



IBM Flex System x240 Compute Node is a high-performance server that offers improved virtualization with increased CPU performance, memory capacity, and flexible configuration options

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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.

Offerings in this announcement include:

- IBM Flex System Enterprise Chassis
- IBM Flex System Compute Nodes
- IBM Flex System Scalable Network and Storage Switches
- IBM Flex System Storage RAID Controller Flash Kits

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

Overview

The IBM Flex System x240 Compute Node is a high-performance server that offers improved virtualization with new levels of CPU performance, memory capacity, and flexible configuration options. It is part of IBM Flex System, a new category of computing that integrates multiple server architectures, networking, storage, and system management capability into a single system that is designed to be easy to deploy and manage. IBM Flex System has full built-in virtualization support of servers, storage, and networking to speed provisioning and increase resiliency. In addition, it supports open industry standards such as operating systems, networking and storage fabrics, virtualization, and system management protocols to easily fit within existing and future datacenter environments. IBM Flex System is scalable and extendable with multigenerational upgrades to protect and maximize IT investments.

To provide clients with the latest technology and innovation, x240 compute nodes require an update with the latest Intel Xeon™ Processor E5-2600 v2 series architecture. This refresh enables enhanced performance while maintaining the leadership features that are already available on the x240 compute node today. In addition to refreshing the node, more connectivity and storage options are available. The new connectivity and storage options being added to the network portfolio are:

- IBM Flex System CN4022 2-port 10Gb Converged Adapter: Dual port 10 Gb converged adapter that supports Ethernet, FCoE and iSCSI protocols. Clients now have a choice of multiple vendors without compromising the features. This adapter also supports virtual NIC (vNIC) capability, which helps clients reduce cost and complexity.
- Cisco Nexus B22 Fabric Extender for IBM Flex System and Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System : Clients looking for Cisco connectivity inside the Flex System chassis can now leverage the new B22 FEX module designed for the IBM Flex System Enterprise Chassis. This module reduces management and offers easy connectivity to existing Nexus infrastructure.
- IBM Flex System EN4023 10Gb Scalable Switch, IBM Flex System EN4023 10Gb Scalable Switch (FoD 1) and IBM Flex System EN4023 10Gb Scalable Switch (FoD 2): Clients deploying the new Brocade-based VCS fabric can now extend the features to the Flex System chassis using the new Brocade-based VDX switch module. This module offers high-speed 10 Gb connectivity and can scale based on clients requirements.
- IBM Flex System CN4054R 10Gb Virtual Fabric Adapter: This is a quad port 10 Gb adapter that supports Ethernet, FCoE, and iSCSI protocols. This adapter also supports virtual NIC (vNIC) capability to help reduce cost and complexity.
- ServeRAID M5100 Series IBM Flex System Flash Kit v2 for x240 and ServeRAID M5100 Series IBM Flex System Flash Kit v2 for x440: These version 2 kits extend drive support to the latest 1.8-inch solid state drives (SSDs). The flash kits optimize storage performance by enabling the installation of up to four 1.8-inch SSDs connected to the ServeRAID M5115 SAS/SATA Controller installed in either the Flex System x240 or x440 Compute Node.

The most forward-thinking companies will completely restructure the way they deploy and manage their IT environments by evolving to a more open, agile, and integrated computing system that is dynamically managed from a single vantage point to simultaneously maximize efficiency and innovation.

By doing this, companies can:

- Improve efficiency and utilization through integration
- Optimize heterogeneous environments, providing the right architecture for the right workload
- Increase speed and dexterity at the enterprise level
- Improve control through simplicity, automation, compliance, and security
- Improve economics with faster time-to-value through real-time scalability
- Deliver insights faster to gain a competitive advantage

IBM Flex System can help enterprises achieve faster time to value of their IT assets, increase control of their environment, and minimize the complexity inherent in a highly virtualized environment.

Key prerequisites

- IBM Flex System Enterprise Chassis
- IBM Flex System network modules
- Appropriate PDUs and main power distribution
- Monitor, keyboard, and mouse for setup

Planned availability date

December 6, 2013

Description

IBM Flex System compute nodes

Compute nodes typically contain the number and type of microprocessors, memory modules, and hard disk drives that are needed to support a specific workload environment. These nodes use integrated network ports or optional network adapters to connect to external devices through the switches or modules that are installed in the chassis.

Note: The network adapters and ports in the compute nodes must be compatible with the network switches or modules in the chassis.

These compute nodes come with Intel Xeon microprocessors and provide the function, reliability, and performance of the X-Architecture® systems in a small form factor design. They support a variety of Microsoft™ Windows™, Linux™, and VMware operating systems and are ideally suited for high-performance and virtualized environments such as memory-intensive computing, collaboration, general and mission-critical processing, and enterprise application workloads. All models come with an integrated management module (IMM2) that connects to the Chassis Management Module to provide the integrated systems-management functions for the node.

Flex System x240 Compute Node

The IBM Flex System x240 Compute Node is a high-density, scalable compute node that is ideally suited for high-performance and virtualized environments.

The Flex System x240 Compute Node provides support for optional devices, such as the following devices:

- Up to two multi-core microprocessors
- Up to 24 dual inline LP memory modules (DIMMs)
- Up to two hot-swap storage drives
- Up to two I/O expansion adapters
- Up to two internal bootable USB flash keys

The Flex System x240 Compute Node is supported in the IBM Flex System Enterprise Chassis only.

The IBM Flex System x240 Compute Node supports memory mirroring. Chipkill is supported in any mode when x4-based DIMM memory is used. Chipkill memory correction for up to four bits per DIMM helps to keep your server up and running.

Additional features

- The IBM Flex System x240 Compute Node system board contains 24 DIMM connectors.
 - Each DIMM connector supports 4 GB, 8 GB, 16 GB, or 32 GB low-profile (LP) double-data rate (DDR3) DRAM.
 - Chipkill is supported in x4 DIMM memory configurations only.
- Support is provided for up to two hot-swap, Small Form Factor (SFF) Serial Attached SCSI (SAS), Serial ATA (SATA), or Solid State (SSD) storage drives.
- Dual 10-Gigabit Ethernet connections are provided on select models.

IBM Flex System x240 Compute Node servers are designed for high throughput from processor to memory, and to bus I/O.

These features, combined with SMP capability and blade-thin density, make it an excellent choice for space-constrained and power-constrained environments used for:

- Database
- Virtualization
- General enterprise applications such as ERP and SCM
- Simulations

High-availability and serviceability features

- Hot-swap capability:
 - Hot-swap compute nodes enable easy access to each node server.
- Management module
 - The management module interfaces with each node server for single systems management control.
- Dynamic System Analysis (DSA)
 - IBM Dynamic System Analysis (DSA) collects and analyzes system information to aid in diagnosing compute node problems. DSA collects the following information about the compute node:
 - Drive health information
 - Event logs for ServeRAID controllers and service processors
 - Hardware inventory, including PCI and USB information
 - Installed applications and hot fixes
 - Kernel modules
 - Light path diagnostics status
 - Network interfaces and settings
 - Performance data and details about processes that are running
 - RAID and controller configuration
 - Integrated management module 2 status and configuration
 - System configuration
 - Vital product data and firmware information
 - DSA creates a DSA log, which is a chronologically ordered merge of the system-event log (as the IPMI event log), the IMM event log (as the ASM event log), and the operating-system event logs. You can send the DSA log as a file to a support representative or view the information as a text file or HTML file.
- Flexible network support
 - The compute node provides flexible network capabilities:
 - The integrated Emulex BE3 dual-port Gigabit Ethernet (select models) controller supports connections to a 1 Gbps, 10 Gbps, or 100 Gbps network through an Ethernet-compatible switch module in the chassis. The controller also supports Wake on LAN technology.
 - The compute node has connectors on the system board for optional expansion adapters for adding network communication capabilities to the compute node. Depending on the model, you can install up to two I/O expansion adapters for network support. This provides the flexibility to install expansion adapters that support a variety of network communication technologies.
- Hard disk drive support
 - The compute node supports up to two hot-swap hard disk drives. You can implement RAID 0 or RAID 1 for the drives.
- IBM ServerGuide Setup and Installation CD
 - The ServerGuide Setup and Installation CD, which you can download from the web, provides programs to help you set up the compute node and install a Windows operating system. The ServerGuide program detects installed optional

hardware devices and provides the correct configuration programs and device drivers.

- IBM X-Architecture

IBM X-Architecture systems combine proven, innovative IBM designs to make your x86-processor-based compute node powerful, scalable, and reliable.

- Integrated management module 2 (IMM2)

The integrated management module 2 (IMM2) combines systems-management function, video controller, the remote presence, and blue-screen capture features in a single chip. The IMM2 provides advanced systems-management control, monitoring, and alerting function. If an environmental condition exceeds a threshold or if a system component fails, LEDs are illuminated on the IMM2 to help you diagnose the problem, the error is recorded in the IMM event log, and a problem alert is sent to you.

Optionally, the IMM2 also provides a virtual presence capability for remote systems management capabilities. The IMM2 provides remote systems management through industry-standard interfaces:

- Common Information Model (CIM)
- Intelligent Platform Management Interface (IPMI) version 2.0
- Simple Network Management Protocol (SNMP) version 3.0
- Web browser

- Large system-memory capacity

The compute node supports up to 768 GB of system memory. The memory controller provides support for up to 24 industry-standard registered or LRDIMM ECC DDR3 on low-profile (LP) DIMMs on the system board.

- Light path diagnostics

Light path diagnostics provides light-emitting diodes (LEDs) to help diagnose problems.

- Microprocessor technology

The compute node supports up to two multi-core Intel Xeon microprocessors.

- Peripheral Component Interconnect Express® (PCIe)

PCIe is a computer expansion bus that is used for chip-to-chip interconnect and expansion adapter interconnect. You can add optional I/O and storage devices.

- Power throttling

By enforcing a configurable power policy known as power-domain oversubscription, the IBM Flex System chassis will allow for a larger overall chassis power budget depending on the number of power supplies installed. When a fault occurs in one or more power supplies, the power supplies can run oversubscribed for a short period of time. During this time period the compute nodes will throttle to safe power level in order to allow all components in the chassis to stay operational and survive the power supply failure. This policy is enforced by the Chassis Management Module in cooperation with every installed compute node in the IBM Flex System chassis. The policy is in effect when initial power is applied to the IBM Flex System chassis or when an administrator changes the policy.

The following settings for this policy are available:

- Basic power management
- Power module redundancy (N+N or N+1)
- Power module redundancy with compute node throttling allowed (N+N or N+1)

An administrator can configure the policy and monitor the overall chassis power environment by using the Chassis Management Module user interface.

- Systems-management support

The compute node supports the IBM Flex System Chassis Management Module (CMM) and IBM Flex System Manager™ management software.

- CMM is a hot-swap module that provides system-management functions for all components in an IBM Flex System chassis. It controls a serial port for remote connection and a 10/100 Mbps Ethernet remote-management connection.
- IBM Flex System Manager management software is a platform-management foundation that streamlines the way you manage physical and virtual systems in a heterogeneous environment. By using industry standards, IBM Flex System Manager management software supports multiple operating systems and virtualization technologies.

Flex System networking portfolio

Networking in datacenters 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 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 enhancements

IBM Flex System CN4022 2-port 10Gb Converged Adapter: Dual port 10 Gb Converged adapter that supports Ethernet, FCoE and iSCSI protocols. Clients now have a choice of multiple vendors without compromising the features. This adapter will also support virtual NIC (vNIC) capability that helps clients reduce cost and complexity.

Cisco Nexus B22 Fabric Extender for IBM Flex System and Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System : Clients looking for Cisco connectivity inside the Flex System chassis can now leverage the new B22 FEX module designed for the IBM Flex System chassis. This module reduces management and offers easy connectivity to existing Nexus infrastructure.

IBM Flex System EN4023 10Gb Scalable Switch and IBM Flex System EN4023 10Gb Scalable Switch (FoD 1) and IBM Flex System EN4023 10Gb Scalable Switch (FoD 2): Clients deploying the new Brocade-based VCS fabric, can now extend the features to the Flex System chassis using the new Brocade-based VDX switch

module. This module offers high-speed 10 Gb connectivity and can scale based on customer requirement.

IBM Flex System CN4054R 10 Gb Virtual Fabric Adapter: This is a quad port 10 Gb adapter that supports Ethernet, FCoE and iSCSI protocols. This also supports virtual NIC (vNIC) capability to help reduce cost and complexity.

Standard IBM Flex System x240 Compute Node configuration

Model information

Model	Intel Xeon name	Cores	CPU speed	CPU GT/s	CPU power	Memory/ type	I/O USB key
8737-94x	E5-2697v2 Cache: 30 MB	12	2.7 GHz	8.0	130w	1x8 GB 1866 MHZ	LOM
8737-9Mx	E5-2697v2 Cache: 30 MB	12	2.7 GHz	8.0	130w	1x8 GB 1866 MHZ	CN4022 adapter
8737-84x	E5-2690v2 Cache: 25 MB	10	3.0 GHz	8.0	130w	1x8 GB 1866 MHZ	LOM
8737-8Mx	E5-2690v2 Cache: 25 MB	10	3.0 GHz	8.0	130w	1x8 GB 1866 MHZ	CN4022 adapter
8737-8Dx	2xE5-2690v2 Cache: 25 MB	10	3.0 GHz	8.0	130w	16x16 GB 1866 MHZ	VMware ESXi 5.1 USB
8737-74x	E5-2680v2 Cache: 25 MB	10	2.8 GHz	8.0	115w	1x8 GB 1866 MHZ	LOM
8737-72x	E5-2680v2 Cache: 25 MB	10	2.8 GHz	8.0	115w	1x8 GB 1866 MHZ	LOM-less
8737-7Mx	E5-2670v2 Cache: 25 MB	10	2.8 GHz	8.0	115w	1x8 GB 1866 MHZ	CN4022 adapter
8737-64x	E5-2670v2 Cache: 25 MB	10	2.5 GHz	8.0	115w	1x8 GB 1866 MHZ	LOM
8737-62x	E5-2670v2 Cache: 25 MB	10	2.5 GHz	8.0	115w	1x8 GB 1866 MHZ	LOM-less
8737-6Mx	E5-2670v2 Cache: 25 MB	10	2.5 GHz	8.0	115w	1x8 GB 1866 MHZ	CN4022 adapter
8737-54x	E5-2660v2 Cache: 25 MB	10	2.2 GHz	8.0	95w	1x8 GB 1866 MHZ	LOM
8737-5Mx	E5-2660v2 Cache: 25 MB	10	2.2 GHz	8.0	95w	1x48GB 1866 MHZ	CN4022 adapter
8737-44x	E5-2650v2 Cache: 20 MB	8	2.6 GHz	8.0	95w	1x8 GB 1866 MHZ	LOM
8737-42x	E5-2650v2 Cache: 20 MB	8	2.6 GHz	8.0	95w	1x8 GB 1866 MHZ	LOM-less
8737-4Mx	E5-2650v2 Cache: 20 MB	8	2.6 GHz	8.0	95w	1x8 GB 1866 MHZ	CN4022 adapter
8737-C4x	E5-2650Lv2 Cache: 25 MB	10	1.7 GHz	8.0	70w	1x8 GB 1600 MHZ	LOM
8737-CMx	E5-2650Lv2 Cache: 25 MB	10	1.7 GHz	8.0	70w	1x8 GB 1600 MHZ	CN4022 adapter
8737-34x	E5-2640v2 Cache: 20 MB	8	2.0 GHz	7.2	95w	1x8 GB 1600 MHZ	LOM
8737-3Mx	E5-2640v2 Cache: 20 MB	8	2.0 GHz	7.2	95w	1x8 GB 1600 MHZ	CN4022 adapter
8737-B4x	E5-2630v2 Cache: 15 MB	6	2.6 GHz	7.2	80w	1x8 GB 1600 MHZ	LOM
8737-BMx	E5-2630v2 Cache: 15 MB	6	2.6 GHz	7.2	80w	1x8 GB 1600 MHZ	CN4022 adapter
8737-24x	E5-2620v2 Cache: 15 MB	6	2.1 GHz	7.2	80w	1x8 GB 1600 MHZ	LOM
8737-22x	E5-2620v2 Cache: 15 MB	6	2.1 GHz	7.2	80w	1x8 GB 1600 MHZ	LOM-less
8737-2Mx	E5-2620v2 Cache: 15 MB	6	2.1 GHz	7.2	80w	1x8 GB 1600 MHZ	CN4022 adapter
8737-14x	E5-2609v2 Cache: 10 MB	4	2.5 GHz	6.4	80w	1x8 GB 1600 MHZ	LOM
8737-1Mx	E5-2609v2 Cache: 10 MB	4	2.5 GHz	6.4	80w	1x8 GB 1600 MHZ	CN4022 adapter

EMEA x = G

Note: The model "x" designation is geography dependent and is spelled out explicitly in the [Product number](#) section.

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.

- IBM Flex System hardware 'building blocks' made up of individual components that can be mixed and matched, and fully customizable with optional management
- IBM Flex System solutions made up of a chassis with an integrated management appliance, 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

Product number

The following are features already announced for the 3331, 7906, 7917, 8737 machine types:

Description	MT	Model	Feature
IBM 200GB SATA 1.8" MLC Enterprise SSD	7906	AC1 MC1	A3AN
IBM 200GB SATA 1.8" MLC Enterprise SSD	7917	AC1 MC1	
IBM 200GB SATA 1.8" MLC Enterprise SSD	8737	AC1 MC1	
IBM 400GB SATA 1.8" MLC Enterprise SSD	7906	AC1 MC1	A3AP
IBM 400GB SATA 1.8" MLC Enterprise SSD	7917	AC1 MC1	
IBM 400GB SATA 1.8" MLC Enterprise SSD	8737	AC1 MC1	
IBM 64GB SATA 1.8" MLC Enterprise Value SSD	7917	AC1 MC1	A3AQ
IBM 512GB SATA 1.8" MLC Enterprise Value SSD	7917	AC1 MC1	A3AR
IBM 100GB SATA 1.8" MLC Enterprise SSD	7906	AC1 MC1	A3HQ
IBM 100GB SATA 1.8" MLC Enterprise SSD	7917	AC1 MC1	
IBM 100GB SATA 1.8" MLC Enterprise SSD	8737	AC1 MC1	
8GB (1x8GB, 2Rx8, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP UDIMM	8737	AC1 MC1	A3QC
8GB (1x8GB, 1Rx4, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP RDIMM	8737	AC1 MC1	A3QH
8GB (1x8GB, 2Rx8, 1.5V) PC3-14900 CL13 ECC DDR3 1866MHZ LP RDIMM	8737	AC1 MC1	A3QJ
16GB (1x16GB, 2Rx4, 1.5V) PC3-14900 CL13 ECC DDR3 1866MHZ LP RDIMM	8737	AC1 MC1	A3QL

16GB (1x16GB, 2Rx4, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP RDIMM	8737	AC1 MC1	A3QM
IBM 128GB SATA 1.8" MLC Enterprise value SSD	7906	AC1 MC1	A3TG
IBM 128GB SATA 1.8" MLC Enterprise value SSD	7917	AC1 MC1	
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	8737	AC1 MC1	
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	7906	AC1 MC1	A3TH
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	7917	AC1 MC1	
IBM 256GB SATA 1.8" MLC Enterprise value SSD	8737	AC1 MC1	
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x240	3331	HC1	A47D
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x240	8737	AC1 MC1	
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x440	3331	HC1	A47E
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x440	7917	AC1 MC1	
32GB (1x32GB, 4Rx4, 1.5V) PC3-14900 CL13 ECC DDR3 1866MHZ LP LRDIMM	8737	AC1 MC1	A47K
IBM Flex System CN4054R 10Gb Virtual Fabric Adapter	3331	HC1	A4K2
IBM Flex System CN4054R 10Gb Virtual Fabric Adapter	8737	AC1 MC1	
IBM Flex System CN4022 2-port 10Gb Converged Adapter	3331	HC1	A4K3
IBM Flex System CN4022 2-port 10Gb Converged Adapter	7906	AC1 MC1	
IBM Flex System CN4022 2-port 10Gb Converged Adapter	7917	AC1 MC1	
IBM Flex System CN4022 2-port 10Gb Converged Adapter	8737	AC1 MC1	
IBM Flex System x240 Compute Node with embedded 10Gb Virtual Fabric	8737	AC1 MC1	A4P5
IBM Flex System x240 Compute Node	8737	AC1 MC1	A4P6
Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB Cache 1866MHZ 130W	8737	AC1 MC1	A4P8
Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB Cache 1333MHZ 80W	8737	AC1 MC1	A4PA
Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB Cache 1600MHZ 80W	8737	AC1 MC1	A4PB
Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB Cache 1600MHZ 80W	8737	AC1 MC1	A4PC
Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB Cache 1600MHZ 95W	8737	AC1 MC1	A4PD
Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB Cache 1866MHZ 95W	8737	AC1 MC1	A4PE
Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB Cache 1866MHZ 95W	8737	AC1 MC1	A4PF
Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB Cache 1866MHZ 115W	8737	AC1 MC1	A4PG
Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB			

Cache 1866MHZ 115W	8737	AC1 MC1	A4PH
Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB Cache 1866MHZ 130W	8737	AC1 MC1	A4PJ
Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB Cache 1600MHZ 70W	8737	AC1 MC1	A4PP
Addl Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB 1866MHZ 130W	3331	HC1	A4PV
Addl Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB 1866MHZ 130W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB 1333MHZ 80W	3331	HC1	A4PX
Addl Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB 1333MHZ 80W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB 1600MHZ 80W	3331	HC1	A4PY
Addl Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB 1600MHZ 80W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB 1600MHZ 80W	3331	HC1	A4PZ
Addl Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB 1600MHZ 80W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB 1600MHZ 95W	3331	HC1	A4Q0
Addl Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB 1600MHZ 95W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB 1866MHZ 95W	3331	HC1	A4Q1
Addl Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB 1866MHZ 95W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB 1866MHZ 95W	3331	HC1	A4Q2
Addl Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB 1866MHZ 95W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB 1866MHZ 115W	3331	HC1	A4Q3
Addl Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB 1866MHZ 115W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB 1866MHZ 115W	3331	HC1	A4Q4
Addl Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB 1866MHZ 115W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB 1866MHZ 130W	3331	HC1	A4Q5
Addl Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB 1866MHZ 130W	8737	AC1 MC1	
Addl Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB 1600MHZ 70W	3331	HC1	A4QA
Addl Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB 1600MHZ 70W	8737	AC1 MC1	
Cisco Nexus B22 Fabric Extender for IBM Flex System	3331	HC1	ESWB
Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System	3331	HC1	ESWC
IBM Flex System EN4023 10Gb Scalable Switch	3331	HC1	ESWD
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	3331	HC1	ESWE
IBM Flex System EN4023 10Gb Scalable Switch (FoD 2)	3331	HC1	ESWF

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

Description	MT	Model	Feature
IBM Flex System EN4023 10Gb Scalable Switch	8721	HC1	ESWD
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	8721	HC1	ESWE
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	8721	HC1	ESWF
Cisco Nexus B22 Fabric Extender for IBM Flex System	8721	HC1	ESWB
Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System	8721	HC1	ESWC

Single Entity Offerings (SEO)

Description	SEO number
IBM Flex System x240 Compute Node	873794U
	87379MU
	873784U
	87378MU
	87378DU
	873774U
	873772U
	87377MU
	873764U
	873762U
	87376MU
	873754U
	87375MU
	873744U
	873742U
	87374MU
	8737C4U
8737CMU	
873734U	
87373MU	
8737B4U	
8737BMU	
873724U	
873722U	
87372MU	
873714U	
87371MU	

Options

Description	Type	Mod	Feature	SEO Number	Part Number
Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB Cache 1866MHz 130W	3331	HC1	A4PV	00Y2849	00Y2849
Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB Cache 1333MHz 80W	3331	HC1	A4PX	00Y2851	00Y2851
Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB Cache 1600MHz 80W	3331	HC1	A4PY	00Y2852	00Y2852
Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB Cache 1600MHz 80W	3331	HC1	A4PZ	00Y2853	00Y2853
Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB Cache 1600MHz 95W	3331	HC1	A4Q0	00Y2854	00Y2854
Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB Cache 1866MHz 95W	3331	HC1	A4Q1	00Y2855	00Y2855

Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB Cache 1866MHz 95W	3331	HC1	A4Q2	00Y2856	00Y2856
Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB Cache 1866MHz 115W	3331	HC1	A4Q3	00Y2857	00Y2857
Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB Cache 1866MHz 115W	3331	HC1	A4Q4	00Y2858	00Y2858
Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB Cache 1866MHz 130W	3331	HC1	A4Q5	00Y2859	00Y2859
Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB Cache 1600MHz 70W	3331	HC1	A4QA	00Y2865	00Y2865
Cisco Nexus B22 Fabric Extender for IBM Flex System	3331	HC1	ESWB	94Y5350	94Y5350
Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System	3331	HC1	ESWC	94Y5355	94Y5355
IBM Flex System EN4023 10Gb Scalable Switch	3331	HC1	ESWD	94Y5212	94Y5212
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	3331	HC1	ESWE	94Y5158	94Y5158
IBM Flex System EN4023 10Gb Scalable Switch (FoD 2)	3331	HC1	ESWF	94Y5159	94Y5159
IBM Flex System CN4054R 10Gb Virtual Fabric Adapter	3331	HC1	A4K2	00Y3306	00Y3306
IBM Flex System CN4022 2-port 10Gb Converged Adapter	3331	HC1	A4K3	88Y5920	88Y5920
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x240	3331	HC1	A47D	47C8808	47C8808
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x440	3331	HC1	A47E	47C8809	47C8809

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<https://www.ibm.com/partnerworld/mem/sla.jsp?num=113-198>

Publications

The *User's Guide* , *Maintenance Guide* , and *Problem Determination and Service Guide* , for IBM Flex System x240 Compute Node solutions, in US English versions, are available from

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

Under "Product Support," select " System x® ," and under "Choose your page" select "Documentation."

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Technical information

Specified operating environment

Physical specifications

IBM Flex System x240 Compute Node

8737-94x

Processor	Intel Xeon E5-2697 v2 12 core 130w
Internal speed	2.7 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	30 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-9Mx

Processor	Intel Xeon E5-2697 v2 12 core 130w
Internal speed	2.7 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	30 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2

Management processor	Standard
Ethernet controller	Not integrated (mezz card standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-84x

Processor	Intel Xeon E5-2690 v2
	10 core 130w
Internal speed	3.0 GHZ
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-8Mx

Processor	Intel Xeon E5-2690 v2
	10 core 130w
Internal speed	3.0 GHZ
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (mezz card standard)
Front access connectors	
KVM connector	1 ³

USB connector	1
	8737-8Dx
Processor	Intel Xeon E5-2690 v2
	10 core 130w
Internal speed	3.0 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	2
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	246 GB
DIMMs (Standard)	16 x 16 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

Note: This model includes 1 x USB Memory Key for VMware ESXi 5.1 and 1 x Blank USB Memory Key for VMWare ESXi Downloads.

8737-74x

Processor	Intel Xeon E5-2680 v2
	10 core 115w
Internal speed	2.8 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-72x

Processor	Intel Xeon E5-2680 v2
	10 core 115w
Internal speed	2.8 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	None
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-7Mx

Processor	Intel Xeon E5-2680 v2
	10 core 115w
Internal speed	2.8 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-64x

Processor	Intel Xeon E5-2670 v2
	10 core 115w
Internal speed	2.5 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-62x

Processor	Intel Xeon E5-2670 v2
	10 core 115w
Internal speed	2.5 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	None
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-6Mx

Processor	Intel Xeon E5-2670 v2
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	10 core 115w
Internal speed	2.5 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-54x

Processor	Intel Xeon E5-2660 v2
	10 core 95w
Internal speed	2.2 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-5Mx

Processor	Intel Xeon E5-2660 v2
	10 core 95w
Internal speed	2.2 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1

Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-44x

Processor	Intel Xeon E5-2650 v2
	8 core 95w
Internal speed	2.6 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	20 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-42x

Processor	Intel Xeon E5-2650 v2
	8 core 95w
Internal speed	2.6 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2

L3 cache (full speed)	20 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	None
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-4Mx

Processor	Intel Xeon E5-2650 v2
Internal speed	8 core 95w 2.6 GHz
Maximum memory speed	1866 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	20 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-C4x

Processor	Intel Xeon E5-2650L v2
Internal speed	10 core 70w 1.7 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24

Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-CMx

Processor	Intel Xeon E5-2650L v2
	10 core 70w
Internal speed	1.7 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	8.0 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	25 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-34x

Processor	Intel Xeon E5-2640 v2
	8 core 95w
Internal speed	2.0 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	20 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional

Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-3Mx

Processor	Intel Xeon E5-2640 v2
Internal speed	8 core 95w 2.0 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	20 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-B4x

Processor	Intel Xeon E5-2630 v2
Internal speed	6 core 80w 2.6 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	15 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0

Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-BMx

Processor	Intel Xeon E5-2630 v2
	6 core 80w
Internal speed	2.6 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	15 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-24x

Processor	Intel Xeon E5-2620 v2
	6 core 80w
Internal speed	2.1 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	15 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1

Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-22x

Processor	Intel Xeon E5-2620 v2
	6 core 80w
Internal speed	2.1 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	15 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	None
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-2Mx

Processor	Intel Xeon E5-2620 v2
	6 core 80w
Internal speed	2.1 GHz
Maximum memory speed	1600 MHz
CPU interconnect speed	7.2 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	15 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2

Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-14x

Processor	Intel Xeon E5-2609 v2
	4 core 80w
Internal speed	2.5 GHz
Maximum memory speed	1333 MHz
CPU interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	10 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Optional
Standard	0
Maximum (LOM)	1
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2
Management processor	Standard
Ethernet controller	Dual 10Gb (standard)
Front access connectors	
KVM connector	1 ³
USB connector	1

8737-1Mx

Processor	Intel Xeon E5-2609 v2
	4 core 80w
Internal speed	2.5 GHz
Maximum memory speed	1333 MHz
CPU interconnect speed	6.4 GT/s
Number standard	1
Maximum	2
L3 cache (full speed)	10 MB
Memory (LP ECC DDR3)	8 GB
DIMMs (Standard)	1 x 8 GB
DIMM sockets	24
Capacity	768 GB ¹
Mezzanine Card	Standard ⁴
Standard	1
Maximum (LOM-less)	2
Video	SVGA
Memory	128 MB
Disk controller	SAS
Channels	2
Connector internal	2
Connector external	0
RAID	Standard
Internal capacity	2 TB ²
Total HDD or SSD bays	Up to 2

Management processor	Standard
Ethernet controller	Not integrated (standard mezz card)
Front access connectors	
KVM connector	1 ³
USB connector	1

Note: The model "x" designation is geography dependent and is spelled out explicitly in the [Product number](#) section.

- 1** Total system memory capacity is based on using 32 GB memory DIMMs.
- 2** Capacities are based on installation of two 1 TB drives.
- 3** Use of the IBM Flex System Console Breakout Cable provided with each chassis and sold separately allows connection of standard KVM options.
- 4** One IBM Flex System CN4022 2-port 10Gb Converged Adapter is installed in this model.

For latest information on supported HDD options, visit

<http://www.ibm.com/servers/eserver/serverproven/compat/us/>

IBM Flex System x240 Compute Node specifications

Video subsystem

- 128 MB DDR3
- Integrated on the IMM2

Supported IBM Flex System x240 Compute Node video resolutions

Resolution	Maximum Refresh Rate Supported	Bpp
640 x 400	60, 72, 75, 85	8, 16, 24
800 x 600	60, 72, 75, 85	8, 16, 24
1024 x 768	60, 72, 75, 85	8, 16, 24
1280 x 1024	60, 75	8, 16, 24
1440 x 900	60, 60 RB	8, 16, 24
1600 x 1200	60, 75	8, 16, 24
1680 x 1050	60, 60 RB	8, 16, 24

Notes:

- 24 Bpp (16.7 million colors) aligned on a 32-bit boundary for performance.
- Each resolution supports both CRT and Flat Panel monitors. For CRT monitors, each resolution complies with CRT ISO 9241.3.
 - 1440 x 900 and 1680 x 1050 are typically wide screen flat panel (non CRT) settings so they are only available at 60 Hz.
 - 1440 x 900 and 1680 x 1050 are available at 60 Hz with support for 60 Hz Reduced Blanking Mode.
 - For the resolutions supported by different operating systems, refer the operating system documentation.

Dimensions - IBM Flex System x240 Compute Node

- Height: 55.5 mm (2.19 in.)
- Depth: 492.24 mm (19.38 in.)
- Width: 217.35 mm (8.56 in.)
- Maximum weight: 7.1 kg (15.6 lb.) (depending on the configuration when options are added)

Electrical

IBM Flex System x240 Compute Node: 12.2 (nominal) V dc

Note: All weights and measurements are approximate.

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

The IBM Flex System x240 compute node complies with ASHRAE Class A3 specifications.

- Power on:
 - Temperature: 5°C to 40°C (41°F to 104°F)
 - Humidity, noncondensing: -12°C dew point (10.4°F) and 8% - 85% relative humidity
 - Maximum dew point: 24°C (75°F)
 - Maximum altitude: 3,048 m (10,000 ft)
 - Maximum rate of temperature change: 5°C/hr (41°F/hr)
- Power off:
 - Temperature: 5°C to 45°C (41°F to 113°F)
 - Relative humidity: 8% - 85%
 - Maximum dew point: 27°C (80.6°F)
- Storage (non-operating):
 - Temperature: 1°C to 60°C (33.8°F - 140°F)
 - Altitude: 3,050 m (10,006 ft)
 - Relative humidity: 5% - 80%
 - Maximum dew point: 29°C (84.2°F)
- Shipment (non-operating):
 - Temperature: -40°C to 60°C (-40°F - 140°F)
 - Altitude: 10,700 m (35,105 ft)
 - Relative humidity: 5% - 100%
 - Maximum dew point: 29°C (84.2°F)
 - Particulate contamination

Hardware requirements

For service, the IBM Flex System x240 Compute Node requires a compatible:

- Monitor
- Combination USB keyboard and pointing device such as IBM part number 40K5372
- USB CD-RW/DVD drive such as the IBM and Lenovo part number 73P4515 or 73P4516

Software requirements

The following network operating systems are supported in the IBM Flex System x240 Compute Node:

The following network operating systems have been tested for compatibility with the IBM Flex System x240 Compute Node:

- Microsoft :
 - Microsoft Windows Server 2008 R2 with Service Pack 1
 - Microsoft Windows Server 2008, Datacenter x64 Edition with Service Pack 2
 - Microsoft Windows Server 2008, Enterprise x64 Edition with RA Service Pack 2
 - Microsoft Windows Server 2008 HPC Edition with HPC Service Pack 1
 - Microsoft Windows Server 2008, Standard x64 Edition with RA Service Pack 2
 - Microsoft Windows Server 2008, Web x64 Edition with RA Service Pack 2
 - Microsoft Windows Server 2012
- Linux :
 - Novell SUSE Linux Enterprise Server 10 for AMD64/EM64T, Service Pack 4
 - Novell SUSE Linux Enterprise Server 10 with Xen for AMD64/EM64T, Service Pack 4
 - Novell SUSE Linux Enterprise Server 11 for AMD64/EM64T, Service Pack 3
 - Novell SUSE Linux Enterprise Server 10 with Xen for AMD64/EM64T, Service Pack 4
 - Red Hat Enterprise Linux 5 Server x64 Edition, U9
 - Red Hat Enterprise Linux 5 Server with Xen x64 Edition, U9
 - Red Hat Enterprise Linux 6 Server x64 Edition, U4
- VMware:
 - VMware vSphere 5.0 U2
 - VMware vSphere 5.1 U1

Note: For additional support, certification, and version information on network operating systems, visit

<http://www-03.ibm.com/systems/info/x86servers/serverproven/compat/us>

Compatibility

The IBM Flex System x240 Compute Node contains licensed system programs that include set configuration, set features, and test programs. IBM system BIOS is loaded from a "flash" EEPROM into system memory. This BIOS provides instructions and interfaces designed to support the standard features of the x240 Compute Node and to maintain compatibility with many current software programs.

Contact your IBM representative or IBM Business Partner, or refer to the *IBM Sales Manual* for information on the compatibility of hardware and software for System x servers. The Sales Manual is updated periodically as new features and options are announced that support these servers.

Limitations

- The Flex System x240 Compute Nodes contain 24 DIMM sockets. A maximum of 768 GB of system memory is supported by using a 32 GB DIMM of ECC DDR3 memory in each of the DIMM sockets. A minimum of one memory feature must be installed. All memory installed must be of the same type (RDIMM, LR DIMM, or UDIMM).
- Processor modules must be of the same type, power level, and clock speed on each Flex System x240 Compute Node. Mixing processor modules of different speeds, power levels, or cache sizes or upgrading the base processors is not

supported. Mixing processor speeds and memory speeds will result in the system running at the lower of rated speeds.

- The Flex System x240 Compute Node is supported only in the IBM Flex System Enterprise Chassis.
- One mezzanine expansion card may can be installed on the Flex System x240 Compute Node with a LOM base, and two mezzanine cards can be installed on the LOM-less base.
- Mezzanine expansion cards installed in the Flex System x240 Compute Node require a switch module in the Flex System Enterprise Chassis of the same connectivity type.
- Regarding the use of solid-state disk drives, solid-state memory cells have an intrinsic, finite number of write cycles that each cell can incur. As a result, each solid-state device has a maximum amount of write cycles to which it can be subjected, documented as Total Bytes Written (TBW). 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

The IBM Flex System x240 Compute Node server is designated as customer setup. Customer setup instructions are shipped with each system.

Supported memory options

Option Number	Description
00D5016	8GB (1x8GB, 2Rx8, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP UDIMM
00D5036	8GB (1x8GB, 1Rx4, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP RDIMM
00D5040	8GB (1x8GB, 2Rx8, 1.5V) PC3-14900 CL13 ECC DDR3 1866MHZ LP RDIMM
00D5048	16GB (1x16GB, 2Rx4, 1.5V) PC3-14900 CL13 ECC DDR3 1866MHZ LP RDIMM
46W0672	16GB (1x16GB, 2Rx4, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP RDIMM
46W0761	32GB (1x32GB, 4Rx4, 1.50V) PC3L-14900 CL11 ECC DDR3 1866 LP LRDIMM

Cable orders

All cables are supplied with the IBM Flex System x240 Compute Node. 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.

Packaging

System x IBM Flex System x240 Compute Node Shipping Contents - Ship group

The system carton contains the system unit and a ship-group kit containing the following documents and CDs:

- Important Notices booklet
- IBM Warranty Information booklet
- Product Documentation CD that includes the following documents:
 - Installation and Service Guide
 - IBM Safety Information

- Product machine code license and other licenses and notices
- Environmental Notice and User Guide Documentation CD

The *Installation and Service Guide* on the Product Documentation CD contains the installation, use, and troubleshooting information necessary to use and service the product.

Security, auditability, and control

Three of the most important features in compute node design are reliability, availability, and serviceability (RAS). These RAS features help to ensure the integrity of the data that is stored in the compute node, the availability of the compute node when you need it, and the ease with which you can diagnose and correct problems.

The compute node has the following RAS features:

- Advanced Configuration and Power Interface (ACPI)
- Automatic server restart (ASR)
- Built-in diagnostics using DSA Preboot, which is stored NAND Flash memory
- Built-in monitoring for temperature, voltage, and hard disk drives
- Customer support center 24 hours per day, 7 days a week
- Customer upgrade of flash ROM-resident code and diagnostics
- Customer-upgradeable Unified Extensible Firmware Interface (UEFI) code and diagnostics
- ECC protected DDR3 memory
- ECC protection on the L2 cache
- Error codes and messages
- Integrated management module 2 (IMM2) that communicates with the Chassis Management Module to enable remote systems management
- Light path diagnostics
- Memory parity testing
- Microprocessor built-in self-test (BIST) during power-on self-test (PST)
- Microprocessor serial number access
- PCI Express 2.0 and PCI Express 3.0
- PCI PMI 2.2
- POST
- Power policy 24-hour support center
- Processor presence detection
- ROM-resident diagnostics
- System-error logging
- Vital product data (VPD) on memory
- Wake on LAN capability
- Wake on PCI (PME) capability
- Wake on USB 2.0 capability

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:

- 2.5-inch HDD filler
- Top cover assembly
- Heatsink filler
- Airbaffle, above DIMM
- Handle, cam assembly left
- HDD cage
- Rear bulkhead
- Intel™ socket
- Heatsink assembly front (heat pipe)
- Heatsink assembly rear (heat pipe)

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-specific 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:

- Front bezel with power button
- System service label
- Miscellaneous parts kit
- HDD backplane
- Mezz retention kit
- Memory DIMMs
- 3x8 double ended periscope receptacle
- Indicator panel
- 3.0 volt battery
- RFID label tag assembly
- 2 GB USB memory flash key
- Mezzanine adapters
- Air with USB baffle
- KVM dongle cable

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 (IWS)

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 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.

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

Prices

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.

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

Description	Model Number	Feature Number	Initial/MES/Both/Support
ServerRAID M5100 Series IBM Flex System Flash kit v2 for x240	HC1	A47D	MES
ServerRAID M5100 Series IBM Flex System Flash kit v2 for x440	HC1	A47E	MES
IBM Flex System CN4054R 10Gb Virtual Fabric Adapter			

IBM Flex System CN4022 2-port 10Gb Converged Adapter	HC1	A4K2	MES
Addl Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB 1866MHz 130W	HC1	A4K3	MES
Addl Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB 1333MHz 80W	HC1	A4PV	MES
Addl Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB 1600MHz 80W	HC1	A4PX	MES
Addl Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB 1600MHz 80W	HC1	A4PY	MES
Addl Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB 1600MHz 95W	HC1	A4PZ	MES
Addl Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB 1866MHz 95W	HC1	A4Q0	MES
Addl Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB 1866MHz 95W	HC1	A4Q1	MES
Addl Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB 1866MHz 115W	HC1	A4Q2	MES
Addl Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB 1866MHz 115W	HC1	A4Q3	MES
Addl Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB 1866MHz 130W	HC1	A4Q4	MES
Addl Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB 1600MHz 70W	HC1	A4Q5	MES
Cisco Nexus B22 Fabric Extender for IBM Flex System	HC1	A4QA	MES
Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System	HC1	ESWB	MES
IBM Flex System EN4023 10Gb Scalable Switch	HC1	ESWC	MES
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	HC1	ESWD	MES
IBM Flex System EN4023 10Gb Scalable Switch (FoD 2)	HC1	ESWE	MES
	HC1	ESWF	MES

The following are features already announced for the 7906 machine type:

Description	Model Number	Feature Number	Initial/MES/Both/Support
IBM 200GB SATA 1.8" MLC Enterprise SSD	AC1	A3AN	Initial
	MC1		Initial
IBM 400GB SATA 1.8" MLC Enterprise SSD	AC1	A3AP	Initial
	MC1		Initial
IBM 100GB SATA 1.8" MLC Enterprise SSD	AC1	A3HQ	Initial
	MC1		Initial
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TG	Initial
	MC1		Initial
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TH	Initial
	MC1		Initial

IBM Flex System CN4022 2-port 10Gb Converged Adapter

AC1	A4K3	Initial
MC1		Initial

The following are features already announced for the 7917 machine type:

Description	Model Number	Feature Number	Initial/MES/Both/Support
IBM 200GB SATA 1.8" MLC Enterprise SSD	AC1 MC1	A3AN	Initial Initial
IBM 400GB SATA 1.8" MLC Enterprise SSD	AC1 MC1	A3AP	Initial Initial
IBM 64GB SATA 1.8" MLC Enterprise Value SSD	AC1 MC1	A3AQ	Initial Initial
IBM 512GB SATA 1.8" MLC Enterprise Value SSD	AC1 MC1	A3AR	Initial Initial
IBM 100GB SATA 1.8" MLC Enterprise SSD	AC1 MC1	A3HQ	Initial Initial
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	AC1 MC1	A3TG	Initial Initial
IBM 256GB SATA 1.8" MLC Enterprise value SSD	AC1 MC1	A3TH	Initial Initial
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x440	AC1 MC1	A47E	Initial Initial
IBM Flex System CN4022 2-port 10Gb Converged Adapter	AC1 MC1	A4K3	Initial Initial

The following are features already announced for the 8737 machine type:

Description	Model Number	Feature Number	Initial/MES/Both/Support
IBM 200GB SATA 1.8" MLC Enterprise SSD	AC1 MC1	A3AN	Initial Initial
IBM 400GB SATA 1.8" MLC Enterprise SSD	AC1 MC1	A3AP	Initial Initial
IBM 100GB SATA 1.8" MLC Enterprise SSD	AC1 MC1	A3HQ	Initial Initial
8GB (1x8GB, 2Rx8, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP UDIMM	AC1 MC1	A3QC	Initial Initial
8GB (1x8GB, 1Rx4, 1.35V) PC3L-12800 CL11 ECC DDR3 1600MHZ LP RDIMM	AC1 MC1	A3QH	Initial Initial
8GB (1x8GB, 2Rx8, 1.5V) PC3-14900 CL13 ECC DDR3 1866MHZ LP RDIMM	AC1 MC1	A3QJ	Initial Initial
16GB (1x16GB, 2Rx4, 1.5V) PC3-14900 CL13 ECC DDR3			

1866MHZ LP RDIMM	AC1	A3QL	Initial
	MC1		Initial
16GB (1x16GB, 2Rx4, 1.35V) PC3L-12800 CL11 ECC DDR3			
1600MHZ LP RDIMM	AC1	A3QM	Initial
	MC1		Initial
IBM 128GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TG	Initial
	MC1		Initial
IBM 256GB SATA 1.8" MLC Enterprise Value SSD	AC1	A3TH	Initial
	MC1		Initial
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x240	AC1	A47D	Initial
	MC1		Initial
32GB (1x32GB, 4Rx4, 1.5V) PC3-14900 CL13 ECC DDR3			
1866MHZ LP LRDIMM	AC1	A47K	Initial
	MC1		Initial
IBM Flex System CN4054R 10Gb Virtual Fabric Adapter	AC1	A4K2	Initial
	MC1		Initial
IBM Flex System CN4022 2-port 10Gb Converged Adapter	AC1	A4K3	Initial
	MC1		Initial
IBM Flex System x240 Compute Node with embedded 10Gb Virtual Fabric	AC1	A4P5	Initial
	MC1		Initial
IBM Flex System x240 Compute Node	AC1	A4P6	Initial
	MC1		Initial
Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB Cache 1866MHZ 130W	AC1	A4P8	Initial
	MC1		Initial
Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB Cache 1333MHZ 80W	AC1	A4PA	Initial
	MC1		Initial
Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB Cache 1600MHZ 80W	AC1	A4PB	Initial
	MC1		Initial
Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB Cache 1600MHZ 80W	AC1	A4PC	Initial
	MC1		Initial
Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB Cache 1600MHZ 95W	AC1	A4PD	Initial
	MC1		Initial
Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB Cache 1866MHZ 95W	AC1	A4PE	Initial
	MC1		Initial
Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB Cache 1866MHZ 95W	AC1	A4PF	Initial
	MC1		Initial
Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB Cache 1866MHZ 115W	AC1	A4PG	Initial
	MC1		Initial
Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB Cache 1866MHZ 115W	AC1	A4PH	Initial
	MC1		Initial
Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB Cache 1866MHZ 130W	AC1	A4PJ	Initial

	MC1		Initial
Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB Cache 1600MHz 70W			
	AC1	A4PP	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB 1866MHz 130W			
	AC1	A4PV	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB 1333MHz 80W			
	AC1	A4PX	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB 1600MHz 80W			
	AC1	A4PY	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB 1600MHz 80W			
	AC1	A4PZ	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB 1600MHz 95W			
	AC1	A4Q0	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB 1866MHz 95W			
	AC1	A4Q1	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB 1866MHz 95W			
	AC1	A4Q2	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB 1866MHz 115W			
	AC1	A4Q3	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB 1866MHz 115W			
	AC1	A4Q4	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB 1866MHz 130W			
	AC1	A4Q5	Initial
	MC1		Initial
Addl Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB 1600MHz 70W			
	AC1	A4QA	Initial
	MC1		Initial

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

Description	Model Number	Feature Number	Initial/MES/Both/Support
IBM Flex System EN4023 10Gb Scalable Switch	HC1	ESWD	Initial
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	HC1	ESWE	Initial
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	HC1	ESWF	Initial
Cisco Nexus B22 Fabric Extender for IBM Flex System	HC1	ESWB	Initial
Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System	HC1	ESWC	Initial

IBM Flex System x240 Compute Node

Description	SEO Number	Initial/ MES/ Both/ Support	CSU
IBM Flex System x240 Compute Node	873794U	Both	Yes
	87379MU	Both	Yes
	873784U	Both	Yes
	87378MU	Both	Yes
	87378DU	Both	Yes
	873774U	Both	Yes
	873772U	Both	Yes
	87377MU	Both	Yes
	873764U	Both	Yes
	873762U	Both	Yes
	87376MU	Both	Yes
	873754U	Both	Yes
	87375MU	Both	Yes
	873744U	Both	Yes
	873742U	Both	Yes
	87374MU	Both	Yes
	8737C4U	Both	Yes
	8737CMU	Both	Yes
	873734U	Both	Yes
	87373MU	Both	Yes
	8737B4U	Both	Yes
	8737BMU	Both	Yes
	873724U	Both	Yes
	873722U	Both	Yes
	87372MU	Both	Yes
	873714U	Both	Yes
	87371MU	Both	Yes

SEO Options

Description	SEO Number	Initial/ MES/ Both/ Support	CSU
Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB Cache 1866MHz 130W	00Y2849	Both	Yes
Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB Cache 1333MHz 80W	00Y2851	Both	Yes
Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB Cache 1600MHz 80W	00Y2852	Both	Yes
Intel Xeon Processor E5-2630 v2 6C 2.6GHz 15MB Cache 1600MHz 80W	00Y2853	Both	Yes
Intel Xeon Processor E5-2640 v2 8C 2.0GHz 20MB Cache 1600MHz 95W	00Y2854	Both	Yes
Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB Cache 1866MHz 95W	00Y2855	Both	Yes
Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB Cache 1866MHz 95W	00Y2856	Both	Yes
Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB Cache 1866MHz 115W	00Y2857	Both	Yes
Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB Cache 1866MHz 115W	00Y2858	Both	Yes

Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB Cache 1866MHz 130W	00Y2859	Both	Yes
Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB Cache 1600MHz 70W	00Y2865	Both	Yes
Cisco Nexus B22 Fabric Extender for IBM Flex System	94Y5350	Both	Yes
Cisco Nexus B22 Fabric Extender with FET bundle for IBM Flex System	94Y5355	Both	Yes
IBM Flex System EN4023 10Gb Scalable Switch	94Y5212	Both	Yes
IBM Flex System EN4023 10Gb Scalable Switch (FoD 1)	94Y5158	Both	Yes
IBM Flex System EN4023 10Gb Scalable Switch (FoD 2)	94Y5159	Both	Yes
IBM Flex System CN4054R 10Gb Virtual Fabric Adapter	00Y3306	Both	Yes
IBM Flex System CN4022 2-port 10Gb Converged Adapter	88Y5920	Both	Yes
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x240	47C8808	Both	Yes
Server RAID M5100 Series IBM Flex System Flash Kit v2 for x440	47C8809	Both	Yes

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