapters to Enclosure	8286	42A	ECBJ
SAS X Cable 6m - HD Narrow 6Gb 2-Adapters to			

Enclosure	8286	42A	ECBK
SAS X Cable 10m - HD Narrow 6Gb 2-Adapters to Enclosure	8286	42A	ECBL
SAS X Cable 15m - HD Narrow 3Gb 2-Adapters to Enclosure	8286	42A	ECBM
5m (16.4-ft), IBM Passive QSFP+ to QSFP+ Cable (DAC)	8286	42A	ECBN
SAS YO Cable 1.5m - HD Narrow 6Gb Adapter to Enclosure	8286	42A	ECBT
SAS YO Cable 3m - HD Narrow 6Gb Adapter to Enclosure	8286	42A	ECBU
SAS YO Cable 6m - HD Narrow 6Gb Adapter to Enclosure	8286	42A	ECBV
SAS YO Cable 10m - HD Narrow 6Gb Adapter to Enclosure	8286	42A	ECBW
SAS YO Cable 15m - HD Narrow 3Gb Adapter to Enclosure	8286	42A	ECBX
SAS AE1 Cable 4m - HD Narrow 6Gb Adapter to Enclosure	8286	42A	ECBY
SAS YE1 Cable 3m - HD Narrow 6Gb Adapter to Enclosure	8286	42A	ECBZ
SAS AA Cable 0.6m - HD Narrow 6Gb Adapter to Adapter	8286	42A	ECC0
SAS AA Cable 1.5m - HD Narrow 6Gb Adapter to Adapter	8286	42A	ECC2
SAS AA Cable 3m - HD Narrow 6Gb Adapter to Adapter	8286	42A	ECC3
SAS AA Cable 6m - HD Narrow 6Gb Adapter to Adapter	8286	42A	ECC4
System Port Converter Cable for UPS	8286	42A	ECCF
Custom Service Specify, Shenzhen, China	8286	42A	ECSC
Custom Service Specify, Mexico	8286	42A	ECSM
Custom Service Specify, Poughkeepsie, USA	8286	42A	ECSP
IBM Cognos Business Intelligence	8286	42A	EHCE
InfoSphere Information Server (IIS) / Data Stage	8286	42A	EHDS
SPSS on Power Solution Indicator	8286	42A	EHSS
PCIe3 RAID SAS Adapter Quad-port 6Gb x8	8286	42A	EJ0J
PCIe3 12GB Cache RAID SAS Adapter Quad-port 6Gb x8	8286	42A	EJ0L
Storage Backplane 12 SFF-3 Bays/DVD Bay	8286	42A	EJ0N
Storage Backplane 18 SFF-3 Bays/eight 1.8-inch SSD bays/DVD Bay/Dual IOA with Write Cache	8286	42A	EJ0P
Split #EJ0N to 6+6 SFF-3 Bays: Add 2nd SAS Controller	8286	42A	EJ0S
SAS Ports/Cabling for Dual IOA BackPlane	8286	42A	EJ0Z
PCIe3 SAS Tape/DVD Adapter Quad-port 6Gb x8	8286	42A	EJ10
PCIe3 FPGA Accelerator Adapter	8286	42A	EJ12
Specify mode-2 (1)5901/5278 for EXP24 #5887 or #EL1S	8286	42A	EJPJ
Specify mode-2 (2)5901/5278 for EXP24 #5887 or #EL1S	8286	42A	EJPK
Specify mode-4 (1)5901/5278 for EXP24 #5887 or #EL1S	8286	42A	EJPL
Specify mode-4 (2)5901/5278 for EXP24 #5887 or #EL1S	8286	42A	EJPM
Specify mode-4 (3)5901/5278 for EXP24 #5887 or #EL1S	8286	42A	EJPN
Specify Mode-1 & (1)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJR1
Specify Mode-1 & (2)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJR2
Specify Mode-2 & (2)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJR3
Specify Mode-2 & (4)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJR4
Specify Mode-4 & (4)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJR5
Specify Mode-2 & (1)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJR6
Specify Mode-2 & (2)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJR7
Specify Mode-2 & (1)EJ0J for EXP24S (#5887/El1S)	8286	42A	EJRA
Specify Mode-2 & (2)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJRB
Specify Mode-4 & (1)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJRC
Specify Mode-4 & (2)EJ0J for EXP24S (#5887/EL1S)	8286	42A	EJRD
Specify Mode-4 & (3)EJ0J for EXP24S (#5888/EL1S)	8286	42A	EJRE
Specify Mode-1 & (2)EJ0L for EXP24S (#5887/EL1S)	8286	42A	EJRP
Specify Mode-2 & (2)EJ0L for EXP24S (#5887/EL1S)	8286	42A	EJRS
Specify Mode-2 & (2)EJ0L for EXP24S (#5887/EL1S)	8286	42A	EJRT
Non-paired Indicator EJ0L PCIe SAS RAID Adapter	8286	42A	EJRU
Front Bezel for 12-Bay BackPlane	8286	42A	EJTC

Front Bezel for 18-Bay BackPlane	8286	42A	EJTD
Front OEM Bezel for 12-Bay BackPlane	8286	42A	EJTE
Front OEM Bezel for 18-Bay BackPlane	8286	42A	EJTF
Eight-bay 1.8-inch SSD Cage	8286	42A	EJTM
Full Width Keyboard -- USB, US English, #103P	8286	42A	EK51
Full Width Keyboard -- USB, French, #189	8286	42A	EK52
Full Width Keyboard -- USB, Italian, #142	8286	42A	EK53
Full Width Keyboard -- USB, German/Austrian, #129	8286	42A	EK54
Full Width Keyboard -- USB, UK English, #166P	8286	42A	EK55
Full Width Keyboard -- USB, Spanish, #172	8286	42A	EK56
Full Width Keyboard -- USB, Japanese, #194	8286	42A	EK57
Full Width Keyboard -- USB, Brazilian Portuguese, #275	8286	42A	EK58
Full Width Keyboard -- USB, Hungarian, #208	8286	42A	EK59
Full Width Keyboard -- USB, Korean, #413	8286	42A	EK60
Full Width Keyboard -- USB, Chinese, #467	8286	42A	EK61
Full Width Keyboard -- USB, French Canadian, #445	8286	42A	EK62
Full Width Keyboard -- USB, Belgian/UK, #120	8286	42A	EK64
Full Width Keyboard -- USB, Swedish/Finnish, #153	8286	42A	EK65
Full Width Keyboard -- USB, Danish, #159	8286	42A	EK66
Full Width Keyboard -- USB, Bulgarian, #442	8286	42A	EK67
Full Width Keyboard -- USB, Swiss/French/German, #150	8286	42A	EK68
Full Width Keyboard -- USB, Norwegian,#155	8286	42A	EK69
Full Width Keyboard -- USB, Dutch, #143	8286	42A	EK70
Full Width Keyboard -- USB, Portuguese, #163	8286	42A	EK71
Full Width Keyboard -- USB, Greek, #319	8286	42A	EK72
Full Width Keyboard -- USB, Hebrew, #212	8286	42A	EK73
Full Width Keyboard -- USB, Polish, #214	8286	42A	EK74
Full Width Keyboard -- USB, Slovakian, #245	8286	42A	EK75
Full Width Keyboard -- USB, Czech, #243	8286	42A	EK76
Full Width Keyboard -- USB, Turkish, #179	8286	42A	EK77
Full Width Keyboard -- USB, LA Spanish, #171	8286	42A	EK78
Full Width Keyboard -- USB, Arabic, #253	8286	42A	EK79
Full Width Keyboard -- USB, Thai, #191	8286	42A	EK80
Full Width Keyboard -- USB, Russian, #443	8286	42A	EK81
Full Width Keyboard -- USB, Slovenian, #234	8286	42A	EK82
Full Width Keyboard -- USB, US English Euro, #103P	8286	42A	EK83
PDU Access Cord 0.38m	8286	42A	ELC0
#ESD4 Load Source Specify (571GB 10K RPM SAS SFF-3 for IBM i)	8286	42A	ELS4
#ES17 Load Source Specify (387GB 1.8" SSD for IBM i)	8286	42A	ELS7
#ESD8 Load Source Specify (1.1TB 10K RPM SAS SFF-3 for IBM i)	8286	42A	ELS8
#ESDA Load Source Specify (283GB 15K RPM SAS SFF-3 for IBM i)	8286	42A	ELSA
#ES0H Load Source Specify (775GB SSD SFF-2)	8286	42A	ELSH
#ES0M Load Source Specify (387GB SFF-3 SSD for IBM i)	8286	42A	ELSM
#ES0P Load Source Specify (775GB SFF-3 SSD for IBM i)	8286	42A	ELSP
#ESDS Load Source Specify (283GB 10k SAS SFF3 for IBM i)	8286	42A	ELSS
#ESDU Load Source Specify (139GB 15k SAS SFF3 for IBM i)	8286	42A	ELSU
#ESFA Load Source Specify (283GB 15K RPM SAS SFF-3 4K Block - 4224)	8286	42A	ELTA
#ESFE Load Source Specify (571GB 15K RPM SAS SFF-3 4K Block - 4224)	8286	42A	ELTE
#ESFN Load Source Specify (571GB 15K RPM SAS SFF-2 4K Block - 4224)	8286	42A	ELTN
#ESEY Load Source Specify (283GB 15K RPM SAS SFF-2 4K Block - 4224)	8286	42A	ELTY
16 GB DDR3 Memory	8286	42A	EM8B
32 GB DDR3 Memory	8286	42A	EM8C
64 GB DDR3 Memory	8286	42A	EM8D
1m (3.3-ft), 10GbE'Net Cable SFP+ Act Twinax Copper	8286	42A	EN01
3m (9.8-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper	8286	42A	EN02
5m (16.4-ft), 10Gb E'Net Cable SFP+ Act Twinax Copper	8286	42A	EN03

PCIe2 16Gb 2-port Fibre Channel Adapter	8286	42A	EN0A
PCIe2 4-port (10Gb FCoE & 1GbE) SR&RJ45	8286	42A	EN0H
PCIe2 4-Port (10Gb+1GbE) SR+RJ45 Adapter	8286	42A	EN0S
PCIe2 4-port (10Gb+1GbE) Copper SFP+RJ45 Adapter	8286	42A	EN0U
PCIe2 2-port 10/1GbE BaseT RJ45 Adapter	8286	42A	EN0W
PCIe 1-port Bisync Adapter	8286	42A	EN13
6-core 3.89 GHz POWER8 Processor Card	8286	42A	EPXE
8-core 4.15 GHz POWER8 Processor Card	8286	42A	EPXF
12-core 3.52 GHz POWER8 Processor Card	8286	42A	EPXH
One Processor Core Activation for #EPXE	8286	42A	EPYE
One Processor Core Activation for #EPXF	8286	42A	EPYF
One Processor Core Activation for #EPXH	8286	42A	EPYH
Quanity 150 of #3452 SAS YO Cable 6m - HD 6Gb Adapter to Enclosure	8286	42A	EQ02
Quantity 150 of #3453 SAS YO Cable 10m - HD 6Gb Adapter to Enclosure	8286	42A	EQ03
Quantity of 150 #ES0C	8286	42A	EQ0C
Quantity of 150 #ES0D	8286	42A	EQ0D
Quantity 150 of #ES0G (775GB SSD SFF-2)	8286	42A	EQ0G
Quantity 150 of #ES0H (775GB SSD SFF-2)	8286	42A	EQ0H
Quantity 150 of #ES19 (387GB SSD SFF-2)	8286	42A	EQ19
Quantity 150 of #ES1A (387GB SSD SFF-2)	8286	42A	EQ1A
Quantity 150 of #1738 (856GB SFF-2 disk)	8286	42A	EQ38
Quantity 150 of #1752 (900GB SFF-2 disk)	8286	42A	EQ52
Quantity 150 of #ESD2 (1.1TB 10k SFF-2)	8286	42A	EQD2
Quantity 150 of #ESD3 (1.2TB 10k SFF-2)	8286	42A	EQD3
Quantity 150 of #ESEY (283 GB SFF-2)	8286	42A	EQEY
Quantity 150 of #ESEZ (300GB SFF-2)	8286	42A	EQEZ
Quantity 150 of #ESFN (571GB SFF-2)	8286	42A	EQFN
Quantity 150 of #ESFP (600GB SFF-2)	8286	42A	EQFP
42U Slim Rack	8286	42A	ER05
RFID Tags for Servers, Compute Nodes, Chassis, Racks, and HMCs	8286	42A	ERF1
387GB SFF-2 SSD for AIX/Linux with eMLC	8286	42A	ES0C
387GB SFF-2 SSD for IBM i with eMLC	8286	42A	ES0D
775GB SFF-2 SSD for AIX/Linux	8286	42A	ES0G
775GB SFF-2 SSD for IBM i	8286	42A	ES0H
387GB SFF-3 SSD for AIX/Linux	8286	42A	ES0L
387GB SFF-3 SSD for IBM i	8286	42A	ES0M
775GB SFF-3 SSD for AIX/Linux	8286	42A	ES0N
775GB SFF-3 SSD for IBM i	8286	42A	ES0P
387GB 1.8" SSD for AIX/Linux	8286	42A	ES16
387GB 1.8" SSD for IBM i	8286	42A	ES17
387GB SFF-2 SSD for AIX/Linux	8286	42A	ES19
387GB SFF-2 SSD for IBM i	8286	42A	ES1A
S&H - No Charge	8286	42A	ESC0
S&H-b	8286	42A	ESC6
1.1TB 10K RPM SAS SFF-2 Disk Drive (IBMi)	8286	42A	ESD2
1.2TB 10K RPM SAS SFF-2 Disk Drive (AIX/Linux)	8286	42A	ESD3
571GB 10K RPM SAS SFF-3 Disk Drive (IBM i)	8286	42A	ESD4
600GB 10K RPM SAS SFF-3 Disk Drive (AIX/Linux)	8286	42A	ESD5
1.1TB 10K RPM SAS SFF-3 DIsk Drive (IBM i)	8286	42A	ESD8
1.2TB 10K RPM SAS SFF-3 Disk Drive (AIX/Linux)	8286	42A	ESD9
283GB 15K RPM SAS SFF-3 Disk Drive (IBM i)	8286	42A	ESDA
300GB 15K RPM SAS SFF-3 Disk Drive (AIX/Linux)	8286	42A	ESDB
300GB 10k RPM SAS SFF-3 Disk Drive (AIX/Linux)	8286	42A	ESDR
283GB 10k RPM SAS SFF-3 Disk Drive (IBM i)	8286	42A	ESDS
146GB 15k RPM SAS SFF-3 Disk Drive (AIX/Linux)	8286	42A	ESDT
139GB 15k RPM SAS SFF-3 Disk Drive (IBM i)	8286	42A	ESDU
283GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive	8286	42A	ESEY
300GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive	8286	42A	ESEZ
283GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive	8286	42A	ESFA
300GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive	8286	42A	ESFB
571GB 15K RPM SAS SFF-3 4K Block - 4224 Disk Drive	8286	42A	ESFE
600GB 15K RPM SAS SFF-3 4K Block - 4096 Disk Drive	8286	42A	ESFF
571GB 15K RPM SAS SFF-2 4K Block - 4224 Disk Drive	8286	42A	ESFN

600GB 15K RPM SAS SFF-2 4K Block - 4096 Disk Drive	8286	42A	ESFP
1TB Removable Disk Drive Cartridge	8286	42A	EU01
RDX USB External Docking Station for Removable Disk Cartridge	8286	42A	EU04
RDX 320 GB Removable Disk Drive	8286	42A	EU08
1.5TB Removable Disk Drive Cartridge	8286	42A	EU15
BLU Acceleration Solution Edition Indicator	8286	42A	EU2B
Software preload define	8286	42A	EUC0
Software preload define	8286	42A	EUC1
Software preload define	8286	42A	EUC2
Software preload define	8286	42A	EUC3
Core Use HW Feature	8286	42A	EUC6
Core Use HW Feature 10X	8286	42A	EUC7

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 8286-42A virtualization engine features

From FC:	To FC:	Return parts
5227 - PowerVM Standard Edition	5228 - PowerVM Enterprise Edition	No

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 IBM ID).

https://www.ibm.com/partnerworld/mem/sla.jsp?num=114-059

Publications

IBM 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

http://www.ibm.com/support/knowledgecenter/POWER8

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

The following information is shipped with the 8286-42A:

- Power Hardware Information DVD SK5T-7087
- Installing the 8286-42A
- 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

http://www.ibm.com/systems/support

You can access IBM i documentation at

http://www.ibm.com/support/knowledgecenter/ssw_ibm_i/welcome

You can access AIX documentation at

http://www.ibm.com/support/knowledgecenter/ssw_aix/welcome

You can access documentation about Linux on IBM systems at

http://www.ibm.com/support/knowledgecenter/linuxonibm/liaab/ic-homepage.htm

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. Visit the IBM Systems Information Center, at

http://www.ibm.com/support/knowledgecenter/

Services

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 visit

http://www.ibm.com/services/

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

http://www.ibm.com/services/continuity

Technical information

Specified operating environment

Physical specifications

- Width: 443 mm (17.5 in.)
- Depth: 756 mm (29.8 in.)
- Height: 173 mm (6.9 in.)
- Weight: 43.8 kg (97 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°C (41° to 113°F); recommended temperature (operating) 18° to 27°C (64° to 80°F); allowable operating temperature 5° to 35°C (41° to 95°F)
- Relative humidity: Nonoperating 8% to 80%; recommended 5.5°C (42°F) dew point to 60% RH and 15°C (59°F) dew point
- Maximum dew point: 28°C (84°F)(operating)
- Operating voltage: 900 W PSU: 100-127 V ac or 200-240 V ac
- Operating frequency: 47/63 Hz
- Maximum measured power consumption: 2,300 watts (maximum)
- Power factor: 0.98
- Thermal output: (7,848 Btu/hour) (maximum)
- Power-source loading
  - 2.38 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

  http://www-912.ibm.com/see/EnergyEstimator

Noise level and sound power

- Rack-mount system: 6.8 bels operating; 6.8 bels idling

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 Underwriters Laboratory, Safety Information
- CSA C22.2 No. 60950-00, 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.

Hardware requirements

The Power S824 offers 6-core, 8-core, and 12-core configurations with one or two processor modules. The system can contain up to 1024 GB of system memory, storage backplane options of twelve or eighteen SFF-3 disk/SSD bays and eight 1.8-inch SSD modules, four PCIe x 16 Gen 3 adapters (full-height, full-length slots), six PCIe x 8 Gen 3 adapters (full-height, half-length slots), and multiple media devices, as desired. This flexibility is made available through the many optional features for the Power S824.

One system central electronics complex (CEC) enclosure with the following items:

- Choose one or two processor modules from:
  - One or two 6-core 3.89 GHz Processor module (#EPXE)
  - One or two 8-core 4.15 GHz Processor module (#EPXF)
  - Two 12-core 3.52 GHz Processor module (#EPXH)

  Notes :

  - If two processor modules are ordered, they must be the same feature number.
  - The total number of processor activation features must equal to the total number of cores on the system.
- Choose 32 GB minimum memory from:
  - 16 GB CDIMM, 1600 Mbps, 4 Gb DDR3 DRAM (#EM8B)
  - 32 GB CDIMM, 1600 Mbps, 4 Gb DDR3 DRAM (#EM8C)
  - 64 GB CDIMM, 1600 Mbps, 4 Gb DDR3 DRAM (#EM8D)

- Choose storage backplane from:
  - Twelve SFF-3 Bays/DVD Bay (#EJ0N).
  - Eighteen SFF-3 Bays/ eight 1.8-inch SSD bays/DVD Bay/Dual IOA with Write Cache (#EJ0P).
  - Split feature EJ0N to 6+6 SFF-3 Bays: Add a second SAS Controller (#EJ0S).
- One PCIe2 4-port 1 GbE Adapter (#5899).

  Note: The adapter takes up one PCIe slot.
- Choose HDDs and SSDs from any orderable SFF HDD or SSD. The defaults are 283 GB 15K RPM SAS SFF-3 for IBM i (2 x #ESDA) and 300 GB 15K RPM SAS SFF-3 for AIX/Linux (#ESDB).

  Notes :

  - When feature 2145, the IBM i operating system, is selected, a minimum of two HDDs or SSDs is required.
  - No internal HDD or SSD is required if feature 0837 (Boot from SAN) is selected. In this case, a Fibre Channel or Fibre Channel over Ethernet adapter must also be ordered.
- Choose the Primary Operating System Indicator from:
  - IBM i (#2145 -- requires #0566 or #0567, and #0040)
  - AIX (#2146)
  - Linux (#2147)
- One Language Group, Specify (#9300 or #97xx)
- Four 900 watt AC power supplies (4 x #EB2L)
- Four PDU power cords (#6665, #6458, #6672, #6671, #6577, #6660, #6460, #6469, or 6669)
- Choose a cover set from:
  - IBM Rack-mount Drawer Bezel and Hardware (#EJTC, used with #EJ0N backplane)
  - IBM Rack-mount Drawer Bezel and Hardware (#EJTD, used with #EJ0P backplane)
  - OEM Rack-mount Drawer Bezel and Hardware (#EJTE, used with #EJ0N backplane)
  - OEM Rack-mount Drawer Bezel and Hardware (#EJTF, used with #EJ0P backplane)

Hardware Management Console (HMC) machine code

An HMC or IVM is required to manage the Power S824 (8286-42A) implementing partitioning with PowerVM. Multiple POWER6, POWER7, and POWER8 processor-based servers can be supported by a single HMC. If an HMC is used to manage the Power S824, the HMC code level V8.810 can only be loaded on a rack-mount model CR5, or later, or deskside model C08.

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

https://www14.software.ibm.com/webapp/set2/sas/f/hmc/home.html

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 level V8.810 contains the following:

- Support for managing IBM Power System S824, S822, S814, S812L and S822L systems.
- Support for the new HMC model 7042-CR8.
- Support for PowerVM functions such as new HMC GUI interface for VIOS management.
- GUI for HMC's Performance and Capacity Monitoring function.
- A new 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 V2.2.3.3 is recommended.

Software requirements

The Power S824 supports:

- Red Hat Enterprise Linux 6.5, or later
- SUSE Linux Enterprise Server 11 Service Pack 3, or later
- AIX Version 7.1 with the 7100-03 Technology Level and Service Pack 3, with APAR IV56367, or later
- AIX Version 6.1 with the 6100-09 Technology Level and Service Pack 3, with APAR IV56366, or later
- These additional AIX levels are supported in an LPAR using virtualized I/O only:
  - AIX Version 7.1 with the 7100-03 Technology Level and Service Pack 1, or later
  - AIX Version 7.1 with the 7100-02 Technology Level and Service Pack 1, or later
  - AIX Version 7.1 with the 7100-01 Technology Level and Service Pack 6, or later
  - AIX Version 6.1 with the 6100-09 Technology Level and Service Pack 1, or later
  - AIX Version 6.1 with the 6100-08 Technology Level and Service Pack 1, or later
  - AIX Version 6.1 with the 6100-07 Technology Level and Service Pack 6, or later
- IBM i 7.1 with TR8, or later, 7.2, or later
- VIOS 2.2.3.3 with interim fix IV56366, or later

System 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. 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 following Load Source specify codes must be specified.

  #0871 Load Source Specify for 139 GB 15k RPM SAS SFF-2 Disk Drive for IBM i (#1947)

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

  #0874 Load Source Specify for 283 GB 10k RPM SAS SFF-2 Disk (#1956)

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

  #0880 Load Source Specify for 856 GB 10k RPM SAS SFF-2 Disk (#1738)

#0894 Load Source Specify for 387 GB SFF-2 SSD for IBM i (#ES0D)

#0911 Load Source Specify for 1.1 TB 10K RPM SAS SFF-2 Disk (#ESD2)

#ELS4 Load Source Specify for 571 GB 10K RPM SAS SFF-3 for IBM i (#ESD4)

#ELS8 Load Source Specify for 1.1 TB 10K RPM SAS SFF-3 for IBM i (#ESD8)

#ELSA Load Source Specify for 283 GB 15K RPM SAS SFF-3 for IBM i (#ESDA)

#ELSK Load Source Specify for 387 GB 1.8" SSD for IBM i (#ES0K)

#ELSM Load Source Specify for 387 GB SFF-3 SSD for IBM i (#ES0M)

#ELSP Load Source Specify for 775 GB SFF-3 SSD for IBM i (#ES0P)

#ELTA Load Source Specify for 283 GB 15K RPM SAS SFF-3 4K Block - 4224 (#ESFA)

#ELTE Load Source Specify for 571 GB 15K RPM SAS SFF-3 4K Block - 4224 (#ESFE)

#ELTN Load Source Specify for 571 GB 15K RPM SAS SFF-2 4K Block - 4224 (#ESFN)

#ELTY Load Source Specify for 283 GB 15K RPM SAS SFF-2 4K Block - 4224 (#ESEY)

- If IBM i (#2145) is selected and the load source disk unit is not in the CEC (system unit), 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.

  #0728 Load Source Specifies DASD are placed in an EXP24S SFF Gen 2 bay Drawer (#5887 or #EL1S)

  #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

Planning information

Cable orders

No additional cables are required.

Security, auditability, and control

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

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

IBM Electronic Services

Electronic Service Agent and the IBM Electronic Support web portal are dedicated to providing fast, exceptional support to IBM Systems customers. The IBM Electronic Service Agent tool is a no-additional-charge tool that proactively monitors and reports hardware events, such as system errors, performance issues, and inventory. The Electronic Service Agent tool can help you stay focused on your company's strategic business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues.

System configuration and inventory information collected by the Electronic Service Agent tool also can be viewed on the secure Electronic Support web portal, and used to improve problem determination and resolution by you and the IBM support team. To access the tool main menu, simply type "smitty esa_main", and select "Configure Electronic Service Agent." In addition, ESA now includes a powerful web user interface, giving the administrator easy access to status, tool settings,

problem information, and filters. For more information and documentation on how to configure and use Electronic Service Agent, refer to

http://www.ibm.com/support/electronic

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

Benefits

Increased uptime: The Electronic Service Agent tool is designed to enhance the Warranty or Maintenance Agreement by providing faster hardware error reporting and uploading system information to IBM Support. This can translate to less wasted time monitoring the "symptoms," diagnosing the error, and manually calling IBM Support to open a problem record. Its 24x7 monitoring and reporting mean no more dependence on human intervention or off-hours customer personnel when errors are encountered in the middle of the night.

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

For additional information, refer to IBM Electronic Service Agent

http://www-01.ibm.com/support/esa/

More accurate reporting: Since system information and error logs are automatically uploaded to the IBM Support center in conjunction with the service request, customers 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: Using the IBM ID entered during activation, customers can view system and support information in the "My Systems" and "Premium Search" sections of the Electronic Support website at

http://www.ibm.com/support/electronic

My Systems provides valuable reports of installed hardware and software using information collected from the systems by Electronic Service Agent. Reports are available for any system associated with the customer's IBM ID. 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 Electronic Service Agent information that has been collected from your system, customers 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, contact your IBM Systems Services Representative, or visit

http://www.ibm.com/support/electronic

Terms and conditions

Volume orders

Contact your IBM representative.

IBM Global Financing

Yes

Products -- terms and conditions

Warranty period

Three years.

Alternative warranty options are available on a special bid basis from your IBM representative or Business Partner.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. 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 effective on its date of installation. 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.

Warranty service

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically through an IBM website. IBM may request Electronic Service Agent (ESA) activation and you must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend the time of your call and is subject to parts availability. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service.

Service levels are response-time objectives, may be limited in some areas, and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information.

CRU Service

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU.

Tier 1 (mandatory) CRU

Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

Tier 2 (optional) CRU

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next-business-day (NBD) delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, return instructions and a container are shipped with the replacement CRU. You may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts have been designated as Tier 1 CRUs:

- DASD SFF Drive
- DASD SSD Drive
- DVD Drive
- Fan
- Fan Cage
- All PCI Adapters
- High-Function RAID Card Cable
- Memory DIMMs
- Native USB Serial Card
- Operator Panel
- Operator Panel Cable
- Power Supply
- Line/power cord
- Keyboard
- Mouse
- External cables
- Power Bus Signal Cable
- Display
- GXP adapter
- Time of Day (TOD) Battery

On-site Service

At IBM's discretion, you will receive specified CRU service, or IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

Service level is:

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response. Calls must be received by 5:00 p.m. local time in order to qualify for next-business-day response.

Warranty service

IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to their customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. Service levels are response-time objectives and are not guaranteed. See the **Warranty services** section above for additional details.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

CRU and On-site Service

At IBM's discretion you will receive CRU service or IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following on-site response-time objectives are available as warranty service upgrades for your machine. Available offerings are:

- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average, same business day response
- 24 hours per day, 7 days a week, 4-hour average response, same day
- 24 hours per day, 7 days a week, 2-hour average response, same day

Customer Replaceable Units (CRUs) may be provided as part of the machine's standard warranty CRU Service except that you may install a CRU yourself or request IBM installation, at no additional charge, under the CRU and On-site Service level specified above. For additional information on the CRU Service, see the warranty information.

Maintenance services

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM website. Certain machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed. The specified level of maintenance service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country-specific and location-specific information. The following service selections are available as maintenance options for your machine type.

On-site Service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well-lit, and suitable for the purpose.

Service levels are:

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response
- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average response, same business day
- 24 hours per day, 7 days a week, 4-hour average response, same day
- 24 hours per day, 7 days a week, 2-hour average response, same day

Customer Replaceable Unit (CRU) Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), and depending upon the maintenance service offerings in your geography, IBM will ship the replacement CRU to you for you to

install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request.

Based upon availability, CRUs will be shipped for next-business-day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 15 days of your receipt of the replacement.

CRUs may be provided as part of the machine's standard maintenance service except that you may install a CRU yourself or request IBM installation, at no additional charge, under any of the On-site Service levels specified above.

Non-IBM parts service

Under certain conditions, IBM provides services for selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

This service includes hardware problem determination (PD) on the non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

Usage plan machine

No

IBM hourly service rate classification

Two

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

General terms and conditions

Field-installable features

Yes

Model conversions

No

Machine installation

Customer setup. Customers are responsible for installation according to the instructions IBM provides with the machine.

Graduated program license charges apply

Yes. The applicable processor tier is: Small

Licensed machine code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative or visiting

http://www.ibm.com/servers/support/machine_warranties/machine_code.html

Machine using LMC Type Model: 8286-42A

Access to 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 in its discretion.

If the machine does not function as warranted and your problem can be resolved through your application of downloadable machine code, you are responsible for downloading and installing these designated machine code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable machine code changes; however, you may be charged.

Machine Code License Acceptance Requirement

Acceptance-By-Use Machine: No, the LIC license requires signed acceptance by the machine's end user directly with IBM, applicable to orders for a new machine, machine type conversion MES, and to machines transferred to another user.

Educational allowance

A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

The educational allowance is 8% for the products in this announcement.

Prices

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

The following are newly announced features on the specific models of the IBM Power Systems 8286 machine type:

Description	Model number	Feature number	Purchase Price	Minimum Monthly Maint. Charge	Initial/ MES/ Both/ Support	CSU	RP MES
IBM Power System S824							
	42A					Yes	
One CSC Billing Unit							
	42A	0010			Both	Yes	No
Ten CSC Billing Units							
	42A	0011			Both	Yes	No
Mirrored System Disk Level, Sp							
	42A	0040			Both	Yes	No
Device Parity Protection All							
	42A	0041			Both	Yes	No
Mirrored System Bus Level							
	42A	0043			Both	Yes	No
Device Parity RAID 6 All							
	42A	0047			Both	Yes	No
RISC to RISC Data Migration							
	42A	0205			Initial	N/A	No
AIX Partition Specify							

	42A	0265		Both	Yes No
Linux Partition Specify					
	42A	0266		Both	Yes No
IBM i Partition Specify					
	42A	0267		Both	Yes No
Specify Custom Data Protection					
	42A	0296		Both	Yes No
Mirrored Level System Specify					
	42A	0308		Both	Yes No
RAID Hot Spare Specify					
	42A	0347		Both	Yes No
V.24/EIA232 6.1m (20 Ft) PCI C					
	42A	0348		Both	Yes No
V.35 6.1m (20 Ft) PCI Cable					
	42A	0353		Both	Yes No
X.21 6.1m (20 Ft) PCI Cable					
	42A	0359		Both	Yes No
CBU Specify					
	42A	0444		Initial	N/A No
Customer Specified Placement					
	42A	0456		Initial	N/A No
SSD Placement Ind 5887,EL1S					
	42A	0465		Initial	N/A No
19 inch, 1.8 meter high rack					
	42A	0551		MES	Yes No
19 inch, 2.0 meter high rack					
	42A	0553		MES	Yes No
IBM i 7.1 Specify Code					
	42A	0567		Both	Yes No
Rack Filler Panel Kit					
	42A	0599		Both	Yes No
Load Source Not in CEC					
	42A	0719		Both	Yes No
#5887/EL1S Load Source Specify					
	42A	0728		Both	Yes No
SAN Load Source Specify					
	42A	0837		Both	Yes No
#1947 Load Source Specify					
	42A	0871		Both	Yes No
#1948 Load Source Specify					
	42A	0872		Both	Yes No
#1956 Load Source Specify					
	42A	0874		Both	Yes No
#1962 Load Source Specify					
	42A	0875		Both	Yes No
#1738 Load Source Specify					
	42A	0880		Both	Yes No
#ES0D Load Source Specify					
	42A	0894		MES	Yes No
#ESD2 Load Source Specify					
	42A	0911		Both	Yes No
US TAA Compliance Indicator					
	42A	0983		Both	Yes No
Modem Cable US/Canada and GU					
	42A	1025		Both	Yes No
USB 500 GB Removable Disk Dr					
	42A	1107		Both	Yes No
Custom Serv. Specify, Roch					
	42A	1140		Both	Yes No
856GB 10k RPM SAS SFF-2 Disk					
	42A	1738		Both	Yes No
900GB 10k RPM SAS SFF-2 Disk					
	42A	1752		Both	Yes No
Quantity 150 of #1962					
	42A	1817		Both	Yes No
Quantity 150 of #1964					
	42A	1818		Both	Yes No
Quantity 150 of #1956					
	42A	1844		Both	Yes No
Quantity 150 of #1917					
	42A	1866		Both	Yes No
Quantity 150 of #1947					
	42A	1868		Both	Yes No
Quantity 150 of #1925					

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                        42A     1869                    Both     Yes No
146GB 15k RPM SAS SFF-2 Disk
                        42A     1917                    Both     Yes No
300GB 10k RPM SAS SFF-2 Disk
                        42A     1925                    Both     Yes No
Quantity 150 of #1948
                        42A     1927                    Both     Yes No
Quantity 150 of #1953
                        42A     1929                    Both     Yes No
139GB 15k RPM SAS SFF-2 Disk
                        42A     1947                    Both     Yes No
283GB 15k RPM SAS SFF-2 Disk
                        42A     1948                    Both     Yes No
300GB 15k RPM SAS SFF-2 Disk
                        42A     1953                    Both     Yes No
283GB 10k RPM SAS SFF-2 Disk
                        42A     1956                    Both     Yes No
571GB 10k RPM SAS SFF-2 Disk
                        42A     1962                    Both     Yes No
600GB 10k RPM SAS SFF-2 Disk
                        42A     1964                    Both     Yes No
Primary OS - IBM i
                        42A     2145                    Both     Yes No
Primary OS AIX
                        42A     2146                    Both     Yes No
Primary OS Linux
                        42A     2147                    Both     Yes No
Factory Deconfiguration of 1 c
                        42A     2319                    Initial  N/A No
LC-SC 50 Micron Fiber Conv Cab
                        42A     2456                    Both     Yes No
LC-SC 62.5 Mic.Fib.Conv.Cable
                        42A     2459                    Both     Yes No
PCIe 2 Line WAN w/Modem
                        42A     2893                    Both     Yes No
Asynch.Termin/Print.Cbl EIA232
                        42A     2934                    Both     Yes No
Asynchronous Cable EIA 232/V
                        42A     2936                    Both     Yes No
Ser to Ser Port Cab Draw/Draw
                        42A     3124                    Both     Yes No
Serial to Se.Port Cbl Rack 8M
                        42A     3125                    Both     Yes No
1m, QDR IB Copper Cable
                        42A     3287                    Both     Yes No
3m, QDR IB Copper Cable
                        42A     3288                    Both     Yes No
5m QDR IB/E'Net Copper Cable
                        42A     3289                    Both     Yes No
10m QDR IB Optic Cable
                        42A     3290                    Both     Yes No
30m QDR IB Optic Cable
                        42A     3293                    Both     Yes No

NOTE: The monitor or display features are subject to a $8

Electronic Waste Recycling Fee (15-INCH TO 34-INCH VIDEO DEVICE.)

Widescreen LCD Monitor
                        42A     3632                    Both     Yes No
SAS Cable (X) Adapter to SAS E
                        42A     3661                    Both     Yes No
SAS Cbl X Adp SAS Enclosure 6M
                        42A     3662                    Both     Yes No
SAS Cbl X Adp SAS Encl 15M
                        42A     3663                    Both     Yes No
3M SAS CABLE, ADPTR TO ADPTR (
                        42A     3681                    Both     Yes No
SAS Cab(YO) Adapter to SAS1.5M
                        42A     3691                    Both     Yes No
SAS Cab(YO) Adapter to SAS 3M
                        42A     3692                    Both     Yes No
SAS Cab(YO) Adapter to SAS 6M
                        42A     3693                    Both     Yes No
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SAS Cab(YO) Adapter to SAS 15M
42A 3694 Both Yes No
0.3M Serial Prt Converter Cbl
42A 3925 Both Yes No
Serial Port Null Mod Cab 3.7M
42A 3927 Both Yes No
Ser.Port Null Modem Cable,10M
42A 3928 Both Yes No
System Serial Port Converter C
42A 3930 Both Yes No
6Foot Extend.Cbl for Displays
42A 4242 Both Yes No
Extender Cable USB Keybo 1.8M
42A 4256 Initial N/A No
VGA to DVI Connection Converte
42A 4276 Both Yes No
Rack Integration Services: BP
42A 4648 Initial N/A No
Rack Integration Services
42A 4649 Initial N/A No

One and only one rack indicator feature is required on
all orders (#4650 to #4666).
No Factory Integration Ind.
42A 4650 Initial N/A No
Rack Indicator, Rack 1
42A 4651 Initial N/A No
Rack Indicator, Rack 2
42A 4652 Initial N/A No
Rack Indicator, Rack 3
42A 4653 Initial N/A No
Rack Indicator, Rack 4
42A 4654 Initial N/A No
Rack Indicator, Rack 5
42A 4655 Initial N/A No
Rack Indicator, Rack 6
42A 4656 Initial N/A No
Rack Indicator, Rack 7
42A 4657 Initial N/A No
Rack Indicator, Rack 8
42A 4658 Initial N/A No
Rack Indicator, Rack 9
42A 4659 Initial N/A No
Rack Indicator, Rack 10
42A 4660 Initial N/A No
Rack Indicator, Rack 11
42A 4661 Initial N/A No
Rack Indicator, Rack 12
42A 4662 Initial N/A No
Rack Indicator, Rack 13
42A 4663 Initial N/A No
Rack Indicator, Rack 14
42A 4664 Initial N/A No
Rack Indicator, Rack 15
42A 4665 Initial N/A No
Rack Indicator, Rack 16
42A 4666 Initial N/A No
Power Active Memory Expansion
42A 4794 Both Yes No
PCIe Crypto Coprocessor No B
42A 4807 Both Yes No
One Processor of 5250 Enterpri
42A 4970 Both Yes No
Full 5250 Enterprise Enablemen
42A 4974 Both Yes No
Software Preload Required
42A 5000 Initial N/A No
PowerVM Standard Edition
42A 5227 Both Yes No
PowerVM Enterprise Edition
42A 5228 Both Yes No
PCIe 2-Port 4X IB QDR Adapt
42A 5285 Both Yes No
PCIe2 2-port 10GbE SR Adapter

	42A	5287	Both	Yes	No
2 Port Async EIA 232 PCIe Adap					
	42A	5289	Both	Yes	No (No Longer Available)
Sys Console On HMC					
	42A	5550	Both	Yes	No
Sys Console-Ethernet No IOP					
	42A	5557	Initial	N/A	No
PCIe2 8Gb 4-port Fibre Channel					
	42A	5729	Both	Yes	No
8 Gigabit PCI Express Dual Por					
	42A	5735	Both	Yes	No
PCIe2 4-Port 10GbE&1GbE SR&RJ4					
	42A	5744	Both	Yes	No
POWER GXT145 PCI Express Graph					
	42A	5748	Both	Yes	No
SATA Slimline DVD-RAM Drive					
	42A	5771	Both	Yes	No
10 Gigabit Ethernet LR PCI					
	42A	5772	Both	Yes	No
EXP24S SFF Gen2-bay Drawer					
	42A	5887	Both	Yes	No
PCIe2 4-port 1GbE Adapter					
	42A	5899	Both	Yes	No
PCIe Dual x4 SAS Adapter					
	42A	5901	Both	Yes	No
SAS AA Cable 3m - HD 6Gb Adapt					
	42A	5915	Both	Yes	No
SAS AA Cable 6m - HD 6Gb Adapt					
	42A	5916	Both	Yes	No
SAS AA Cable 1.5m - HD 6Gb Ada					
	42A	5917	Both	Yes	No
SAS AA Cbl 0.6m - HD 6Gb Adapt					
	42A	5918	Both	Yes	No
Opt Front Door for 1.8m Rack					
	42A	6068	MES	Yes	No
Opt Front Door for 2.0m Rack					
	42A	6069	MES	Yes	No
1.8m Rack Acoustic Doors					
	42A	6248	MES	Yes	No
2.0m Rack Acoustic Doors					
	42A	6249	MES	Yes	No
1.8m Rack Trim Kit					
	42A	6263	MES	Yes	No
2.0m Rack Trim Kit					
	42A	6272	MES	Yes	No
Pwr Crd 4.3m 14ft Wall IBM PDU					
	42A	6458	Both	Yes	No
Pwr Crd (14FT), Drwr - OEM PDU					
	42A	6460	Both	Yes	No
Pwr Crd 4.3m 14ft Wall OEM PDU					
	42A	6469	Both	Yes	No
Pwr Crd 1.8m 6ft Wall 125V/15A					
	42A	6470	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6471	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6472	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6473	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6474	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6475	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6476	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6477	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6478	Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
	42A	6488	Both	Yes	No
4.3m (14 Ft) 3PH/24A Power Cor					
	42A	6489	MES	Yes	No
4.3m (14 Ft) 1PH/48A Pwr Cord					

42A	6491		MES	Yes	No
4.3m (14 Ft) 1PH/48 60A Pwr Co					
42A	6492		MES	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
42A	6493		Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
42A	6494		Both	Yes	No
Pwr Crd 2.7m 9ft Wall 250V,10A					
42A	6496		Both	Yes	No
Power Cable Drawer to IBM PD					
42A	6577		Both	Yes	No
Optional Rack Security Kit					
42A	6580		MES	Yes	No
Modem Tray for 19-Inch Rack					
42A	6586		MES	Yes	No
Pwr Crd 2.7m 9ft Wall 125V,15A					
42A	6651		Both	Yes	No
4.3m 3PH/16A Power Cord					
42A	6653		MES	Yes	No
4.3m 1PH/24-30A Pwr Cord					
42A	6654		MES	Yes	No
4.3m 14Ft 1PH/24 30A WR Pwr					
42A	6655		MES	Yes	No
4.3m 14Ft 1PH/24A Power Cord					
42A	6656		MES	Yes	No
4.3m 14Ft 1PH/24A Power Cord					
42A	6657		MES	Yes	No
4.3m 14Ft 1PH/24A Pwr Cd Kor					
42A	6658		MES	Yes	No
Pwr.Cord(9ft),To Wall/OEM PDU					
42A	6659		Both	Yes	No
Pwr Crd 14ft 4.3m WallOEM PDU					
42A	6660		Both	Yes	No
Pwr Crd 2.8m 9.2ft Wall PDU					
42A	6665		Both	Yes	No
4.3m 14Ft 3PH/32A Pwr Cd Aus					
42A	6667		MES	Yes	No
Pwr Crd 4.3M, Drwr - OEM PDU					
42A	6669		Both	Yes	No
Pwr Crd 2.7m, Drwr - IBM PDU					
42A	6671		Both	Yes	No
Pwr Crd 1.5M, Drwr - IBM PDU					
42A	6672		Both	Yes	No
Pwr Crd 2.7m 9ft Wall OEM PDU					
42A	6680		Both	Yes	No
IIntelligent PDU+ 1 EIA Unit					
42A	7109		MES	Yes	No
Environmental Monitoring Probe					
42A	7118		Both	Yes	No
Power Distribution Unit					
42A	7188		MES	Yes	No
AAP Software Pre-Inst.Indic.					
42A	7305		Initial	N/A	No
Eth Cbl 15M HW Management					
42A	7802		Both	Yes	No
Linux Software Preinstall					
42A	8143		Initial	N/A	No
Linux Software Preinstall BP					
42A	8144		Initial	N/A	No
USB Mouse					
42A	8845		Both	Yes	No
Order Routing Indicator Syste					
42A	9169		Initial	N/A	No
Language Group Spcf-US Eng					
42A	9300	NC	Initial	N/A	No
specify mode-1 & (1)5901/5278					
42A	9359		Both	Yes	No
Specify mode-1 & (2)5901/5278					
42A	9360		Both	Yes	No
Specify mode-2 & (2)5901/5278					
42A	9361		Both	Yes	No
Specify mode-4 & (4)5901/5278					
42A	9365		Both	Yes	No

Specify mode-2 & (4)5901/5278						
	42A	9366		Both	Yes	No
Specify mode-1 & CEC SAS port						
	42A	9387		Both	Yes	No
New AIX License Core Counter						
	42A	9440	NC	Initial	N/A	No
New IBM i Lic Core Counter						
	42A	9441	NC	Initial	N/A	No
New Red Hat Lic Core Counter						
	42A	9442	NC	Initial	N/A	No
New SUSE Lic Core Counter						
	42A	9443	NC	Initial	N/A	No
Other AIX Lic Core Counter						
	42A	9444	NC	Initial	N/A	No
Other Linux Lic Core Counter						
	42A	9445	NC	Initial	N/A	No
3rd Party Linux Lic Core Cnt						
	42A	9446	NC	Initial	N/A	No
VIOS Core Counter						
	42A	9447	NC	Initial	N/A	No
Other License Core Counter						
	42A	9449	NC	Initial	N/A	No
Month Indicator						
	42A	9461		Initial	N/A	No
Day Indicator						
	42A	9462		Initial	N/A	No
Hour Indicator						
	42A	9463		Initial	N/A	No
Minute Indicator						
	42A	9464		Initial	N/A	No
Qty Indicator						
	42A	9465		Initial	N/A	No
Countable Member Indicator						
	42A	9466		Initial	N/A	No
Language Group Spcf-Dutch						
	42A	9700	NC	Initial	N/A	No
Language Group Spcf-French						
	42A	9703	NC	Initial	N/A	No
Language Group Spcf-German						
	42A	9704	NC	Initial	N/A	No
Language Group Spcf-Polish						
	42A	9705	NC	Initial	N/A	No
Lang Group Specify - Norwegian						
	42A	9706	NC	Initial	N/A	No
Lang.Group Spcf-Portuguese						
	42A	9707	NC	Initial	N/A	No
Language Group Spcf-Spanish						
	42A	9708	NC	Initial	N/A	No
Language Group Spcf-Italian						
	42A	9711	NC	Initial	N/A	No
Langua Gr Speci Canadian Frenc						
	42A	9712	NC	Initial	N/A	No
Language Group Spcf-Japanese						
	42A	9714	NC	Initial	N/A	No
Language Group Specify Tr Chin						
	42A	9715	NC	Initial	N/A	No
Language Group Spcf-Korean						
	42A	9716	NC	Initial	N/A	No
Language Group Spcf-Turkish						
	42A	9718	NC	Initial	N/A	No
Language Group Spcf-Hungarian						
	42A	9719	NC	Initial	N/A	No
Language Group Spcf-Slovakian						
	42A	9720	NC	Initial	N/A	No
Language Group Spcf-Russian						
	42A	9721	NC	Initial	N/A	No
Lang Group Spcf Simpl Chinese						
	42A	9722	NC	Initial	N/A	No
Language Group Spcf-Czech						
	42A	9724	NC	Initial	N/A	No
Language Group Spcf-Romanian						
	42A	9725	NC	Initial	N/A	No
Lang Group Specify - Croatian						
	42A	9726	NC	Initial	N/A	No

Language Group Spcf-Slovenian						
	42A	9727	NC	Initial	N/A	No
Lang Group Specify - Braz Port						
	42A	9728	NC	Initial	N/A	No
Lang Group Specify - Thai						
	42A	9729	NC	Initial	N/A	No
QSFP+ 40G Transceiver						
	42A	EB27		Both	Yes	No
1m Passive QSFP+ to QSFP+ Cbl						
	42A	EB2B		Both	Yes	No
3m Passive QSFP+ to QSFP+ Cbl						
	42A	EB2H		Both	Yes	No
10m QSFP+ MTP Optical Cable						
	42A	EB2J		Both	Yes	No
30m QSFP+ MTP Optical Cable						
	42A	EB2K		Both	Yes	No
AC Power Supply - 900W						
	42A	EB2L		Initial	N/A	No
IBM i 7.2 Indicator						
	42A	EB72		Both	N/A	No
Rack Front Door (Black)						
	42A	EC01		MES	Yes	No
Rack Rear Door						
	42A	EC02		MES	Yes	No
Rack Side Cover						
	42A	EC03		MES	Yes	No
Rack Suite Attachment Kit						
	42A	EC04		MES	Yes	No
Rear Door Heat Exchanger						
	42A	EC15		MES	Yes	No
PCIe2 2-port 10GbE SFN6122F						
	42A	EC2J		Both	Yes	No
PCIe2 2-Port 10GbE RoCE SR Ada						
	42A	EC30		Both	Yes	No
PCIe3 2-Port 40GbE NIC RoCE						
	42A	EC3B		Both	Yes	No
PCIe2 4-Port USB 3.0 Adapter						
	42A	EC46		Both	Yes	No
SAS X Cable 3m - HD Narrow						
	42A	ECBJ		Both	Yes	No
SAS X Cable 6m - HD Narrow						
	42A	ECBK		Both	Yes	No
SAS X Cable 10m - HD Narrow						
	42A	ECBL		Both	Yes	No
SAS X Cable 15m -HD Narrow 3Gb						
	42A	ECBM		Both	Yes	No
5m Passive QSFP+ to QSFP+ Cbl						
	42A	ECBN		Both	Yes	No
SAS YO Cable 1.5m - HD Narrow						
	42A	ECBT		Both	Yes	No
SAS YO Cable 3m - HD Narrow						
	42A	ECBU		Both	Yes	No
SAS YO Cable 6m - HD Narrow						
	42A	ECBV		Both	Yes	No
SAS YO Cable 10m - HD Narrow						
	42A	ECBW		Both	Yes	No
SAS YO Cable 15m-HD Narrow 3Gb						
	42A	ECBX		Both	Yes	No
SAS AE1 Cable 4m - HD Narrow						
	42A	ECBY		Both	Yes	No
SAS YE1 Cable 3m - HD Narrow						
	42A	ECBZ		Both	Yes	No
SAS AA Cable 0.6m - HD Narrow						
	42A	ECC0		Both	Yes	No
SAS AA Cable 1.5m - HD Narrow						
	42A	ECC2		Both	Yes	No
SAS AA Cable 3m - HD Narrow						
	42A	ECC3		Both	Yes	No
SAS AA Cable 6m - HD Narrow						
	42A	ECC4		Both	Yes	No
Port Converter Cable for UPS						
	42A	ECCF		Initial	N/A	No
Custom Serv. Specify, Shen						
	42A	ECSC		Both	Yes	No

Custom Serv. Specify, Mexico
42A ECSM Both Yes No
Custom Serv. Spec Poughkeepsie
42A ECSP Both Yes No
Cognos Business Intelligence
42A EHCE Initial N/A No
IIS / Data Stage
42A EHDS Initial N/A No
SPSS on Pwr Sol Ind
42A EHSS Initial N/A No
PCIe3 RAID SAS Adapter 4-port
42A EJ0J Both Yes No
PCIe3 12GB Cache RAID SAS Adap
42A EJ0L Both Yes No
Backplane 12 SFF & DVD Bays
42A EJ0N Both No No
Backplane 18 SFF & Dual IOA
42A EJ0P Both No No
Split#EJ0N: Add 2nd Control
42A EJ0S Both No No
SAS Ports: Dual IOA Backplane
42A EJ0Z Both Yes No
PCIe3 SAS Tape/DVD Adapter
42A EJ10 Both Yes No
PCIe3 FPGA Accelerator Adapter
42A EJ12 Both Yes No
Mode-2 (1)5901/5278
42A EJPJ Both Yes No
Mmode-2(2)5901/5278
42A EJPK Both Yes No
Mode-4 (1)5901/5278
42A EJPL Both Yes No
Mode-4 (2) 5901/5278
42A EJPM Both Yes No
Mode-4 (3) 5901/5278
42A EJPN Both Yes No
Specify Mode1 & (1)EJ0J-EXP24S
42A EJR1 Both Yes No
Specify Mode1 &1(2)EJ0J-EXP24S
42A EJR2 Both Yes No
Specify Mode1 & (2)EJ0J-EXP24S
42A EJR3 Both Yes No
Specify Mode2 & (4)EJ0J-EXP24S
42A EJR4 Both Yes No
Specify Mode4 & (4)EJ0J-EXP24S
42A EJR5 Both Yes No
Specify Mode2 & (1)EJ0J-EXP24S
42A EJR6 Both Yes No
Specify Mode2 & (2)EJ0J-EXP24S
42A EJR7 Both Yes No
Specify Mode2 & (1)EJ0J-EXP24S
42A EJRA Both Yes No
Specify Mode2 & (2)EJ0J-EXP24S
42A EJRB Both Yes No
Specify-Mode4 & (1)EJ0J-EXP24S
42A EJRC Both Yes No
Specify-Mode4 & (2)EJ0J-EXP24S
42A EJRD Both Yes No
Specify-Mode4 & (3)EJ0J-EXP24S
42A EJRE Both Yes No
Specify Mode1 & (2)EJ0L-EXP24S
42A EJRP Both Yes No
Specify Mode2 & (2)EJ0L-EXP24S
42A EJRS Both Yes No
Specify Mode2 & (2)EJ0L-EXP24S
42A EJRT Both Yes No
Non-paired Indicator EJ0L PCIe
42A EJRU Both Yes No
Front Bezel - 12-Bay BackPlane
42A EJTC Both Yes No
Front Bezel - 8-Bay BackPlane
42A EJTD Both Yes No
Front Bezel - 12-Bay BackPlane
42A EJTE Both Yes No

Front Bezel - 8-Bay BackPlane					
	42A	EJTF		Both	Yes No
Eight-bay 1.8-inch SSD Cage					
	42A	EJTM		Both	Yes No
Full Width Key USB, US English					
	42A	EK51		Both	Yes No
Full Width Key USB, French					
	42A	EK52		Both	Yes No
Full WidthKey USB,Italian					
	42A	EK53		Both	Yes No
Full Width Key USB, German/Aus					
	42A	EK54		Both	Yes No
Full Width Key USB, UK English					
	42A	EK55		Both	Yes No
Full Width Key USB, Spanish					
	42A	EK56		Both	Yes No
Full Width Key USB, Japanese					
	42A	EK57		Both	Yes No
Full Width Key USB, BrazilianP					
	42A	EK58		Both	Yes No
Full Width Key USB, Hungarian					
	42A	EK59		Both	Yes No
Full Width Key USB, Korean					
	42A	EK60		Both	Yes No
Full Width Key USB, Chinese					
	42A	EK61		Both	Yes No
Full Width Key USB, French Can					
	42A	EK62		Both	Yes No
Full Width Key USB, Belgian/UK					
	42A	EK64		Both	Yes No
Full Width Key USB, Swedish/Fi					
	42A	EK65		Both	Yes No
Full Width Key USB, Danish					
	42A	EK66		Both	Yes No
Full Width Key USB, Bulgarian					
	42A	EK67		Both	Yes No
Full Width Key USB, Swiss/Fr/G					
	42A	EK68		Both	Yes No
Full Width Key USB, Norwegian					
	42A	EK69		Both	Yes No
Full Width Key USB, Dutch					
	42A	EK70		Both	Yes No
Full Width Key USB, Portuguese					
	42A	EK71		Both	Yes No
Full Width Key USB, Greek					
	42A	EK72		Both	Yes No
Full Width Key USB, Hebrew					
	42A	EK73		Both	Yes No
Full Width Key USB, Polish					
	42A	EK74		Both	Yes No
Full Width Key USB, Slovakian					
	42A	EK75		Both	Yes No
Full Width Key USB, Czech					
	42A	EK76		Both	Yes No
Full Width Key USB, Turkish					
	42A	EK77		Both	Yes No
Full Width Key USB, LA Spanish					
	42A	EK78		Both	Yes No
Full Width Key USB, Arabic					
	42A	EK79		Both	Yes No
Full Width Key USB, Thai					
	42A	EK80		Both	Yes No
Full Width Key USB, Russian					
	42A	EK81		Both	Yes No
Full Width Key USB, Slovenian					
	42A	EK82		Both	Yes No
Full Width Key USB, US English					
	42A	EK83		Both	Yes No
PDU Access Cord 0.38m					
	42A	ELC0		MES	Yes No
#ESD4 Load Source Specify					
	42A	ELS4		Both	Yes No
#ES17 Load Source Specify					
	42A	ELS7		Both	Yes No

#ESD8 Load Source Specify					
	42A	ELS8	Both	Yes	No
#ESDA Load Source Specify					
	42A	ELSA	Both	Yes	No
#ES0H Load Source Specify 775G					
	42A	ELSH	Both	Yes	No
#ES0M Load Source Specify					
	42A	ELSM	Both	Yes	No
#ES0P Load Source Specify					
	42A	ELSP	Both	Yes	No
#ESDS Load Source Specify					
	42A	ELSS	Both	Yes	No
#ESDU Load Source Specify					
	42A	ELSU	Both	Yes	No
#ESFA Load Source Specify					
	42A	ELTA	Both	Yes	No
#ESFE Load Source Specify					
	42A	ELTE	Both	Yes	No
#ESFN Load Source Specify					
	42A	ELTN	Both	Yes	No
#ESEY Load Source Specify					
	42A	ELTY	Both	Yes	No
16 GB DDR3 Memory					
	42A	EM8B	Both	Yes	No
32 GB DDR3 Memory					
	42A	EM8C	Both	Yes	No
64 GB DDR3 Memory					
	42A	EM8D	Both	Yes	No
1m 10GbE Cable SFP+ Act Twinax					
	42A	EN01	Both	Yes	No
3m 10GbE Cable SFP+ Act Twinax					
	42A	EN02	Both	Yes	No
5m 10GbE Cable SFP+ Act Twinax					
	42A	EN03	Both	Yes	No
PCIe2 16Gb 2-port Fibre Channe					
	42A	EN0A	Both	Yes	No
PICe2 4-port 10Gb FCoE & 1GbE					
	42A	EN0H	Both	Yes	No
PCIe2 4-pt(10+1 GbE)SR+RJ45					
	42A	EN0S	Both	Yes	No
PCIe2 4-pt(10+1GbE)CRSR+RJ45					
	42A	EN0U	Both	Yes	No
PCIe2 2-pt 10/1GbE BaseT RJ45					
	42A	EN0W	Both	Yes	No
PCIe 1-port Bisync Adapter					
	42A	EN13	Both	Yes	No
6-core 3.89 GHz Proc Card					
	42A	EPXE	Both	No	No
8-core 4.15 GHz Proc Card					
	42A	EPXF	Both	No	No
12-core 3.52 GHz Proc Card					
	42A	EPXH	Both	No	No
One Proc Activation for #EPXE					
	42A	EPYE	Both	Yes	No
One Proc Activation for #EPXF					
	42A	EPYF	Both	Yes	No
One Proc Activation for #EPXH					
	42A	EPYH	Both	Yes	No
Quantity 150 of #3452 SAS Cabl					
	42A	EQ02	Both	Yes	No
Quantity 150 of #3453 SAS YO					
	42A	EQ03	Both	Yes	No
Quantity of 150 #ES0C					
	42A	EQ0C	Support	Yes	No
Quantity of 150 #ES0D					
	42A	EQ0D	Support	Yes	No
Quantity 150 # ES0G 775G SSD					
	42A	EQ0G	Both	Yes	No
Quantity 150 #ES0H 775GB SSD					
	42A	EQ0H	Both	Yes	No
Quantity 150 #ES19 387GB SSD					
	42A	EQ19	Both	Yes	No
Quantity 150 #ES1A 387GB SSD					
	42A	EQ1A	Both	Yes	No

Quantity 150 of #1738					
	42A	EQ38	Both	Yes	No
Quantity 150 of #1752					
	42A	EQ52	Both	Yes	No
Quantity 150 #ESD2 1.1TB Disk					
	42A	EQD2	Both	Yes	No
Quantity 150 #ESD3 1.2TB Disk					
	42A	EQD3	Both	Yes	No
Quantity 150 of #ESEY 283 GB S					
	42A	EQEY	Both	Yes	No
Quantity 150 of #ESEZ 300GB					
	42A	EQEZ	Both	Yes	No
Quantity 150 of #ESFN 571GB					
	42A	EQFN	Both	Yes	No
Quantity 150 of #ESFP 600GB					
	42A	EQFP	Both	Yes	No
42U Slim Rack					
	42A	ER05	MES	Yes	No
RFID Tags for Compute Nodes					
	42A	ERF1	Initial	N/A	No
387GB SFF-2 SSD for AIX/Linux					
	42A	ES0C	Support	Yes	No
387GB SFF-2 SSD for IBM i					
	42A	ES0D	Support	Yes	No
775GB SFF-2 SSD for AIX/Linux					
	42A	ES0G	Both	Yes	No
775GB SFF-2 SSD for IBM i					
	42A	ES0H	Both	Yes	No
387GB SFF-3 SSD (AIX/Linux)					
	42A	ES0L	Both	Yes	No
387GB SFF-3 SSD (IBM i)					
	42A	ES0M	Both	Yes	No
775GB SFF-3 SSD (AIX/Linux)					
	42A	ES0N	Both	Yes	No
775GB SFF-3 SSD (IBM i)					
	42A	ES0P	Both	Yes	No
387GB 1.8" SSD for AIX/Linux					
	42A	ES16	Both	Yes	No
387GB 1.8" SSD for IBM i					
	42A	ES17	Both	Yes	No
387GB SFF-2 SSD for AIX/Linux					
	42A	ES19	Both	Yes	No
387GB SFF-2 SSD for IBM i					
	42A	ES1A	Both	Yes	No
S&H - No Charge					
	42A	ESC0	Initial	N/A	No
S&H-b					
	42A	ESC6	Initial	N/A	No
1.1TB 10K RPM SAS SFF-2 Disk					
	42A	ESD2	Both	Yes	No
1.2TB 10K RPM SAS SFF-2 (AIX/					
	42A	ESD3	Both	Yes	No
571GB 10K RPM SAS SFF-3 Disk					
	42A	ESD4	Both	Yes	No
600GB 10K RPM SAS SFF3 Disk					
	42A	ESD5	Both	Yes	No
1.1TB 10K RPM SAS SFF-3 Disk					
	42A	ESD8	Both	Yes	No
1.2TB 10K RPM SAS SFF3 Disk					
	42A	ESD9	Both	Yes	No
283GB 15K RPM SAS SFF-3 Disk					
	42A	ESDA	Both	Yes	No
300GB 15K RPM SAS SFF-3 Disk					
	42A	ESDB	Both	Yes	No
300GB 10K RPM SAS SFF-3 Disk					
	42A	ESDR	Both	Yes	No
283GB 10K RPM SAS SFF-3 Disk					
	42A	ESDS	Both	Yes	No
146GB 15K RPM SAS SFF-3 Disk					
	42A	ESDT	Both	Yes	No
139GB 15K RPM SAS SFF-3 Disk					
	42A	ESDU	Both	Yes	No
283GB 15K SAS SFF-2 4K BLK HDD					
	42A	ESEY	Both	Yes	No

300GB 15K SAS SFF-2 4K BLK HDD	42A	ESEZ	Both	Yes	No
283GB 15K SAS SFF-3 4K BLK HDD	42A	ESFA	Both	Yes	No
300GB 15K SAS SFF-3 4K BLK HDD	42A	ESFB	Both	Yes	No
571GB 15K SAS SFF-3 4K BLK HDD	42A	ESFE	Both	Yes	No
600GB 15K SAS SFF-3 4K BLK HDD	42A	ESFF	Both	Yes	No
571GB 15K SAS SFF-2 4K BLK HDD	42A	ESFN	Both	Yes	No
600GB 15K SAS SFF-2 4K BLK HDD	42A	ESFP	Both	Yes	No
1TB Removable Disk Cartridge	42A	EU01	Both	Yes	No
RDX USB External Docking	42A	EU04	Both	Yes	No
RDX 320 GB Removable Disk Driv	42A	EU08	Both	Yes	No
1.5TB Removable Disk Cartridge	42A	EU15	Both	Yes	No
BLU Accelerationi Solution Ed	42A	EU2B	Initial	N/A	No
Software preload define	42A	EUC0	Initial	N/A	No
Software preload define	42A	EUC1	Initial	N/A	No
Software preload define	42A	EUC2	Initial	N/A	No
Software preload define	42A	EUC3	Initial	N/A	No
Core Use HW Feature	42A	EUC6	MES	Yes	No
Core Use HW Feature 10	42A	EUC7	MES	Yes	No

Feature conversions

Feature conversions for 8286-42A virtualization engine features:

From FC:	To FC:	Parts returned	Purchase price
5227 - PowerVM Standard Edition	5228 - PowerVM Enterprise Edition	No	

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Corrections

(Corrected on June 26, 2014)

In the Operating environment section, the noise level and sound power information was revised.

(Corrected on May 30, 2014)

In the Prices section, the information in the Initial/MES/Both/Support column was changed to "Both" for feature 2893.

(Corrected on May 23, 2014)

In the Description section, under Power S824 system configuration, the minimum defined initial order configuration was revised for feature EM8B. In the Product number section and Prices section , Feature 5289 was changed to no longer available.