IBM Flex System Enterprise Chassis offers support for IBM Flex System Compute Nodes

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At a glance

IBM® Flex System is a new category of computing that integrates multiple server architectures, networking, storage, and system management capability into a single system.

IBM Flex System Enterprise Chassis features:

- Two 2,500-watt power supplies standard plus four optional
- Four hot-swap 80 mm fans and two hot-swap 40 mm fans standard plus four optional 80 mm fans
- One Chassis Management Module standard plus one optional
- The ability to integrate storage and Ethernet networking into chassis

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

Overview

IBM Flex System, a new category of computing and the next generation of Smarter Computing, is anchored by the IBM Flex System Enterprise Chassis. This platform offers intelligent workload deployment and management for maximum business agility. This chassis delivers high-speed performance complete with integrated servers, storage, and networking for multi-chassis management in datacenter compute environments. Furthermore, its flexible design can meet the needs of varying workloads with independently scalable IT resource pools for higher utilization and lower cost per workload. While increased security and resiliency

protect vital information and promote maximum uptime, the integrated, easy-to-use management system reduces setup time and complexity, providing a quicker path to ROI.

The IBM Flex System Enterprise Chassis is a rack-optimized, 10U modular design enclosure that holds up to 14 nodes. It features:

- New high-efficiency 2500-watt power supplies.
- New hot-swap, 80 mm and 40 mm redundant fans.
- Support for all new x86 compute nodes.
- A Chassis Management Module (CMM) that gives you control over the solutions at the chassis level, simplifying installation and management of your installation. A second management module is optional.
- Support for up to four traditional fabrics using networking switches, storage switches, or pass-through devices. The chassis also supports up to four switches, scalable to eight logical switches, and support for protocols such as Ethernet, Fibre Channel, FCoE, ISCI, and InfiniBand.

Key prerequisites

- 200 to 240 V ac power source
- Ethernet switch module

Planned availability date

May 21, 2012

Description

Flex System Enterprise Chassis

The IBM Flex System Enterprise Chassis (machine type 8721) is a 10U next-generation server platform with integrated chassis management. It is a compact, high-density, high-performance, rack-mount, scalable server platform system. It supports up to 14 one-bay compute nodes that can share common resources, such as power, cooling, management, and I/O resources within a single Flex System Enterprise Chassis. In addition, it can also support up to seven 2-bay compute nodes or three 4-bay compute nodes when the shelves are removed from the chassis. You can mix and match 1-bay, 2-bay, and 4-bay compute nodes to meet your specific hardware needs.

The Flex System Enterprise Chassis can support the following components:

- Fourteen 1-bay compute nodes (can also support seven 2-bay or three 4-bay compute nodes with the shelves removed).
- Six 2500-watt power modules that provide N+N or N+1 redundant power.
- Ten fan modules (eight 80 mm fan modules and two 40 mm fan modules).
- Four physical I/O modules (two redundant pairs), each providing:
  - A four-lane physical interconnect that supports speeds up to 16 Gbps
  - Four x1 ports or a single x4 port on each compute node
  - Up to 16 logical I/O modules (four per physical I/O module)
- Two IBM Flex System Managers (FSMs) for redundancy. The FSM provides multiple-chassis management support for up to four chassis.
- Two IBM Flex System Chassis Management Modules (CMMs). The CMM provides single-chassis management support.

Configuring the Flex System Enterprise Chassis

You can configure the Flex System Enterprise Chassis locally or remotely using the Flex System Manager. Configuring the chassis involves performing all of the tasks that are necessary to set up a functioning chassis on which you can begin to install applications.

The chassis system provides the following features:

- IBM X-Architecture®

  The Flex System Enterprise Chassis is an IBM X-Architecture system that leverages proven innovative IBM technologies to build powerful, scalable, and reliable compute node platforms. It provides features such as IBM Predictive Failure Analysis (PFA) and real-time diagnostics.

- Compute node expansion capabilities

  Clients can add up to fourteen 1-bay compute nodes, seven 2-bay compute nodes, or three 4-bay compute nodes to the chassis.

- Hot-swap capabilities

  Bays in the chassis are hot-swappable. For example, you can add, remove, or replace a compute node, I/O module, FSM, Chassis Management Module, fan logic card, fan module, or power supply module without disconnecting the power from the chassis.

- High-availability design components in the chassis that enable continued operation if one of the components fails:
  - Power supply modules

    The power supply modules provide redundant power to all of the chassis components. The power supply modules must be installed in pairs for N+N redundancy support. If a power supply module fails, the other power supply modules can continue operating the system without disruption. You can replace a power supply module without shutting down the chassis.

    Note: The power management policy that you have implemented for the chassis determines the result of a power supply module failure.

  - I/O modules

    The physical I/O modules provide a four-lane physical interconnect that supports speeds up to 16 Gbps. The I/O modules must be installed in pairs for redundancy support. If one I/O module fails, the other I/O module can continue operating the system without disruption. You can replace an I/O module without shutting down the chassis.

  - Fan modules

    The fan modules provide redundant cooling to the compute nodes, I/O modules, and Chassis Management Module. If one fan module fails, the other fan modules can continue operating the system without disruption. You can replace a fan module without shutting down the chassis.

  - Chassis midplane

    The midplane has the following characteristics:

    -- Redundant high-speed serial interconnects between compute nodes and switches
    -- I2C communication between the CMM and all modules (except compute nodes)

    The midplane provides hot-pluggable connectors for the following components:

    -- Fourteen 1-bay compute nodes, seven 2-bay compute nodes, or three 4-bay compute nodes
    -- Four I/O modules

-- Two CMMs
-- Six power modules
-- Ten fan modules
-- Two fan logic cards

Systems management

The IBM Flex System Manager Node provides configuration and management support for multiple (up to four) chassis, their devices, and the compute nodes locally or remotely. You can install up to two FSMs in each four-chassis configuration (one FSM in two of the four chassis) for redundancy. This enables the system to continue to operate without disruption if one fails. The Flex System Manager provides all of the management functions that the CMM provides, plus other advanced management functions.

The IBM Flex System Chassis Management Module (CMM) provides single-chassis management. The CMM is used to communicate with the service processor in each compute node to provide system monitoring, event recording, and alerts, and to manage the chassis, its devices, and the compute nodes. The chassis supports up to two Chassis Management Modules. If one CMM fails, the second CMM can detect its inactivity and activate itself and take control of the system without any disruption.

Minimum chassis configuration

Component	Bay
Two power supplies	Power-supply bays 1 and 4
Two 40 mm fan modules	Fan bays 5 and 10
Four 80 mm fan modules	Fan bays 1, 2, 6, and 7
IBM Flex System Manager Node (optional, one per chassis)	Node bay 1
One Chassis Management Module	CMM bay 1
One I/O module	I/O bay 1
One compute node	Node bays 2 - 14

Flex System networking portfolio

Networking in datacenters today is undergoing a transition from a discrete traditional model to a more flexible, optimized model or the "smarter" model. Clients are looking to support more workloads with decreasing or flat IT budget. The network architecture on the Flex System platform has been designed to address the key challenges clients are facing today in their datacenters. The key attributes of the network architecture on this platform are:

- Integrated
  - Efficient integrated management as part of the management appliance
  - Move from physical network management to logical network management in a virtualized environment
- Automated
  - Seamless provisioning, management, and deployment of both physical and virtual network parameters using tools like Virtual Fabric Manager, IBM SoftSwitch (5000v), and VMready®
- Optimized
  - Creation of a flat logical network so there are fewer elements to manage
  - Reduced cost and complexity by leveraging IBM Virtual Fabric and I/O convergence
  - Reduced risk and cost by leveraging scalable switches that can provide both port and bandwidth flexibility

One of the key attributes of the products on this platform is scalability. When modules are marked "Scalable" this means that clients can buy the base product with certain number of ports and when they need to scale up for more ports, they

can just buy the license to enable the extra ports without having to provision any new hardware.

The Flex System networking portfolio includes:

- IBM Flex System EN2092 1Gb Ethernet Scalable Switch

  This 1 Gb scalable switch is for clients looking to use the value of Flex System without moving to a 10 Gb environment. Key features of this switch module are:

  - The switch supports up to two logical partitions per physical switch.
  - It is a 52-port switch with 28 internal 1 Gb ports, 20 external 1 Gb ports, and 4 external 10 Gb ports.
  - The base switch provides 14 internal 1 Gb ports and 10 external 1 Gb RJ45 ports.
  - Upgrade 1 offers 14 additional internal 1 Gb ports and 10 additional external 1 Gb RJ45 ports.
  - Upgrade 2 enables the four 10 Gb uplink ports.
  - Upgrade 1 can be applied to the base switch or to Upgrade 2.
  - 10 Gb SFP+ ports can function at 1 Gb or 10 Gb.
  - The switch provides support for full L2/L3 Ethernet functionality.

  The IBM Flex System EN2092 1Gb Ethernet Scalable Switch offers 14 internal 1 Gb ports to each compute node and ten external 1 Gb ports as uplinks. The external ports are RJ45.

- IBM Flex System EN2092 1 Gb Ethernet Scalable Switch (Upgrade 1)

  Clients who require either more than two 1 Gb ports per server or more bandwidth can enable additional ports by using this switch upgrade. This option enables another 14 internal 1 Gb ports to each compute node and 10 additional external 1 Gb uplinks.

- IBM Flex System EN2092 1Gb Ethernet Scalable Switch (10 Gb Uplinks) (Upgrade 2)

  This option enables the four 10 Gb uplinks on this switch module for clients who require higher performance and bandwidth to connect to 10 Gb Top-of-Rack (ToR) switch modules. Clients need to purchase at least the base switch before they can enable these uplinks. These uplinks can be enabled on either partition of the switch.

- IBM Flex System Fabric EN4093 10Gb Scalable Switch

  This 10 Gb scalable switch offers uncompromised scalability, throughput, and performance. This switch can help clients migrate to 10 Gb infrastructure and offers virtualization features like Virtual Fabric and VMready . Clients should consider this switch if they:

  - Are building a 10 Gb Ethernet Infrastructure or migrating from 1 Gb to 10 Gb (mixed environment)
  - Are deploying virtualization
  - Want investment protection to upgrade to more ports and bandwidth (40 Gb)

  Some of the key features of this switch are:

  - This is a triple-density switch with the ability to scale based on your needs.
  - It offers a total 64 ports with 42 internal 10 Gb ports and 22 external 10 Gb ports.
  - The base switch provides 14 internal 10 Gb ports and 10 external SFP+ 10 Gb ports.
  - Upgrade 1 provides 14 additional internal 10 Gb ports and enables two 40 Gb QSFP ports that can be used as four 10 Gb ports.
  - Upgrade 2 offers 14 additional internal 10 Gb ports and enables 4 external SFP + 10 Gb ports.

- Upgrade 1 is required to apply Upgrade 2.
- 10 Gb SFP+ ports can function at 1 Gb or 10 Gb.
- 40 Gb QSFP ports can function at 10 Gb or 40 Gb.
- The switch provides full Layer 2/3 Ethernet function.
- The switch offers Virtual Fabric support and management.

This base switch model will enable 14 internal 10 Gb ports, one to each compute node, and 10 external 10 Gb ports to connect to a ToR switch module. All external 10 Gb ports are SFP+ based connections.

- IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 1)

  This switch upgrade can be applied on the base switch when you require support of four ports of 10 Gb on the server or if you just want more uplink bandwidth on the base switch. The upgrade will enable 14 additional internal 10 Gb ports, one to each compute node, and two 40 Gb uplinks. These 40 Gb uplinks are QSFP connectors but can be converted to four 10 Gb uplinks using fan out cable. This upgrade can be applied if you already have the base switch model.

- IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 2)

  This switch upgrade can be applied on top of Upgrade 1 when you want to support six ports of 10 Gb on the server or if you just want more uplink bandwidth on the base switch. The upgrade will enable 14 additional internal 10 Gb ports, one to each compute node, and four 10 Gb uplinks. These uplinks are SFP+ ports.

- IBM Flex System EN4091 10Gb Ethernet Pass-thru

  This module offers easy connectivity of the Flex System Chassis to an external network infrastructure. This is an unmanaged device enabling direct connectivity of a compute node in the chassis to an external Top-of-Rack switch. This module can function at both 1 Gb and 10 Gb speeds. It has 14 internal links and 14 external SFP+ uplinks.

- IBM Flex System EN2024 4-port 1Gb Ethernet Adapter

  This four-port 1 Gb adapter can provide 1 Gb connectivity to clients. When it is combined with the IBM Flex System EN2092 1Gb Ethernet Scalable Switch, clients can leverage an end-to-end 1 Gb solution on Flex System Chassis. This adapter is based on Broadcom 5718 ASIC and supports a PCIe Gen2 x4 interface with MSI/MSI-X. It also supports I/O virtualization features like VMware NetQueue and Microsoft™ VMQ technologies.

- IBM Flex System CN4054 10Gb Virtual Fabric Adapter and IBM Flex System CN4054 Virtual Fabric Adapter (software upgrade)

  This is a four-port 10 Gb adapter that can scale up to 16 virtual ports and support multiple protocols like Ethernet, iSCSI, and FCoE. This adapter uses the third generation of Emulex ASIC (BE3) that supports hardware offload and acceleration for network and storage protocols. By using a common infrastructure for Ethernet and storage networks, datacenters can reduce capital expenses (CAPEX) and operating expenses (OPEX). Key features of this adapter are:

  - Each 10 Gb physical port can support up to four virtual ports (vNIC).
  - Each vNIC appears as an individual adapter to the operating system.
  - Each vNIC allocates bandwidth at increments of 100 Mb.
  - Clients can run advanced protocols like HW iSCSI or FCoE on one of the vNICs per physical port via the software upgrade key.
  - The adapter can connect at 1 Gb or 10 Gb speed.

  This adapter will support the following modes of operations:

  - Physical Mode (pNIC): In this mode the adapter will present four ports of 10 Gb and clients can upgrade to run either FCoE or HW iSCSI to connect to a storage target.

  - IBM Virtual Fabric Mode: In this mode each of the physical 10 Gb ports can present up to four virtual ports to the operating system. Therefore on this card, users can get up to 16 virtual ports. Clients can set the bandwidth of each of these virtual ports at increments of 100 Mb. Additionally they can apply the software upgrade to run storage protocols (HW iSCSI or FCoE) on four of the 16 virtual ports. This mode works with the IBM 10Gb Virtual Fabric Switch to provide end-to-end I/O virtualization. This adapter ships by default in this mode.
  - Switch Independent Mode: This functions like the IBM Virtual Fabric Mode except no setting or changes are required on the switch side. The adapter presents four virtual ports per physical port but on the switch side it is still a single 10 Gb port. This mode will enable clients to leverage the IBM Virtual Fabric capability with the 10Gb Pass-thru module also.

  Key benefits of this adapter are:

  - Ability to maximize I/O consolidation with high-performance 10 Gb ports
  - One adapter to run multiple protocols
  - Simplified setup and management options like CLI, Switch Interface, or Virtual Fabric Manager
- IBM Flex System EN4132 2-port 10Gb Ethernet Adapter

  This two-port 10 Gb adapter is based on Mellanox Connect X3 ASIC. This is a PCIe Gen 3 adapter that supports next-generation technology like RDMA and RoCE. Other key features of this adapter are:

  - Application acceleration
  - Low latency for specialized apps

  This adapter will work with the 10 Gb Flex System Fabric Switch and 10 Gb Pass-thru modules.

Fibre Channel Switch and Adapters

- IBM Flex System FC3171 8Gb SAN Switch and IBM Flex System FC3171 8Gb SAN Pass-thru

  These SAN modules enable 8 Gb connectivity to storage from the Flex System Chassis. These SAN modules offer enhanced Fibre Channel functions like Port Aggregation, Auto-StreamGuard, Enhanced N_Port ID Virtualization (NPIV), and Automatic Failover.

  Both of these modules run at high-performance 8 Gb speed. Two part numbers are offered to meet clients' requirements whether they need full switching function in the chassis or just a simple pass-thru solution.

- IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch, IBM Flex System FC5022 16Gb SAN Scalable Switch, and IBM Flex System FC5022 2-port 16Gb FC Adapter

  These SAN switch modules and HBA deliver an embedded option for IBM Flex System users deploying storage area networks in their enterprise. They offer end-to-end 16 Gb and 8 Gb connectivity. These scalable switches enable Dynamic Ports on Demand (DPOD) and grow with the needs of the clients. The N-Port Virtualization mode streamlines the infrastructure by reducing the number of domains to manage while enabling the ability to add or move servers without impact to the SAN. Management is simplified via an integrated management appliance, or clients using end-to-end Brocade SAN can leverage the Brocade management tools.

  Key features of this switch:

  - Superior scalability to allow greater intra-chassis connectivity
  - Extension, encryption , and compression capable
  - Diagnostic Port (D-Port) for superior validation and serviceability of network

- Total of 48 ports wired with 28 ports internal and 20 external
- Based on Brocade's seventh-generation Fibre Channel Switch ASIC

Two versions of this switch are available:

- IBM Flex System FC5022 16Gb SAN Scalable Switch

  This switch comes with 12 Dynamic Ports on Demand (DPOD) licenses that can be applied to either internal or external links on this switch. Clients who do not fully populate the chassis can leverage this switch without having to pay for ports they are not using.

- IBM Flex System FC5022 24-port 16Gb Enterprise SAN Scalable Switch

  This switch comes with 24 DPOD licenses that can be applied to either internal or external links on this switch. This switch will also include these enhanced software licenses installed:

  -- ISL Trunking (up to 128Gb ISL Trucks)
  -- Adaptive Networking
  -- Advanced Performance Monitoring
  -- Fabric Watch
  -- Extended Fabrics
  -- Server Application Optimization

  To complement the 16Gb switches, we will offer a two-port 16 Gb adapter based on Brocade architecture to offer end-to-end 16 Gb connectivity to a SAN. This adapter can autonegotiate and work at 8 Gb speed also. It offers enhanced features like storage Target Rate Limiting (TRL), VM aware QoS, and 1M+ IOPS performance.

  Clients can manage these devices via the integrated Flex System Manager or for advanced monitoring they can use the Brocade Network Advisor.

  In summary, these SAN switches and adapter offer these key values:

  -- First 16 Gbps embedded switch with up to 640 Gb bandwidth
  -- Investment protection; growth in ports and bandwidth
  -- Superior scalability to allow greater intrachassis connectivity
  -- ISL Trunks up to 128Gb for superior performance, resiliency, and management
  -- Extension, encryption, and compression capable
  -- Diagnostic Port (D-Port) for superior serviceability
  -- VM Aware Quality of Service from adapter through entire network

- IBM Flex System FC3172 2-port 8Gb FC Adapter

  The QLogic 8Gb Fibre Channel adapter enables high-speed access for Flex System compute nodes to connect to a Fibre Channel storage area network (SAN). This adapter is based on the proven Qlogic 2532 8 Gb ASIC design and works with any of the 8 Gb or 16 Gb Flex System Fibre Channel switch modules. When compared to the previous-generation 4 Gb adapters, the new-generation 8 Gb adapters double the throughput speeds for Fibre Channel traffic. As a result, you can manage increased amounts of data and possibly benefit from a reduced hardware expense.

- IBM Flex System FC3052 2-port 8Gb FC Adapter

  The Emulex 2-port 8Gb Fibre Channel adapter enables high-speed access for Flex System compute nodes to an external storage area network (SAN). This adapter is based on the proven Emulex Fibre Channel stack and works with any of the 8 Gb or 16 Gb Flex System Fibre Channel switch modules. When compared to the previous-generation 4 Gb adapters, the new-generation 8 Gb adapters double the throughput speeds for Fibre Channel traffic. As a

result, you can manage increased amounts of data and possibly benefit from a reduced hardware expense.

InfiniBand and adapters

- IBM Flex System IB6131 InfiniBand Switch, IBM Flex System IB6132 2-port QDR InfiniBand Adapter, and IBM Flex System IB6132 2-port FDR InfiniBand Adapter

InfiniBand is a high-speed server-interconnect technology that is ideally suited as the interconnect technology for access layer and storage components specifically for application and back-end IPC applications, for connectivity between application and back-end layers, and from back-end to storage layers. Through use of host channel adapters (HCAs) and switches, InfiniBand technology is used to connect servers with remote storage and networking devices, and other servers. It can also be used inside servers for inter-processor communication (IPC) in parallel clusters.

IBM Flex System IB6131 InfiniBand Switch is an upgradeable device that can scale with your needs. Base switch enables 14 internal QDR links to each server and 18 QSFP uplink ports for inter-switch links or to connect to external servers. Clients can upgrade to FDR speed (56 Gb) via the Feature On Demand (FOD) process.

The InfiniBand QDR and FDR switches based on Mellanox technology are unmanaged switches. A subnet manager is required to establish an InfiniBand fabric. This module supports switch-embedded subnet managers and host-based subnet managers.

Accessibility by people with disabilities

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

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

Product positioning

IBM Flex System suits multiple delivery models from highly customizable hardware platforms to a fully integrated and optimized system by offering:

- IBM Flex System Hardware "building blocks" made up of individual components that can be mixed and matched, and are fully customizable with optional management
- IBM Flex System solutions made up of a chassis with an integrated management appliance, with IBM networking and storage standard
- IBM Flex System optimized offerings made up of preconfigured, highly customized systems - focused on selected workloads or single-purpose such as PureFlex or Cloudburst

Statement of general direction

- IBM plans to expand its next generation portfolio of IBM Flex System compute nodes. These additional compute nodes will be optimized for virtualization with the highest level of integration - advanced management, new security enhancements, and flexible IO options. In addition, IBM will continue to expand the Flex System interconnect ecosystem of ferings to support higher levels of capabilities and new fabric protocols such as converged networks.
- IBM plans to provide future upgrade offerings to enhance customer value in their new IBM PureFlex System investments as technology advancements are introduced. The availability details regarding these upgrade offerings will be made available in future announcements and communications.
- To enable efficient access to these optional future upgrade offerings, customers should enable delivery of their IBM PureFlex System inventory to IBM through Electronic Service Agent.

- IBM intends to further enhance the integration of server, storage, andnetworking with the introduction of an IBM Flex System storage node.This new storage system will share the software functional richness of IBM Storwize V7000 -- including IBM System Storage Easy Tier for automated SSD optimization -- while being physically and logicallyintegrated into IBM PureFlex System.
- The Flex System storage node is being designed to build on the industry-leading storage virtualization and efficiency capabilities of IBM Storwize V7000 by simplifying and speeding deployment, and providing greater integration of server and storage management to automate and streamline provisioning for greater responsiveness to business needs and lower overall cost.

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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=112-053

Product number

The following are newly announced features on the specified models of the IBM xSeries® 8721 machine type:

Description	MT	Model	Feature
8721-HC1	8721	HC1	
UID Asset Tag Label	8721	HC1	0747
EMEA Long Leadtime Configurations	8721	HC1	1763
Hungary CHW plant 9SH	8721	HC1	1764
Guad CHW plant 9KQ	8721	HC1	1765
ISTC CHW 9K2	8721	HC1	1766
RTP CHW 9NR	8721	HC1	1767
Offload Manufacturing to Guadalajara HVEC	8721	HC1	1768
Offload Manufacturing to RTP HVEC	8721	HC1	1769
Offload Manufacturing to ISTC	8721	HC1	1770
Capacity Scheduling Service	8721	HC1	1772
Custom SLA Scheduling Service	8721	HC1	1796
Custom Asset Tagging - Standard	8721	HC1	2200
Custom Asset Tagging - Enhanced	8721	HC1	2201
Custom Media Shipgroup	8721	HC1	2206
Request for Global Trade Number (UPC or EAN)	8721	HC1	2207
Custom Software/Firmware Setting - Standard	8721	HC1	2208
Custom Software/Firmware Setting - Enhanced	8721	HC1	2209
Custom Labeling	8721	HC1	2220
Custom Palletization	8721	HC1	2221
Request for a new Vendor Logo Hardware	8721	HC1	2247
Request for an existing IBM Feature	8721	HC1	2248
Request for an existing Public RPQ	8721	HC1	2249
BladeCenter Chassis Configuration	8721	HC1	2300
Rack Installation >1U Component	8721	HC1	2306
Rack 01	8721	HC1	3101
Rack 02	8721	HC1	3102
Rack 03	8721	HC1	3103
Rack 04	8721	HC1	3104

Rack 05	8721	HC1	3105
Rack 06	8721	HC1	3106
Rack 07	8721	HC1	3107
Rack 08	8721	HC1	3108
Rack 09	8721	HC1	3109
Rack 10	8721	HC1	3110
Rack 11	8721	HC1	3111
Rack 12	8721	HC1	3112
Rack 13	8721	HC1	3113
Rack 14	8721	HC1	3114
Rack 15	8721	HC1	3115
Rack 16	8721	HC1	3116
Rack 17	8721	HC1	3117
Rack 18	8721	HC1	3118
Rack 19	8721	HC1	3119
Rack 20	8721	HC1	3120
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Rack 30	8721	HC1	3130
Rack 31	8721	HC1	3131
Rack 32	8721	HC1	3132
Rack 33	8721	HC1	3133
Rack 34	8721	HC1	3134
Rack 35	8721	HC1	3135
Rack 36	8721	HC1	3136
Rack 37	8721	HC1	3137
Rack 38	8721	HC1	3138
Rack 39	8721	HC1	3139
Rack 40	8721	HC1	3140
Rack 41	8721	HC1	3141
Rack 42	8721	HC1	3142
Rack 43	8721	HC1	3143
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Rack 59	8721	HC1	3159
Rack 60	8721	HC1	3160
Rack 61	8721	HC1	3161
Rack 62	8721	HC1	3162
Rack 63	8721	HC1	3163
Rack 64	8721	HC1	3164
Rack location U01	8721	HC1	3201
Rack location U02	8721	HC1	3202
Rack location U03	8721	HC1	3203
Rack location U04	8721	HC1	3204
Rack location U05	8721	HC1	3205
Rack location U06	8721	HC1	3206
Rack location U07	8721	HC1	3207
Rack location U08	8721	HC1	3208
Rack location U09	8721	HC1	3209
Rack location U10	8721	HC1	3210
Rack location U11	8721	HC1	3211
Rack location U12	8721	HC1	3212
Rack location U13	8721	HC1	3213
Rack location U14	8721	HC1	3214

Rack location U15	8721	HC1	3215
Rack location U16	8721	HC1	3216
Rack location U17	8721	HC1	3217
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Rack location U32	8721	HC1	3232
Rack location U33	8721	HC1	3233
Rack location U34	8721	HC1	3234
Rack location U35	8721	HC1	3235
Rack location U36	8721	HC1	3236
Rack location U37	8721	HC1	3237
Rack location U38	8721	HC1	3238
Rack location U39	8721	HC1	3239
Rack location U40	8721	HC1	3240
Rack location U41	8721	HC1	3241
Rack location U42	8721	HC1	3242
Rack location A	8721	HC1	3251
Rack location B	8721	HC1	3252
Rack location C	8721	HC1	3253
Rack location D	8721	HC1	3254
Rack location E	8721	HC1	3255
Rack location F	8721	HC1	3256
Rack location T	8721	HC1	3259
IBM SFP RJ45 Transceiver	8721	HC1	3268
IBM SFP SX Transceiver	8721	HC1	3269
BladeCenter 01	8721	HC1	3301
BladeCenter 02	8721	HC1	3302
BladeCenter 03	8721	HC1	3303
BladeCenter 04	8721	HC1	3304
BladeCenter 05	8721	HC1	3305
BladeCenter 06	8721	HC1	3306
BladeCenter 07	8721	HC1	3307
BladeCenter 08	8721	HC1	3308
BladeCenter 09	8721	HC1	3309
BladeCenter 10	8721	HC1	3310
BladeCenter 11	8721	HC1	3311
BladeCenter 12	8721	HC1	3312
BladeCenter 13	8721	HC1	3313
BladeCenter 14	8721	HC1	3314
BladeCenter 15	8721	HC1	3315
BladeCenter 16	8721	HC1	3316
BladeCenter 17	8721	HC1	3317
BladeCenter 18	8721	HC1	3318
BladeCenter 19	8721	HC1	3319
BladeCenter 20	8721	HC1	3320
BladeCenter 21	8721	HC1	3321
BladeCenter 22	8721	HC1	3322
BladeCenter 23	8721	HC1	3323
BladeCenter 24	8721	HC1	3324
BladeCenter 25	8721	HC1	3325
BladeCenter 26	8721	HC1	3326
BladeCenter 27	8721	HC1	3327
BladeCenter 28	8721	HC1	3328
BladeCenter 29	8721	HC1	3329
BladeCenter 30	8721	HC1	3330
BladeCenter 31	8721	HC1	3331
BladeCenter 32	8721	HC1	3332
BladeCenter 33	8721	HC1	3333
BladeCenter 34	8721	HC1	3334
BladeCenter 35	8721	HC1	3335
BladeCenter 36	8721	HC1	3336
BladeCenter 37	8721	HC1	3337

BladeCenter 38	8721	HC1	3338
BladeCenter 39	8721	HC1	3339
BladeCenter 40	8721	HC1	3340
1m LC-LC Fiber Cable (networking)	8721	HC1	3700
5m LC-LC Fiber Cable (networking)	8721	HC1	3701
25m LC-LC Fiber Cable (networking)	8721	HC1	3702
1m LC-LC Fiber Cable	8721	HC1	3703
5m LC-LC Fiber Cable	8721	HC1	3704
25m LC-LC Fiber Cable	8721	HC1	3705
1.8m Black Cat5e Cable	8721	HC1	3760
3m Black Cat5e Cable	8721	HC1	3761
10m Black Cat5e Cable	8721	HC1	3762
0.6m Yellow Cat5e Cable	8721	HC1	3791
1.5m Yellow Cat5e Cable	8721	HC1	3792
3m Yellow Cat5e Cable	8721	HC1	3793
10m Yellow Cat5e Cable	8721	HC1	3794
25m Yellow Cat5e Cable	8721	HC1	3795
0.6m Green Cat5e Cable	8721	HC1	3796
1.5m Green Cat5e Cable	8721	HC1	3797
3m Green Cat5e Cable	8721	HC1	3798
10m Green Cat5e Cable	8721	HC1	3799
25m Green Cat5e Cable	8721	HC1	3800
0.6m Blue Cat5e Cable	8721	HC1	3801
1.5m Blue Cat5e Cable	8721	HC1	3802
3m Blue Cat5e Cable	8721	HC1	3803
10m Blue Cat5e Cable	8721	HC1	3804
25m Blue Cat5e Cable	8721	HC1	3805
Copper QDR InfiniBand QSFP Cable	8721	HC1	3866
IBM 4 Gbps SW SFP Transceiver	8721	HC1	4804
10GbE 850 nm Fiber SFP+ Transceiver (SR) for IBM BladeCenter	8721	HC1	4942
IBM SFP+ SR Transceiver	8721	HC1	5053
IBM 8Gb SFP+ SW Optical Transceiver	8721	HC1	5075
Brocade 4Gb SFP SW Optical Transceiver	8721	HC1	5085
SOFS Solution Code MFG Instruction	8721	HC1	6124
SAP-BWA Solution Code MFG Instruction	8721	HC1	6125
InfoSphere-BWA Solution Code MFG Instruction	8721	HC1	6126
GMAS Solution Code MFG Instruction	8721	HC1	6127
IBW-SSD Solution Code MFG Instruction	8721	HC1	6128
Cloudburst Solution Code MFG Instruction	8721	HC1	6129
SoNAS Solution Code MFG Instruction	8721	HC1	6130
2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power Cable	8721	HC1	6252
2m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable	8721	HC1	6292
China Warranty	8721	HC1	7599
Customer Solution Center Services	8721	HC1	7831
e1350 Special Bid Solution Component	8721	HC1	7929
Consolidate Shipment	8721	HC1	8031
e1350 Solution Component	8721	HC1	8034
No Blade	8721	HC1	8062
TAA Compliant Order	8721	HC1	8067
General Racking Solution	8721	HC1	8072
Integrate BladeCenter® in Manufacturing	8721	HC1	8077
No Ethernet Switch	8721	HC1	8083
No Publications Selected	8721	HC1	8086
No Management Module (BC Only)	8721	HC1	8117
Integrate in manufacturing	8721	HC1	8971
Ship Uninstalled (Safety)	8721	HC1	8972
SUSE Specify	8721	HC1	9203
Drop-in-the-Box Specify	8721	HC1	9205
No Preload Specify	8721	HC1	9206
IBM Flex System Enterprise Chassis	8721	HC1	A0TA
IBM Flex System Enterprise Chassis Power Module Filler	8721	HC1	A0TL
IBM Flex System Chassis Management Module	8721	HC1	A0TM
IBM Flex System Chassis Management Module Filler	8721	HC1	A0TN
IBM Flex System Compute Node Filler	8721	HC1	A0TP
IBM Flex System Switch Filler	8721	HC1	A0TQ
IBM Flex System Enterprise Chassis Label Group	8721	HC1	A0TR
IBM Flex System Enterprise Chassis Fan Module Filler	8721	HC1	A0TU
System Documentation and Software-US English	8721	HC1	A0TW

IBM Flex System Enterprise Chassis Packaging World Wide	8721	HC1	A0UB
IBM Flex System Enterprise Chassis 2500W Power Module Standard	8721	HC1	A0UC
System x Cluster Upgrade	8721	HC1	A103
IBM Flex System Enterprise Chassis Rack Kit	8721	HC1	A10X
1m IBM QSFP+ DAC Break Out Cable	8721	HC1	A1DL
3m IBM QSFP+ DAC Break Out Cable	8721	HC1	A1DM
5m IBM QSFP+ DAC Break Out Cable	8721	HC1	A1DN
1m IBM QSFP+-to-QSFP+ cable	8721	HC1	A1DP
3m IBM QSFP+-to-QSFP+ cable	8721	HC1	A1DQ
IBM QSFP+ SR Transceiver	8721	HC1	A1DR
10m IBM QSFP+ MTP Optical cable	8721	HC1	A1MM
30m IBM QSFP+ MTP Optical cable	8721	HC1	A1MN
1m IBM Passive DAC SFP+ Cable	8721	HC1	A1PH
3m IBM Passive DAC SFP+ Cable	8721	HC1	A1PJ
5m IBM Passive DAC SFP+ Cable	8721	HC1	A1PK
IBM SFP+ LR Transceiver	8721	HC1	A1PM
IBM SFP LX Transceiver	8721	HC1	A1PN
RFID Tag, AG/AP: 902-928Mhz	8721	HC1	A2EV
IBM Fabric Manager w/1 Yr Subscription & Support	8721	HC1	A2WX
IBM Fabric Manager w/3 Yr Subscription & Support	8721	HC1	A2WY
IBM Fabric Manager Manufacturing Instruction	8721	HC1	A2ZT
PureFlex System Expansion Indicator	8721	HC1	A34H

The following are features already announced for the 3331 and 8721 machine types:

Description	MT	Model	Feature
3331-HC1	3331	HC1	
8721-HC1	8721	HC1	
1.8m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	3331	HC1	6537
1.8m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	8721	HC1	
2.5m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	3331	HC1	6566
2.5m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	8721	HC1	
IBM Flex System Fabric EN4093 10Gb Scalable Switch	3331	HC1	A0TB
IBM Flex System Fabric EN4093 10Gb Scalable Switch	8721	HC1	
IBM Flex System FC3171 8Gb SAN Switch	3331	HC1	A0TD
IBM Flex System FC3171 8Gb SAN Switch	8721	HC1	
IBM Flex System EN2092 1Gb Ethernet Scalable Switch	3331	HC1	A0TF
IBM Flex System EN2092 1Gb Ethernet Scalable Switch	8721	HC1	
IBM Flex System FC3171 8Gb SAN Pass-thru	3331	HC1	A0TJ
IBM Flex System FC3171 8Gb SAN Pass-thru	8721	HC1	
IBM Flex System Enterprise Chassis 80mm Fan Module	8721	HC1	A0UA
IBM Flex System Enterprise Chassis 2500W Power Module	3331	HC1	A0UD
IBM Flex System Enterprise Chassis 2500W Power Module	8721	HC1	
IBM Flex System Chassis Management Module	3331	HC1	A0UE
IBM Flex System Chassis Management Module	8721	HC1	
IBM Flex System FC5022 16Gb SAN Scalable Switch	3331	HC1	A1EH
IBM Flex System FC5022 16Gb SAN Scalable Switch	8721	HC1	
IBM Flex System IB6131 InfiniBand Switch	3331	HC1	A1EK
IBM Flex System IB6131 InfiniBand Switch	8721	HC1	
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 1)	3331	HC1	A1EL

IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 1)	8721	HC1	
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 2)	3331	HC1	A1EM
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 2)	8721	HC1	
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (10Gb Uplinks)	3331	HC1	A1EN
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (10Gb Uplinks)	8721	HC1	
IBM Flex System Console Breakout Cable	3331	HC1	A1NF
IBM Flex System Console Breakout Cable	8721	HC1	
4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord	3331	HC1	A1NV
4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord	8721	HC1	
IBM Flex System EN4091 10Gb Ethernet Pass-thru	3331	HC1	A1QV
IBM Flex System EN4091 10Gb Ethernet Pass-thru	8721	HC1	
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (Upgrade 1)	3331	HC1	A1QW
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (Upgrade 1)	8721	HC1	
IBM Flex System IB6131 InfiniBand Switch (FDR Upgrade)	3331	HC1	A1QX
IBM Flex System IB6131 InfiniBand Switch (FDR Upgrade)	8721	HC1	
3m FDR InfiniBand Cable	3331	HC1	A227
3m FDR InfiniBand Cable	8721	HC1	
Brocade 16Gb SFP+ Optical Transceiver	3331	HC1	A22R
Brocade 16Gb SFP+ Optical Transceiver	8721	HC1	
IBM Flex System Enterprise Chassis Airborne Contaminant Filter	3331	HC1	A2AT
IBM Flex System Enterprise Chassis Contaminant Filter Pack	3331	HC1	A2AU
Brocade 8Gb SFP+ Optical Transceiver	3331	HC1	A2B9
Brocade 8Gb SFP+ Optical Transceiver	8721	HC1	
IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch	3331	HC1	A2RQ
IBM Flex System Management Serial Access Cable	3331	HC1	A2RR
4.3m, US/CAN, NEMA L15-30P - (3P+Gnd) to 3X IEC 320 C19 Line Cord	3331	HC1	A2Y3
4.3m, US/CAN, NEMA L15-30P - (3P+Gnd) to 3X IEC 320 C19 Line Cord	8721	HC1	
PureFlex System Express® Indicator	8721	HC1	A2VS
PureFlex System Standard Indicator	8721	HC1	A2VT
PureFlex System Enterprise Indicator	8721	HC1	A2VU
PureFlex System Expansion Indicator	8721	HC1	A2VV
IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch	8721	HC1	A2RQ
IBM Flex System Enterprise Chassis 80mm Fan Module Pair	3331	HC1	A39E

Description	SEO
IBM Flex System Enterprise Chassis	8721A1U

Option SEOs

Description	SEO part number
IBM Flex System Fabric EN4093 10Gb Scalable Switch	49Y4270
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 1)	49Y4798
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 2)	88Y6037
IBM Flex System EN2092 1Gb Ethernet Scalable Switch	49Y4294
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (Upgrade 1)	90Y3562
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (10Gb Uplinks)	49Y4298
IBM Flex System EN4091 10Gb Ethernet Pass-thru	88Y6043

IBM Flex System FC3171 8Gb SAN Switch	69Y1930
IBM Flex System FC3171 8Gb SAN Pass-thru	69Y1934
IBM Flex System FC5022 16Gb SAN Scalable Switch	88Y6374
IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch	90Y9356
IBM Flex System IB6131 InfiniBand Switch	90Y3450
IBM Flex System IB6131 InfiniBand Switch (FDR Upgrade)	90Y3462
Brocade 16Gb SFP+ transceiver module	88Y6393
Brocade 8Gb SFP+ transceiver module	88Y6416
3m FDR InfiniBand Cable	90Y3470
IBM Flex System Enterprise Chassis 80mm Fan Module Pair	43W9078
IBM Flex System Enterprise Chassis 2500W Power Module	43W9049
IBM Flex System Chassis Management Module	68Y7030
IBM Flex System Console Breakout Cable	81Y5286
IBM Flex System Enterprise Chassis Airborne Contaminant Filter	43W9055
IBM Flex System Enterprise Chassis Contaminant Filter Pack	43W9057
IBM Flex System Management Serial Access Cable	90Y9338
4.3m, US/CAN, NEMA L15-30P - (3P+Gnd) to 3X IEC 320 C19 Line Cord	00D7192
2.5m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	00D7195
1.8m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	00D7196
4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord	00D7197

Publications

The *Installation and Service Guide* for IBM Flex System Enterprise Chassis solutions, in US English, is available from

https://www-304.ibm.com/systems/support/

Under "Product Support", select " System x® ", and under "Find a Product" select your product and "Documentation."

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

http://publib14.boulder.ibm.com/infocenter/systems

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.

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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 , BladeCenter , and Flex System 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

Functional overview

The chassis is a 10U server platform that accepts compute nodes, storage nodes, switches (or I/O modules), expansion units, and Chassis Management Modules (CMMs). It supports:

- Fourteen horizontally oriented bays, which can support up to 14 single-wide compute nodes, or expansion units, or seven double-wide compute nodes. A double-wide node plugs into two adjacent bays. The compute node pitch is 57 mm.

  For the single-wide compute node form factor, the height of the compute node is limited to single high, therefore, a single 57 mm pitch device.

  For the double-wide compute node form factor, the height is limited to double high (57 mm + 57 mm pitch).

- Four I/O switch bays (two redundant pairs), each providing a 4-lane of physical interconnect supporting speeds with capability up to 16 Gbps, four individual x1 ports, or a single x4 port interconnect to each compute node. Up to 16 logical switches (four per physical switch) are supported.

- Two CMM bays, either of which may function as the management controller for the chassis, along with a redundant standby.
- Six power modules, providing N+N or N+1 redundant power to a single power domain. Each supply has a dedicated power input connector.

  Chassis is divided into separate cooling zones (left and right) which are managed by individual fan modules. Each 40 mm fan module provides cooling support for two of the I/O module bays, and also the two chassis Management Module (CMM) bays. The 80 mm fan modules provide cooling support for the compute node bays. Cooling redundancy has been implemented into the chassis design based on the proper installation of the fan modules to support each of the cooling zones.
- Two fan logic cards which contain active components used to communicate with the fan modules.
- Two passive fan distribution cards which pass power and signals from the midplane to the fan module and fan logic card.
- A read LED card with chassis support for nonvolatile storage, temperature measurement, connection to the front user interface panel card, and LEDs for rear of chassis indicators.
- A front LED panel card which has chassis information LEDs.
- A front bezel with optional replaceable passive airborne contaminant filter.

Dimensions

```
   - Height: 440 mm (17.32 in) (10 EIA rack standard units)
   - Width:  447 mm (17.60 in) (EIA 19-inch rack standard width,
   - Depth:  800 mm (31.50 in) (measured from front bezel to rear of
              chassis)
             840 mm (33.07) (measured from node latch handle to the
              power supply handle)

Weight

Chassis:
```

- Weight: (minimum configuration) 96.62 kg (213 lb)
- Weight: (maximum configuration) 220.45 kg (486 lb)
- Temperature:
  - 5° to 40°C (41° to 104°F) at 0 - 914 m (0 to 3,000 ft)
  - 914 m to 3048 m, the maximum ambient temperature drops 1°C for every additional 178 m increase in altitude until the maximum temperature is 28°C at 3048 m
- Relative humidity: 8% to 85%
- Maximum altitude: 3,048 m (10,000 ft)
- Electrical power:
  - 200 - 240 V ac (nominal), 50 or 60 Hz
  - Minimum configuration: 0.51 kVA (two power supplies)
  - Maximum configuration: 13 kVA (six power supplies)
- Power consumption: 12,900 watts maximum
- Thermal output:
  - Ship configuration - 500 watts (1,700 Btu/hr)
  - Full configuration - 12,900 watts (43,900 Btu/hr)
- Acoustical noise emissions for Flex Chassis:
  - 7.5 bels operating
  - 7.5 bels idling

Note: The noise emission level stated is the declared (upper limit) sound power level, in bels, for a random sample of machines. All measurements are made in accordance with ISO 7779 and reported in conformance with ISO 9296.

Rack installation

Installation Kit:

- Rails are adjustable for front to rear EIA Rack flange distance variation between 609 and 762 mm (24 and 30 inches).
  - Rails are not compatible with racks with threaded (pretapped) front and rear EIA flanges.
  - For racks with threaded front and rear EIA flanges, a support shelf which will occupy EIA U space below the chassis is required (not supplied by IBM).
- Three brackets are needed: left and right rear bracket and a lower rear bracket.

Installation into a rack

- Lift handles are provided (4x) in a box within the accessory pack.
- Due to chassis weight, chassis components must be removed prior to lift, or mechanical assist must be used.

Standards

Equipment approvals and safety

- FCC - Verified to comply with Part 15 of the FCC Rules Class A
- Canada ICES-004, issue 3 Class A
- UL/IEC 60950-1
- CSA C22.2 No. 60950-1
- NOM-019
- Argentina IEC 60950-1

Operating environment

Software requirements

Not required.

Planning information

Cable orders

AC power cable.

Installability

Refer to the limitations information.

Packaging

```
System x IBM Flex System Enterprise Chassis shipping contents

Chassis
2 - 6 PDU jumper cords (equal number of power supplies)
1 Rail kit
1 Rack installation kit
1 Rack install template
4 Chassis handles
1 Setup poster
1 Notices manual
1 Warranty flyer
1 Documentation CD
3 Director DVDs
```

Additional configured items

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.

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

- Three years
- Optional features - One year

Note: For configurations that support the RAID battery, the RAID battery will be warranted for 1 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 which 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 is the same as the machine it is installed.

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

- System batteries
- Air baffle
- Fillers
- Shelf
- Cable-management arm
- Lift handle kit
- Rail kit
- Brackets
- Filters

- Front bezel
- Miscellaneous kit

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:

- Fan modules
- Fan logic modules
- Labels
- Fan pack
- Power supply
- Ethernet switch modules
- Ethernet cards
- Fibre Channel switch modules
- Cables
- Transceivers
- Power cord
- Switches
- KVM dongel
- Adapters
- Chassis management module

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?lndocid=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 2 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/

The following are features already announced for the 3331 machine type:

Description	Model number	Feature number	Initial/ MES/ Both support	RP CSU	RP MES
HC1					
	HC1			Yes	
1.8m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord					
	HC1	6537	MES		
2.5m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord					
	HC1	6566	MES		
IBM Flex System Fabric EN4093 10Gb Scalable Switch					
	HC1	A0TB	MES		
IBM Flex System FC3171 8Gb SAN Switch					
	HC1	A0TD	MES		
IBM Flex System EN2092 1Gb Ethernet Scalable Switch					
	HC1	A0TF	MES		
IBM Flex System FC3171 8Gb SAN Pass-thru					
	HC1	A0TJ	MES		
IBM Flex System Enterprise Chassis 2500W Power Module					
	HC1	A0UD	MES		
IBM Flex System Chassis Management Module					
	HC1	A0UE	MES		
IBM Flex System FC5022 16Gb SAN Scalable Switch					
	HC1	A1EH	MES		
IBM Flex System IB6131 InfiniBand Switch					
	HC1	A1EK	MES		
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 1)					
	HC1	A1EL	MES		
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 2)					
	HC1	A1EM	MES		
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (10Gb Uplinks)					
	HC1	A1EN	MES		
IBM Flex System Console Breakout Cable					
	HC1	A1NF	MES		
4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord					
	HC1	A1NV	MES		
IBM Flex System EN4091 10Gb Ethernet Pass-thru					
	HC1	A1QV	MES		
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (Upgrade 1)					
	HC1	A1QW	MES		
IBM Flex System IB6131 InfiniBand Switch (FDR Upgrade)					
	HC1	A1QX	MES		
3m FDR InfiniBand Cable					
	HC1	A227	MES		
Brocade 16Gb SFP+ Optical Transceiver					
	HC1	A22R	MES		
IBM Flex System Enterprise Chassis Airborne Contaminant Filter					
	HC1	A2AT	MES		
IBM Flex System Enterprise Chassis Contaminant Filter Pack					
	HC1	A2AU	MES		
Brocade 8Gb SFP+ Optical Transceiver					
	HC1	A2B9	MES		
IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch					
	HC1	A2RQ	MES		

```
IBM Flex System Management Serial Access Cable
                            HC1      A2RR          MES
4.3m, US/CAN, NEMA L15-30P - (3P+Gnd) to 3X IEC 320
C19 Line Cord
                            HC1      A2Y3          MES
IBM Flex System Enterprise Chassis 80mm Fan
  Module Pair
                            HC1      A39E          MES
```

The following are newly announced features on the specified models of the IBM xSeries 8721 machine type:

```
                                                   Initial/
                                                   MES/
                           Model  Feature          Both         RP
Description                number number          support  CSU MES

IBM Flex System Enterprise Chassis
                            HC1                           Yes



 UID Asset Tag Label
                            HC1      0747          Initial


 EMEA Long Leadtime Configurations
                            HC1      1763          Initial
Hungary CHW plant 9SH
                            HC1      1764          Initial
Guad CHW plant 9KQ
                            HC1      1765          Initial
ISTC CHW 9K2
                            HC1      1766          Initial
RTP CHW 9NR
                            HC1      1767          Initial
Offload Manufacturing to Guadalajara HVEC
                            HC1      1768          Initial
Offload Manufacturing to RTP HVEC
                            HC1      1769          Initial
Offload Manufacturing to ISTC
                            HC1      1770          Initial
Capacity Scheduling Service
                            HC1      1772          Initial
Custom SLA Scheduling Service
                            HC1      1796          Initial
Custom Asset Tagging - Standard
                            HC1      2200          Initial
Custom Asset Tagging - Enhanced
                            HC1      2201          Initial
Custom Media Shipgroup
                            HC1      2206          Initial
Request for Global Trade Number (UPC or EAN)
                            HC1      2207          Initial
Custom Software/Firmware Setting - Standard
                            HC1      2208          Initial
Custom Software/Firmware Setting - Enhanced
                            HC1      2209          Initial
Custom Labeling
                            HC1      2220          Initial
Custom Palletization
                            HC1      2221          Initial
Request for a new Vendor Logo Hardware
                            HC1      2247          Initial
Request for an existing IBM Feature
                            HC1      2248          Initial
Request for an existing Public RPQ
                            HC1      2249          Initial
BladeCenter Chassis Configuration
                            HC1      2300          Initial
Rack Installation >1U Component
                            HC1      2306          Initial
Rack 01
```

	HC1	3101	Initial
Rack 02			
	HC1	3102	Initial
Rack 03			
	HC1	3103	Initial
Rack 04			
	HC1	3104	Initial
Rack 05			
	HC1	3105	Initial
Rack 06			
	HC1	3106	Initial
Rack 07			
	HC1	3107	Initial
Rack 08			
	HC1	3108	Initial
Rack 09			
	HC1	3109	Initial
Rack 10			
	HC1	3110	Initial
Rack 11			
	HC1	3111	Initial
Rack 12			
	HC1	3112	Initial
Rack 13			
	HC1	3113	Initial
Rack 14			
	HC1	3114	Initial
Rack 15			
	HC1	3115	Initial
Rack 16			
	HC1	3116	Initial
Rack 17			
	HC1	3117	Initial
Rack 18			
	HC1	3118	Initial
Rack 19			
	HC1	3119	Initial
Rack 20			
	HC1	3120	Initial
Rack 21			
	HC1	3121	Initial
Rack 22			
	HC1	3122	Initial
Rack 23			
	HC1	3123	Initial
Rack 24			
	HC1	3124	Initial
Rack 25			
	HC1	3125	Initial
Rack 26			
	HC1	3126	Initial
Rack 27			
	HC1	3127	Initial
Rack 28			
	HC1	3128	Initial
Rack 29			
	HC1	3129	Initial
Rack 30			
	HC1	3130	Initial
Rack 31			
	HC1	3131	Initial
Rack 32			
	HC1	3132	Initial
Rack 33			
	HC1	3133	Initial
Rack 34			
	HC1	3134	Initial
Rack 35			
	HC1	3135	Initial
Rack 36			
	HC1	3136	Initial
Rack 37			
	HC1	3137	Initial
Rack 38			

	HC1	3138	Initial
Rack 39			
	HC1	3139	Initial
Rack 40			
	HC1	3140	Initial
Rack 41			
	HC1	3141	Initial
Rack 42			
	HC1	3142	Initial
Rack 43			
	HC1	3143	Initial
Rack 44			
	HC1	3144	Initial
Rack 45			
	HC1	3145	Initial
Rack 46			
	HC1	3146	Initial
Rack 47			
	HC1	3147	Initial
Rack 48			
	HC1	3148	Initial
Rack 49			
	HC1	3149	Initial
Rack 50			
	HC1	3150	Initial
Rack 51			
	HC1	3151	Initial
Rack 52			
	HC1	3152	Initial
Rack 53			
	HC1	3153	Initial
Rack 54			
	HC1	3154	Initial
Rack 55			
	HC1	3155	Initial
Rack 56			
	HC1	3156	Initial
Rack 57			
	HC1	3157	Initial
Rack 58			
	HC1	3158	Initial
Rack 59			
	HC1	3159	Initial
Rack 60			
	HC1	3160	Initial
Rack 61			
	HC1	3161	Initial
Rack 62			
	HC1	3162	Initial
Rack 63			
	HC1	3163	Initial
Rack 64			
	HC1	3164	Initial
Rack location U01			
	HC1	3201	Initial
Rack location U02			
	HC1	3202	Initial
Rack location U03			
	HC1	3203	Initial
Rack location U04			
	HC1	3204	Initial
Rack location U05			
	HC1	3205	Initial
Rack location U06			
	HC1	3206	Initial
Rack location U07			
	HC1	3207	Initial
Rack location U08			
	HC1	3208	Initial
Rack location U09			
	HC1	3209	Initial
Rack location U10			
	HC1	3210	Initial
Rack location U11			

	HC1	3211	Initial
Rack location U12			
	HC1	3212	Initial
Rack location U13			
	HC1	3213	Initial
Rack location U14			
	HC1	3214	Initial
Rack location U15			
	HC1	3215	Initial
Rack location U16			
	HC1	3216	Initial
Rack location U17			
	HC1	3217	Initial
Rack location U18			
	HC1	3218	Initial
Rack location U19			
	HC1	3219	Initial
Rack location U20			
	HC1	3220	Initial
Rack location U21			
	HC1	3221	Initial
Rack location U22			
	HC1	3222	Initial
Rack location U23			
	HC1	3223	Initial
Rack location U24			
	HC1	3224	Initial
Rack location U25			
	HC1	3225	Initial
Rack location U26			
	HC1	3226	Initial
Rack location U27			
	HC1	3227	Initial
Rack location U28			
	HC1	3228	Initial
Rack location U29			
	HC1	3229	Initial
Rack location U30			
	HC1	3230	Initial
Rack location U31			
	HC1	3231	Initial
Rack location U32			
	HC1	3232	Initial
Rack location U33			
	HC1	3233	Initial
Rack location U34			
	HC1	3234	Initial
Rack location U35			
	HC1	3235	Initial
Rack location U36			
	HC1	3236	Initial
Rack location U37			
	HC1	3237	Initial
Rack location U38			
	HC1	3238	Initial
Rack location U39			
	HC1	3239	Initial
Rack location U40			
	HC1	3240	Initial
Rack location U41			
	HC1	3241	Initial
Rack location U42			
	HC1	3242	Initial
Rack location A			
	HC1	3251	Initial
Rack location B			
	HC1	3252	Initial
Rack location C			
	HC1	3253	Initial
Rack location D			
	HC1	3254	Initial
Rack location E			
	HC1	3255	Initial
Rack location F			

	HC1	3256	Initial
Rack location T			
	HC1	3259	Initial
IBM SFP RJ45 Transceiver			
	HC1	3268	Initial
IBM SFP SX Transceiver			
	HC1	3269	Initial
BladeCenter 01			
	HC1	3301	Initial
BladeCenter 02			
	HC1	3302	Initial
BladeCenter 03			
	HC1	3303	Initial
BladeCenter 04			
	HC1	3304	Initial
BladeCenter 05			
	HC1	3305	Initial
BladeCenter 06			
	HC1	3306	Initial
BladeCenter 07			
	HC1	3307	Initial
BladeCenter 08			
	HC1	3308	Initial
BladeCenter 09			
	HC1	3309	Initial
BladeCenter 10			
	HC1	3310	Initial
BladeCenter 11			
	HC1	3311	Initial
BladeCenter 12			
	HC1	3312	Initial
BladeCenter 13			
	HC1	3313	Initial
BladeCenter 14			
	HC1	3314	Initial
BladeCenter 15			
	HC1	3315	Initial
BladeCenter 16			
	HC1	3316	Initial
BladeCenter 17			
	HC1	3317	Initial
BladeCenter 18			
	HC1	3318	Initial
BladeCenter 19			
	HC1	3319	Initial
BladeCenter 20			
	HC1	3320	Initial
BladeCenter 21			
	HC1	3321	Initial
BladeCenter 22			
	HC1	3322	Initial
BladeCenter 23			
	HC1	3323	Initial
BladeCenter 24			
	HC1	3324	Initial
BladeCenter 25			
	HC1	3325	Initial
BladeCenter 26			
	HC1	3326	Initial
BladeCenter 27			
	HC1	3327	Initial
BladeCenter 28			
	HC1	3328	Initial
BladeCenter 29			
	HC1	3329	Initial
BladeCenter 30			
	HC1	3330	Initial
BladeCenter 31			
	HC1	3331	Initial
BladeCenter 32			
	HC1	3332	Initial
BladeCenter 33			
	HC1	3333	Initial
BladeCenter 34			

```
                              HC1      3334          Initial
BladeCenter 35
                              HC1      3335          Initial
BladeCenter 36
                              HC1      3336          Initial
BladeCenter 37
                              HC1      3337          Initial
BladeCenter 38
                              HC1      3338          Initial
BladeCenter 39
                              HC1      3339          Initial
BladeCenter 40
                              HC1      3340          Initial
1m LC-LC Fiber Cable (networking)
                              HC1      3700          Initial
5m LC-LC Fiber Cable (networking)
                              HC1      3701          Initial
25m LC-LC Fiber Cable (networking)
                              HC1      3702          Initial
1m LC-LC Fiber Cable
                              HC1      3703          Initial
5m LC-LC Fiber Cable
                              HC1      3704          Initial
25m LC-LC Fiber Cable
                              HC1      3705          Initial
1.8m Black Cat5e Cable
                              HC1      3760          Initial
3m Black Cat5e Cable
                              HC1      3761          Initial
10m Black Cat5e Cable
                              HC1      3762          Initial
0.6m Yellow Cat5e Cable
                              HC1      3791          Initial
1.5m Yellow Cat5e Cable
                              HC1      3792          Initial
3m Yellow Cat5e Cable
                              HC1      3793          Initial
10m Yellow Cat5e Cable
                              HC1      3794          Initial
25m Yellow Cat5e Cable
                              HC1      3795          Initial
0.6m Green Cat5e Cable
                              HC1      3796          Initial
1.5m Green Cat5e Cable
                              HC1      3797          Initial
3m Green Cat5e Cable
                              HC1      3798          Initial
10m Green Cat5e Cable
                              HC1      3799          Initial
25m Green Cat5e Cable
                              HC1      3800          Initial
0.6m Blue Cat5e Cable
                              HC1      3801          Initial
1.5m Blue Cat5e Cable
                              HC1      3802          Initial
3m Blue Cat5e Cable
                              HC1      3803          Initial
10m Blue Cat5e Cable
                              HC1      3804          Initial
25m Blue Cat5e Cable
                              HC1      3805          Initial
Copper QDR InfiniBand QSFP Cable
                              HC1      3866          Initial
IBM 4 Gbps SW SFP Transceiver
                              HC1      4804          Initial
10GbE 850 nm Fiber SFP+ Transceiver (SR) for IBM
BladeCenter
                              HC1      4942          Initial
IBM SFP+ SR Transceiver
                              HC1      5053          Initial
IBM 8Gb SFP+ SW Optical Transceiver
                              HC1      5075          Initial
Brocade 4Gb SFP SW Optical Transceiver
                              HC1      5085          Initial
```

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SOFS Solution Code MFG Instruction
                              HC1      6124          Initial
SAP-BWA Solution Code MFG Instruction
                              HC1      6125          Initial
InfoSphere-BWA Solution Code MFG Instruction
                              HC1      6126          Initial
GMAS Solution Code MFG Instruction
                              HC1      6127          Initial
IBW-SSD Solution Code MFG Instruction
                              HC1      6128          Initial
Cloudburst Solution Code MFG Instruction
                              HC1      6129          Initial
SoNAS Solution Code MFG Instruction
                              HC1      6130          Initial
2.5m, 16A/100-240V, C19 to IEC 320-C20 Rack Power
Cable
                              HC1      6252          Initial
2m, 16A/100-250V, C19 to IEC 320-C20 Rack Power
Cable
                              HC1      6292          Initial
China Warranty
                              HC1      7599          Initial
Customer Solution Center Services
                              HC1      7831          Initial
e1350 Special Bid Solution Component
                              HC1      7929          Initial
Consolidate Shipment
                              HC1      8031          Initial
e1350 Solution Component
                              HC1      8034          Initial
No Blade
                              HC1      8062          Initial
TAA Compliant Order
                              HC1      8067          Initial
General Racking Solution
                              HC1      8072          Initial
Integrate BladeCenter in Manufacturing
                              HC1      8077          Initial
No Ethernet Switch
                              HC1      8083          Initial
No Publications Selected
                              HC1      8086          Initial
No Management Module (BC Only)
                              HC1      8117          Initial
Integrate in manufacturing
                              HC1      8971          Initial
Ship Uninstalled (Safety)
                              HC1      8972          Initial
SUSE Specify
                              HC1      9203          Initial
Drop-in-the-Box Specify
                              HC1      9205          Initial
No Preload Specify
                              HC1      9206          Initial
IBM Flex System Enterprise Chassis
                              HC1      A0TA          Initial
IBM Flex System Enterprise Chassis Power Module
Filler
                              HC1      A0TL          Initial
IBM Flex System Chassis Management Module
                              HC1      A0TM          Initial
IBM Flex System Chassis Management Module Filler
                              HC1      A0TN          Initial
IBM Flex System Compute Node Filler
                              HC1      A0TP          Initial
IBM Flex System Switch Filler
                              HC1      A0TQ          Initial
IBM Flex System Enterprise Chassis Label Group
                              HC1      A0TR          Initial
IBM Flex System Enterprise Chassis Fan Module
Filler
                              HC1      A0TU          Initial
```

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 System Documentation and Software-US English
                              HC1      A0TW          Initial

 IBM Flex System Enterprise Chassis Packaging World
Wide
                              HC1      A0UB          Initial
IBM Flex System Enterprise Chassis 2500W Power
Module Standard
                              HC1      A0UC          Initial
System x Cluster Upgrade
                              HC1      A103          Initial
IBM Flex System Enterprise Chassis Rack Kit
                              HC1      A10X          Initial
1m IBM QSFP+ DAC Break Out Cable
                              HC1      A1DL          Initial
3m IBM QSFP+ DAC Break Out Cable
                              HC1      A1DM          Initial
5m IBM QSFP+ DAC Break Out Cable
                              HC1      A1DN          Initial
1m IBM QSFP+-to-QSFP+ cable
                              HC1      A1DP          Initial
3m IBM QSFP+-to-QSFP+ cable
                              HC1      A1DQ          Initial
IBM QSFP+ SR Transceiver
                              HC1      A1DR          Initial
10m IBM QSFP+ MTP Optical cable
                              HC1      A1MM          Initial
30m IBM QSFP+ MTP Optical cable
                              HC1      A1MN          Initial
1m IBM Passive DAC SFP+ Cable
                              HC1      A1PH          Initial
3m IBM Passive DAC SFP+ Cable
                              HC1      A1PJ          Initial
5m IBM Passive DAC SFP+ Cable
                              HC1      A1PK          Initial
IBM SFP+ LR Transceiver
                              HC1      A1PM          Initial
IBM SFP LX Transceiver
                              HC1      A1PN          Initial


 RFID Tag, AG/AP: 902-928Mhz
                              HC1      A2EV          Initial


 IBM Fabric Manager w/1 Yr Subscription & Support
                              HC1      A2WX          Initial
IBM Fabric Manager w/3 Yr Subscription & Support
                              HC1      A2WY          Initial
IBM Fabric Manager Manufacturing Instruction
                              HC1      A2ZT          Initial
PureFlex System Expansion Indicator
                              HC1      A34H          Initial
```

The following are features already announced for the 8721 machine type:

```
                                                    Initial/
                                                    MES/
                             Model  Feature         Both         RP
Description                  number number          support  CSU MES

HC1
```

	HC1		Yes
1.8m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord			
	HC1	6537	Initial
2.5m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord			
	HC1	6566	Initial
IBM Flex System Fabric EN4093 10Gb Scalable Switch			
	HC1	A0TB	Initial
IBM Flex System FC3171 8Gb SAN Switch			
	HC1	A0TD	Initial
IBM Flex System EN2092 1Gb Ethernet Scalable Switch			
	HC1	A0TF	Initial
IBM Flex System FC3171 8Gb SAN Pass-thru			
	HC1	A0TJ	Initial
IBM Flex System Enterprise Chassis 80mm Fan Module			
	HC1	A0UA	Initial
IBM Flex System Enterprise Chassis 2500W Power Module			
	HC1	A0UD	Initial
IBM Flex System Chassis Management Module			
	HC1	A0UE	Initial
IBM Flex System FC5022 16Gb SAN Scalable Switch			
	HC1	A1EH	Initial
IBM Flex System IB6131 InfiniBand Switch			
	HC1	A1EK	Initial
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 1)			
	HC1	A1EL	Initial
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 2)			
	HC1	A1EM	Initial
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (10Gb Uplinks)			
	HC1	A1EN	Initial
IBM Flex System Console Breakout Cable			
	HC1	A1NF	Initial
4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord			
	HC1	A1NV	Initial
IBM Flex System EN4091 10Gb Ethernet Pass-thru			
	HC1	A1QV	Initial
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (Upgrade 1)			
	HC1	A1QW	Initial
IBM Flex System IB6131 InfiniBand Switch (FDR Upgrade)			
	HC1	A1QX	Initial
3m FDR InfiniBand Cable			
	HC1	A227	Initial
Brocade 16Gb SFP+ Optical Transceiver			
	HC1	A22R	Initial
Brocade 8Gb SFP+ Optical Transceiver			
	HC1	A2B9	Initial
4.3m, US/CAN, NEMA L15-30P - (3P+Gnd) to 3X IEC 320 C19 Line Cord			
	HC1	A2Y3	Initial
PureFlex System Express Indicator	HC1	A2VS	Initial
PureFlex System Standard Indicator	HC1	A2VT	Initial
PureFlex System Enterprise Indicator	HC1	A2VU	Initial
PureFlex System Expansion Indicator	HC1	A2VV	Initial
IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch			

HC1 A2RQ Initial

Description	SEO number	Initial/ MES/ Both support	CSU	RP MES
IBM Flex System Enterprise Chassis	8721A1U	Both	Yes	

Option SEOs

Description	SEO	Initial MES/ Both support	CSU
IBM Flex System Fabric EN4093 10Gb Scalable Switch	49Y4270	Both	Yes
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 1)	49Y4798	Both	Yes
IBM Flex System Fabric EN4093 10Gb Scalable Switch (Upgrade 2)	88Y6037	Both	Yes
IBM Flex System EN2092 1Gb Ethernet Scalable Switch	49Y4294	Both	Yes
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (Upgrade 1)	90Y3562	Both	Yes
IBM Flex System EN2092 1Gb Ethernet Scalable Switch (10Gb Uplinks)	49Y4298	Both	Yes
IBM Flex System EN4091 10Gb Ethernet Pass-thru	88Y6043	Both	Yes
IBM Flex System FC3171 8Gb SAN Switch	69Y1930	Both	Yes
IBM Flex System FC3171 8Gb SAN Pass-thru	69Y1934	Both	Yes
IBM Flex System FC5022 16Gb SAN Scalable Switch	88Y6374	Both	Yes
IBM Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch	90Y9356	Both	Yes
IBM Flex System IB6131 InfiniBand Switch	90Y3450	Both	Yes
IBM Flex System IB6131 InfiniBand Switch (FDR Upgrade)	90Y3462	Both	Yes
Brocade 16Gb SFP+ transceiver module	88Y6393	Both	Yes
Brocade 8Gb SFP+ transceiver module	88Y6416	Both	Yes
3m FDR InfiniBand Cable	90Y3470	Both	Yes
IBM Flex System Enterprise Chassis 80mm Fan Module Pair	43W9078	Both	Yes
IBM Flex System Enterprise Chassis 2500W Power Module	43W9049	Both	Yes
IBM Flex System Chassis Management Module	68Y7030	Both	Yes
IBM Flex System Console Breakout Cable	81Y5286	Both	Yes
IBM Flex System Enterprise Chassis Airborne Contaminant Filter	43W9055	Both	Yes
IBM Flex System Enterprise Chassis Contaminant Filter Pack	43W9057	Both	Yes
IBM Flex System Management Serial Access Cable	90Y9338	Both	Yes
4.3m, US/CAN, NEMA L15-30P - (3P+Gnd) to 3X IEC 320 C19 Line Cord	00D7192	Both	Yes
2.5m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	00D7195	Both	Yes
1.8m, 15A/208V, C19 to NEMA 6-15P (US) Line Cord	00D7196	Both	Yes
4.3m, 15A/250V, C19 to NEMA 6-15P (US) Line Cord	00D7197	Both	Yes

ServicePac for Warranty and Maintenance

ServicePac offerings are valid for models announced in the United States.

ServicePac for Warranty and Maintenance

		SEO	MTM
8721	3 Year Onsite Repair 9x5 4 Hour Response	00X8520	67567Z6
8721	3 Year Onsite Repair 24x7 4 Hour Response	00X8521	67567Z7
8721	3 Year Onsite Repair 24x7 2 Hour Response	00X8522	67567Z8
8721	4 Year Onsite Repair 9x5 Next Business Day	00X8523	67567Z9
8721	4 Year Onsite Repair 9x5 4 Hour Response	00X8524	67567ZA
8721	4 Year Onsite Repair 24x7 4 Hour Response	00X8525	67567ZB
8721	4 Year Onsite Repair 24x7 2 Hour Response	00X8526	67567ZC
8721	5 Year Onsite Repair 9x5 Next Business Day	00X8527	67567ZD
8721	5 Year Onsite Repair 9x5 4 Hour Response	00X8528	67567ZF
8721	5 Year Onsite Repair 24x7 4 Hour Response	00X8529	67567ZG
8721	5 Year Onsite Repair 24x7 2 Hour Response	00X8530	67567ZH

ServicePac for Maintenance Agreement

		SEO	MTM
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8721	1 Year Onsite Repair 9x5 4 Hour Response	00X8532	6756MXD
8721	1 Year Onsite Repair 24x7 4 Hour Response	00X8533	6756MXF
8721	1 Year Onsite Repair 24x7 2 Hour Response	00X8534	6756MXG
8721	2 Year Onsite Repair 9x5 Next Business Day	00X8535	6756MXH
8721	2 Year Onsite Repair 9x5 4 Hour Response	00X8536	6756MXJ
8721	2 Year Onsite Repair 24x7 4 Hour Response	00X8537	6756MXK
8721	2 Year Onsite Repair 24x7 2 Hour Response	00X8538	6756MXM

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Corrections

(Corrected on June 27, 2013)
A part number was added to the "Product number" section. (It had been included in other sections, but was omitted from "Product number.")