IBM

@server

xSeries 225
Type 8649

User's Guide

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Note:

Before using this information and the product it supports, read the general information in and Appendix B, "Notices," on page 25.

Contents

Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الآمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information
（安全信息）。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się
z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

v

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Statement 1:

DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. First, attach all cables to devices.	2. First, remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

Statement 2:

CAUTION:
When replacing the lithium battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:
- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

Statement 3:

CAUTION:
When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.**

DANGER

> **Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following.**
>
> **Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.**

Statement 4:

≥ 18 kg (39.7 lb)　　　≥ 32 kg (70.5 lb)　　　≥ 55 kg (121.2 lb)

CAUTION:
Use safe practices when lifting.

Statement 5:

CAUTION:
The power control button on the device and the power switch on the power
supply do not turn off the electrical current supplied to the device. The device
also might have more than one power cord. To remove all electrical current
from the device, ensure that all power cords are disconnected from the power
source.

Statement 8:

CAUTION:
Never remove the cover on a power supply or any part that has the following label attached.

Hazardous voltage, current, and energy levels are present inside any component that has this label attached. There are no serviceable parts inside these components. If you suspect a problem with one of these parts, contact a service technician.

Statement 12:

CAUTION:
The following label indicates a hot surface nearby.

Statement 13:

DANGER

> **Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device for electrical specifications.**

Statement 15:

⚠️

CAUTION:
Make sure that the rack is secured properly to avoid tipping when the server unit is extended.

Statement 23

⚠️

CAUTION:
Do not place any object weighing more than 50 kg (110 lb) on top of rack-mounted devices.

🚫

>50 kg (110 lb)

Declaración 23

⚠️

PRECAUCIÓN:

No coloque ningún objeto que pese más de 50 kg (110 libras) encima de los dispositivos montados en bastidor.

🚫

>50 kg (110 libras)

Hinweis 23

ACHTUNG:

Keine Gegenstände, die mehr als 50 kg wiegen, auf Rack-Einheiten ablegen.

>50 kg

Notice nø 23

ATTENTION:

Ne posez pas d'objet dont le poids dépasse 50 kg sur les unités montées en armoire.

>50 kg

Varningsmeddelande 23

VARNING:

Placera inte något föremål som väger mer än 50 kg ovanpå rackmonterade enheter.

>50 kg

Merknad 23

ADVARSEL:

Ikke sett gjenstander som veier mer enn 50 kg oppå enheter som er montert i et kabinett.

Merknad 23

>50 kg

Avviso 23

ATTENZIONE:

Non poggiare oggetti che pesano più di 50 kg sulla parte superiore delle unità montate in rack.

>50 kg

Turvaohje 23

Varoitus:

Telineeseen asennettujen laitteiden päälle ei saa asettaa yli 50 kilon painoista esinettä.

>50 kg

Voorschrift 23

WAARSCHUWING:

Plaats geen objecten die meer dan 50 kg wegen op apparaten die in het rek zijn gemonteerd.

>50 kg

Forskrift 23

Pas på!:

Anbring ikke genstande, der vejer mere end 50 kg, oven på enheder, der er monteret i rack.

>50 kg

Instrução 23

CUIDADO:

Não coloque nenhum objeto com peso superior a 50 kg (110 lbs.) sobre dispositivos montados em rack.

>50 kg (110 lbs)

عبارة ٢٣

⚠

تنبيه :

لا تضع أي عنصر يزن أكثر من ٥٠ كيلوجرام
(١١٠ رطل) أعلى سطح الأجهزة.

أكبر من ٥٠ كيلوجرام (١١٠ رطل)

- Izjava br. 23

OPREZ:
Ne postavljajte predmete teže od 50 kg (110 funti) na ormar u koji
su ugrađeni uređaji.

> 50 kg (110 lbs)

Δήλωση 23

ΠΡΟΣΟΧΗ:
Μην τοποθετείτε οποιοδήποτε αντικείμενο με βάρος μεγαλύτερο από 50 kg
επάνω σε συσκευές που έχουν προσαρμοσθεί σε ικρίωμα (rack).

> 50 kg

..

זהירות:
אל תניחו שם חפץ שמשקלו יותר מ-50 ק"ג על גבי התקנים המורכבים על מסדי מרווידיח.
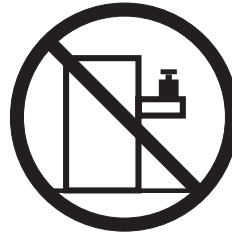
50 ק"ג

- 23. ismertető

FIGYELEM:
Keretszerelésű eszközök tetejére ne helyezzen olyan tárgyat, melynek súlya több, mint 50 kg (110 lbs.).

> 50 kg (110 lbs)

- 記述 23

 注意

ラック・モデルのサーバーの上に 50 Kg 以上の物を置かないでください。

> 50 Kg

경고문 23

주의:
서랍형 모델의 장치 상단에 50 kg(110 lbs.)이 넘는 물체를 올려
놓지 마십시오.

> 50 kg (110 lbs)

Instrukcja 23

ZAGROŻENIE:
Nie należy umieszczać przedmiotów cięższych
niż 50 kg (110 funtów.)

> 50 kg (110 funtów)

· Положение 23

ОСТОРОЖНО:
Не ставьте предметы весом более 50 кг на верхнюю крышку
устройств, смонтированных на выдвижных полках.

> 50 кг

声明 23

警告：

机柜安装的设备上面不能放置重于 50kg（110 磅）的物品。

> 50 kg (110 磅)

· Príkaz 23

VÝSTRAHA:
Neumiestňujte žiadny predmet vážiaci viac ako 50 kg (110 lbs.)
na vrch zariadenia montovaného do stojana.

> 50 kg (110 lbs)

· Navedba 23

SVARILO:
Ne postavljajte nobenega predmeta, ki je težji od 50 kg, na vrh
naprav, montiranih v stojala.

> 50 kg (110 lbs)

聲明 23

注意：
請勿將任何重量超過 50 公斤 (110 磅) 的物品置於已安裝機架的裝置上方。

> 50 公斤 (110 磅)

Instrukce 23

POZOR:
Neumísťujte nic s hmotností vyšší než 50 kg navrch zařízení namontovaných do stojanu.

>50 kg (110 lbs)

▪ Инструкција 23

ПРЕДУПРЕДУВАЊЕ:
Не поставувајте предмети потешки од 50 кг. (110 lbs.) над уредите кои се монтирани во ормари.

>50 kg (110 lbs)

Instrução 23

CUIDADO:

Não coloque nenhum objeto com peso superior a 50 kg (110 lbs.) sobre dispositivos montados em rack.

>50 kg (110 lbs)

WARNING: Handling the cord on this product or cords associated with accessories sold with this product, will expose you to lead, a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm. *Wash hands after handling.*

ADVERTENCIA: El contacto con el cable de este producto o con cables de accesorios que se venden junto con este producto, pueden exponerle al plomo, un elemento químico que en el estado de California de los Estados Unidos está considerado como un causante de cancer y de defectos congénitos, además de otros riesgos reproductivos. *Lávese las manos después de usar el producto.*

Important:

All caution and danger statements in this documentation begin with a number. This number is used to cross reference an English caution or danger statement with translated versions of the caution or danger statement in the IBM *Safety Information* book.

For example, if a caution statement begins with a number 1, translations for that caution statement appear in the IBM *Safety Information* book under statement 1.

Be sure to read all caution and danger statements in this documentation before performing the instructions. Read any additional safety information that comes with your server or optional device before you install the device.

Chapter 1. Introducing the IBM xSeries 225 Type 8649 server

The IBM® @server xSeries 225 Type 8649 server is a high-performance server based on IBM X-Architecture™ technologies. It can be upgraded to a symmetric multiprocessing (SMP) server through a microprocessor upgrade. It is ideally suited for networking environments that require superior microprocessor performance, efficient memory management, flexibility, and large amounts of reliable data storage.

Performance, ease of use, reliability, and expansion capabilities were key considerations in the design of your server. These design features make it possible for you to customize the system hardware to meet your needs today and provide flexible expansion capabilities for the future.

Your server comes with a limited warranty. For more information about the terms of your warranty, see the *Installation Guide*.

Your server contains IBM Enterprise X-Architecture technologies, which help increase performance and reliability. For more information, see "What your server offers" on page 4 and "Reliability, availability, and serviceability" on page 5.

For service or assistance information, see Appendix A, "Getting help and technical assistance," on page 23.

Note: The illustrations in this document might differ slightly from your hardware.

Related publications

This *User's Guide* provides general information about your server, including information about features, how to configure the server, how to use the *ServerGuide™ Setup and Installation* CD, and how to get help. In addition to this *User's Guide*, the following documentation comes with your server:

- *Installation Guide*
  This printed publication contains setup and installation instructions.

- *Safety Information* book
  This multilingual publication is provided in PDF on the IBM *xSeries Documentation* CD. It contains translated versions of the caution and danger statements that appear in the documentation for your server. Each caution and danger statement has an assigned number, which you can use to locate the corresponding statement in your native language.

- *Hardware Maintenance Manual and Troubleshooting Guide*
  This publication is provided in PDF on the IBM *xSeries Documentation* CD. It contains information to help you solve the problem yourself or to provide helpful information to a service technician.

- *Option Installation Guide*
  This publication is provided in PDF on the IBM *xSeries Documentation* CD. It contains instructions to install, remove, and connect optional devices supported by your server.

Depending on your server model, additional publications might be included on the IBM *xSeries Documentation* CD.

Your server might have features that are not described in the documentation that you received with the server. The documentation might be updated occasionally to include information about those features, or technical updates might be available to

provide additional information that is not included in your server documentation. These updates are available from the IBM Web site. Complete the following steps to check for updated documentation and technical updates:

1. Go to http://www.ibm.com/pc/support/.
2. In the **Learn** section, click **Online publications**.
3. On the ″Online publications″ page, in the **Brand** field, select **Servers**.
4. In the **Family** field, select **xSeries 225**.
5. Click **Display documents**.

Notices and statements used in this publication

The caution and danger statements that appear in this publication are also in the multilingual *Safety Information* book, which is on the IBM *xSeries*® *Documentation* CD. Each statement is numbered for reference to the corresponding statement in the *Safety Information* book.

The following notices and statements are used in the documentation:

- **Notes:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Features and specifications

The following table provides a summary of the features and specifications of your server. Depending on your server model, some features might not be available, or some specifications might not apply.

You can use the Configuration/Setup Utility program in your server to determine the specific type of microprocessor that is on the system board.

Table 1. Features and specifications

Microprocessor:	Integrated functions:	Electrical input:

• Intel™ Xeon Processor
• 512 KB Level-2 or 1 MB Level-3 cache
• 400 MHz or 533 MHz front-side bus (FSB)
• Support for up to two microprocessors
 	
Memory:
• Minimum: 256 MB
• Maximum: 8 GB
• Type: PC2100, double-data-rate (DDR)
• Connectors: four dual inline memory module (DIMM) connectors, two-way interleaved
 	
Drives standard:
• Diskette: 1.44 MB (two mode)
• CD-ROM: IDE
 	
Expansion bays:
• Six open hot-swap, slim-high, 3.5-inch drive bays (some models)
• Four slim-high, 3.5-inch drive bays with one hard disk drive installed (some models)
• Two 5.25-inch bays (CD-ROM drive installed in one bay)
• One 3.5-inch removable-media drive bay (diskette drive installed)
 	
PCI expansion slots:
• Four PCI-X 100 MHz/64-bit
• One PCI 33 MHz/32-bit
 	
Cooling:
Three or more speed-controlled fans
 	
Upgradeable microcode:
BIOS upgrades (when available) can update EEPROMs on the system board
	• Support for IBM Remote Supervisor Adapter II
	• Broadcom 5703 10/100/1000 Ethernet controller on the system board with RJ-45 Ethernet port
	• Two serial ports
	• One parallel port
	• Integrated SCSI controller with RAID capabilities and two Ultra320 SCSI ports (one internal, one optional external)
	• Four Universal Serial Bus (USB) v2.0 ports (two on front and two on rear of enclosure)
	• Keyboard port
	• Mouse port
	• Audio ports (rear)
	  – Line out
	  – Mic
	  – Line in
	• ATA-100 dual-channel IDE controller
	• ATI Rage XL video (mini-PCI)
	  – Compatible with SVGA and VGA
	  – 8 MB video memory
	
	Diagnostic LEDs:
	• Fans
	• Memory
	• Microprocessors
	• Hot-swap power supplies (some models)
	
	Power supplies:
	• Hot-swap (depending on your model) Your system might come with two 514 watt (115-230 V ac) output . Two power supplies provide redundancy power.
	• Non-hot-swap (some models) One 425 watt output (115-230 V ac)
	
	Size:
	• Height: 440 mm (18.4 in.)
	• Depth: 660 mm (26 in.)
	• Width: 217 mm (6.5 in.)
	• Weight: 20 kg (44 lb) to 25.8 kg (57 lb) depending upon configuration
		• Sine-wave input (50 or 60 Hz) required
		• Input voltage and frequency ranges automatically selected
		• Input voltage low range:
		  – Minimum: 100 V ac
		  – Maximum: 127 V ac
		• Input voltage high range:
		  – Minimum: 200 V ac
		  – Maximum: 240 V ac
		• Input kilovolt-amperes (kVA) approximately:
		  – Minimum: 0.15 kVA (all models)
		  – Maximum: 0.80 kVA
		
		Heat output:
		Approximate heat output in British thermal units (Btu) per hour
		• Minimum configuration: 341 Btu/hour (100 watts)
		• Maximum configuration: 2455 Btu/hour (720 watts)
		
		Environment:
		• Air temperature:
		  – Server on: 10° to 35°C (50° to 95°F) Altitude: 0 to 2134 m (7000 ft)
		  – Server off: -40° to +60°C (-40° to 140°F) Maximum altitude: 2133 m (7000 ft)
		• Humidity (operating and storage): 8% to 80%
		
		Acoustical noise emissions:
		• Non-redundant Sound power, idle: 5.3 bel maximum Sound power, operating: 5.8 bel maximum
		• Redundant Sound power, idle: 6.0 bel maximum Sound power, operating: 6.1 bel maximum

What your server offers

Your server takes advantage of advancements in symmetric multiprocessing (SMP), data storage, disk-array technologies, and memory management. Your server includes:

- **IBM X-Architecture design**

  IBM X-Architecture technology combines proven, innovative IBM designs to make your Intel-processor-based server powerful, scalable, and reliable. X-Architecture design includes Chipkill™ memory (some models), hot-swappable hard disk drives, and Predictive Failure Analysis® capability.

- **Impressive performance using SMP**

  Your server supports up to two Intel Xeon microprocessors. It comes with at least one microprocessor installed; if it comes with only one microprocessor, you can install an additional microprocessor to enhance performance and provide SMP capability.

- **Large data-storage and hot-swap capabilities**

  Some server models support up to six 25.4-mm (1-inch) slim-high, 3.5-inch hot-swap hard disk drives in the hot-swap bays. With the hot-swap feature, you can add, remove, or replace hard disk drives without turning off the server.

- **Redundant power capabilities**

  Some models of the server come with two 514-watt hot-swap power supplies, which provide redundant power for many server configurations. If the average load on your server is less than 514-watt and a problem occurs with one of the power supplies, the other power supply can handle the load.

- **Large system memory**

  Your server supports up to 8 GB of system memory. The memory controller provides error correcting code (ECC) support for up to four industry-standard, 133 MHz, 2.5 V, 184-pin, double-data-rate (DDR), PC2100 registered, synchronous dynamic random access memory (SDRAM) dual inline memory modules (DIMMs). Your memory controller provides Chipkill memory protection if the DIMMs are 512 MB or larger. Chipkill memory protection is also provided on servers with 256 MB, 128 Mb technology DIMMs installed. All 128 MB DIMMs or 256 MB, 256 Mb technology DIMMs do not provide Chipkill memory protection. Chipkill memory protection is a technology that protects the server from a single chip failure on a DIMM.

- **System-management capabilities**

  Your server supports an optional IBM Remote Supervisor Adapter II. By using the optional IBM Remote Supervisor Adapter II with the system-management software that comes with your server, you can manage the functions of the server locally and remotely giving you a World Wide Web interface to the system-management functions.

  See the documentation that comes with your system-management software for more information. To order an optional Remote Supervisor Adapter II , contact your IBM marketing representative or authorized reseller.

- **Integrated network environment support**

  Your server comes with an integrated Broadcom Gigabit Ethernet controller on the system board. This Ethernet controller has an interface for connecting to a 10-Mbps, 100-Mbps, or 1-Gbps network. The server automatically selects between 10BASE-T and 100/1000BASE-TX environments. The controller provides full-duplex (FDX) capability, which enables simultaneous transmission and reception of data on an Ethernet local area network (LAN). This controller supports Wake on LAN® technology.

- **Redundant connection**

  The addition of an optional network interface card (NIC) provides a failover capability to a redundant Ethernet connection. If a problem occurs with the primary Ethernet connection, all Ethernet traffic associated with the primary connection is automatically switched to the redundant NIC. If the appropriate device drivers are installed, this switching occurs without data loss and without user intervention.

- **IBM *ServerGuide Setup and Installation* CD**

  The *ServerGuide Setup and Installation* CD that comes with your server provides programs to help you set up your server and install the operating system. The ServerGuide program detects installed hardware options and provides the correct configuration programs and device drivers.

  For more information about the *ServerGuide Setup and Installation* CD, see "Using the ServerGuide Setup and Installation CD" on page 15.

- **ServeRAID support**

  Your server supports IBM ServeRAID adapters to create redundant array of independent disks (RAID) configurations.

- **IBM Director**

  IBM Director is a workgroup-hardware-management tool that you can use to centrally manage xSeries servers. For more information about IBM Director, see the IBM Director *User's Guide* on the IBM *xSeries Documentation* CD.

- **IBM *Enhanced Diagnostics* CD**

  Your server comes with a *IBM Enhanced Diagnostics* CD, which you can use to diagnose problems with the server.

Reliability, availability, and serviceability

Three important server design features are reliability, availability, and serviceability (RAS). The RAS features help to ensure the integrity of the data that is stored on your server, the availability of the server when you need it, and the ease with which you can diagnose and repair problems.

Your server had the following RAS features:

- 1-year parts, 1-year labor limited warranty
- Advanced Configuration and Power Interface (ACPI)
- Advanced Desktop Management Interface (DMI) features
- Alert Standard Format (ASF) support providing seven standard alerts for components such as fans, voltage, and thermals
- Automatic BIOS recovery to a backup image
- Automatic error retry or recovery
- Automatic memory downsizing on error detection
- Automatic restart on non-maskable interrupt (NMI)
- Automatic Server Restart (ASR) logic supporting a system restart when the operating system becomes unresponsive
- Automatic server restart after a power failure, based on the BIOS setting
- Availability of microcode and diagnostic levels
- Boot-block recovery
- Built-in, menu-driven setup, system configuration, and redundant array of independent disks (RAID) configuration
- Built-in monitoring for fan, power, temperature, and voltage

- CD-based diagnostic programs
- Cooling fans with speed-sensing capability
- Customer support center that is available 24 hours a day, 7 days a week[1]
- Diagnostic support of ServeRAID adapters
- Error codes and messages
- Error correcting code (ECC) double-data-rate (DDR) synchronous dynamic random access memory (SDRAM) with serial presence detect (SPD)
- Error logging of POST failures
- Hot-swap hard disk drives
- Integrated Ethernet controller
- Support for the optional IBM Remote Supervisor Adapter II
- Key-lock support for physical security
- Memory change messages posted to the error log
- Power-on self-test (POST)
- Predictive Failure Analysis (PFA) alerts
- Read-only memory (ROM) checksums
- Redundant Ethernet capabilities (requires an optional Ethernet adapter) with failover support
- Redundant hot-swap power supplies (some models)
- Standby voltage for system-management features and monitoring
- System auto-configuring from the configuration menu
- System-error LED on the front bezel and diagnostics LEDs on the system board
- Upgradeable basic input/output system (BIOS) and POST code
- Upgradeable microcode for POST, BIOS, and read-only memory (ROM) resident code, locally or over a LAN
- Vital product data (VPD); includes serial-number information and replacement part numbers, stored in nonvolatile memory, for easier remote maintenance
- Wake on LAN capability
- xSeries Server Management

Updating device drivers and firmware

The Update*Xpress* program is available for most xSeries servers and server options. It detects supported and installed device drivers and firmware in your server and installs available updates. You can download the Update*Xpress* program from the Web at no additional cost, or you can purchase it on a CD. To download the program or purchase the CD, go to the IBM Support Web site at http://www.ibm.com/pc/ww/eserver/xseries/serverguide/xpress.html.

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1. Service availability will vary by country. Response time varies; may exclude holidays.

IBM Director

With IBM Director, a network administrator can:

- View the hardware configuration of remote systems, in detail
- Monitor the usage and performance of critical components, such as microprocessors, disks, and memory
- Centrally manage individual or large groups of IBM and non-IBM Intel-based servers, desktop computers, workstations, and mobile computers on a variety of platforms

IBM Director provides a comprehensive entry-level workgroup hardware manager. Key features include:

- Advanced self-management capabilities for maximum system availability
- Multiple operating-system platform support, including Microsoft Windows 98, Windows 2000, Windows XP Professional, Novell NetWare, IBM OS/2, SCO UnixWare, Linux, and Caldera OpenUNIX
- Support for IBM and non-IBM servers, desktop computers, workstations, and mobile computers
- Support for systems-management industry standards
- Integration into leading workgroup and enterprise systems-management environments
- Ease of use, training, and setup

IBM Director also provides an extensible platform that supports advanced server tools that are designed to reduce the total cost of managing and supporting networked systems. By deploying IBM Director, you can achieve reductions in ownership costs through:

- Reduced downtime
- Increased productivity of IT personnel and users
- Reduced service and support costs

For more information about IBM Director, see the *IBM Director* CD that comes with your server, the IBM Director publications on the CD, and the following Web pages:

Systems Management - Director Package
> http://www.ibm.com/pc/qtechinfo/MIGR-40738.html

> This Web page includes links to software downloads and publications for the latest release of IBM Director.

IBM xSeries Systems Management page
> http://www.ibm.com/pc/ww/eserver/xseries/systems_management/index.html

> This Web page presents an overview of IBM Systems Management and IBM Director.
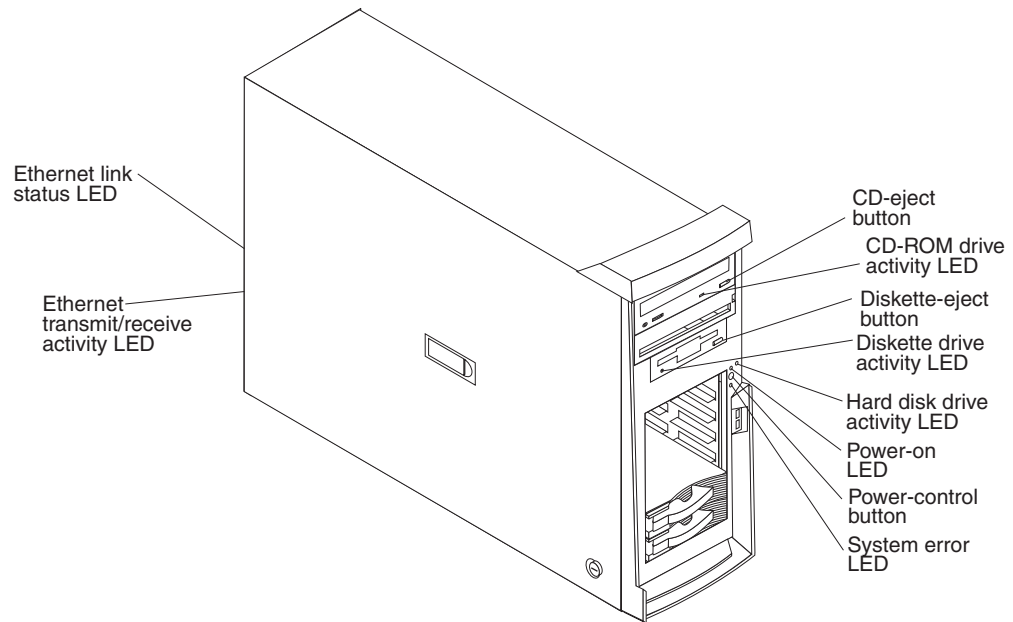
IBM Universal Manageability page
> http://www.ibm.com/pc/us/pc/um/index.html

> This Web page links to an IBM portfolio of advanced management tools that help reduce costs and increase availability throughout the life cycle of a product.

Server controls, LEDs, and power

The following illustration shows the controls and LEDs on the server.

Ethernet link
status LED

Ethernet
transmit/receive
activity LED

CD-eject
button

CD-ROM drive
activity LED

Diskette-eject
button

Diskette drive
activity LED

Hard disk drive
activity LED

Power-on
LED

Power-control
button

System error
LED

AC power LED

> This LED is on each hot-swap power supply on the back of some server models. During typical operation, both the ac and dc power LEDs are on. For any other combination of LEDs, see the *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM *xSeries Documentation* CD.

CD-eject button

> Press this button to release a CD from the CD-ROM drive.

CD-ROM drive activity LED

> When this LED is lit, it indicates that the CD-ROM drive is in use.

DC power LED

> This LED is on each hot-swap power supply on the back of some server models. During typical operation, both the ac and dc power LEDs are on. For any other combination of LEDs, see the *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM *xSeries Documentation* CD.

Diskette-eject button

> Press this button to release a diskette from the diskette drive.

Diskette drive activity LED

> When this LED is lit, it indicates that the diskette drive is in use.

Ethernet link status LED

> This LED is on the Ethernet connector on the back of the server. When this LED is lit, it indicates that there is an active connection on the Ethernet port.

Ethernet transmit/receive activity LED

> This LED is on the Ethernet connector on the back of the server. When this LED is lit, it indicates that there is activity between the server and the network.

Hard disk drive activity LED

> When this LED is flashing, it indicates that a hard disk drive is in use.

Hot-swap hard disk drive activity LED

On some server models, each hot-swap drive has a hard disk drive activity LED. When this green LED is flashing, it indicates that the drive is in use.

Hot-swap hard disk drive status LED

On some server models, each hot-swap hard disk drive has a status LED. If the status LED for a drive is lit continuously, that individual drive is faulty. The interpretation of a flashing status LED depends on the SCSI controller connected to the hot-swap drive, as follows:

- When the drive is connected to the integrated SCSI controller with RAID capabilities, a flashing status LED indicates that the drive is a secondary drive in a mirrored pair and the drive is being synchronized.

- When the drive is connected to an optional ServeRAID controller, a slowly flashing (one flash per second) status LED indicates that the drive is being rebuilt. When the LED is flashing rapidly (three flashes per second), it indicates that the controller is identifying the drive.

Power-control button

Press this button to turn the server on and off manually.

Power-on LED

When this LED is lit and not flashing, it indicates that the server is turned on. When this LED is flashing, it indicates that the server is off and still connected to an ac power source (standby mode).

System-error LED

When this LED is lit, it indicates that a system error has occurred. An LED on the system board might also be lit to help isolate the error. Detailed troubleshooting information is in the *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM *xSeries Documentation* CD.

Server power features

When the server is connected to an ac power source but is not turned on, the operating system does not run, and all core logic is shut down; however, the server can respond to remote requests to turn on the server. The power-on LED flashes to indicate that the server is connected to an ac power source but is not turned on (standby mode).

Turning on the server

Notes:

1. Turn on all external devices, such as the monitor, before turning on the server.

2. The power-on LED on the front of the server is lit when the server is on and while it is powering-up.

Approximately 20 seconds after the server is connected to ac power, the power-control button becomes active, and you can turn on the server and start the operating system by pressing the power-control button. The server can also be turned on in any of the following ways:

- If a power failure occurs while the server is turned on, the server will restart automatically when power is restored.

- If an optional Remote Supervisor Adapter II is installed in the server, the server can be turned on from the Remote Supervisor Adapter II user interface.

- When you plug in your server for the first time, the Wake on LAN feature can turn on the server. If your server was previously turned on, it must be properly turned off for the Wake on LAN feature to turn on the server.

Note: When 4 GB or more of memory (physical or logical) is installed, some memory is reserved for various system resources and is unavailable to the operating system. The amount of memory that is reserved for system resources depends on the operating system, the configuration of the server, and the configured PCI options.

Turning off the server

When you turn off the server and leave it connected to ac power, the server can respond to remote requests to turn on the server. To remove all power from the server, you must disconnect it from the power source.

Some operating systems require an orderly shutdown before you turn off the server. See your operating-system documentation for information about shutting down the operating system.

Statement 5:

CAUTION:
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.
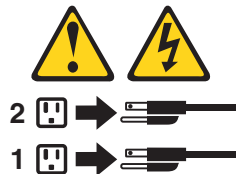
Note: After turning off the server, wait at least 5 seconds before you press the power-control button to turn on the server again.

The server can be turned off in any of the following ways:
- You can turn off the server from the operating system, if your operating system supports this feature. After an orderly shutdown of the operating system, the server will be turned off automatically.
- You can press the power-control button to start an orderly shutdown of the operating system and turn off the server, if your operating system supports this feature.
- If the operating system stops functioning, you can press and hold the power-control button for more than 4 seconds to turn off the server.
- If an optional Remote Supervisor Adapter II is installed in the server, the server can be turned off from the Remote Supervisor Adapter II user interface.
- The server can turn itself off as an automatic response to a critical system failure.

Chapter 2. Configuring your server

The following configuration programs are provided with your server:

- **Configuration/Setup Utility**

  This is part of the basic input/output system (BIOS) code in your server. Use it to configure serial port assignments, change interrupt request (IRQ) settings, change the startup-device sequence, set the date and time, and set passwords. For information about using this utility program, see "Using the Configuration/Setup Utility program."

- **IBM *ServerGuide Setup and Installation* CD**

  This provides software-setup tools and installation tools that are designed for your server. Use this CD during the installation of your server to configure basic hardware features. For information about using this CD, see "Using the ServerGuide Setup and Installation CD" on page 15.

- **LSI Logic Configuration Utility**

  Use this to configure the integrated SCSI controller with RAID capabilities and the devices that are attached to it. For information about using this utility program, see "Using the LSI Logic Configuration Utility program" on page 19.

- **ServeRAID Manager**

  ServeRAID Manager is available as a stand-alone program and as an IBM Director extension. If a ServeRAID adapter is installed in your server or if you are using the RAID capabilities of the SCSI controller, use ServeRAID Manager to define and configure your disk-array subsystem *before* you install the operating system. For information about using this program, see "Using ServeRAID Manager" on page 20.

- **Ethernet controller configuration process**

  For information about configuring the Ethernet controller, see "Configuring the Gigabit Ethernet controller" on page 21.

Using the Configuration/Setup Utility program

Use the Configuration/Setup Utility program to:

- View configuration information
- View and change assignments for devices and I/O ports
- Set the date and time
- Set and change passwords and Remote Control Security settings
- Set the startup characteristics of the server and the order of startup devices
- Set and change settings for advanced hardware features
- View and clear error logs

Starting the Configuration/Setup Utility program

Complete the following steps to start the Configuration/Setup Utility program:

1. Turn on the server.
2. When the prompt `Press F1 for Configuration/Setup` appears, press F1. If you have set both a power-on password and an administrator password, you must type the administrator password to access the full Configuration/Setup Utility menu. If you do not type the administrator password, a limited Configuration/Setup Utility menu is available.
3. Select settings to view or change.

Configuration/Setup Utility menu choices

The following choices are on the Configuration/Setup Utility main menu. Depending on the version of the BIOS code in your server, some menu choices might differ slightly from these descriptions.

- **System Summary**

  Select this choice to view configuration information, including the type, speed, and cache sizes of the microprocessors and the amount of installed memory. When you make configuration changes through other options in the Configuration/Setup Utility program, the changes are reflected in the system summary; you cannot change settings directly in the system summary.

  This choice is on the full and limited Configuration/Setup Utility menu.

- **System Information**

  Select this choice to view information about your server. When you make changes through other options in the Configuration/Setup Utility program, some of those changes are reflected in the system information; you cannot change settings directly in the system information.

  This choice is on the full Configuration/Setup Utility menu only.

  – **Product Data**

    Select this choice to view the machine type and model of your server, the serial number, and the revision level or issue date of the BIOS stored in the electrically erasable programmable ROM (EEPROM).

  – **System Card Data**

    Select this choice to view information about the system board.

- **Devices and I/O Ports**

  Select this choice to view or change assignments for devices and input/output (I/O) ports.

  Select this choice to enable or disable integrated SCSI and Ethernet controllers and all standard ports (such as serial and parallel). **Enable** is the default setting for all controllers. If you disable a device, it cannot be configured, and the operating system will not be able to detect it (this is equivalent to disconnecting the device). If you disable the integrated SCSI controller and no SCSI adapter is installed, the server will have no SCSI capability. If you disable the integrated Ethernet controller and no Ethernet adapter is installed, the server will have no Ethernet capability.

  This choice is on the full Configuration/Setup Utility menu only.

- **Date and Time**

  Select this choice to set the date and time in the server, in 24-hour format (*hour*:*minute*:*second*).

- **System Security**

Select this choice to set passwords. See "Passwords" on page 14 for more information about passwords. You can also enable the chassis-intrusion detector to alert you each time the server cover is removed.

– **Power-on Password**

   Select this choice to set or change a power-on password. See "Power-on password" on page 15 for more information.

– **Administrator Password**

   Select this choice to set or change an administrator password. An administrator password is intended to be used by a system administrator; it limits access to the full Configuration/Setup Utility menu. If an administrator password is set, the full Configuration/Setup Utility menu is available only if you type the administrator password at the password prompt. See "Administrator password" on page 15 for more information.

- **Start Options**

   Select this choice to view or change the start options. Changes in the start options take effect when you restart the server.

   You can set keyboard operating characteristics, such as the keyboard speed, and you can specify whether the server starts with the keyboard number lock on or off. You can enable the server to run without a diskette drive, monitor, or keyboard.

   The startup sequence specifies the order in which the server checks devices to find a boot record. The server starts from the first boot record that it finds. If your server has Wake on LAN hardware and software and the operating system supports Wake on LAN functions, you can specify a startup sequence for the Wake on LAN functions. You can also specify whether the integrated SCSI controller or a PCI SCSI adapter has boot precedence.

   If you enable the boot fail count, the BIOS default settings will be restored after three consecutive failures to find a boot record.

   You can enable a virus-detection test that checks for changes in the boot record when the server starts.

- **Advanced Setup**

   Select this choice to change settings for advanced hardware features.

   Important: The server might malfunction if these options are incorrectly configured. Follow the instructions on the screen carefully.

– **Power Management Setup**

   Select this choice to enable or disable system power settings. This includes automatic power-on settings such as the Wake on LAN feature.

– **Chipset Feature**

   Select this choice to modify settings that control features of the core chip set on the system board.

   Attention: Do not make changes in the Chipset Feature option unless directed to do so by an IBM authorized service representative.

– **Processor Control**

   Select this choice to enable or disable the microprocessor cache and hyper-threading. The default status for hyperthreading is Enabled.

   Attention: Do not make changes in the Processor Control option unless directed to do so by an IBM authorized service representative.

- **PC Health Status**

Select this choice to display the server temperature and voltage status, and fan speeds.

- **Error Logs**

  Select **POST Error Log** to view the three most recent error codes and messages that the system generated during POST.

  Select **Clear event/error logs** from the **POST Error Log** menu to clear the POST Error Log.

- **Save Settings**

  Select this choice to save the changes you have made in the settings.

- **Restore Settings**

  Select this choice to cancel the changes you have made in the settings and restore the previous settings.

- **Load Default Settings**

  Select this choice to cancel the changes you have made in the settings and restore the factory settings.

- **Exit Setup**

  Select this choice to exit from the Configuration/Setup Utility program. If you have not saved the changes you have made in the settings, you are asked whether you want to save the changes or exit without saving them.

Passwords

From the **System Security** choice, you can set, change, and delete a power-on password and an administrator password. The **System Security** choice is on the full Configuration/Setup menu only.

If you set only a power-on password, you must type the power-on password to complete the system startup, and you have access to the full Configuration/Setup Utility menu.

An administrator password is intended to be used by a system administrator; it limits access to the full Configuration/Setup Utility menu. If you set only an administrator password, you do not have to type a password to complete the system startup, but you must type the administrator password to access the Configuration/Setup Utility menu.

If you set a power-on password for a user and an administrator password for a system administrator, you can type either password to complete the system startup. A system administrator who types the administrator password has access to the full Configuration/Setup Utility menu; the system administrator can give the user authority to set, change, and delete the power-on password. A user who types the power-on password has access to only the limited Configuration/Setup Utility menu; the user can set, change, and delete the power-on password, if the system administrator has given the user that authority.

If you forget the power-on password, you can regain access to the server in any of the following ways:

- If you have forgotten the user password and an administrator password is set, type the administrator password at the power-on prompt. Start the Configuration/Setup Utility program and change the user password.

  CAUTION:
  Before changing any switch settings or moving any jumpers, turn off the server; then, disconnect all power cords and external cables.

- Clear CMOS settings by changing the position of the CMOS recovery jumper (JBAT1). See the *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM *xSeries Documentation* CD for instructions.
- Remove the battery and then install the battery. See the *Option Installation Guide* on the IBM *xSeries Documentation* CD for instructions.

Power-on password

If a power-on password is set, when you turn on the server, the system startup will not be completed until you type the power-on password. You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for the password.

Administrator password

If an administrator password is set, you must type the administrator password for access to the full Configuration/Setup Utility menu. You can use any combination of up to seven characters (A–Z, a–z, and 0–9) for the password.

Using the ServerGuide Setup and Installation CD

The *ServerGuide Setup and Installation* CD includes an easy-to-use setup and installation program that is specifically designed for your IBM server. The ServerGuide program detects the server model and hardware options that are installed and uses that information during setup to configure the hardware. The ServerGuide program simplifies operating system installations by providing updated device drivers and, in some cases, installing them automatically.

If a later version of the ServerGuide program is available, you can download a free image of the *ServerGuide Setup and Installation* CD, or you can purchase the CD. To download the image, go to the IBM ServerGuide Web page at http://www.ibm.com/pc/qtechinfo/MIGR-4ZKPPT.html. To purchase the latest *ServerGuide Setup and Installation* CD, go to the ServerGuide fulfillment Web site at http://www.ibm.com/pc/coupon/.

The ServerGuide program has the following features to make setup easier:
- An easy-to-use interface with online help
- Diskette-free setup, and configuration programs that are based on detected hardware
- Performance Optimizer program, which easily tunes your SCSI RAID adapter settings for your server environment
- A system BIOS update program, which updates the BIOS code directly from the CD
- Device drivers that are provided for your server model and detected hardware
- Operating system partition size and file-system type that are selectable during setup

ServerGuide features

Features and functions can vary slightly with different versions of the ServerGuide program. To learn more about the version that you have, start the *ServerGuide Setup and Installation* CD and view the online overview. Not all features are supported on all server models.

The ServerGuide program requires a supported IBM server with an enabled startable (bootable) CD-ROM drive. In addition to the *ServerGuide Setup and Installation* CD, you must have your operating system CD to install your operating system.

The ServerGuide program has the following features:
- Sets system date and time.
- Detects an installed SCSI RAID adapter or controller and runs the SCSI RAID configuration program. (Does not apply to the integrated SCSI controller with RAID capabilities.)
- Updates the licensed internal code (firmware) level without diskettes.
- Checks the system BIOS code and microcode (firmware) levels of supported options to determine whether a later level is available from the CD. You can perform updates without using diskettes.
- Provides the Performance Optimizer program to easily tune your SCSI RAID adapter settings for your server environment.
- Creates a System Partition on the default drive. You can run server-specific utility programs after setup.
- Detects installed hardware options and provides updated device drivers for most adapters and devices.
- Creates a setup-replication diskette for replicating setup selections for other servers of the same model.
- Provides diskette-free installation for supported operating systems.
- Provides a replicated installation path for multiple installations of supported operating systems.
- Includes an online README file with links to tips for your hardware and operating system installation.

Setup and configuration overview

When you use the *ServerGuide Setup and Installation* CD, you do not need setup diskettes. You can use the CD to configure any supported IBM server model. The ServerGuide program checks your system BIOS, service processors, and other system hardware to determine if system updates are available. The setup program provides a list of tasks that are required to set up your server model. On SCSI RAID servers, you can run the SCSI RAID configuration program to create logical drives.

Note: Features and functions can vary slightly with different versions of the ServerGuide program.

When you start the *ServerGuide Setup and Installation* CD, the program performs the following tasks:
- The ServerGuide program prompts you for your language, country, and keyboard layout. (This information is stored and later passed to the operating system installation program.)
- The ServerGuide program displays choices for running the configuration programs. For example:
  - The Express Configuration method runs the required programs for your server, based on the hardware that is detected.
  - The Custom Configuration method displays all programs that are available for your server, and you decide which programs to run.
  - The Replicated Configuration method provides the option of duplicating your setup selections to other servers that are the same model.
- If you select the Custom Configuration method, the following features are optional. If you select the Express Configuration method, some or all of these features are run, depending on the hardware that is detected:
  - The Set Date and Time feature is provided so that you do not have to use the Configuration/Setup Utility program to access these settings.

- The Clear Hard Disks feature is provided so you can delete all partitions on all hard disk drives. If the server has a SCSI RAID adapter installed, you can select to restore the configuration on the SCSI RAID adapter to the factory default settings.
- The ServerGuide program checks the server BIOS code and microcode (firmware) levels for supported options and then checks the CD for a newer level. The CD content might be newer than the BIOS code and firmware level. The ServerGuide program can perform a flash update of the BIOS code and supported microcode (firmware) options without using diskettes.
- The SCSI RAID configuration program starts, leading you through the entire configuration process.
- The Performance Optimizer program easily tunes your server for your environment.
- The ServerGuide program creates a System Partition on the default drive.
- The ServerGuide program displays a confirmation summary, so that you will know when you have completed all the required tasks. Then, you are ready to install your operating system.

Notes:

1. Plug and Play adapters are configured automatically. Non-Plug and Play adapters or non-IBM adapters might require switch settings, additional device drivers, and installation after the operating system is installed. See the documentation that comes with the adapter.
2. Diagnostics for your server come in BIOS code or on a separate diagnostics CD.

System Partition

The ServerGuide program creates a 50 MB System Partition on the default drive. The System Partition contains server-specific utility programs such as service processor disk operating system (DOS) utilities, system diagnostics, flash BIOS updates, and other programs. Programs in the System Partition vary by server model, and not all server models run utility programs from the System Partition. To determine which ones do, start the *ServerGuide Setup and Installation* CD and view the online overview.

After setup is complete, you can access programs in the System Partition by restarting the server and pressing Alt+F1 when the prompt is displayed. The **System Partition** menu displays the programs that are available on your server model.

Typical operating system installation

You can use the ServerGuide program to shorten your installation time. The ServerGuide program provides the device drivers that are required for your hardware and for the operating system that you are installing. This section describes a typical ServerGuide operating system installation.

Note: Features and functions can vary slightly with different versions of the ServerGuide program.

1. After you have completed the setup process, the operating system installation program starts. (You will need your operating system CD to complete the installation.)
2. The ServerGuide program stores information about the server model, service processor, hard disk drive controllers, and network adapters. Then, the program

checks the CD for newer device drivers. This information is stored and then passed to the operating system installation program.

3. With some operating system installations, you can create an operating system replication diskette for setting up additional servers. This diskette contains the Internet protocol (IP) address, server name, and other selections.

4. The ServerGuide program presents operating system partition options that are based on your operating system selection and the installed hard disk drives.

5. If you are installing the operating system from diskette, the ServerGuide program lists the diskettes that you must create and the optional diskettes that you might want to create. The diskettes that you can create are the device-driver diskettes for the installed adapters or controllers.

6. The ServerGuide program prompts you to insert your operating system CD and restart the server. At this point, the installation program for the operating system takes control to complete the installation.

Setting up or updating multiple servers

You can use the ServerGuide program to create diskettes that help you set up or update multiple servers. You can modify information on the diskettes as you use them to set up or update other servers.

Note: Availability and function can vary by server model and by the hardware that is installed.

You can create a setup-replication diskette, which contains your hardware configuration selections. Use this diskette to replicate selections to other servers that are of the same model.

You can create a operating system replication diskette, which contains information that you need to complete multiple installations. Not all operating systems support operating system replication diskettes.

Installing your operating system without ServerGuide

If you have already configured the server hardware and you decide not to use the ServerGuide program to install your operating system, complete the following steps to download the latest operating system installation instructions from the IBM Support Web page:

1. Go to http://www.ibm.com/pc/support/.

2. Under **Browse**, click **Servers**.

3. From the **Family** drop-down list, select your server model.

4. If operating system installation instructions are available for your server model, **OS installation** is in the list in the upper-left corner of the Web page. Click **OS installation** and select the instructions for your operating system.

Using the RAID Configuration programs

Use the following programs to configure and manage RAID arrays. Be sure to use these programs as described in this book:

- **LSI Logic Configuration Utility program**

  Use the LSI Logic Configuration Utility program to:

  – Perform a low-level format on a SCSI hard disk drive

  – View or change SCSI IDs for attached devices

  – Set SCSI protocol parameters on SCSI hard disk drives

- **ServeRAID Manager**

  Use the ServeRAID Manager program to:
  - Configure a redundant array of independent disks (RAID)
  - View your RAID configuration and associated devices
  - Monitor operation of your RAID controllers

The following notes provide information that you must consider when using the LSI Logic Configuration Utility and the ServeRAID Manager programs to configure and manage your arrays:

- The integrated SCSI controller with RAID capabilities in your server supports only RAID level 1 with a hot-spare drive installed. Installing an optional ServeRAID controller provides additional RAID levels.
- If your server has a ServeRAID controller installked, you can use ServeRAID Manager to configure the integrated SCSI controller with RAID capabilities for other supported RAID levels.
- You cannot use the ServerGuide Setup and Installation CD to configure the integrated SCSI controller with RAID capabilities.
- When you create a RAID 1 mirrored pair, all drives must be on the same channel.
- You can set up a mirror after the operating system is installed on the primary drive only if you are using the integrated SCSI controller with RAID capabilities. You must ensure that the primary drive has the lower SCSI ID (for example 0).

  Important: If you use the integrated SCSI controller with RAID capabilities to configure a RAID level 1 (mirrored) array after you install the operating s;ystem, you will lose access to any data or applications that were previously stored on the secondary physical drive of the mirrored pair.

- To update the firmware and BIOS for an optional ServeRAID controller, you must use the IBM ServeRAID Support CD that comes with ServeRAID option.
- If you install a different type of RAID controller in your server, use the configuration method supplied with the RAID controller to view or change SCSI settings for attached devices.

Using the LSI Logic Configuration Utility program

The following sections provide the instructions for starting and running the LSI Logic Configuration Utility program and performing selected functions.

Starting the LSI Logic Configuration Utility program

Complete the following steps to start the LSI Logic Configuration Utility program:

1. Turn on the server.
2. When the prompt `<<< Press <CTRL><C> to start LSI Logic Configuration Utility >>>` appears, press Ctrl+C. If you have set an administrator password you are prompted to type the password.
3. Use the arrow keys to select a controller (channel) from the list of adapters; then, press Enter.
4. Follow the instructions on the screen to change the settings of the selected items; then, press Enter. The **Device Properties** and **Mirroring Properties** choices produce additional screens of parameters to review or change.

Formatting a SCSI hard disk drive

Low-level formatting removes all data from the hard disk. If there is data you want to save, back up the hard disk before performing this procedure. Complete the following steps to format a drive.

Note: Before you format a SCSI hard disk, make sure that it is not part of a mirrored pair. From the list of adapters, select the controller (channel) for the drive to format. Select **Mirroring Properties** and make sure the mirroring value for the drive is set to **None**.

1. From the list of adapters, select the controller (channel) for the drive to format.
2. Select **Device Properties**.
3. Use the arrow keys (↑ or ↓) to highlight the drive to format.
4. Use the arrow keys (← or →) or the End key to scroll to the right.
5. Select **Format**; then, press Enter to begin the low-level formatting operation.

Using ServeRAID Manager

You can run ServeRAID Manager in startable-CD mode from the *IBM ServeRAID Support* CD or as an installed program. For information about installing ServeRAID Manager, see the documentation on the CD.

See the ServeRAID™ documentation on the *IBM ServeRAID Support* CD for additional information about RAID technology and instructions for using ServeRAID Manager. The *Installation Guide* for your server also contains instructions for using ServeRAID Manager to configure your integrated SCSI controller with RAID capabilities.

Before you install your operating system, you must configure the controller that is attached to the hard disk drives. Use the configuration program on the *IBM ServeRAID Support* CD to configure the integrated SCSI controller with RAID capabilities or to configure an optional IBM ServeRAID controller.

Notes:

1. You cannot use the *ServerGuide Setup and Installation* CD to configure the optional controllers.
2. To update the firmware and BIOS code for an optional ServeRAID controller, you must use the *IBM ServeRAID Support* CD that comes with the ServeRAID option.

Configuring the Gigabit Ethernet controller

The Ethernet controller is integrated on the system board. It provides an interface for connecting to a 10-Mbps, 100-Mbps, or 1000-Mbps network and provides full duplex (FDX) capability, which enables simultaneous transmission and reception of data on the network. If the Ethernet port in the server supports auto-negotiation, the controller detects the data-transfer rate of the network (10BASE-T, 100BASE-TX, or 1000BASE-T) and automatically operates at that rate, in full-duplex or half-duplex mode, as appropriate. The Ethernet controller supports optional modes, such as teaming, priority packets, load balancing, fault tolerance, and virtual LANs, which provide better performance, security, and throughput. These modes apply to the integrated Ethernet controller and to controllers on supported Ethernet adapters.

You do not need to set any jumpers or configure the controller. However, you must install a device driver to enable the operating system to address the controller. The device drivers are available on the *Broadcom NetXtreme Gigabit Ethernet Software CD*. For the latest device drivers and information about configuring your Ethernet controller, go to the IBM Support Web site at http://www.ibm.com/pc/support/.

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your xSeries or IntelliStation® system, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system is turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM *xSeries Documentation* CD or in the IntelliStation *Hardware Maintenance Manual* at the IBM Support Web site.
- Go to the IBM Support Web site at http://www.ibm.com/pc/support/ to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the publications that are provided with your system and software. The information that comes with your system also describes the diagnostic tests that you can perform. Most xSeries and IntelliStation systems, operating systems, and programs come with information that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the information for the operating system or program.

Using the documentation

Information about your IBM xSeries or IntelliStation system and preinstalled software, if any, is available in the documentation that comes with your system. That documentation includes printed books, online books, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to http://www.ibm.com/pc/support/ and follow the instructions. Also, you can order publications through the IBM Publications Ordering System at
http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi.

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Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM xSeries and IntelliStation products, services, and support. The address for IBM xSeries information is http://www.ibm.com/eserver/xseries/. The address for IBM IntelliStation information is http://www.ibm.com/pc/intellistation/.

You can find service information for your IBM products, including supported options, at http://www.ibm.com/pc/support/.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with xSeries servers, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, go to http://www.ibm.com/services/sl/products/.

For more information about Support Line and other IBM services, go to http://www.ibm.com/services/, or go to http://www.ibm.com/planetwide/ for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

Hardware service and support

You can receive hardware service through IBM Integrated Technology Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. Go to http://www.ibm.com/planetwide/ for support telephone numbers, or in the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

Appendix B. Notices

This information was developed for products and services offered in the U.S.A.

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@server	Update Connector
FlashCopy	Wake on LAN
IBM	XA-32
IntelliStation	XA-64
NetBAY	X-Architecture
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Predictive Failure Analysis	

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Important notes

Processor speeds indicate the internal clock speed of the microprocessor; other factors also affect application performance.

CD-ROM drive speeds list the variable read rate. Actual speeds vary and are often less than the maximum possible.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for approximately 1000 bytes, MB stands for approximately 1 000 000 bytes, and GB stands for approximately 1 000 000 000 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity may vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives available from IBM.

Maximum memory may require replacement of the standard memory with an optional memory module.

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Some software may differ from its retail version (if available), and may not include user manuals or all program functionality.

Product recycling and disposal

This unit contains materials such as circuit boards, cables, electromagnetic compatibility gaskets, and connectors which may contain lead and copper/beryllium alloys that require special handling and disposal at end of life. Before this unit is disposed of, these materials must be removed and recycled or discarded according to applicable regulations. IBM offers product-return programs in several countries. For country-specific instructions, refer to the following Web site: http://www.ibm.com/ibm/environment/products/prp.shtml.

Battery return program

This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to http://www.ibm.com/ibm/environment/products/batteryrecycle.shtml or contact your local waste disposal facility.

In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

In the Netherlands, the following applies.

Electronic emission notices

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australia and New Zealand Class A statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

United Kingdom telecommunications safety requirement

Notice to Customers

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Taiwanese Class A warning statement

警告使用者：
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

Chinese Class A warning statement

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声　　明

此为 A 级产品。在生活环境中，
该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其
干扰采取切实可行的措施。

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Japanese Voluntary Control Council for Interference (VCCI) statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に
基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を
引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求
されることがあります。

Power cords

For your safety, IBM provides a power cord with a grounded attachment plug to use
with this IBM product. To avoid electrical shock, always use the power cord and
plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriter's
Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified
cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord,
a maximum of 15 feet in length and a parallel blade, grounding-type attachment
plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and
CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT,
three-conductor cord, a maximum of 15 feet in length and a tandem blade,
grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set
with a grounding-type attachment plug. The cord set should have the appropriate
safety approvals for the country in which the equipment will be installed.

IBM power cords for a specific country or region are usually available only in that
country or region.

IBM power cord part number	Used in these countries and regions
02K0546	China
13F9940	Australia, Fiji, Kiribati, Nauru, New Zealand, Papua New Guinea

IBM power cord part number	Used in these countries and regions
13F9979	Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaijan, Belarus, Belgium, Benin, Bosnia and Herzegovina, Bulgaria, Burkina Faso, Burundi, Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo (Democratic Republic of), Congo (Republic of), Cote D'Ivoire (Ivory Coast), Croatia (Republic of), Czech Republic, Dahomey, Djibouti, Egypt, Equatorial Guinea, Eritrea, Estonia, Ethiopia, Finland, France, French Guyana, French Polynesia, Germany, Greece, Guadeloupe, Guinea, Guinea Bissau, Hungary, Iceland, Indonesia, Iran, Kazakhstan, Kyrgyzstan, Laos (People's Democratic Republic of), Latvia, Lebanon, Lithuania, Luxembourg, Macedonia (former Yugoslav Republic of), Madagascar, Mali, Martinique, Mauritania, Mauritius, Mayotte, Moldova (Republic of), Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Reunion, Romania, Russian Federation, Rwanda, Sao Tome and Principe, Saudi Arabia, Senegal, Serbia, Slovakia, Slovenia (Republic of), Somalia, Spain, Suriname, Sweden, Syrian Arab Republic, Tajikistan, Tahiti, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, Uzbekistan, Vanuatu, Vietnam, Wallis and Futuna, Yugoslavia (Federal Republic of), Zaire
13F9997	Denmark
14F0015	Bangladesh, Lesotho, Maceo, Maldives, Namibia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda
14F0033	Abu Dhabi, Bahrain, Botswana, Brunei Darussalam, Channel Islands, China (Hong Kong S.A.R.), Cyprus, Dominica, Gambia, Ghana, Grenada, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar (Burma), Nigeria, Oman, Polynesia, Qatar, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Seychelles, Sierra Leone, Singapore, Sudan, Tanzania (United Republic of), Trinidad and Tobago, United Arab Emirates (Dubai), United Kingdom, Yemen, Zambia, Zimbabwe
14F0051	Liechtenstein, Switzerland
14F0069	Chile, Italy, Libyan Arab Jamahiriya
14F0087	Israel
1838574	Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Caicos Islands, Canada, Cayman Islands, Costa Rica, Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guam, Guatemala, Haiti, Honduras, Jamaica, Japan, Mexico, Micronesia (Federal States of), Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Taiwan, United States of America, Venezuela
24P6858	Korea (Democratic People's Republic of), Korea (Republic of)
34G0232	Japan
36L8880	Argentina, Paraguay, Uruguay
49P2078	India
49P2110	Brazil

IBM power cord part number	Used in these countries and regions
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