



IBM Intelligent Cluster portfolio expands with portfolio enhancements from Mellanox, Brocade, LSI, and NetApp

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At a glance

The Intelligent Cluster™ portfolio has been enhanced with new InfiniBand and Ethernet switches.

The Intelligent Cluster offering solutions are built on:

- Rack-optimized servers from IBM®
- Industry-leading interconnections
- IBM service options: three-year on-site¹ limited warranty²

They offer easy-to-order, robust factory-built configurations supported by IBM .

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

Overview

Intelligent Cluster solutions, based on leading-edge technology, deliver high performance with award-winning energy and space efficiencies.

These comprehensive solutions can help simplify and expedite deployment of a Linux™ or Microsoft™ Windows™ high-performance computing (HPC) cluster. IBM combines all hardware, software, services, and support into a single integrated product offering, providing the benefit of a single point of contact for the entire cluster and eliminating the need to deal with multiple vendors for individual components.

The Intelligent Cluster is an outstanding choice for any organization that recognizes the economic advantages of a reduced time to deployment of an HPC cluster but has concerns about the time and technical resources required for the end-to-end implementation.

New offerings for Intelligent Cluster portfolio

Mellanox

- Mellanox SX6518 324 Port FDR IB Switch (0724-030)

The SX6518 switch system provides a fabric solution in a 16U form factor by delivering 36.3Tb/s of non-blocking bandwidth with 170 ns to 510 ns port latency with up to 56Gb/s full bi-directional bandwidth per port.

Brocade

- Brocade ICX 6610 Switch (0563-042 and -043)

The Brocade ICX 6610 delivers wire-speed, non-blocking performance across all ports to support latency-sensitive applications such as real-time voice and video streaming and VDI. Brocade ICX 6610 Switches can be stacked using four full-duplex 40 Gbps stacking ports that provide 320 Gbps of backplane stacking bandwidth with full redundancy, eliminating inter-switch bottlenecks. Additionally, each switch can provide up to eight 10 Gigabit Ethernet (GbE) ports for high-speed connectivity to the aggregation or core layers.

LSI

- LSI SAS 9201-16e HCA 16 Port SAS Switch (00Y3535)

The SAS 9201-16e is a 16-port 6Gb/s PCIe Host Bus Adapter. It is a full height adapter with four external mini-SAS connectors.

- LSI SAS 9206-16e HCA 16 Port SAS Switch (00Y3539)

The LSI SAS 9206-16e is a quad-port PCI Express® 3.0 Host Bus Adapter. The LSI SAS 9206-16e provides 16 lanes of 6Gb/s SAS data transfer rates. It has four external HD mini-SAS connectors.

NetApp

- NetApp DE6600 SAS Disk Controller JBOD (0796-011, -012, -013, and -014)

This 4U Disk Enclosure is available only as a component of a hardware GPFS™ solution released by Intelligent Clusters and sold only as part of the solution, not stand alone. There are four fully configured JBODs in this offering.

- IBM System x® GPFS Storage Server (58x2TB) (0796-011)
- IBM System x GPFS Storage Server (58x2TB+2x200GB SSD) (0796-012)
- IBM System x GPFS Storage Server (58x3TB) (0796-013)
- IBM System x GPFS Storage Server (58x3TB+2x200GB SSD) (0796-014)

Note: Some products may not be available in every country.

1 You may be asked certain diagnostic questions before a technician is sent.

2 For information on IBM's Statement of Limited Warranty, contact your IBM representative or reseller. Copies are available upon request.

Key prerequisites

- Device drivers, as required

Planned availability date

November 16, 2012

Description

IBM Intelligent Cluster description

Computing applications or environments often have more requirements than an individual computer or server can address. These requirements may be best addressed by several computers working together. A cluster is a group of interconnected individual computers, working together on a single problem, or consolidating workloads from multiple servers. Although these computers can operate individually, they are managed from a single point of control using cluster management software.

The Intelligent Cluster offering, a high-performance scalable cluster, is built on:

- Intel Xeon™ processors
- AMD Opteron processor-based, rack-optimized, and blade-based servers

The Intelligent Cluster supports Microsoft HPC Server 2008, SUSE Linux Enterprise Server (SLES) 11 (64-bit) service pack 2, and Red Hat Enterprise Linux 6.2. All hardware components are configured and integrated into racks in the factory prior to shipment. You must obtain the prerequisite version of the Linux operating system and device drivers as specified by IBM .

- Either you or a qualified IBM Business Partner can install the required software.
- You can use the optional installation services to have IBM install the operating system, device drivers, and General Parallel File System (GPFS).

For intensive storage applications, IBM provides a service for all cluster hardware components and IBM software during the applicable warranty period. The IBM Intelligent Cluster warranty support does not include support for the software. Software service and support can be purchased separately through an optional IBM Support Line service.

System x iDataPlex description

Flex nodes

Technology for flexible node configurations enables the servers for iDataPlex® to be configured in numerous ways. In addition to compute-oriented configurations, the iDataPlex solution offers a storage-rich configuration.

System x iDataPlex 2U Flex Chassis

- One or two server nodes
- Support for both high-performance SAS and low-cost, high-capacity SATA HDDs
- High-density storage offering
- Shared high-efficiency power supply
- Shared low-power-consuming fans
- Choice of SAS, Ethernet, or iSCSI host interface

Additional enhancements

For a listing of hardware components, refer to the [Overview](#) section.

The Intelligent Cluster offerings include an expanded array of hardware from other vendors, along with new features to help boost productivity for data centers.

New offerings for Intelligent Cluster portfolio

Switch descriptions

Note: A new switch description nomenclature is being introduced to help describe key information about the switch regarding airflow. PSE, oPSE, and SE are being added to the end of 1U switch descriptions.

- Port-side exhaust (PSE) airflow is typically installed in an enterprise rack such as the IBM 1410 rack family.
- Opposite port-side exhaust (oPSE) airflow is typically installed in an iDataPlex rack.
- Side exhaust (SE) is typically installed in an iDataPlex rack, but depending on the switch can also be installed in an Enterprise rack.

The suffixes do not necessarily determine rack support. Each switch is evaluated on its own merit for rack support.

Mellanox portfolio

- Mellanox SX6518 324 Port FDR IB Switch (0724-030 FC A3FT)

The SX6518 switch offers the highest-performing fabric solution by delivering high bandwidth and low latency to EDCs and HPC. High-P Networks built with the SX6518 can carry converged traffic with the combination of assured bandwidth and granular quality of service. Built with the Mellanox fifth-generation SwitchX InfiniBand switch device, the SX6518 provides up to 56 Gb/s (FDR) full bisectional bandwidth per port. The SX6518 supports a superior scalable platform that increases as the number of nodes per cluster and number of cores per node increases. This modular chassis switch is an ideal choice for building medium- to large-size clusters or for use as a core switch for very large clusters.

Features include:

- 324 FDR (56 Gb/s) ports in a 16U switch chassis
- 72.52 TB/s switching capacity
- 170 ns to 510 ns switching latency
- FDR/FDR10 support for FEC
- IBTA Specification 1.3- and 1.2.1-compliant
- QoS enforcement
- Port mirroring
- Adaptive routing
- Congestion control
- Reversible air flow
- Redundant power supplies
- Replaceable fan drawers

Management

- Integrated subnet manager agent (up to 324 nodes)
- Fast and efficient fabric bring-up
- Comprehensive chassis management
- Mellanox API for third-party integration
- Intuitive CLI and GUI for easy access
- Optional Mellanox Unified Fabric Manager (UFM)
- Temperature sensors and voltage monitors
- Fan speed controlled by management software

Brocade

- Brocade ICX 6610 Switch Chassis (0563-042 and -043)

Highlights:

- Delivers chassis-level performance and availability, providing an optimal user experience for streaming video, VDI, UC, and other critical applications
- Offers stacking performance with 320 Gbps of stacking bandwidth, eliminating inter-switch bottlenecks
- Provides up to 1 Tbps of total switching capacity with up to 384 1 GbE and 64 10 GbE per stack for campus network edge and aggregation layers
- Provides unmatched availability with four redundant 40 Gbps stacking ports per switch, hitless stacking failover, hot switch replacement, and dual hot-swappable power supplies and fans
- Simplifies network operations and protects investments with Brocade HyperEdge technology, enabling single-point network lifecycle management and advanced services sharing across a heterogeneous stack

Form factor: 1U

Dimensions and weight:

- Width: 429 mm (16.880 in.)
- Height: 44 mm (1.732 in.)
- Depth: 406.4 mm (16.00 in.)
- Weight: 6.78 kg (14.95 lb)

LSI

- LSI SAS9201-16e Quad-port mini-SAS x8 PCIe 2.0 SAS HBA

The LSI SAS 9201-16e, quad-port, host bus adapter provides connectivity and performance for external JBOD and external RAID enclosures. The LSI SAS 9201-16e provides 16 lanes of 6Gb/s SAS connectivity to 8 lanes of PCI Express 2.0. The HBA supports up to 512 SAS or SATA devices.

The LSI SAS 9201-16e has four (x4) external mini-SAS connectors (SFF8088) enabling a solution which provide SAS and SATA data transfer rates of 1.5, 3, and 6Gb/s per lane.

Connector - x4 external mini-SAS

- LSI SAS9206-16e quad-port x4 HD mini-SAS x8 PCIe 3.0 SAS HBA

The LSI SAS 9206-16e, quad-port, host bus adapter provides high performance for high-end servers and storage applications. The LSI SAS 9206-16e provides 16 lanes of 6Gb/s SAS data transfer rates. The adapter complies with the latest PCI Express 3.0 specification with 8Gb/s per lane. The adapter is backward compatible with previous PCIe generations and provides SAS and SATA data transfer rates of 6 and 3Gb/s per lane through automatic speed negotiation. The LSI SAS 9206-16e has four (x4) external HD mini-SAS connectors (SFF8644) enabling a low-profile solution and can achieve over 1 million IOPs.

Connector - x4 external HD mini-SAS

NetApp

- NetApp DE6600 SAS Disk Controller JBOD (0796-011, -012, -013, and -014)

This 4U Disk Enclosure is available only as a component of a hardware GPFS solution released by Intelligent Clusters and sold only as part of the solution, not stand alone. There are four fully configured JBODs in this offering.

- IBM System x GPFS Storage Server (58x2TB) (0796-011)

- IBM System x GPFS Storage Server (58x2TB+2x200GB SSD) (0796-012)
- IBM System x GPFS Storage Server (58x3TB) (0796-013)
- IBM System x GPFS Storage Server (58x3TB+2x200GB SSD) (0796-014)

This System x storage solution consists of fully populated JBODs, racked System x 3650 M4 servers, and a networking infrastructure integrated in 1410 racks. When deployed with GPFS, this design provides performance benefits for workloads such as Hadoop and Big Data.

IBM Platform Computing

Platform Computing simplifies and accelerates deployment and management of high-performance clusters, grids, and clouds. Platform Computing products can optimize the deployment of complex applications and workloads in many of the world's largest environments, including computationally and data intensive design, manufacturing, financial analytics, and business and research applications.

Many organizations face the constant challenge of managing the cost and complexity associated with managing, maintaining, and analyzing massive amounts of data across multiple environments. Platform Computing can help simplify the setup, integration, and resource management of heterogeneous infrastructure while driving up server utilization, accelerating application performance, and helping to greatly improve time to results. Business value is delivered in days versus weeks or months.

Product portfolio

Platform Computing delivers a focused technical computing management software portfolio ideal for engineering, financial services, digital media, oil and gas, life sciences, government laboratories, and other research and development organizations in need of simplified, high-performance, and agile systems workload and resource management. This includes:

- IBM Platform LSF® product family: Enables powerful workload management for demanding, distributed, and mission-critical, high-performance technical computing environments. Compared to other solutions that lack key components and vendor support, Platform LSF includes a comprehensive set of intelligent, policy-driven scheduling features. It is designed to enable optimal utilization of all compute infrastructure resources while increasing application throughput, helping to ensure a high return on investment.
- Platform HPC: Its robust cluster and workload management capabilities are accessible using the latest design in web-based interfaces, making it powerful, yet easy to use. The result is shorter time to system readiness and productivity as well as optimal application throughput for reduced time to results. Backed by the industry's best customer support, Platform HPC incorporates nearly two decades of product and technology leadership.
- Platform Symphony® : Enables enterprise-class management for running distributed application services on a scalable, shared, heterogeneous grid. It accelerates a wide variety of compute and data-intensive applications, quickly computing results while making optimal use of available infrastructure. Unlike other solutions that perform poorly or lack dynamic resource sharing, Platform Symphony's efficient low-latency middleware and scheduling architecture is designed to deliver the performance and agility required to predictably meet and exceed throughput goals for the most demanding analytic workloads, including Hadoop MapReduce applications.
- IBM Platform Cluster Manager: Provisions, runs, manages, and monitors high-performance computing clusters. This first release, Platform Cluster Manager Advanced Edition, automates assembly of multiple high-performance technical computing environments on a shared compute infrastructure for use by multiple teams. It creates an agile environment for running technical computing and analysis workloads to consolidate disparate cluster infrastructure, resulting in increased hardware utilization and the ability to meet or exceed SLAs while lowering costs.

- Platform MPI is a high-performance, production-quality implementation of the Message Passing Interface (MPI). Platform MPI supports the broadest range of industry-standard platforms, interconnects, and operating systems, helping ensure that parallel applications can run anywhere.
- Platform Analytics is an advanced tool for visualizing and analyzing massive amounts of workload data. It enables managers, planners, and administrators to easily correlate job, resource, and license data from one or multiple clusters for data-driven decision making. With better insight into HPC data center environments, organizations can identify and quickly remove bottlenecks, spot emerging trends, and plan capacity more effectively.

Traditional business intelligence solutions require significant time and multiple steps to translate raw data into usable information. However, Platform Analytics incorporates innovative visualization tools that are built on top of a powerful analytics engine for quick and easy results. You can use the preconfigured dashboards or construct your own, quickly answer questions about your technical computing infrastructure and applications, and use that information to optimize technical computing resource utilization.

IBM Racks

- Intelligent Cluster 42U 1100 mm Enterprise Rack (1410-PRB) and Expansion Rack (1410-ERB)

42U 1100mm Enterprise V2 Dynamic Rack

The IBM 42U 1100mm V2 Dynamic Rack is an industry-standard 19-inch rack that supports BladeCenter® and rack-mountable System x servers and options. This 42U rack conforms to the EIA-310-D industry standard for 19-inch, type A rack cabinets, and has outriggers (stabilizers), allowing for movement of even large loads.

Features include:

- Perforated front door that allows for air flow.
- Six side-wall compartments that support 1U-high power distribution units (DUs) and switches without taking up valuable rack space.
- Cable management slots that route Velcro strips around cables.
- Easy-to-install and remove side panels standard on the 4PX models.
- Front door that can be hinged on either side, providing flexibility to open in either direction.
- Rear door that improves access and serviceability.
- Front and rear doors and side panels that include locks and keys to help secure servers.
- Heavy duty casters with outriggers (stabilizers) that come with the 42U Dynamic Rack for added stability, allowing movement of even large loads.
- Tool-less 0U PDU rear channel mounting (1U PDU requires screws) that reduces installation time and increases accessibility.

Description

- IBM 42U 1100mm Enterprise V2 Dynamic Rack

This rack includes everything needed to set up a high-powered IT solution with rack solutions that are ready to deploy. This Dynamic Rack features:

- Additional space for front cable management
- 600 mm standard width to complement current raised-floor data center designs
- Increased depth to 1100 mm from 1000 mm to improve cable management
- Increased door perforation to maximize airflow
- Support for tool-less 0U PDU mounting; 1U PDU requires screws
- Front-to-back cable raceways

- Dynamic rack that supports shipping fully integrated solutions
- Lockable doors and side panels that all use the same key
- Thermal optimization for sustained performance
- Heavy-duty casters that help to safely move large loads in the rack
- Rear door for easy access for serviceability

IBM Intelligent Cluster ecosystem

Intelligent Cluster 42U 1200 mm Deep Primary and Expansion Racks

IBM 42U 1200 mm Deep Rack offerings are industry-standard 19-inch server cabinets that are designed for high-availability System x and BladeCenter environments. They are optimized to help maximize floor space, expedite installation, simplify cable management, and increase accessibility for improved serviceability. With a depth of 1200 mm (approximately 47 inches), these racks offer expansive rear channels with tool-less button mounts for virtually effortless installation of up to six IBM 0U vertical rack strip power distribution units (PDUs) or can easily accommodate vertical cable organizers or mounting of other equipment.

IBM Dynamic Racks enable you to receive your System x and BladeCenter solutions fully integrated in the rack and ready to instantly deploy into your data center. Dynamic Racks are designed to affordably, safely, and securely handle shipping fully loaded configurations up to 950 kg (2,100 lb), which can help to increase your efficiency by reducing the time and cost that is associated with typical server deployments. However, if you do not need to ship the rack fully loaded, IBM offers cost-effective static offerings that are ideal when doing on-site integration.

The racks contain the following items:

- One rack
- Rear and front doors
- Side panels (except expansion racks ship without side panels)
- Shipping pallet and ramp
- Removable outriggers
- Keys for the rack doors and side panels
- One front stabilizer bracket
- Two bolt-down brackets/side stabilizers
- Hardware kit containing miscellaneous rack components
- Hardware kit for attaching the expansion rack to a rack suite (expansion racks only)

Features include

42U 600 mm x 1200 mm designs

- Cost-effective 42U static (non-ship loadable) and dynamic (fully ship loadable) static models
- Designed for high-availability System x and BladeCenter environments
- 600 mm standard single floor tile width to complement current raised-floor data center designs
- 1200 mm depth for improved cable management and air circulation
- Compliance with the EIA-310-D industry standard for 19-inch, type A rack cabinets

Rear cable management:

- Features expansive rear channels with tool-less button mounts for virtually effortless installation of up to six IBM 0U vertical rack strip PDUs, or can easily accommodate vertical cable organizers or mounting of other equipment.

- Zero U mounting design conserves valuable EIA space for IT equipment, simplifies cable management, reduces installation time, and increases accessibility.

Side pockets: Six sidewall compartments support installation of 1U PDUs and switches without unnecessarily taking up valuable rack space.

Overhead cable access: Front cable access portals and a large rear adjustable opening provide improved overhead cable management.

Standard stabilizers: Standard front and side stabilizers enable static rack stability when equipment is routinely installed, removed, or accessed.

Adjustable leveling pads: Four easily adjustable leveling pads ensure stability and prevent rolling on casters.

U markings: Clear U markings on mounting rails aid in space planning and installation.

42U cabinets are less than 2 m (6.56 ft) in height on casters. Fixed front and rear swivel heavy duty casters can easily accommodate the maximum load capacity, while still being less than 2 m (6.56 ft) in height to allow the 42U rack models to fit under most doorways.

Perforated doors: Perforated front and rear doors enable maximum airflow.

Split rear door: Split rear door design improves access and serviceability.

Secure doors and panels: Lockable doors and side panels provide a more secure environment for equipment and data.

Quick release hinges: Quick release hinge design allows the front door to easily be mounted on either side of the cabinet. This provides for flexible placement alternatives by allowing the door to open in either direction.

42U dynamic ship load offerings:

- Affordable 42U dynamic rack models that support shipping ready for instant deployment fully integrated solutions up to 952.54 kg (2,100 lb)
- Robust frame, mounting rails, and shock reusable packaging to help protect the heaviest loads in transit
- Integrated outriggers for dynamic tilt stability and safety at maximum loads

Expansion cabinets: All the primary IBM 1200 mm Deep Rack offerings have corresponding expansion cabinets. These models ship without side panels and include buying kits for seamless creation of a suite of racks.

42U Enterprise Rack (1410-4RX)

This specially designed 42U rack is one of two racks that can be used in Intelligent Cluster configurations.

This rack features base stabilizers to enable shipment from the factory with Intelligent Cluster components such as power units, nodes, switches, cables, and consoles mounted in position and with intrarack cabling installed according to applicable Intelligent Cluster racking rules.

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This specially designed 42U rack is one of two racks that can be used in IBM Intelligent Cluster configurations.

This rack features base stabilizers to enable shipment from the factory with IBM Intelligent Cluster components, such as power units, nodes, switches, cables, and consoles, mounted in position and with intrarack cabling installed according to applicable IBM Intelligent Cluster racking rules.

The Enterprise Rack is designated as IBM-installed for easy on-site installation. This designation, coupled with the factory integration services and optional on-site installation and verification of software, results in a ready-to-run cluster system. The cost of the hardware installation is included in the price of the rack. The cost of software installation by IBM or a qualified IBM Business Partner is not included.

25U Standard Rack (1410-2RX)

This 25U rack addresses the requirements of smaller departmental cluster configurations.

It is shipped from the factory with IBM Intelligent Cluster components such as power units, nodes, switches, cables, and consoles mounted in position and with intrarack cabling installed according to applicable Intelligent Cluster racking rules.

The 1410-2RX rack is designated as IBM-installed for easy on-site installation. This designation, coupled with the factory integration services and optional on-site installation and verification of software, results in a ready-to-run cluster system. The cost of the hardware installation is included in the price of the rack. The cost of software installation by IBM or a qualified IBM Business Partner is not included.

Power and cooling advantages for IBM Intelligent Cluster

The IBM energy management portfolio tackles the challenge to increase power and thermal efficiency and help reduce costs on many levels. Inside the system, all System x and BladeCenter servers start with Calibrated Vectors Cooling™ technology. This feature allows dual paths of air to each component, helping to improve uptime and longevity, and reducing wasteful air movement and heat generation. It can be coupled with more energy-efficient power supplies.

For clusters within a rack, System x servers are designed to work at full density in a well-planned rack solution. They can also operate at extended temperature ranges to keep the system up and running, even in some cases in extreme temperature and many potential failure conditions. IBM rack-based cluster solutions are engineered to optimize air flow and prevent undesirable recirculation within the rack, so that servers can run in optimal temperature conditions.

IBM blade-based clusters enable you to pack more processors into the same power and cooling envelope, as well as better utilize floor space and right-size data center design. With BladeCenter servers, less power per processor means more processing capacity per kilowatt. The BladeCenter runs cooler to deliver greater reliability.

For dense data center environments, IBM delivers smart rack-level heat solutions, such as the super-efficient IBM Rear Door Heat eXchanger. The water-cooled door can dissipate heat generated from the back of the rack to reduce the overall room temperature. With this combination of benefits at the server and data center level, IBM systems can offer strong power and cooling benefits to IBM Intelligent Cluster clients.

IBM Rear Door Heat eXchanger (32R0712)

The Rear Door Heat eXchanger for IBM Enterprise Racks helps keep your growing data center at a safer temperature without adding air conditioning units. This unobtrusive solution brings more cooling capacity to areas where the heat is greatest, around racks of servers with multiple, more powerful processors.

Design simplicity delivers efficient cooling

The size and appearance of the Rear Door Heat eXchanger are similar to those of a standard rack acoustical 66 cm (26 in) wide door. It adds a mere 10 cm (4 in)

to the depth of a rack, yet a single door may remove up to 50,000 Btu of heat (or approximately 15 kW). The door is designed to attach to a 42U-high IBM Enterprise Rack and swings wide to provide unrestricted access to electrical components. Sealed coils, filled with above-dewpoint, chilled water, passively remove a significant amount of the heat generated in a fully populated rack. This cooling efficiency may help eliminate the need for additional ac power and the associated construction cost.

Cluster Enablement Consulting for IBM Intelligent Cluster

Cluster Enablement Consulting is available at a flat-rate price per day that includes resource, travel, and expenses for predefined engagements.

The fee covers expenses for cluster enablement engagements of the following type:

- Staging and integration of cluster hardware and software components at the manufacturing site or another location
- Cluster integration into an existing cluster or cluster upgrades
- Customer acceptance testing
- Software installation and integration, including operating system, management software, file system, compilers, or customer applications
- Instructor-led on-site training

Factory integration -- product customization services for IBM Intelligent Cluster

The Intelligent Cluster features several hardware validation and test services collectively referred to as product customization services. These services include the integration of hardware and software on AMD and System x servers in innovative manufacturing facilities. You can deploy systems in almost any IT environment. This means your IT resources can be better used elsewhere.

This statement is especially true for Linux cluster solutions. Given the complexity of a Linux cluster, you want the confidence that the solution arrives properly configured and ready to integrate in your data center. These options are integrated into the servers. The System x platform also offers a Blade Integration Service, which, for a flat fee, includes installation of:

- Hardware options on the blades
- Options in the BladeCenter chassis
- Blades in the chassis

IBM can install the chassis in an Enterprise Rack and have it shipped to you. Performing the same services on-site would take hours or even days.

In addition, Intelligent Cluster manufacturing offers specific services for the IBM Intelligent Cluster called Cluster Systems Validation and Test to confirm that all system settings are enabled and tested to enable smooth on-site deployment:

- Enable BIOS management
- Configure BIOS on each node
- Set up ASM and RSA
- Create disk partitioning
- Configure network, firewall, language, and time zone
- Configure services
- Set up storage
- Install terminal server
- Set up DNS
- Test, debug, and confirm that cluster is ready for operation

IBM has the skills and technology to offer this type of service. The Intelligent Cluster manufacturing product customization portfolio offers a tremendous value, especially for clients interested in complex offerings such as Linux cluster.

Installation and deployment services

The Intelligent Cluster solutions deployed in the 1410-4RX and 1410-2RX rack enclosures include on-site hardware installation and basic installation planning services for announced content.

System x iDataPlex ecosystem

IBM System x iDataPlex Rack (7825)

This specially designed rack is used in iDataPlex configurations.

The iDataPlex Rack is designated as IBM-installed for easy on-site installation. This designation, coupled with the factory integration services and optional on-site installation and verification of software, results in a ready-to-run cluster system.

The iDataPlex solution offers increased density in a holistic rack design. For ease of serviceability, all hard drive, planar, and I/O access is from the front of the rack.

Power and cooling advantages

iDataPlex servers help pack more processors into the same power and cooling envelope, better utilize floor space, and "right size" data center design. With the iDataPlex solution, less power per processor means more processing capacity per kilowatt. The iDataPlex can run cooler to deliver greater reliability.

System x iDataPlex Rear Door Heat eXchanger (43V6048)

For dense data center environments, IBM offers smart rack-level heat management solutions like the super-efficient Rear Door Heat eXchanger. The water-cooled door is designed to dissipate heat generated from the back of the rack to help reduce the overall room temperature. With this combination of benefits at the server and data center level, IBM systems deliver strong power and cooling benefits to iDataPlex clients.

The iDataPlex Rear Door Heat eXchanger for iDataPlex racks helps reduce the air temperature in your growing data center to approximately the same air temperature as that entering the rack, alleviating the need to add air conditioning units. This unobtrusive solution brings more cooling capacity to areas where the heat is greatest, around racks of servers with multiple, more powerful processors.

Design simplicity delivers cooling efficiency that can help alleviate or even eliminate the need for additional air conditioning power and the associated construction cost.

IBM High Density Plus PDU

The new PDUs make it quick and simple to deploy, protect, and manage your high-density System x iDataPlex rack environment. iDataPlex Enterprise PDU+ models combine receptacle density with advanced intelligent power management capabilities that seamlessly integrate with IBM Systems Director Active Energy Manager™.

Solution Enablement Consulting

Solution Enablement Consulting is available at a flat-rate price per day that includes resource, travel, and expenses for predefined engagements.

The fee covers expenses for solution enablement engagements of the following type:

- Staging and integration of hardware and software components at the manufacture site or another location
- Solution integration into an existing cluster or cluster upgrades
- Solution acceptance testing
- Software installation and integration, including operating system, management software, file system, compilers, or customer applications
- Instructor-led on-site training

Factory integration -- product customization services

The iDataPlex offering features several hardware validation and test services collectively referred to as product customization services. These services include the integration of hardware and software on Intel™ processor-based System x servers in technologically advanced manufacturing facilities. You can deploy systems in almost any IT environment. This means your IT resources can be better used elsewhere.

These options are integrated into the servers. IBM can install the chassis in an iDataPlex Rack and have it shipped to you. Performing the same services on-site could take hours or even days.

In addition, iDataPlex manufacturing offers specific services for the iDataPlex called Cluster Systems Validation and Test to confirm that all system settings are enabled and tested to enable smooth on-site deployment:

- Enable BIOS management
- Configure BIOS on each node
- Set up ASM and RSA
- Create disk partitioning
- Configure network, firewall, language, and time zone
- Configure services
- Set up storage
- Install terminal server
- Set up DNS
- Test, debug, and confirm that cluster is ready for operation

IBM has the skills and technology to offer this type of service. The iDataPlex product customization portfolio delivers tremendous value, especially for clients interested in complex offerings such as Linux cluster.

Services

Installation and deployment services

The System x iDataPlex solutions deployed in the iDataPlex rack enclosures include on-site installation of hardware.

Additional optional on-site software installation and customization services include Linux and Windows customization and skills transfer for system administration personnel.

Lab services

iDataPlex installation planning

Features:

- Assess client's air conditioning and air distribution in support of iDataPlex systems

- Evaluate the need for any Rear Door Heat eXchanger installations and offer necessary guidance
- Review the iDataPlex power specifications based on the client's hardware configurations and offer necessary guidance

Typical benefits:

- Offers accurate environmental information as required for supporting iDataPlex systems most reliably
- Identifies the most efficient approach to the iDataPlex system cooling and ventilation needs
- Reduces potential installation shortfalls with open and ongoing communication with the client surrounding their specific iDataPlex system requirements

On-site post installation services

Cluster setup and configuration:

- Configure and verify console switches
- Configure management node:
 - Verify and update BIOS
 - Verify and configure RAID
 - Install and configure operating system
 - Install and configure cluster manager
- Configure and verify Ethernet networking equipment:
 - Configure switch
 - Test and validate Gb Ethernet network operation
- Configure storage subsystem
- Verify and configure storage node RAID
- Load and validate operating system on compute nodes and storage nodes
- Check and update node BIOS and firmware
- Configure and verify InfiniBand networking equipment (depending on configuration)
 - Configure InfiniBand switch
 - Test and validate InfiniBand network
- Implement and verify:
 - File system
 - Default configurations of resource manager, scheduler resource manager, and scheduler
 - Miscellaneous cluster software and functions, including compilers, MPI, and SSH

Test and validate cluster operation:

- Perform power-down and power-up test
- Perform testing (stream, ping-pong) to place load on the cluster
- Analyze results for anomalies and address problems

Skills transfer

Quarterly health check

One-year support agreement includes:

- 8 x 5 support (except weekends and holidays) with 24-hour response time
- Remote monitoring and alerting of the systems and monitoring the operating system

- Maintaining patch and firmware releases (Red Hat, SUSE Linux , and Storage Manager) as validated by IBM on ongoing basis
- Four site visits per year (one per quarter):
 - Health check assessment
 - Software update (firmware, device drivers, and patches for other software if applicable)
 - Skills transfer on best practices, such as TRES administration and updates and Storage Manager (if applicable)
 - Performance tuning (if applicable)

For more information on these services, visit

<http://www-03.ibm.com/systems/services/>

iDataPlex systems management

The System x iDataPlex product family offers systems management support for large scale-out compute environments via standards-based, scriptable interfaces. This support starts with the embedded Intelligent Platform Management Interface (IPMI) baseboard management controller (BMC).

For rapid diagnosis of problems, iDataPlex supports IBM Dynamic System Analysis (DSA) preboot diagnostics as well as online data collection for problem determination in supported Windows and Linux environments. Refer to the Dynamic System Analysis product documentation for additional detail on DSA features.

iDataPlex compute nodes support IBM Systems Director with limited function. Refer to IBM Systems Director product documentation for specific details on supported functions on iDataPlex hardware.

The compute nodes have been tested with the Extreme Cloud Administration Toolkit (xCAT), an open source community-based cluster administration tool set tailored to scale-out compute environments. You can download xCAT from SourceForge at

<http://sourceforge.net/projects/xcat/>

For additional information on xCAT, contact your IBM Sales and Support Team, or visit

<http://www.xcat.org/>

System x iDataPlex - Product customization services

The following product customization services are included with iDataPlex .

For information, refer to the following and contact your IBM representative.

Description	Feature
iDataPlex Rack Assembly (100U)	2312
Rack Installation of 1U Component in iDataPlex	2313
Rack Installation greater than 1U Component in iDataPlex	2314
iDataPlex Hardware / Configuration Verification	2315

Applicable quantities are configuration-dependent and will be determined in the configuration process.

IBM Intelligent Cluster - Product customization services

The following product customization services are included with IBM Intelligent Cluster .

For information, refer to the following and contact your IBM representative.

Description	Part number
Rack Assembly - 25U Rack	41Y4570
Rack Assembly - 42U Rack	25R4167
Rack Installation of 1U Component	25R4168
Rack Installation greater than 1U Component	25R4169
BladeCenter Chassis Configuration	58P8676
Cluster Hardware and Fabric Verification - 42U Rack	25R4170
Cluster Hardware and Fabric Verification - 25U Rack	40K9802
Cluster Enablement Consulting - 1 Day	26K7785

Applicable quantities are configuration-dependent and will be determined in the configuration process.

Section 508 of the US Rehabilitation Act

IBM makes no representation about the Section 508 status of the third-party electronic and information technology product in this offering. Contact the vendor for specific, current information on the Section 508 status of this product.

Product positioning

IBM Intelligent Cluster

The Intelligent Cluster is positioned within the IBM System x family of offerings as the platform of choice for high-value and high-performance scalable Linux cluster solutions.

System x iDataPlex

IBM delivers innovations that meet your specific needs. The right choice depends on your business requirements, target applications, and operating environment. iDataPlex focuses on:

- Price/performance per watt
- Fast, large scale-out deployments
- Compute density
- Customization
- Targeted workloads
- Data center model for rip-and-replace IT resources

The iDataPlex hardware platform is positioned for cost-conscious large enterprises that rely on recovery-oriented architecture that enables redundancy through the software layer instead of redundant hardware.

Product number

The following are newly announced features on the specified models of the IBM xSeries 0563, 0724, 0796 machine type:

Description	MT	Model	Feature
0563-HD4	0563	HD4	
0563-HD5	0563	HD5	
0724-HCP	0724	HCP	
0796-HC1	0796	HC1	
0796-HC2	0796	HC2	
0796-HC3	0796	HC3	
0796-HC4	0796	HC4	
Rack location U01	0796	HC1	3201
		HC2	

		HC3	
		HC4	
Rack location U02	0796	HC1	3202
		HC2	
		HC3	
		HC4	
Rack location U03	0796	HC1	3203
		HC2	
		HC3	
		HC4	
Rack location U04	0796	HC1	3204
		HC2	
		HC3	
		HC4	
IBM 3M SAS Cable	0796	HC1	3707
		HC2	
		HC3	
		HC4	
IBM 1M SAS Cable	0796	HC1	3708
		HC2	
		HC3	
		HC4	
2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable	0796	HC1	6252
		HC2	
		HC3	
		HC4	
1m IBM QSFP+-to-QSFP+ cable	0563	HD4	A1DP
		HD5	
3m IBM QSFP+-to-QSFP+ cable	0563	HD4	A1DQ
		HD5	
1m LC-LC Fiber Cable (networking)	0563	HD4	A1DS
		HD5	
5m LC-LC Fiber Cable (networking)	0563	HD4	A1DT
		HD5	
25m LC-LC Fiber Cable (networking)	0563	HD4	A1DU
		HD5	
IBM GNRx Solution	0796	HC1	A3BB
		HC2	
		HC3	
		HC4	
IBM System x GPFS Storage Server JBOD (58x2TB)	0796	HC1	A3FJ
Mellanox SX6518 FDR14 InfiniBand Switch	0724	HCP	A3FT
Brocade ICX 6610 Switch (PSE)	0563	HD4	A3G5
Brocade ICX 6610 Switch (oPSE)	0563	HD5	A3G6
IBM System x GPFS Storage Server JBOD (58x2TB+2x200GB SSD)	0796	HC2	A3GG
IBM System x GPFS Storage Server JBOD (58x3TB)	0796	HC3	A3GH
IBM System x GPFS Storage Server JBOD (58x3TB+2x200GB SSD)	0796	HC4	A3GJ
Intelligent Cluster OEM Pub Pack	0563	HD4	A3J0
		HD5	
Intelligent Cluster OEM Pub Pack	0724	HCP	
Intelligent Cluster OEM Pub Pack	0796	HC1	
		HC2	
		HC3	
		HC4	

The following are features already announced for the 0563, 0724, 0778, 0796, 3331, and 8852 machine types:

Description	MT	Model	Feature
0563-HCP	0563	HCP	
0563-HD4	0563	HD4	
0563-HD5	0563	HD5	
0563-HD6	0563	HD6	
0724-HCP	0724	HCP	
0778-HC1	0778	HC1	
0796-HC1	0796	HC1	
0796-HC2	0796	HC2	
0796-HC3	0796	HC3	
0796-HC4	0796	HC4	

3331-HC1	3331	HC1	
8852-HC1	8852	HC1	
UID Asset Tag Label	0563	HD4	0747
		HD5	
		HD6	
UID Asset Tag Label	0724	HCP	
UID Asset Tag Label	0796	HC1	
		HC2	
		HC3	
		HC4	
EMEA Long Leadtime Configurations	0563	HD4	1763
		HD5	
		HD6	
EMEA Long Leadtime Configurations	0724	HCP	
EMEA Long Leadtime Configurations	0796	HC1	
		HC2	
		HC3	
		HC4	
Hungary CHW plant 9SH	0563	HD4	1764
		HD5	
		HD6	
Hungary CHW plant 9SH	0724	HCP	
Hungary CHW plant 9SH	0796	HC1	
		HC2	
		HC3	
		HC4	
Guad CHW plant 9KQ	0563	HD4	1765
		HD5	
		HD6	
Guad CHW plant 9KQ	0724	HCP	
Guad CHW plant 9KQ	0796	HC1	
		HC2	
		HC3	
		HC4	
ISTC CHW 9K2	0563	HD4	1766
		HD5	
		HD6	
ISTC CHW 9K2	0724	HCP	
ISTC CHW 9K2	0796	HC1	
		HC2	
		HC3	
		HC4	
RTP CHW 9NR	0563	HD4	1767
		HD5	
		HD6	
RTP CHW 9NR	0724	HCP	
RTP CHW 9NR	0796	HC1	
		HC2	
		HC3	
		HC4	
Offload Manufacturing to Guadalajara HVEC	0563	HD4	1768
		HD5	
		HD6	
Offload Manufacturing to Guadalajara HVEC	0724	HCP	
Offload Manufacturing to Guadalajara HVEC	0796	HC1	
		HC2	
		HC3	
		HC4	
Offload Manufacturing to RTP HVEC	0563	HD4	1769
		HD5	
		HD6	
Offload Manufacturing to RTP HVEC	0724	HCP	
Offload Manufacturing to RTP HVEC	0796	HC1	
		HC2	
		HC3	
		HC4	
Offload Manufacturing to ISTC	0563	HD4	1770
		HD5	
		HD6	
Offload Manufacturing to ISTC	0724	HCP	
Offload Manufacturing to ISTC	0796	HC1	

		HC2	
		HC3	
		HC4	
Capacity Scheduling Service	0563	HD4	1772
		HD5	
		HD6	
Capacity Scheduling Service	0724	HCP	
Capacity Scheduling Service	0796	HC1	
		HC2	
		HC3	
		HC4	
Custom SLA Scheduling Service	0563	HD4	1796
		HD5	
		HD6	
Custom SLA Scheduling Service	0724	HCP	
Custom SLA Scheduling Service	0796	HC1	
		HC2	
		HC3	
		HC4	
Custom Asset Tagging - Standard	0563	HD4	2200
		HD5	
		HD6	
Custom Asset Tagging - Standard	0724	HCP	
Custom Asset Tagging - Standard	0796	HC1	
		HC2	
		HC3	
		HC4	
Custom Asset Tagging - Enhanced	0563	HD4	2201
		HD5	
		HD6	
Custom Asset Tagging - Enhanced	0724	HCP	
Custom Asset Tagging - Enhanced	0796	HC1	
		HC2	
		HC3	
		HC4	
Request for Global Trade Number (UPC or EAN)	0563	HD4	2207
		HD5	
		HD6	
Request for Global Trade Number (UPC or EAN)	0724	HCP	
Request for Global Trade Number (UPC or EAN)	0796	HC1	
		HC2	
		HC3	
		HC4	
Custom Labeling	0563	HD4	2220
		HD5	
		HD6	
Custom Labeling	0724	HCP	
Custom Labeling	0796	HC1	
		HC2	
		HC3	
		HC4	
Custom Palletization	0563	HD4	2221
		HD5	
Custom Palletization	0724	HCP	
Custom Palletization	0796	HC1	
		HC2	
		HC3	
		HC4	
Request for a new Vendor Logo Hardware	0563	HD4	2247
		HD5	
		HD6	
Request for a new Vendor Logo Hardware	0724	HCP	
Request for a new Vendor Logo Hardware	0796	HC1	
		HC2	
		HC3	
		HC4	
Request for an existing IBM Feature	0563	HD4	2248
		HD5	
Request for an existing IBM Feature	0724	HCP	
Request for an existing IBM Feature	0796	HC1	
		HC2	
		HC3	
		HC4	
Request for an existing Public RPQ	0563	HD4	2249

		HD5	
Request for an existing Public RPQ	0724	HCP	
Request for an existing Public RPQ	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack Installation of 1U Component	0563	HD4	2305
Rack Installation >1U Component	0724	HCP	2306
Rack Installation >1U Component	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack Installation of 1U Component in iDataPlex	0563	HD5	2313
IntraRack CAT5E Cable Service	0563	HD4	2323
		HD5	
IntraRack CAT5E Cable Service	0724	HCP	
Rack 01	0563	HD4	3101
		HD5	
		HD6	
Rack 01	0724	HCP	
Rack 01	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 02	0563	HD4	3102
		HD5	
		HD6	
Rack 02	0724	HCP	
Rack 02	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 03	0563	HD4	3103
		HD5	
		HD6	
Rack 03	0724	HCP	
Rack 03	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 04	0563	HD4	3104
		HD5	
		HD6	
Rack 04	0724	HCP	
Rack 04	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 05	0563	HD4	3105
		HD5	
		HD6	
Rack 05	0724	HCP	
Rack 05	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 06	0563	HD4	3106
		HD5	
		HD6	
Rack 06	0724	HCP	
Rack 06	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 07	0563	HD4	3107
		HD5	
		HD6	
Rack 07	0724	HCP	
Rack 07	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 08	0563	HD4	3108
		HD5	

Rack 08	0724	HD6	
Rack 08	0796	HCP	
		HC1	
		HC2	
		HC3	
		HC4	
Rack 09	0563	HD4	3109
		HD5	
		HD6	
Rack 09	0724	HCP	
Rack 09	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 10	0563	HD4	3110
		HD5	
		HD6	
Rack 10	0724	HCP	
Rack 10	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 11	0563	HD4	3111
		HD5	
		HD6	
Rack 11	0724	HCP	
Rack 11	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 12	0563	HD4	3112
		HD5	
		HD6	
Rack 12	0724	HCP	
Rack 12	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 13	0563	HD4	3113
		HD5	
		HD6	
Rack 13	0724	HCP	
Rack 13	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 14	0563	HD4	3114
		HD5	
		HD6	
Rack 14	0724	HCP	
Rack 14	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 15	0563	HD4	3115
		HD5	
		HD6	
Rack 15	0724	HCP	
Rack 15	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 16	0563	HD4	3116
		HD5	
		HD6	
Rack 16	0724	HCP	
Rack 16	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 17	0563	HD4	3117
		HD5	
		HD6	
Rack 17	0724	HCP	

Rack 17	0796	HC1 HC2 HC3 HC4	
Rack 18	0563	HD4 HD5 HD6	3118
Rack 18	0724	HCP	
Rack 18	0796	HC1 HC2 HC3 HC4	
Rack 19	0563	HD4 HD5 HD6	3119
Rack 19	0724	HCP	
Rack 19	0796	HC1 HC2 HC3 HC4	
Rack 20	0563	HD4 HD5 HD6	3120
Rack 20	0724	HCP	
Rack 20	0796	HC1 HC2 HC3 HC4	
Rack 21	0563	HD4 HD5 HD6	3121
Rack 21	0724	HCP	
Rack 21	0796	HC1 HC2 HC3 HC4	
Rack 22	0563	HD4 HD5 HD6	3122
Rack 22	0724	HCP	
Rack 22	0796	HC1 HC2 HC3 HC4	
Rack 23	0563	HD4 HD5 HD6	3123
Rack 23	0724	HCP	
Rack 23	0796	HC1 HC2 HC3 HC4	
Rack 24	0563	HD4 HD5 HD6	3124
Rack 24	0724	HCP	
Rack 24	0796	HC1 HC2 HC3 HC4	
Rack 25	0563	HD4 HD5 HD6	3125
Rack 25	0724	HCP	
Rack 25	0796	HC1 HC2 HC3 HC4	
Rack 26	0563	HD4 HD5 HD6	3126
Rack 26	0724	HCP	
Rack 26	0796	HC1 HC2	

			HC3	
			HC4	
Rack 27	0563		HD4	3127
			HD5	
			HD6	
Rack 27	0724		HCP	
Rack 27	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 28	0563		HD4	3128
			HD5	
			HD6	
Rack 28	0724		HCP	
Rack 28	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 29	0563		HD4	3129
			HD5	
			HD6	
Rack 29	0724		HCP	
Rack 29	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 30	0563		HD4	3130
			HD5	
			HD6	
Rack 30	0724		HCP	
Rack 30	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 31	0563		HD4	3131
			HD5	
			HD6	
Rack 31	0724		HCP	
Rack 31	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 32	0563		HD4	3132
			HD5	
			HD6	
Rack 32	0724		HCP	
Rack 32	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 33	0563		HD4	3133
			HD5	
			HD6	
Rack 33	0724		HCP	
Rack 33	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 34	0563		HD4	3134
			HD5	
			HD6	
Rack 34	0724		HCP	
Rack 34	0796		HC1	
			HC2	
			HC3	
			HC4	
Rack 35	0563		HD4	3135
			HD5	
			HD6	
Rack 35	0724		HCP	
Rack 35	0796		HC1	
			HC2	
			HC3	
			HC4	

Rack 36	0563	HD4	3136
		HD5	
		HD6	
Rack 36	0724	HCP	
Rack 36	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 37	0563	HD4	3137
		HD5	
		HD6	
Rack 37	0724	HCP	
Rack 37	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 38	0563	HD4	3138
		HD5	
		HD6	
Rack 38	0724	HCP	
Rack 38	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 39	0563	HD4	3139
		HD5	
		HD6	
Rack 39	0724	HCP	
Rack 39	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 40	0563	HD4	3140
		HD5	
		HD6	
Rack 40	0724	HCP	
Rack 40	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 41	0563	HD4	3141
		HD5	
		HD6	
Rack 41	0724	HCP	
Rack 41	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 42	0563	HD4	3142
		HD5	
		HD6	
Rack 42	0724	HCP	
Rack 42	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 43	0563	HD4	3143
		HD5	
		HD6	
Rack 43	0724	HCP	
Rack 43	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 44	0563	HD4	3144
		HD5	
		HD6	
Rack 44	0724	HCP	
Rack 44	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 45	0563	HD4	3145
		HD5	

Rack 45	0724	HD6	
Rack 45	0796	HCP	
		HC1	
		HC2	
		HC3	
		HC4	
Rack 46	0563	HD4	3146
		HD5	
		HD6	
Rack 46	0724	HCP	
Rack 46	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 47	0563	HD4	3147
		HD5	
		HD6	
Rack 47	0724	HCP	
Rack 47	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 48	0563	HD4	3148
		HD5	
		HD6	
Rack 48	0724	HCP	
Rack 48	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 49	0563	HD4	3149
		HD5	
		HD6	
Rack 49	0724	HCP	
Rack 49	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 50	0563	HD4	3150
		HD5	
		HD6	
Rack 50	0724	HCP	
Rack 50	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 51	0563	HD4	3151
		HD5	
		HD6	
Rack 51	0724	HCP	
Rack 51	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 52	0563	HD4	3152
		HD5	
		HD6	
Rack 52	0724	HCP	
Rack 52	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 53	0563	HD4	3153
		HD5	
		HD6	
Rack 53	0724	HCP	
Rack 53	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack 54	0563	HD4	3154
		HD5	
		HD6	
Rack 54	0724	HCP	

Rack 54	0796	HC1 HC2 HC3 HC4	
Rack 55	0563	HD4 HD5 HD6	3155
Rack 55	0724	HCP	
Rack 55	0796	HC1 HC2 HC3 HC4	
Rack 56	0563	HD4 HD5 HD6	3156
Rack 56	0724	HCP	
Rack 56	0796	HC1 HC2 HC3 HC4	
Rack 57	0563	HD4 HD5 HD6	3157
Rack 57	0724	HCP	
Rack 57	0796	HC1 HC2 HC3 HC4	
Rack 58	0563	HD4 HD5 HD6	3158
Rack 58	0724	HCP	
Rack 58	0796	HC1 HC2 HC3 HC4	
Rack 59	0563	HD4 HD5 HD6	3159
Rack 59	0724	HCP	
Rack 59	0796	HC1 HC2 HC3 HC4	
Rack 60	0563	HD4 HD5 HD6	3160
Rack 60	0724	HCP	
Rack 60	0796	HC1 HC2 HC3 HC4	
Rack 61	0563	HD4 HD5 HD6	3161
Rack 61	0724	HCP	
Rack 61	0796	HC1 HC2 HC3 HC4	
Rack 62	0563	HD4 HD5 HD6	3162
Rack 62	0724	HCP	
Rack 62	0796	HC1 HC2 HC3 HC4	
Rack 63	0563	HD4 HD5 HD6	3163
Rack 63	0724	HCP	
Rack 63	0796	HC1 HC2	

		HC3	
		HC4	
Rack 64	0563	HD4	3164
		HD5	
		HD6	
Rack 64	0724	HCP	
Rack 64	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U05	0563	HD4	3205
Rack location U05	0724	HCP	
Rack location U05	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U06	0563	HD4	3206
Rack location U06	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U07	0563	HD4	3207
Rack location U07	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U08	0563	HD4	3208
Rack location U08	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U09	0563	HD4	3209
Rack location U09	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U10	0563	HD4	3210
Rack location U10	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U11	0563	HD4	3211
Rack location U11	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U12	0563	HD4	3212
Rack location U12	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U13	0563	HD4	3213
Rack location U13	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U14	0563	HD4	3214
Rack location U14	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U15	0563	HD4	3215
Rack location U15	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U16	0563	HD4	3216
Rack location U16	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U17	0563	HD4	3217
Rack location U17	0796	HC1	
		HC2	

		HC3	
		HC4	
Rack location U18	0563	HD4	3218
Rack location U18	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U19	0563	HD4	3219
Rack location U19	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U20	0563	HD4	3220
Rack location U20	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U21	0563	HD4	3221
Rack location U21	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U22	0563	HD4	3222
Rack location U22	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U23	0563	HD4	3223
Rack location U23	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U24	0563	HD4	3224
Rack location U24	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U25	0563	HD4	3225
Rack location U25	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U26	0563	HD4	3226
Rack location U26	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U27	0563	HD4	3227
Rack location U27	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U28	0563	HD4	3228
Rack location U28	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U29	0563	HD4	3229
Rack location U29	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U30	0563	HD4	3230
Rack location U30	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U31	0563	HD4	3231
Rack location U31	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U32	0563	HD4	3232
Rack location U32	0796	HC1	

		HC2	
		HC3	
		HC4	
Rack location U33	0563	HD4	3233
Rack location U33	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U34	0563	HD4	3234
Rack location U34	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U35	0563	HD4	3235
Rack location U35	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U36	0563	HD4	3236
Rack location U36	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U37	0563	HD4	3237
Rack location U37	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U38	0563	HD4	3238
Rack location U38	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U39	0563	HD4	3239
Rack location U39	0796	HC1	
		HC2	
		HC3	
		HC4	
Rack location U40	0563	HD4	3240
Rack location U41	0563	HD4	3241
Rack location U42	0563	HD4	3242
Network Switch ID 01	0563	HD4	3501
		HD5	
		HD6	
Network Switch ID 01	0724	HCP	
Network Switch ID 01	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 02	0563	HD4	3502
		HD5	
		HD6	
Network Switch ID 02	0724	HCP	
Network Switch ID 02	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 03	0563	HD4	3503
		HD5	
		HD6	
Network Switch ID 03	0724	HCP	
Network Switch ID 03	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 04	0563	HD4	3504
		HD5	
		HD6	
Network Switch ID 04	0724	HCP	
Network Switch ID 04	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 05	0563	HD4	3505

			HD5	
			HD6	
Network Switch ID 05	0724		HCP	
Network Switch ID 05	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 06	0563		HD4	3506
			HD5	
			HD6	
Network Switch ID 06	0724		HCP	
Network Switch ID 06	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 07	0563		HD4	3507
			HD5	
			HD6	
Network Switch ID 07	0724		HCP	
Network Switch ID 07	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 08	0563		HD4	3508
			HD5	
			HD6	
Network Switch ID 08	0724		HCP	
Network Switch ID 08	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 09	0563		HD4	3509
			HD5	
			HD6	
Network Switch ID 09	0724		HCP	
Network Switch ID 09	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 10	0563		HD4	3510
			HD5	
			HD6	
Network Switch ID 10	0724		HCP	
Network Switch ID 10	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 11	0563		HD4	3511
			HD5	
			HD6	
Network Switch ID 11	0724		HCP	
Network Switch ID 11	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 12	0563		HD4	3512
			HD5	
			HD6	
Network Switch ID 12	0724		HCP	
Network Switch ID 12	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 13	0563		HD4	3513
			HD5	
			HD6	
Network Switch ID 13	0724		HCP	
Network Switch ID 13	0796		HC1	
			HC2	
			HC3	
			HC4	
Network Switch ID 14	0563		HD4	3514
			HD5	
			HD6	

Network Switch ID 14	0724	HCP	
Network Switch ID 14	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 15	0563	HD4	3515
		HD5	
		HD6	
Network Switch ID 15	0724	HCP	
Network Switch ID 15	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 16	0563	HD4	3516
		HD5	
		HD6	
Network Switch ID 16	0724	HCP	
Network Switch ID 16	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 17	0563	HD4	3517
		HD5	
		HD6	
Network Switch ID 17	0724	HCP	
Network Switch ID 17	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 18	0563	HD4	3518
		HD5	
		HD6	
Network Switch ID 18	0724	HCP	
Network Switch ID 18	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 19	0563	HD4	3519
		HD5	
		HD6	
Network Switch ID 19	0724	HCP	
Network Switch ID 19	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 20	0563	HD4	3520
		HD5	
		HD6	
Network Switch ID 20	0724	HCP	
Network Switch ID 20	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 21	0563	HD4	3521
		HD5	
		HD6	
Network Switch ID 21	0724	HCP	
Network Switch ID 21	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 22	0563	HD4	3522
		HD5	
		HD6	
Network Switch ID 22	0724	HCP	
Network Switch ID 22	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 23	0563	HD4	3523
		HD5	
		HD6	
Network Switch ID 23	0724	HCP	
Network Switch ID 23	0796	HC1	

		HC2	
		HC3	
		HC4	
Network Switch ID 24	0563	HD4	3524
		HD5	
		HD6	
Network Switch ID 24	0724	HCP	
Network Switch ID 24	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 25	0563	HD4	3525
		HD5	
		HD6	
Network Switch ID 25	0724	HCP	
Network Switch ID 25	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 26	0563	HD4	3526
		HD5	
		HD6	
Network Switch ID 26	0724	HCP	
Network Switch ID 26	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 27	0563	HD4	3527
		HD5	
		HD6	
Network Switch ID 27	0724	HCP	
Network Switch ID 27	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 28	0563	HD4	3528
		HD5	
		HD6	
Network Switch ID 28	0724	HCP	
Network Switch ID 28	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 29	0563	HD4	3529
		HD5	
		HD6	
Network Switch ID 29	0724	HCP	
Network Switch ID 29	0796	HC1	
		HC2	
		HC3	
		HC4	
Network Switch ID 30	0563	HD4	3530
		HD5	
		HD6	
Network Switch ID 30	0724	HCP	
Network Switch ID 30	0796	HC1	
		HC2	
		HC3	
		HC4	
0.6m Yellow Cat5e Cable	0563	HD4	3791
		HD5	
0.6m Yellow Cat5e Cable	0724	HCP	
1.5m Yellow Cat5e Cable	0563	HD4	3792
		HD5	
1.5m Yellow Cat5e Cable	0724	HCP	
3m Yellow Cat5e Cable	0563	HD4	3793
		HD5	
3m Yellow Cat5e Cable	0724	HCP	
10m Yellow Cat5e Cable	0563	HD4	3794
		HD5	
10m Yellow Cat5e Cable	0724	HCP	
25m Yellow Cat5e Cable	0563	HD4	3795
		HD5	
25m Yellow Cat5e Cable	0724	HCP	

0.6m Green Cat5e Cable	0563	HD4	3796
		HD5	
0.6m Green Cat5e Cable	0724	HCP	
1.5m Green Cat5e Cable	0563	HD4	3797
		HD5	
1.5m Green Cat5e Cable	0724	HCP	
3m Green Cat5e Cable	0563	HD4	3798
		HD5	
3m Green Cat5e Cable	0724	HCP	
10m Green Cat5e Cable	0563	HD4	3799
		HD5	
10m Green Cat5e Cable	0724	HCP	
25m Green Cat5e Cable	0563	HD4	3800
		HD5	
25m Green Cat5e Cable	0724	HCP	
0.6m Blue Cat5e Cable	0563	HD4	3801
		HD5	
0.6m Blue Cat5e Cable	0724	HCP	
1.5m Blue Cat5e Cable	0563	HD4	3802
		HD5	
1.5m Blue Cat5e Cable	0724	HCP	
3m Blue Cat5e Cable	0563	HD4	3803
		HD5	
3m Blue Cat5e Cable	0724	HCP	
10m Blue Cat5e Cable	0563	HD4	3804
		HD5	
10m Blue Cat5e Cable	0724	HCP	
25m Blue Cat5e Cable	0563	HD4	3805
		HD5	
25m Blue Cat5e Cable	0724	HCP	
IBM 10GbE SW SFP+ Transceiver	0563	HD4	5721
		HD5	
SOFS Solution Code MFG Instruction	0563	HD4	6124
		HD5	
		HD6	
SOFS Solution Code MFG Instruction	0724	HCP	
SOFS Solution Code MFG Instruction	0796	HC1	
		HC2	
		HC3	
		HC4	
SAP-BWA Solution Code MFG Instruction	0563	HD4	6125
		HD5	
		HD6	
SAP-BWA Solution Code MFG Instruction	0724	HCP	
SAP-BWA Solution Code MFG Instruction	0796	HC1	
		HC2	
		HC3	
		HC4	
InfoSphere-BWA Solution Code MFG Instruction	0563	HD4	6126
		HD5	
		HD6	
InfoSphere-BWA Solution Code MFG Instruction	0724	HCP	
InfoSphere-BWA Solution Code MFG Instruction	0796	HC1	
		HC2	
		HC3	
		HC4	
GMAS Solution Code MFG Instruction	0563	HD4	6127
		HD5	
		HD6	
GMAS Solution Code MFG Instruction	0724	HCP	
GMAS Solution Code MFG Instruction	0796	HC1	
		HC2	
		HC3	
		HC4	
IBW-SSD Solution Code MFG Instruction	0563	HD4	6128
		HD5	
		HD6	
IBW-SSD Solution Code MFG Instruction	0724	HCP	
IBW-SSD Solution Code MFG Instruction	0796	HC1	
		HC2	
		HC3	
		HC4	
Cloudburst Solution Code MFG Instruction	0563	HD4	6129
		HD5	

			HD6	
Cloudburst Solution Code MFG Instruction	0724	HCP		
Cloudburst Solution Code MFG Instruction	0796	HC1		
		HC2		
		HC3		
		HC4		
SoNAS Solution Code MFG Instruction	0563	HD4	6130	
		HD5		
		HD6		
SoNAS Solution Code MFG Instruction	0724	HCP		
SoNAS Solution Code MFG Instruction	0796	HC1		
		HC2		
		HC3		
		HC4		
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	0563	HD4	6201	
		HD5		
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	0724	HCP		
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	0563	HD4	6204	
		HD5		
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	0724	HCP		
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	0563	HD4	6263	
		HD5		
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	0724	HCP		
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	0563	HD4	6311	
		HD5		
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	0724	HCP		
System x iDataPlex Solution	0563	HD4	7018	
		HD5		
		HD6		
System x iDataPlex Solution	0724	HCP		
Integrate Network Switch in MFG	0563	HD4	7829	
		HD5		
		HD6		
Integrate Network Switch in MFG	0724	HCP		
Integrate Network Switch in MFG	0796	HC1		
		HC2		
		HC3		
		HC4		
Customer Solution Center Services	0563	HD4	7831	
		HD5		
		HD6		
Customer Solution Center Services	0724	HCP		
Customer Solution Center Services	0796	HC1		
		HC2		
		HC3		
		HC4		
e1350 Special Bid Solution Component	0563	HD4	7929	
		HD5		
		HD6		
e1350 Special Bid Solution Component	0724	HCP		
e1350 Special Bid Solution Component	0796	HC1		
		HC2		
		HC3		
		HC4		
Consolidate Shipment	0563	HD4	8031	
		HD5		
		HD6		
Consolidate Shipment	0724	HCP		
Consolidate Shipment	0796	HC1		
		HC2		
		HC3		
		HC4		
e1350 Solution Component	0563	HD4	8034	
		HD5		
		HD6		
e1350 Solution Component	0724	HCP		

e1350 Solution Component	0796	HC1 HC2 HC3 HC4	
TAA Compliant Order	0563	HD4 HD5 HD6	8067
TAA Compliant Order	0724	HCP	
TAA Compliant Order	0796	HC1 HC2 HC3 HC4	
Integrate in manufacturing	0563	HD4 HD5 HD6	8971
Integrate in manufacturing	0724	HCP	
Integrate in manufacturing	0796	HC1 HC2 HC3 HC4	
Ship Uninstalled (Safety)	0563	HD4 HD5 HD6	8972
Ship Uninstalled (Safety)	0724	HCP	
Ship Uninstalled (Safety)	0796	HC1 HC2 HC3 HC4	
System x Cluster Upgrade	0563	HD4 HD5 HD6	A103
System x Cluster Upgrade	0724	HCP	
System x Cluster Upgrade	0796	HC1 HC2 HC3 HC4	
Integrated Solutions - Microsoft	0563	HD4 HD5 HD6	A192
Integrated Solutions - Microsoft	0724	HCP	
Integrated Solutions - Microsoft	0796	HC1 HC2 HC3 HC4	
Integrated Solutions	0563	HD4 HD5 HD6	A193
Integrated Solutions	0724	HCP	
Integrated Solutions	0796	HC1 HC2 HC3 HC4	
IntraRack CAT6 Cable Service	0563	HD4 HD5	A1MR
IntraRack CAT6 Cable Service	0724	HCP	
10m CAT6 Yellow Cable	0563	HD4 HD5	A1MS
10m CAT6 Yellow Cable	0724	HCP	
10m CAT6 Green Cable	0563	HD4 HD5	A1MT
10m CAT6 Green Cable	0724	HCP	
10m CAT6 Blue Cable	0563	HD4 HD5	A1MU
10m CAT6 Blue Cable	0724	HCP	
25m CAT6 Yellow Cable	0563	HD4 HD5	A1MV
25m CAT6 Yellow Cable	0724	HCP	
25m CAT6 Green Cable	0563	HD4 HD5	A1MW
25m CAT6 Green Cable	0724	HCP	
25m CAT6 Blue Cable	0563	HD4 HD5	A1MX
25m CAT6 Blue Cable	0724	HCP	
High Performance Analytics Appliance	0563	HD4	A1NN

			HD5	
			HD6	
High Performance Analytics Appliance	0724	HCP		
1m IBM Active DAC SFP+ Cable	0563	HCP		A25A
			HD4	
			HD5	
3m IBM Active DAC SFP+ Cable	0563	HCP		A25B
			HD4	
			HD5	
5m IBM Active DAC SFP+ Cable	0563	HCP		A25C
			HD4	
			HD5	
IBM System for Cloud Solution	0563	HD4		A2EE
			HD5	
			HD6	
IBM System for Cloud Solution	0724	HCP		
Mellanox SX65xx PPC460-based Management Module	0724	HCP		A2F4
BladeCenter Foundation for Cloud	0563	HD4		A2HM
			HD5	
			HD6	
BladeCenter Foundation for Cloud	0724	HCP		
Mellanox SX65xx 18-port QSFP FDR14 InfiniBand Leaf Module	0724	HCP		A2YC
Mellanox SX65xx FDR14 Spine Module	0724	HCP		A2YD
1m Mellanox QSFP Passive Copper FDR14 InfiniBand Cable	0724	HCP		A2YG
3m Mellanox QSFP Passive Copper FDR14 InfiniBand Cable	0724	HCP		A2YH
0.5m Mellanox QSFP Passive Copper FDR14 InfiniBand Cable	0724	HCP		A2YJ
3m Mellanox QSFP Optical FDR14 InfiniBand Cable	0724	HCP		A2YL
5m Mellanox QSFP Optical FDR14 InfiniBand Cable	0724	HCP		A2YM
10m Mellanox QSFP Optical FDR14 InfiniBand Cable	0724	HCP		A2YN
15m Mellanox QSFP Optical FDR14 InfiniBand Cable	0724	HCP		A2YP
20m Mellanox QSFP Optical FDR14 InfiniBand Cable	0724	HCP		A2YQ
30m Mellanox QSFP Optical FDR14 InfiniBand Cable	0724	HCP		A2YR
50m Mellanox QSFP Optical FDR14 InfiniBand Cable	0724	HCP		A2YS
LSI SAS9201-16e Quad-port miniSAS x8 PCIe 2.0 SAS HBA	3331	HC1		A3F2
LSI SAS9206-16e Quad-port x4 HD-miniSAS x8 PCIe 3.0 SAS HBA	3331	HC1		A3F3
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	3331	HC1		A3G7
Brocade RPS15-I 250w Power Supply (PSE)	0563	HD4		A3G8
Brocade RPS15-I 250w Power Supply (PSE)	3331	HC1		
Brocade RPS15-E 250w Power Supply (oPSE)	0563	HD5		A3G9
Brocade RPS15-E 250w Power Supply (oPSE)	3331	HC1		
Brocade ICX6610-FAN-I Fan Module (PSE)	0563	HD4		A3GA
Brocade ICX6610-FAN-I Fan Module (PSE)	3331	HC1		
Brocade ICX6610-FAN-E Fan Module (oPSE)	0563	HD5		A3GB
Brocade ICX6610-FAN-E Fan Module (oPSE)	3331	HC1		
Brocade ICX6610-RMK Enterprise Rack Mount Kit	0563	HD4		A3GC
Brocade ICX6610-RMK Enterprise Rack Mount Kit	3331	HC1		
Brocade ICX6610 iDPx Rack Mount Kit	0563	HD5		A3GD
Brocade ICX6610 iDPx Rack Mount Kit	3331	HC1		
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	3331	HC1		A3GE
Brocade MLXe 24-port SFP+ 10GbE (DM) Module	0563	HD6		A3GF
6m DDN HD-miniSAS to miniSAS Cable	3331	HC1		A3GK
0.6m IBM HD-miniSAS to miniSAS SAS Cable	0778	HC1		A3HW
0.6m IBM HD-miniSAS to miniSAS SAS Cable	0796	HC1		
			HC2	
			HC3	
			HC4	
0.6m IBM HD-miniSAS to miniSAS SAS Cable	3331	HC1		
1.5m IBM HD-miniSAS to miniSAS SAS Cable	0778	HC1		A3HX
1.5m IBM HD-miniSAS to miniSAS SAS Cable	0796	HC1		
			HC2	
			HC3	
			HC4	
1.5m IBM HD-miniSAS to miniSAS SAS Cable	3331	HC1		
3m IBM HD-miniSAS to miniSAS SAS Cable	0778	HC1		A3HY
3m IBM HD-miniSAS to miniSAS SAS Cable	0796	HC1		
			HC2	
			HC3	
			HC4	

3m IBM HD-miniSAS to miniSAS SAS Cable	3331	HC1	
6m IBM HD-miniSAS to miniSAS SAS Cable	0778	HC1	A3HZ
6m IBM HD-miniSAS to miniSAS SAS Cable	0796	HC1	
		HC2	
		HC3	
		HC4	
6m IBM HD-miniSAS to miniSAS SAS Cable	3331	HC1	
1m IBM miniSAS to miniSAS SAS Cable	0778	HC1	A3J1
1m IBM miniSAS to miniSAS SAS Cable	0796	HC1	
		HC2	
		HC3	
		HC4	
1m IBM miniSAS to miniSAS SAS Cable	3331	HC1	
1m IBM miniSAS to miniSAS SAS Cable	8852	HC1	
3m IBM miniSAS to miniSAS SAS Cable	0778	HC1	A3J2
3m IBM miniSAS to miniSAS SAS Cable	0796	HC1	
		HC2	
		HC3	
		HC4	
3m IBM miniSAS to miniSAS SAS Cable	3331	HC1	
3m IBM miniSAS to miniSAS SAS Cable	8852	HC1	
6m IBM miniSAS to miniSAS SAS Cable	0778	HC1	A3KU
6m IBM miniSAS to miniSAS SAS Cable	0796	HC1	
		HC2	
		HC3	
		HC4	
6m IBM miniSAS to miniSAS SAS Cable	3331	HC1	
6m IBM miniSAS to miniSAS SAS Cable	8852	HC1	

The following are features already announced for the 0563, 0750, 1410, 7143, 7147, 7158, 7164, 7309, 7825, 7912, 7914, 7915, 7945, 8722, and 9308 machine types:

Description	MT	Model	Feature
UID Asset Tag Label	0563	HD3	0747
SFP+ Transceiver 10GbE SR 300m MMF	7143	AC1	6416
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	7147	AC1	
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	7158	AC1	
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	7164	AC1	
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	7912	AC1	
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	7914	AC1	
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	7915	AC1	
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	7945	AC1	
		MC1	
SFP+ Transceiver 10GbE SR 300m MMF	8722	AC1	
		MC1	
1m IBM Active DAC SFP+ Cable	0563	HCN	A25A
		HCQ	
		HCR	
		HCS	
		HCT	
		HCU	
		HCV	
3m IBM Active DAC SFP+ Cable	0563	HCN	A25B
		HCQ	
		HCR	
		HCS	
		HCT	
		HCU	
		HCV	
5m IBM Active DAC SFP+ Cable	0563	HCN	A25C
		HCQ	
		HCR	

		HCS HCT HCU HCV	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7143	AC1 MC1	A3F2
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7147	AC1 MC1	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7158	AC1 MC1	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7164	AC1 MC1	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7912	AC1 MC1	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7914	AC1 MC1	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7915	AC1 MC1	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	7945	AC1 MC1	
LSI SAS9201-16e Quad-port minisAS x8 PCIe 2.0 SAS HBA	8722	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7143	AC1 MC1	A3F3
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7147	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7158	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7164	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7912	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7914	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7915	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	7945	AC1 MC1	
LSI SAS9206-16e Quad-port x4 HD-minisAS x8 PCIe 3.0 SAS HBA	8722	AC1 MC1	
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7143	AC1 MC1	A3G7
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7147	AC1 MC1	
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7158	AC1 MC1	
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7164	AC1 MC1	
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7912	AC1 MC1	
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7914	AC1 MC1	
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7915	AC1 MC1	
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	7945	AC1 MC1	

Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	8722	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7143	AC1 MC1	A3GE
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7147	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7158	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7164	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7912	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7914	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7915	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	7945	AC1 MC1	
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	8722	AC1 MC1	
Brocade MLXe 24-port SFP+ 10GbE (DM) Module	0563	HCU	A3GF
6m DDN HD-minisAS to minisAS Cable	0750	HCV HCA HCB HCC HCD HCE HCF	A3GK
0.6m IBM HD-minisAS to minisAS SAS Cable	1410	HEA HEB HPA HPB RC2 RC4	A3HW
0.6m IBM HD-minisAS to minisAS SAS Cable	7143	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7147	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7158	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7164	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7825	RC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7912	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7914	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7915	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	7945	AC1 MC1	
0.6m IBM HD-minisAS to minisAS SAS Cable	8722	AC1 MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	1410	HEA HEB HPA HPB RC2 RC4	A3HX
1.5m IBM HD-minisAS to minisAS SAS Cable	7143	AC1 MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	7147	AC1 MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	7158	AC1 MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	7164	AC1 MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	7825	RC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	7912	AC1 MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	7914	AC1 MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	7915	AC1 MC1	

1.5m IBM HD-minisAS to minisAS SAS Cable	7945	AC1	
		MC1	
1.5m IBM HD-minisAS to minisAS SAS Cable	8722	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	1410	HEA	A3HY
		HEB	
		HPA	
		HPB	
		RC2	
		RC4	
3m IBM HD-minisAS to minisAS SAS Cable	7143	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	7147	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	7158	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	7164	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	7825	RC1	
3m IBM HD-minisAS to minisAS SAS Cable	7912	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	7914	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	7915	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	7945	AC1	
		MC1	
3m IBM HD-minisAS to minisAS SAS Cable	8722	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	1410	HEA	A3HZ
		HEB	
		HPA	
		HPB	
		RC2	
		RC4	
6m IBM HD-minisAS to minisAS SAS Cable	7143	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	7147	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	7158	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	7164	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	7825	RC1	
6m IBM HD-minisAS to minisAS SAS Cable	7912	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	7914	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	7915	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	7945	AC1	
		MC1	
6m IBM HD-minisAS to minisAS SAS Cable	8722	AC1	
		MC1	
1m IBM minisAS to minisAS SAS Cable	1410	HEA	A3J1
		HEB	
		HPA	
		HPB	
		RC2	
		RC4	
1m IBM minisAS to minisAS SAS Cable	7143	AC1	
		MC1	
1m IBM minisAS to minisAS SAS Cable	7147	AC1	
		MC1	
1m IBM minisAS to minisAS SAS Cable	7158	AC1	
		MC1	
1m IBM minisAS to minisAS SAS Cable	7164	AC1	
		MC1	
1m IBM minisAS to minisAS SAS Cable	7825	RC1	
1m IBM minisAS to minisAS SAS Cable	7912	AC1	
		MC1	
1m IBM minisAS to minisAS SAS Cable	7914	AC1	
		MC1	
1m IBM minisAS to minisAS SAS Cable	7915	AC1	

1m IBM miniSAS to miniSAS SAS Cable	7945	MC1 AC1	
1m IBM miniSAS to miniSAS SAS Cable	8722	MC1 AC1	
3m IBM miniSAS to miniSAS SAS Cable	1410	HEA HEB HPA HPB RC2 RC4	A3J2
3m IBM miniSAS to miniSAS SAS Cable	7143	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	7147	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	7158	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	7164	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	7825	RC1	
3m IBM miniSAS to miniSAS SAS Cable	7912	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	7914	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	7915	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	7945	AC1 MC1	
3m IBM miniSAS to miniSAS SAS Cable	8722	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	1410	HEA HEB HPA HPB RC2 RC4	A3KU
6m IBM miniSAS to miniSAS SAS Cable	7143	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	7147	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	7158	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	7164	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	7825	RC1	
6m IBM miniSAS to miniSAS SAS Cable	7912	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	7914	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	7915	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	7945	AC1 MC1	
6m IBM miniSAS to miniSAS SAS Cable	8722	AC1 MC1	
Digital Analytics on Premise for Netezza	7309	HC6	A3MU
Digital Analytics on Premise for Netezza	7914	AC1	
Digital Analytics on Premise for Netezza	9308	RC4	

Note: The following are available only on the IBM Intelligent Cluster and System x iDataPlex.

Description	SEO
Brocade ICX 6610 Switch (PSE)	0563042
Brocade ICX 6610 Switch (oPSE)	0563043
Brocade MLXe 24-port SFP+ 10GbE (DM) Module	0563044
IBM System x GPFS Storage Server JBOD (58x2TB)	0796011
IBM System x GPFS Storage Server JBOD (58x2TB+2x200GB SSD)	0796012
IBM System x GPFS Storage Server JBOD (58x3TB)	0796013
IBM System x GPFS Storage Server JBOD (58x3TB+2x200GB SSD)	0796014
Mellanox SX6518 FDR14 InfiniBand Switch	0724030

Option SEOs

Description	SEO
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	00Y7026
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	00Y7006
Brocade RPS15-I 250w Power Supply (PSE)	00Y7010
Brocade RPS15-E 250w Power Supply (oPSE)	00Y7012
Brocade ICX6610-FAN-I Fan Module (PSE)	00Y7014
Brocade ICX6610-FAN-E Fan Module (oPSE)	00Y7016
Brocade ICX6610-RMK Enterprise Rack Mount Kit	00Y7018
Brocade ICX6610 iDPX Rack Mount Kit	00Y7022
6m DDN HD-miniSAS to miniSAS Cable	00Y7045
0.6m IBM HD-miniSAS to miniSAS SAS Cable	00D5222
1.5m IBM HD-miniSAS to miniSAS SAS Cable	00D5224
3m IBM HD-miniSAS to miniSAS SAS Cable	00D5226
6m IBM HD-miniSAS to miniSAS SAS Cable	00D5228
1m IBM miniSAS to miniSAS SAS Cable	00D5230
3m IBM miniSAS to miniSAS SAS Cable	00D5234
6m IBM miniSAS to miniSAS SAS Cable	00D5239
LSI SAS9201-16e 4 port miniSAS x8 PCIe 2.0 SAS HBA	00Y3535
LSI SAS9206-16e 4 port x4 HD-miniSAS PCIe 3.0 SAS HBA	00Y3539

Education support

Online training for Intelligent Cluster is available at

http://www-306.ibm.com/services/learning/ites.wss/tp/en?pageType=tp_search_results&rowStart=0&rowsToReturn=20&searchString=cluster+1350

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=112-218>

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>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

System x and BladeCenter support services

Recommended core technical support

When you buy IBM System x technology, include the support services you need -- to help keep both your hardware and software working for you, day after day, at peak performance. It's your first step toward helping to protect your investment and sustain high levels of system availability. We offer service-level and response-time options to fit your business needs. And we'll help you get started with a core support package that includes:

- **Continuous system monitoring**

Electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.

- **Hardware maintenance**

World-class remote and on-site hardware problem determination and repair services.

- **Software technical support**

Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

<http://www.ibm.com/servers/eserver/xseries/services.html>

Technical information

Specified operating environment

Physical specifications

Physical specifications for the 1410-PRB Enterprise Rack

Approximate external dimensions

IBM 42U 1100mm Enterprise V2 Dynamic Rack

- Height: 2009 mm (79.1 in)
- Width: 604 mm (23.8 in)
- Depth: 1100 mm (43.3 in)
- Weight: 169 kg (372 lb), including outriggers

IBM Rear Door Heat eXchanger V2 for 9363 Rack - 1756-42X

- Height: 1950 mm (76.8 in)
- Width: 600 mm (23.6 in)
- Depth: 129 mm (5.0 in)
- Weight: 39 kg (85 lb)

EMC compliance strategy

Typical configurations of the Linux cluster will be tested under the Class A requirement plus jurisdictional regulations for offer of sale in all markets.

- Title 47 CFR Part 15 Subpart B: US
- EN 55022; EN 55024: Europe
- AS/NZS CISPR 22: Australia/New Zealand
- VCCI: Japan

- ICES-003: Canada
- GB9254-2008: China
- MIC Notice No. 2000-79 and MIC Notice No. 200-80: Korea
- CISPR 22
- CISPR 24
- CNS 13438: Taiwan
- GOST: Russia

Product safety regulatory compliance strategy

The Intelligent Cluster will meet the jurisdictional regulations for offer of sale in all traditional and targeted markets.

- US: Certification to UL 60950-1:2005, Second Edition
- Canada: Certification to CSA C22.2 No. 60950-1-07, 2nd Edition, 2007-03
- UK, Germany, France, Australia, New Zealand, Japan, Italy, Spain, Switzerland, Austria, Netherlands, Sweden, Norway, Belgium, and Korea: Certification to EN 60950-1:2006 + A11:2009
- Eastern Europe: CB scheme report and certification to EN 60950-1:2006 + A11:2009
- Russia and the CIS: GOST certification

Linux will also meet the NEC and regional code requirements identified in N-B2-4700-037, Power Systems™ National Requirements.

Operating environment

- Temperature: 16° to 32°C (60.8° to 89.6°F)
- Relative humidity: 8% to 80%
- Maximum wet bulb: 23°C
- Sound power: 7.5 bels LwAd (operating)³, Category 1A (with four BladeCenters and an acoustics module) (for more configurations, refer to the BladeCenter *Planning and Installation Guide*)
- Sound pressure: No operator position
- Maximum altitude: 2,133.6 m (7,000 ft)

³ If Option machine type 4671-001 is selected, sound power is 8.3 bels.

Power requirements (per rack)

- Operating voltage: 200 - 240 V at 50/60 Hz
- Electrical output: 36 kW (maximum)
- Power source loading: 22 kVA (maximum)
- Thermal output: 20.9 kJ/s (71,400 Btu/hr) (maximum configuration)

When deploying the following network switches:

- Mellanox IS5100 0724-014
- Mellanox IS5300 0724-015
- Mellanox SX6512 FDR14 InfiniBand Switch 0724-024
- Mellanox SX6518 FDR14 InfiniBand Switch 0724-030
- Mellanox SX6536 FDR14 InfiniBand Switch 0724-025
- Brocade MLXe-8 Switch 0563-034
- Brocade MLXe-16 Switch 0563-035

The following Noise Hazard Notice notification applies:

Note: Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation. This IBM system is available with an optional acoustical door feature that can help reduce the sound emitted from this system. The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation, the size, materials, and configuration of the room, the noise levels from other equipment, the room ambient temperature, and employees' location in relation to the equipment. Further, compliance with such government regulations also depends upon a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. IBM recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

Hardware requirements

For attended installation of an operating system, this server requires a compatible:

- USB keyboard
- USB mouse
- HDD
- Display

Unattended or remote installation may be performed without requiring some or all of these components. Review your unattended software installation program information for specific hardware configuration requirements.

For service, the server requires a compatible:

- USB keyboard
- USB mouse
- HDD
- Display

When having the unit serviced, plan to have these components attached to your server either directly or indirectly via a console.

Lift specifications

The following require a lift tool.

- Mellanox
 - 0724-014, -015, -018, -024, -025, -026, -030
 - 0724-HC7, -HC8, -HCB, -HCH, -HCJ, -HCK, -HCP
- Brocade
 - 0563-034, -035
 - 0563-HCU, -HCV
- Data Direct Networks
 - 0750-014
 - 0750-HC4

Note: Any chassis above 54.89 kg (121 lb) requires a lift tool.

For high-weight switches, plan to provide a lift for installation, removal, and replacement services. Lift specifications should meet the following:

Height -	Stowed	5 ft 7.5 in
	Maximum forks down	8 ft 3 in
	Maximum forks up	10 ft .5 in
	Minimum forks down	3.5 in

Load capacity
up to 400 lb

Note: Due to the weights of these devices, parts may be delayed in shipment.

Software requirements

Supported operating systems

GPFS Multiplatform and GPFS for POWER

GPFS is a high-performance cluster file system for AIX®, Linux, and mixed clusters that gives users shared access to files spanning multiple disk drives. By dividing individual files into blocks and reading/writing these blocks in parallel across multiple disks, GPFS enables very high bandwidth. In addition, multiple data paths can also help eliminate single points of failure, making GPFS highly available for mission-critical applications.

GPFS is based on a shared disk model, enabling lower overhead access to disks not directly attached to the application nodes. It uses a distributed protocol data coherence for access from any node. GPFS also incorporates a powerful ILM policy engine. This engine allows complex, policy-based placement and file-based migration (without path changes) between multiple tiers of storage, including tape, which can scale to billions of files and multiple petabytes of data. Additionally, GPFS includes hardware-neutral snapshots and mirroring functions, enabling users to better virtualize storage hardware.

GPFS is ideal for several different roles in clustered computing and shared storage:

- A multicluster file system for parallel processing on compute clusters, featuring extreme scalability and throughput optimized for streaming workloads such as those common in Web 2.0, digital media, scientific, and engineering applications.
- An information lifecycle management file system that enables multiple tiers of storage, including tape, with powerful policy-driven file placement, migration, archival, and deletion. The unique GPFS policy engine delivers file migration scalable to billions of files and multiple petabytes of data.
- A scalable, shared storage file system for storage consolidation and virtualization. This includes clustered NFS support and a scalable, shared namespace that enables horizontally scalable file serving. Additionally, GPFS includes many data and SAN management features, including storage hardware-neutral snapshots and mirroring.
- A high availability file system for any business application or database that can benefit from very rapid failover of a consistent application data environment.
- A distributed file system that offers a global, cross-platform, coherent namespace across an enterprise for around-the-world, around-the-clock operations.

GPFS delivers fast, reliable data access from all nodes in a homogeneous or heterogeneous cluster of servers running the Linux operating system. GPFS allows applications simultaneous access to a set of files (even a single file) from any node that has the GPFS file system mounted, while providing a high level of control over all file system operations. Additionally, GPFS offers extreme scaling across numerous metrics, including I/O performance, file or file system size, numbers of files, number of nodes, and execution of complex ILM policies.

For more information on GPFS, and supported servers and operating system levels, visit the GPFS web page at

<http://www.ibm.com/servers/eserver/clusters/software/gpfs.html>

GPFS frequently asked questions at

http://publib.boulder.ibm.com/infocenter/clresctr/vxrx/index.jsp?topic=/com.ibm.cluster.gpfs.doc/gpfs_faqs/gpfs_faqs.html

GPFS documentation at

<http://publib.boulder.ibm.com/infocenter/clresctr/vxrx/topic/com.ibm.cluster.gpfs.doc/gpfsbooks.html>

Software

The following IBM software is provided through the IBM Passport Advantage® program and shipped directly to you. For information about Passport Advantage , visit

http://www-142.ibm.com/software/sw-lotus/services/cwepassport.nsf/wdocs/passport_advantage_online_enhancements_effective_11_14_2005

For information about Passport Advantage enrollment, visit

http://www.lotus.com/services/passport.nsf/WebDocs/Passport_Advantage_Home

For information about Passport Advantage by country, visit

<http://www.lotus.com/lotus/country.nsf/wdocs/homepage>

Software description	Part number
IBM General Parallel File System for Linux Multiplatform V3.3 English CD Media Pack	BH031EN
IBM General Parallel File System for Windows V3.2.1 English Media Pack	BH03KEN
GPFS Server 10 Processor Value Unit Lic + Software Service and support 12 Mo	D091MLL
GPFS Server 10 Processor Value Unit Annual Software Service and support Rnw1	E06VULL
GPFS Server 10 Processor Value Unit Software Service and support Reinstate 12 Mo	D091NLL
IBM General Parallel File System Server Proc Day 00CoD Temp Use Chrg	D091ULL
GPFS Client 10 Processor Value Unit Lic + Software Service and support 12 Mo	D091RLL
GPFS Client 10 Processor Value Unit Annual Software Service and support Rnw1	E06VWLL
GPFS Client 10 Processor Value Unit Software Service and support Reinstate 12 Mo	D091SLL
IBM General Parallel File System Client Proc Day 00CoD Temp Use Chrg	D091TLL
IBM General Parallel File System V3.3 Linux Media Pack	BH03REN
IBM General Parallel File System V3.3 Windows Media Pack	BH03QEN

Additionally, the following GPFS Part Numbers have been released into the System x ordering systems:

Software description	Part number
Server: per 10 PVU w/ 1yr Service and support	49Y9348
Server: qty 250 per 10 PVU w/ 1yr Service and Support	49Y9349
Client: per 10 PVU w/ 1yr Service and Support	49Y9350
Client: qty 250 per 10 PVU w/ 1yr Service and Support	49Y9351

Service is required for GPFS and is available from

<http://www14.software.ibm.com/webapp/set2/sas/f/cluster/home.html>

xCat for IBM Intelligent Cluster

xCAT is a scalable distributed computing management and provisioning tool that provides a unified interface for hardware control, discovery, and OS diskful or diskfree deployment. xCAT has been deploying and managing large Linux systems for a number of years. xCAT is an open source management tool available from

SourceForge.net that offers a powerful customizable architecture licensed under the Eclipse Public License, one of the more flexible licenses available for open source software.

IBM Support for xCAT provides world-class technical support for Extreme Cloud Administration Toolkit (xCAT) 2, the open source cluster management tool available from SourceForge. IBM Support for xCAT delivers the technical support clients need to confidently manage their large systems. IBM Support for xCAT enables you to optimize the value you get from the open source community and IBM, through unparalleled choice on software and choice on support. IBM Support for xCAT offers two tiers of IBM support:

- IBM Enhanced Support for xCAT
- IBM Elite Support for xCAT

IBM Support for xCAT offers clients who are interested in using pure open source technology the comfort of having IBM support available when they need it.

Passport Advantage

Program number	VRM	Program name
5724-V63	2.0.0	IBM Enhanced Support for xCAT
5724-V64	2.0.0	IBM Elite Support for xCAT

Program name/Description	Part number
IBM Enhanced Support for xCAT Server 2 Contacts SW Support 12 Month	D04X5LL
IBM Elite Support for xCAT Server Unlimited Contacts SW Support 12 Month	D04X6LL

Compatibility

All components of the IBM Intelligent Cluster are compatible when purchased as a supported IBM Intelligent Cluster solution.

Limitations

IBM Intelligent Cluster

- IBM Intelligent Cluster options are supported only when deployed in an IBM Intelligent Cluster solution. They will not be supported when installed outside a 1410 Rack.
- Use of the 1410-4RX or 1410-2RX Linux Cluster Rack outside of the IBM Intelligent Cluster offering is prohibited.
- When the heat exchange door is part of the IBM Intelligent Cluster Solution, IBM will attach the door to the rack. You are responsible for filling the heat exchange door with fluid and hooking up all plumbing connections. You are also responsible for draining the heat exchange door and disconnecting all plumbing connections prior to an IBM servicer's arrival on-site for replacement of the door assembly. After the servicer has replaced the heat exchange door assembly on the rack, it is your responsibility to refill the heat exchange door and reconnect all plumbing connections. All preventative maintenance on the rack is the sole responsibility of the client.
 - Due to the weight of some switch chassis, the client may have to provide lifts for installation and repair if switches are installed in the upper portion of the rack.
 - The LG-Ericsson ES-5048XG Switch (PSE) (4668-020 and -HC9) is only supported in the 1410 enterprise racks because of length of the switch.
- The IBM 0563-034 HVEC, 0563-HCU XCC FC A308 (Brocade MLXe 8) and IBM 0563-035 HVEC, 0563-HCV XCC FC A309 (Brocade MLXE 16) will not be supported in configurations in conjunction with the IBM Acoustic Door Kit for Enterprise Rack option (part number 40K9627 feature code 4852), the IBM Rear

Door Heat eXchanger Option (part number 32R0712 feature code 4392), and the IBM Dynamic Rack and Rear Door Heat eXchanger V2 1756-42X HVEC, 1756-HC1 XCC (feature code A2FP). This is due to air pressurization that occurs in the rack rear as a result of the added impendence of acoustic and cooling doors. This pressurization could result in hot air recirculation though the rack cold aisle opening created by the switch port location on the rack front cold aisle side.

System x iDataPlex

- System x iDataPlex options are supported only when ordered and deployed in an iDataPlex solution. They will not be supported when ordered without a corresponding order for an iDataPlex Rack configuration.
- The 1410 Rack Management Appliance is supported only when deployed in an iDataPlex configuration and with iDataPlex-supported BOM content.
- Rear Door Heat eXchanger:
 - The Rear Door Heat eXchanger is shipped separately from the iDataPlex rack for delivery and installation to the rack by an IBM authorized supplier.
 - When the Rear Door Heat eXchanger is part of the iDataPlex solution, an IBM authorized supplier will attach the door to the rack. (Refer to the Rear Door Heat eXchanger service pamphlet shipped with Rear Door Heat eXchanger for warranty service information.) The client is responsible for filling the heat exchange door with fluid and hooking up all plumbing connections. The client is also responsible for draining the heat exchange door and disconnecting all plumbing connections prior to an IBM authorized supplier's arrival on site for replacement of the door assembly. After the servicer has replaced the heat exchange door assembly on the rack, it is the client's responsibility to refill the heat exchange door and reconnect all plumbing connections. All preventative maintenance on the rack is the sole responsibility of the client.
 - Use of the iDataPlex Rack outside of the iDataPlex offering is not supported.
- The Cisco 4948E Switch (oPSE) (4670-050 and -HD1) is supported only in iDataPlex due to airflow.
- Components not specifically released and announced for the Intelligent Cluster may not receive full support.

Note: Regarding the use of SSD drives, solid-state memory cells have an intrinsic, finite number of write cycles each cell can incur. As a result, each solid-state device has a maximum amount of write cycles it can be subjected to, documented as total bytes written (TBD). IBM is not responsible for replacement of hardware that has reached the maximum guaranteed number of write cycles. This limit may be revealed as the device failing to respond to system-generated commands or becoming incapable of being written to. Additional information is available at

<http://www-03.ibm.com/systems/x/options/storage/solidstate/index.html>

Planning information

Customer responsibilities

Installation of hardware components is provided by IBM on the 1410 and 7825 machine types. Installation of hardware options within specific server nodes is a customer responsibility if not purchased as part of a manufacturing install service. Customers are responsible for preparing their site for installation.

IBM offers warranty support or service for the IBM and non-IBM products and options announced as part of the offering. To obtain solution-level support, contact IBM using the solution rack machine type and serial. IBM machine types supported as part of the IBM Intelligent Cluster solution carry their own warranty terms for on-site and CRU.

You must obtain the prerequisite version of the Linux operating system and device drivers as specified by IBM . You can install the required Linux operating system, device drivers, GPFS , and CSM software, use optional Linux cluster installation services to have IBM install it, or have a qualified IBM Business Partner perform the service.

You are expected to review the *Installation Planning Guide* before the delivery of your IBM Intelligent Cluster . The customer's responsibilities must be verified as complete before scheduling an IBM installer to come on-site.

Visit

<http://publib.boulder.ibm.com/cluster/>

Important

The Intelligent Cluster is a highly customized solution that tests a best recipe of supported hardware and software components and code levels. In order to maintain full support of your Intelligent Cluster , it is important that the solution hardware and software levels remain at the best recipe level. Unless specifically directed to do so by the IBM Support team, do not apply any firmware or BIOS upgrades on your system or modify the software OS. In addition, do not add content to your cluster that is not part of the tested recipe and without contacting your sales team for an expert review of the content changes you would like to make.

You can review the supported code levels and hardware components for the Intelligent Cluster by visiting the support website and choosing Intelligent Cluster .

For information on the supported versions visit

<http://www-947.ibm.com/support/entry/portal/overview>

Select downloads, and select the release of best recipe that is associated to the ship date of your Intelligent Cluster .

Cable orders

All cables are supplied with the IBM Intelligent Cluster . Depending on the applications, the cables may be fully installed, partially installed (plugged at one end and packaged for shipping), or included as part of a shipment group.

Installability

Setup and installation of the IBM Intelligent Cluster hardware are provided by IBM on the 1410 machine type.

When the heat exchange door is part of the IBM Intelligent Cluster Solution, IBM will only attach the door to the rack.

Packaging

IBM Intelligent Cluster Shipping Contents

- CD/Pubs Pack
 - IBM Intelligent Cluster information
 - IBM International License Agreement for Non-warranted Programs
 - IBM Statement of Limited Warranty
 - IBM Warranty Information Sheet for IBM Intelligent Cluster
 - IBM International Program License Agreement
- Poly bag - generic
 - Installation Information Flyer
 - Safety manual

Supplies

None

Security, auditability, and control

This offering uses the security and auditability features from standard IBM offerings and supported Linux distributions.

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

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

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

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

To learn how Electronic Services can work for you, visit

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

Terms and conditions

IBM Global Financing

Yes

To obtain copies of the IBM Statement of Limited Warranty, contact your reseller or IBM .

In the United States, call 800-IBM-SERV (426-7378), or write to:

Warranty Information
P.O. Box 12195
Research Triangle Park, NC 27709
Attn: Dept JDJA/B203

Warranty period

- Machine type 0724 - Three years
- Machine type 0796 - Three years
- Machine type 0563 - Three years
- Optional features - One year

Note: For configurations that support the RAID battery, the RAID battery will be warranted for one year effective on its "Date of Installation". All other product warranty terms for the machine remain unchanged.

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.

The following have been designated as consumables, supply items, or structural parts and therefore not covered by this warranty:

- Rack Front Door
- Rack Filler Plate
- DDN Battery
- Mellanox Blanks
- Brocade Blanks

Warranty service

If required, IBM provides repair or exchange service, depending on the type of warranty service specified below for the machine. 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. Service levels are response-time objectives 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- and location-specific information.

The type of service is Customer Replaceable Unit (for example, keyboard, mouse, speaker, memory, or hard disk drive) Service and On-site Service.

Customer Replaceable Unit (CRU) Service

IBM provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request. A CRU is designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) 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. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your machine.

Based upon availability, a CRU 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, and 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 or features have been designated as Tier 1 CRUs:

- CMOS batteries
- Hard disk drives
- Hot-swap fan
- Hot-swap AC power supply
- Memory DIMM

- Optical drive
- PCI adapter
- Power cord
- Service label
- System label
- Hypervisor USB key
- PCI riser
- RAID card without battery
- Tape drive
- Ethernet daughter card

On-site Service

At IBM's discretion you will receive CRU service or IBM or your reseller will repair the failing machine at your location and verify its operation. If required, On-site Repair is provided, 9 hours per day, Monday through Friday excluding holidays, NBD response. 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. On-site Service is not available in all countries, and some countries have kilometer or mileage limitations from an IBM service center. In those locations where On-site Service is not available, the normal in-country service delivery is used.

Call IBM at 1-800-IBM-SERV (426-7378) to assist with problem isolation for hardware to determine if warranty service is required. Telephone support may be subject to additional charges, even during the limited warranty period.

Calls must be received by 5:00 p.m. local time in order to qualify for NBD service.

International Warranty Service

International Warranty Service (IWS) is available in selected countries or regions.

The warranty service type and the service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit

<http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=GCOR-3FBJK2>

For more information on IWS, refer to Services Announcement [601-034](#), dated September 25, 2001 .

Licensing

Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Maintenance services

ServicePac , ServiceSuite , ServiceElect, and ServiceElite

ServicePac® , ServiceSuite® , ServiceElect, and ServiceElite provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

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.

CRUs will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM installation, at no additional charge, under one of the On-site Service levels specified below.

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.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance service specified below for the machine. 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. Service levels are response-time objectives and are not guaranteed.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

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, and 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.

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.

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Alternative service (warranty service upgrades)

During the warranty period, a warranty service upgrade provides an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

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.

A CRU will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your machine.

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.

Maintenance service

If required, IBM provides repair or exchange service, depending on the type of maintenance service specified below for the machine. 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. Service levels are response-time objectives and are not guaranteed.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), IBM will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM at any time on your request.

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, and 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.

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.

Non-IBM parts support

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 its customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades and maintenance services

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

IBM Service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, or memory) installed within IBM machines covered under warranty service upgrades or maintenance services 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.

Warranty service upgrades

IBM hourly service rate classification

One

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

No

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-304.ibm.com/servers/support/machine_warranties/machine_code.html

IBM may release changes to the Machine Code. IBM plans to make the Machine Code changes available for download from the IBM System x technical support website

<http://www-304.ibm.com/systems/support/>

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 for that service.

Access to IBM Flex System™ fix downloads will be granted upon entitlement validation. The terms and conditions for fixes will be covered under the License Agreement for Machine Code, International Program License Agreement, International License Agreement for Non-Warranted Programs and/or other terms provided with the fix, as applicable.

Educational allowance

None

Pricing

For current prices, contact IBM at 888-Shop-IBM (746-7426) or visit

<http://www-03.ibm.com/systems/x/>

To locate the web price, search on the feature number in the Search field.

Description	SEO number	Initial/ MES/ Both support	RP CSU MES
Brocade ICX 6610 Switch (PSE)	0563042	Initial	No
Brocade ICX 6610 Switch (oPSE)	0563043	Initial	No
Brocade MLXe 24-port SFP+ 10GbE (DM) Module	0563044	Initial	No
IBM System x GPFS Storage Server JBOD (58x2TB)	0796011	Initial	No
IBM System x GPFS Storage Server JBOD (58x2TB+2x200GB SSD)	0796012	Initial	No
IBM System x GPFS Storage Server JBOD (58x3TB)	0796013	Initial	No
IBM System x GPFS Storage Server JBOD (58x3TB+2x200GB SSD)	0796014	Initial	No
Mellanox SX6518 FDR14 InfiniBand Switch	0724030	Initial	No

Note: The following are only available on the IBM Intelligent Cluster and System x iDataPlex.

Description	SEO number	Initial MES/ Both support	RP CSU MES
Brocade 1860 Single-port SFP+ 10GbE Fabric Adapter	00Y7026	Initial	Yes
Brocade 1860 Dual-port SFP+ 10GbE Fabric Adapter	00Y7006	Initial	Yes
Brocade RPS15-I 250w Power Supply (PSE)	00Y7010	Initial	Yes
Brocade RPS15-E 250w Power Supply (oPSE)	00Y7012	Initial	Yes
Brocade ICX6610-FAN-I Fan Module (PSE)	00Y7014	Initial	Yes
Brocade ICX6610-FAN-E Fan Module (oPSE)	00Y7016	Initial	Yes
Brocade ICX6610-RMK Enterprise Rack Mount Kit	00Y7018	Initial	Yes
Brocade ICX6610 iDPx Rack Mount Kit	00Y7022	Initial	Yes
6m DDN HD-minisAS to minisAS Cable	00Y7045	Initial	Yes
0.6m IBM HD-minisAS to minisAS SAS Cable	00D5222	Initial	Yes
1.5m IBM HD-minisAS to minisAS SAS Cable	00D5224	Initial	Yes
3m IBM HD-minisAS to minisAS SAS Cable	00D5226	Initial	Yes
6m IBM HD-minisAS to minisAS SAS Cable	00D5228	Initial	Yes
1m IBM minisAS to minisAS SAS Cable	00D5230	Initial	Yes

3m IBM miniSAS to miniSAS SAS Cable	00D5234	Initial	Yes
6m IBM miniSAS to miniSAS SAS Cable	00D5239	Initial	Yes
LSI SAS9201-16e 4 port miniSAS x8 PCIe 2.0 SAS HBA	00Y3535	Initial	Yes
LSI SAS9206-16e 4 port x4 HD-miniSAS PCIe 3.0 SAS HBA	00Y3539	Initial	Yes

Maintenance charges

For additional information on maintenance and pricing, contact your IBM sales representative or your IBM Business Partner, or call 1-800-IBM-CALL (1-800-426-2255).

IBM Global Financing

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<http://www.ibm.com/financing>

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Order now

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To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

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 Fax: 800-2IBM-FAX (242-6329)
 Internet: callserv@ca.ibm.com
 Mail: IBM Teleweb Customer Support
 ibm.com® Sales Execution Center, Americas North
 3500 Steeles Ave. East, Tower 3/4
 Markham, Ontario
 Canada
 L3R 2Z1

Reference: YE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.

Note: Shipments will begin after the planned availability date.

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