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

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 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® network switch
- Appropriate PDU's 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, records the error 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 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 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 10Gb 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.

Accessibility by people with disabilities

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


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 7906, 7917, 8737 machine type:

<table>
<thead>
<tr>
<th>Description</th>
<th>MT</th>
<th>Model</th>
<th>Feature</th>
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<tr>
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<td>45X</td>
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- Model: 7906
- Quantity: 25X
- Part Number: A3TG

### IBM 128GB SATA 1.8" MLC Enterprise Value SSD
- Model: 7917
- Quantity: 45X
- Part Number: A47E

### IBM 256GB SATA 1.8" MLC Enterprise Value SSD
- Model: 8737
- Quantity: 15X
- Part Number: A3TH

### IBM 256GB SATA 1.8" MLC Enterprise Value SSD
- Model: 8717
- Quantity: 45X
- Part Number: A47F

### ServeRAID M5100 Series IBM Flex System Flash Kit v2 for x240
- Model: 8737
- Quantity: 15X
- Part Number: A47D

### ServeRAID M5100 Series IBM Flex System Flash Kit v2 for x440
- Model: 8737
- Quantity: 15X
- Part Number: A47E

### 32GB (1x32GB, 4Rx4, 1.5V) PC3-14900 CL13 ECC DDR3 1866MHz LP LRDIMM
- Model: 8737
- Quantity: 15X
- Part Number: A47K

### IBM Flex System x240 Compute Node with embedded 10Gb Virtual Fabric
- Model: 8737
- Quantity: 15X
- Part Number: A47L

### IBM Flex System x240 Compute Node
- Model: 8737
- Quantity: 15X
- Part Number: A47M

### Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB Cache 1866MHz 130W
- Model: 8737
- Quantity: 15X
- Part Number: A47N

### Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB Cache 1333MHz 80W
- Model: 8737
- Quantity: 15X
- Part Number: A47O

### Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB Cache 1600MHz 80W
- Model: 8737
- Quantity: 15X
- Part Number: A47P

### Intel Xeon Processor E5-2640 v2 8C 2.6GHz 20MB Cache 1600MHz 95W
- Model: 8737
- Quantity: 15X
- Part Number: A47Q

### Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB Cache 1866MHz 95W
- Model: 8737
- Quantity: 15X
- Part Number: A47R

### Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB Cache 1866MHz 95W
- Model: 8737
- Quantity: 15X
- Part Number: A47S

### Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB Cache 1866MHz 115W
- Model: 8737
- Quantity: 15X
- Part Number: A47T

### Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB Cache 1866MHz 115W
- Model: 8737
- Quantity: 15X
- Part Number: A47U

### Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB Cache 1866MHz 130W
- Model: 8737
- Quantity: 15X
- Part Number: A47V

### Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB Cache 1600MHz 70W
- Model: 8737
- Quantity: 15X
- Part Number: A47W

### Addl Intel Xeon Processor E5-2697 v2 12C 2.7GHz 30MB 1866MHz 130W
- Model: 8737
- Quantity: 15X
- Part Number: A47X

### Addl Intel Xeon Processor E5-2609 v2 4C 2.5GHz 10MB 1333MHz 80W
- Model: 8737
- Quantity: 15X
- Part Number: A47Y

### Addl Intel Xeon Processor E5-2620 v2 6C 2.1GHz 15MB 1600MHz 80W
- Model: 8737
- Quantity: 15X
- Part Number: A47Z

### Addl Intel Xeon Processor E5-2640 v2 8C 2.6GHz 20MB 1600MHz 95W
- Model: 8737
- Quantity: 15X
- Part Number: A480

### Addl Intel Xeon Processor E5-2650 v2 8C 2.6GHz 20MB 1866MHz 95W
- Model: 8737
- Quantity: 15X
- Part Number: A481

### Addl Intel Xeon Processor E5-2660 v2 10C 2.2GHz 25MB 1866MHz 95W
- Model: 8737
- Quantity: 15X
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### Addl Intel Xeon Processor E5-2670 v2 10C 2.5GHz 25MB 1866MHz 115W
- Model: 8737
- Quantity: 15X
- Part Number: A483

### Addl Intel Xeon Processor E5-2680 v2 10C 2.8GHz 25MB 1866MHz 115W
- Model: 8737
- Quantity: 15X
- Part Number: A484

### Addl Intel Xeon Processor E5-2690 v2 10C 3.0GHz 25MB 1866MHz 130W
- Model: 8737
- Quantity: 15X
- Part Number: A485

### Addl Intel Xeon Processor E5-2650L v2 10C 1.7GHz 25MB 1600MHz 70W
- Model: 8737
- Quantity: 15X
- Part Number: A486

### ESXi MANAGEMENT SERVER FOR VDI
- Model: 8737
- Quantity: 15X
- Part Number: A487

### WINDOWS STORAGE SERVER FOR VDI
- Model: 8737
- Quantity: 15X
- Part Number: A488

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**Publications**

The *Installation and Service Guide*, for IBM Flex System x240 Compute Node solutions, in US English versions, are available from


IBM Systems Information Centers provide 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


Multilingual support is provided for many of the IBM Flex System x240 Compute Node components in the following languages:

- Brazilian Portuguese
- Chinese (Simplified and Traditional)
- English (US and UK)
- French
- German
- Italian
- Japanese
- Korean
- Spanish

The multilingual support includes national language keyboard support, multilingual nomenclature, and translated documentation as required by the individual countries.

**Services**

**Global Technology Services®**

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an on-demand business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

For details on available services, contact your IBM representative or visit

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

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

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

For details on education offerings related to specific products, visit


Select your country, and then select the product as the category.
**Specified operating environment**

**Physical specifications**
For latest information on supported HDD options, visit


**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**

<table>
<thead>
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<th>Resolution</th>
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<td>800 x 600</td>
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<td>1600 x 1200</td>
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</tr>
<tr>
<td>1680 x 1050</td>
<td>60, 60 RB</td>
<td>8, 16, 24</td>
</tr>
</tbody>
</table>

**Notes:**
- 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**
- Russia/GOST ME01, IEC 60950-1, GOST R 51318.22, GOST R 51318.249, GOST R 51317.3.2, GOST R 51317.3.3
• IEC 60950-1 (CB Certificate and CB Test Report)
• CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
• CISPR 22, Class A
• TUV-GS (EN60950-1/IEC 60950-1, EK1-ITB2000)

**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 - 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

**Homologation**
This product is not certified for direct connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection. Contact an IBM representative or reseller for any questions.

**Hardware requirements**
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 and 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 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 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.

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
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.

Global Technology Services

Contact your IBM representative for the list of selected services available in your country, either as standard or customized offerings, for the efficient installation, implementation, and/or integration of this product.

IBM Electronic Services

Electronic Service Agent™ and the IBM Electronic Support web portal are dedicated to providing fast, exceptional support to IBM Systems customers. The IBM Electronic Service Agent tool is a no-additional-charge tool that proactively monitors and reports hardware events, such as system errors, performance issues, and inventory. The Electronic Service Agent tool can help you stay focused on your company’s strategic business initiatives, save time, and spend less effort managing day-to-day IT maintenance issues. Servers enabled with this tool can be monitored remotely around the clock by IBM Support all at no additional cost to you.

Now integrated into the base operating system of AIX® 5.3, AIX 6.1, and AIX 7.1, Electronic Service Agent is designed to automatically and electronically report system failures and utilization issues to IBM, which can result in faster problem resolution and increased availability. System configuration and inventory information collected by the Electronic Service Agent tool also can be viewed on the secure Electronic Support web portal, and used to improve problem determination and resolution by you and the IBM support team. To access the tool main menu, simply type "smitty esa_main", and select "Configure Electronic Service Agent." In addition, ESA now includes a powerful web user interface, giving the administrator easy access to status, tool settings, problem information, and filters. For more information and documentation on how to configure and use Electronic Service Agent, refer to
The IBM Electronic Support portal is a single Internet entry point that replaces the multiple entry points traditionally used to access IBM Internet services and support. This portal enables you to gain easier access to IBM resources for assistance in resolving technical problems. The My Systems and Premium Search functions make it even easier for Electronic Service Agent tool-enabled customers to track system inventory and find pertinent fixes.

**Benefits**

*Increased uptime:* The Electronic Service Agent tool is designed to enhance the Warranty or Maintenance Agreement by providing faster hardware error reporting and uploading system information to IBM Support. This can translate to less wasted time monitoring the "symptoms," diagnosing the error, and manually calling IBM Support to open a problem record. Its 24 x 7 monitoring and reporting mean no more dependence on human intervention or off-hours customer personnel when errors are encountered in the middle of the night.

*Security:* The Electronic Service Agent tool is designed to be secure in monitoring, reporting, and storing the data at IBM. The Electronic Service Agent tool securely transmits either via the Internet (HTTPS or VPN) or modem, and can be configured to communicate securely through gateways to provide customers a single point of exit from their site. Communication is one way. Activating Electronic Service Agent does not enable IBM to call into a customer's system. System inventory information is stored in a secure database, which is protected behind IBM firewalls. It is viewable only by the customer and IBM. The customer's business applications or business data is never transmitted to IBM.

*More accurate reporting:* Since system information and error logs are automatically uploaded to the IBM Support center in conjunction with the service request, customers are not required to find and send system information, decreasing the risk of misreported or misdiagnosed errors. Once inside IBM, problem error data is run through a data knowledge management system and knowledge articles are appended to the problem record.

*Customized support:* Using the IBM ID entered during activation, customers can view system and support information in the "My Systems" and "Premium Search" sections of the Electronic Support website at

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

My Systems provides valuable reports of installed hardware and software using information collected from the systems by Electronic Service Agent. Reports are available for any system associated with the customer's IBM ID. Premium Search combines the function of search and the value of Electronic Service Agent information, providing advanced search of the technical support knowledgebase. Using Premium Search and the Electronic Service Agent information that has been collected from your system, customers are able to see search results that apply specifically to their systems.

For more information on how to utilize the power of IBM Electronic Services, contact your IBM Systems Services Representative, or visit

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

**Terms and conditions**

**Warranty period**

One year.

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature that replaces a previously installed part or feature assumes the
remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature are the same as the machine it is installed in.

The following has been designated as consumables or supply items and is, therefore, not covered by this warranty:

- RAID batteries

The following part has been designated as a Tier 1 CRU:

- CMOS batteries

**Customer setup**

Yes

**Machine code**

No. All other terms and conditions are the same as those applicable to the IBM machine type in which the feature is installed.

**Prices**

For all local charges, contact your IBM representative.

**Announcement countries**

All European, Middle Eastern, and African countries.

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