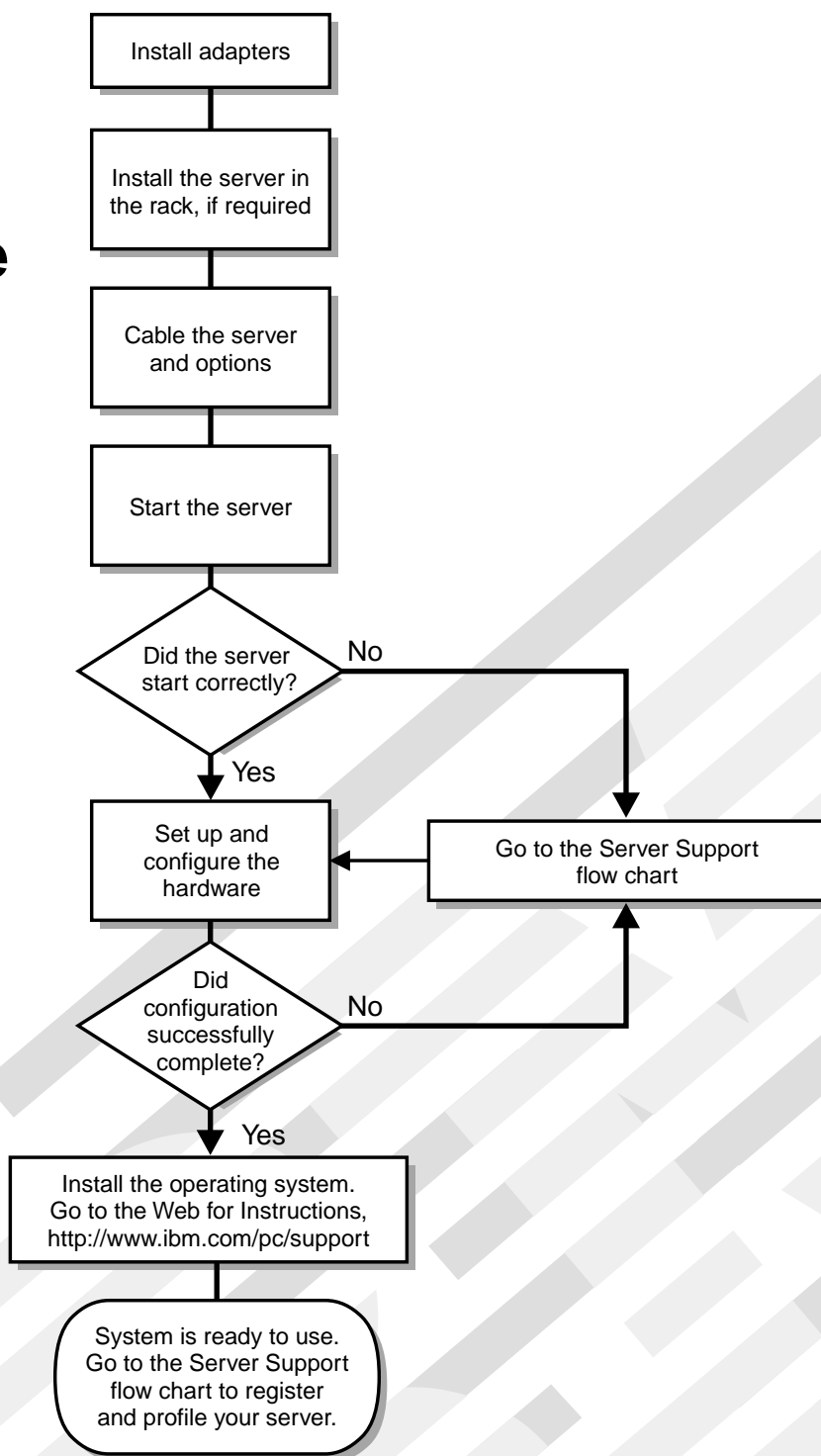# IBM ®

ⓔserver
xSeries 380

Installation Guide

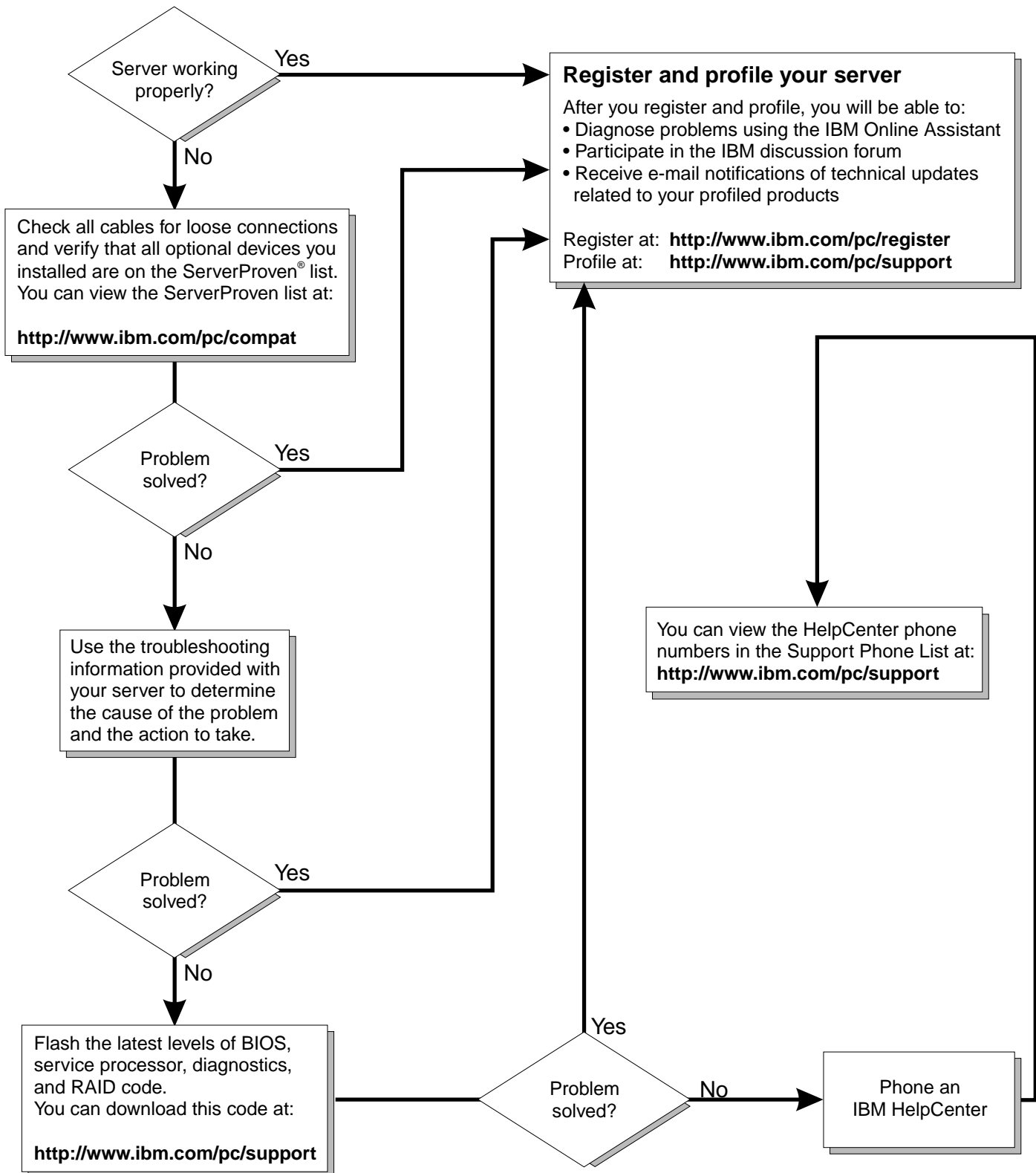## Welcome. . .

Thank you for buying an IBM xSeries server.

This server *Installation Guide* contains information for setting up and configuring your server.

For detailed information about your server, view the *User's Reference* on the Documentation CD.

You can also find the most current information about your server on the IBM Web site at: http://www.ibm.com/pc/support

```
┌─────────────────────┐
│   Install adapters  │
└──────────┬──────────┘
           │
┌──────────┴──────────┐
│ Install the server in│
│ the rack, if required│
└──────────┬──────────┘
           │
┌──────────┴──────────┐
│    Cable the server │
│     and options     │
└──────────┬──────────┘
           │
┌──────────┴──────────┐
│    Start the server │
└──────────┬──────────┘
           │
      ╱────┴────╲          No
    ╱ Did the server ╲ ──────────┐
    ╲ start correctly? ╱          │
      ╲────┬────╱                 │
         Yes                      │
           │                      ▼
┌──────────┴──────────┐   ┌──────────────────┐
│    Set up and       │◄──│ Go to the Server │
│    configure the    │   │ Support flow chart│
│    hardware         │   └────────▲─────────┘
└──────────┬──────────┘            │
      ╱────┴────╲                  │
    ╱   Did        ╲   No          │
    ╲ configuration  ╱ ────────────┘
    ╲ successfully  ╱
      ╲ complete? ╱
         Yes
           │
┌──────────┴──────────┐
│ Install the operating│
│ system. Go to the Web│
│ for Instructions,    │
│ http://www.ibm.com/pc/support│
└──────────┬──────────┘
           │
     ╭─────┴─────╮
     │ System is ready │
     │ to use. Go to the│
     │ Server Support  │
     │ flow chart to   │
     │ register and    │
     │ profile your server.│
     ╰───────────╯
```

Server Support

Server working properly? — Yes → **Register and profile your server**

After you register and profile, you will be able to:
• Diagnose problems using the IBM Online Assistant
• Participate in the IBM discussion forum
• Receive e-mail notifications of technical updates
  related to your profiled products

Register at: **http://www.ibm.com/pc/register**
Profile at: **http://www.ibm.com/pc/support**

Server working properly? — No →

Check all cables for loose connections and verify that all optional devices you installed are on the ServerProven® list. You can view the ServerProven list at:

http://www.ibm.com/pc/compat

Problem solved? — Yes →

Problem solved? — No ↓

Use the troubleshooting information provided with your server to determine the cause of the problem and the action to take.

Problem solved? — Yes →

Problem solved? — No ↓

Flash the latest levels of BIOS, service processor, diagnostics, and RAID code.
You can download this code at:

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

Problem solved? — Yes ↑

Problem solved? — No → Phone an IBM HelpCenter

You can view the HelpCenter phone numbers in the Support Phone List at:
http://www.ibm.com/pc/support

xSeries 380

IBM

Installation Guide

Note: Before using this information and the product it supports, be sure to read the general information in Appendix A, "Product warranties and notices," on page 23.

Contents

Safety

Before installing this product, read the Safety Information.

مج، يجب قراءة   دات السلامة

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.

v

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

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.**

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 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.
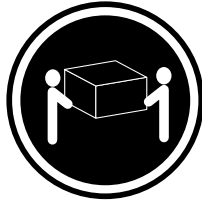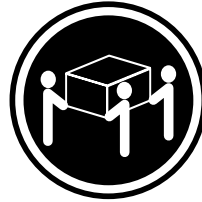
Class 1 Laser Product
Laser Klasse 1
Laser Klass 1
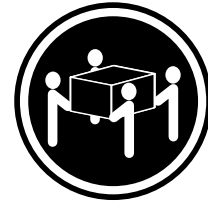Luokan 1 Laserlaite
Appareil À Laser de Classe 1

Statement 4

≥18 kg (37 lbs)   ≥32 kg (70.5 lbs)   ≥55 kg (121.2 lbs)

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.
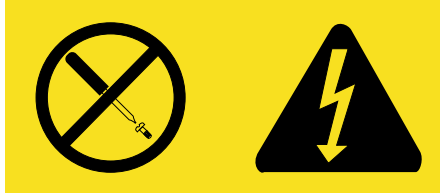
Statement 8

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 10

CAUTION:
Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.

Statement 13

CAUTION:

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 IBM device for electrical specifications.

Statement 14

CAUTION:
Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the following label is attached.

Statement 15

CAUTION:

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

Statement 16

CAUTION:

Some accessory or option board outputs exceed Class 2 or limited power source limits and must be installed with appropriate interconnecting cabling in accordance with the national electric code.

Chapter 1. Introduction

Thank you for purchasing an IBM®@server xSeries 380. This *Installation Guide* provides the information that is needed to:

- Set up and cable your server
- Start and configure your server

Packaged with the *Installation Guide* is an *IBM xSeries Documentation* CD, which provides detailed information about your server.

Your xSeries 380 server comes with a three-year limited warranty. If you have access to the World Wide Web, you can obtain up-to-date information about your xSeries 380 model and other IBM server products at http://www.ibm.com/eserver/xseries.

To install your server in a rack, refer to the *Rack Installation Instructions* for complete rack installation and removal instructions.

Record your product information in this table.
Product name _____   **Type** _____   **Model number** _____   **Serial number** _____

The server serial number in located on labels on the rear of the server and on the front of the server below the bezel.

Features and specifications

The following table provides a summary of the features and specifications for your xSeries 380.

Microprocessor:

- Intel® Itanium® microprocessor
- 2 or 4 MB* of level-3 cache 133 MHz front-side bus (FSB)
- Support for up to four microprocessors

Memory:

- Standard: 1 GB*(4-256 MB DIMMs)
- Maximum: 64 GB (64-1 GB DIMMs)
- Type: PC100, version 1.2 buffered, ECC, SDRAM
- Slots: 64 dual inline

Standard drives:

- Diskette: IDE 120 MB (LS120)
- CD-ROM: IDE
- Hard disk drives: Two 36 GB hot-swap low voltage differential SCSI (LVDS) drives

Redundant cooling:

Six hot-swap fan assemblies

PCI expansion slots:

- Eight hot-plug 66 MHz 64-bit
- Two non-hot-plug 33 MHz 64-bit (adapter installation is unsupported)

Hot-swap power supplies:

- Four 800-watt (110 -208 V ac)

Video:

- ATI RAGE controller
- Compatible with SVGA and VGA
- 8 MB video memory

Size:

- Height: 31.12 cm (12.25 inches, 7U)
- Depth: 44.45 cm (17.5 inches)
- Width: 71.12 cm (28.0 inches)
- Maximum weight: 68.1 kg (150 lb) depending on configuration

Environment:

Air temperature: 10° to 35°C (41° to 95°F)

Heat output

Approximate heat output in British thermal units (Btu) per hour: 6174 Btu

Installation requirements:

- Front clearance: 3 in.
- Rear clearance: 8 in.

Integrated functions:

- QLogic ISP12160 low voltage directive SCSI (LVDS) controller
- Integrated service processor
- Video port
- Mouse port
- Keyboard
- Parallel port
- Two serial ports
- Two Universal Serial Bus (USB) ports
- System controls and indicators
- Basic input/output system (BIOS), power-on self-test (POST), and Setup utility stored in a flash memory device.

*KB equals approximately 1000 bytes. MB equals approximately 1 000 000 bytes. GB equals approximately 1 000 000 000 bytes.

Notices and statements used in this book

The Caution statements and Danger statements also appear in the multilingual safety information book provided on the *IBM xSeries Documentation* CD. Each statement is numbered for easy reference to the corresponding statement in the safety book.

Descriptions of the notices and statements that appear in this book are as follows:

- **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 possible 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 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.

Before you begin

Before you begin to install options in your server, read the following information:

- Become familiar with the safety and handling guidelines provided in the Safety Information book, the requirements specified in "Safety" on page v, and the information in "Handling static-sensitive devices" on page 4. These guidelines will help you work safely while working with your server or options.
- Make sure you have an adequate number of properly grounded electrical outlets for your server, monitor, and any other options that you intend to install.
- You do not need to turn off the server to install or replace hot-swap power supplies, hot-swap drives, hot-swap fans, or hot-plug PCI adapters.
- Back up all important data before you make changes to disk drives.

For a list of supported options for the xSeries 380, refer to http://www.ibm.com/pc/us/compat on the World Wide Web.

Handling static-sensitive devices

Attention: Static electricity can damage electronic devices and your system. To avoid damage, keep static-sensitive devices in their static protective package until you are ready to install them.

To reduce the possibility of electrostatic discharge, observe the following precautions:

- Limit your movement. Movement can cause static electricity to build up around you.

- Handle the device carefully, holding it by its edges or its frame.

- Do not touch solder joints, pins, or exposed printed circuitry.

- Do not leave the device where others can handle and possibly damage the device.

- While the device is still in its static-protective package, touch it to an unpainted metal part of the system unit for at least two seconds. (This drains static electricity from the package and from your body.)

- Remove the device from its package and install it directly into your system unit without setting it down. If it is necessary to set the device down, place it in its static-protective package. Do not place the device on your system unit cover or on a metal table.

- Take additional care when handling devices during cold weather because heating reduces indoor humidity and increases static electricity.

Chapter 2. Installing options

This chapter provides the basic information that is needed to install hardware options and components in your server. If you need more detailed installation information, see the *User's Reference* on the *IBM xSeries Documentation* CD.

Some options and components must be installed or replaced only by trained service personnel.

You can install or replace the following options and components:

- 172-mm fan
- 120-mm fan
- Hard disk drive
- PCI adapters in slots 3 through 10
- Power supply

Trained service personnel only can install or replace the following components:

- Microprocessor
- Memory
- Legacy I/O board

Statement 14

CAUTION:
Hazardous voltage, current, and energy levels might be present. Only a qualified service technician is authorized to remove the covers where the following label is attached.

Working with hot-swap hard disk drives

Your server supports two 1-inch (26 mm) slim, 3.5-inch hot-swap SCSI hard disk drives in the hard disk drive bays.

Each hot-swap hard disk drive has three indicator lights: the power-on light, activity light, and status light. The hard disk drive lights are illustrated and described in "Controls and indicators" on page 15. If the amber hard disk drive status light is lit continuously, that individual drive is faulty and requires replacement. You can replace a hot-swap drive without turning off the server.

Attention: When you handle static-sensitive devices, take precautions to avoid damage from static electricity. For details on handling these devices, see "Handling static-sensitive devices" on page 4.

Note: To maintain proper system cooling, do not operate the server for more than 10 minutes without either a drive or a filler panel installed in each bay.

Complete the following steps to install a drive in a hot-swap bay:

1. Review the information in "Before you begin" on page 3.

   Notes:

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

   b. You do not have to turn off the server to install hot-swap hard disk drives.
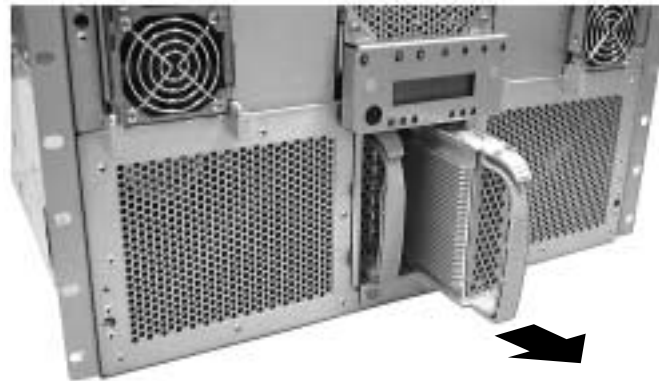
2. Align the drive assembly with the guide rails in the bay, and slide the drive into the bay.

3. Check the hard disk drive indicator lights to verify that the drive is functioning properly. See "Controls and indicators" on page 15 for more information.

   Attention: Do not press on the perforated metal bracket of the tray when you push the assembly into the bay.

Working with hot-plug PCI adapters

This section provides the instructions needed to replace a hot-plug PCI adapter.

Notes:

1. Installation of adapters is unsupported in slots 1 and 2.

2. Hot-plug adapters are installed in slots 3 through 10 only, counting from right to left while facing the back of the server.

3. Hot-plug operation requires operating system support and installation of the required device drivers. You can determine if an adapter that is validated by IBM supports hot-plug operation at: http://www.ibm.com/pc/us/compat/hotplug/index.shtml. Also, refer to the documentation provided with the adapter for information and support.

Complete the following steps to replace a hot-plug PCI adapter:

1. Review the information in "Before you begin" on page 3.

   Note:

   Statement 15

   CAUTION:

   Make sure that the rack is secured properly to avoid tipping when the server unit is extended.
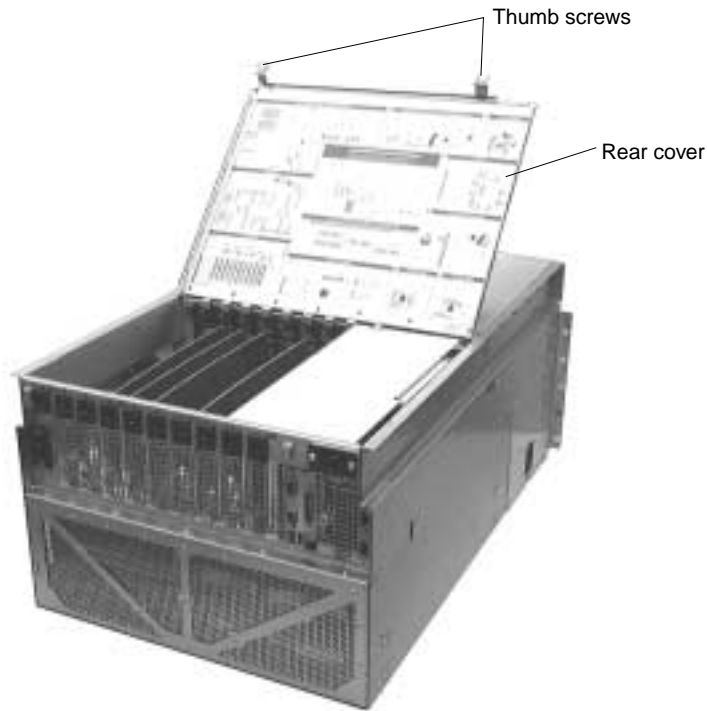
   **Statement 16**

   CAUTION:

   Some accessory or option board outputs exceed Class 2 or limited power source limits and must be installed with appropriate interconnecting cabling in accordance with the national electric code.

2. Slide the server out of the rack.

3. Loosen the thumbscrews on the rear cover and open the cover.

4. Press on the retention mechanism locking tab, and rotate the mechanism out toward the rear of the server.
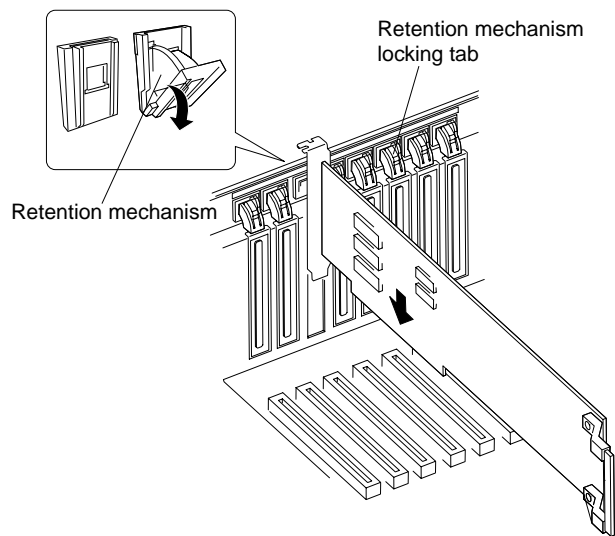
5. Remove the adapter from the expansion slot.

6. Insert the new PCI adapter into the expansion slot, and press it firmly into place.

7. Push the retention mechanism in from the rear of the server until it locks into place.

   Note: Refer to the upper-left corner of the illustration above.

8. Rotate the retention mechanism locking tab on the rear of the expansion slot into place.

Retention mechanism
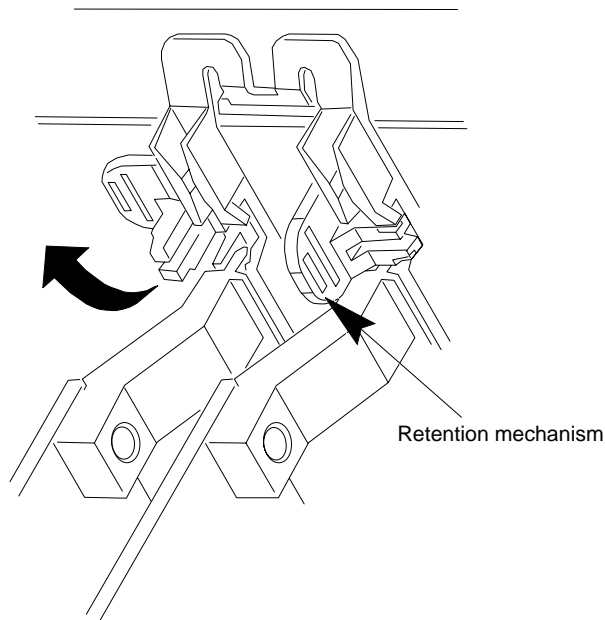
9. Check the status lights above the PCI adapter after it is installed.

   Note: If the green status light is lit, power is applied to the adapter and it is ready for use. If the amber status light is lit, the adapter might be defective or not installed properly.

10. Configure the adapter, according to the instructions that come with the adapter.

Working with hot-swap power supplies

Before you continue with the power-supply replacement procedure, review the following information.

Attention: To maintain proper system cooling, do not operate the server for more than 5 minutes without either a power supply or filler panel installed.

Notes:

1. The power-supply bays are, from left to right, 1, 3, 4, 2.
2. The illustrations in this document might differ slightly from your hardware.
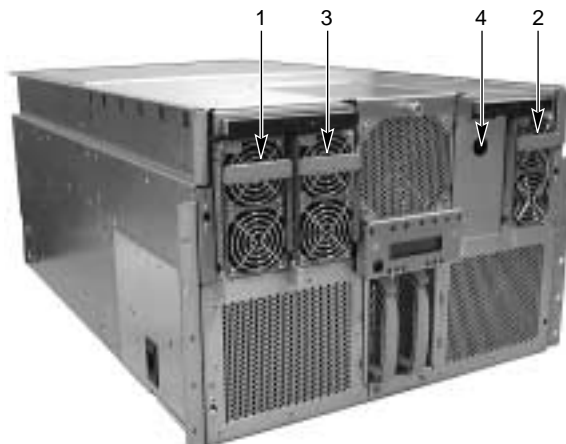
Statement 8

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.

The power-supply status indicators provide the following information:

Power on	Predictive failure	Failure	Power-supply status
Off	Off	Off	No power to any power supplies
Off	Off	On	Power-supply failure
Blinking	Off	Off	AC power present/standby output on
On	Off	Off	DC outputs on and working
On	Off	Blinking	Current limit
On	Blinking	Off	Predictive failure

The following illustration shows the installation of a hot-swap power-supply:

Handle locking tab

Power supply handle
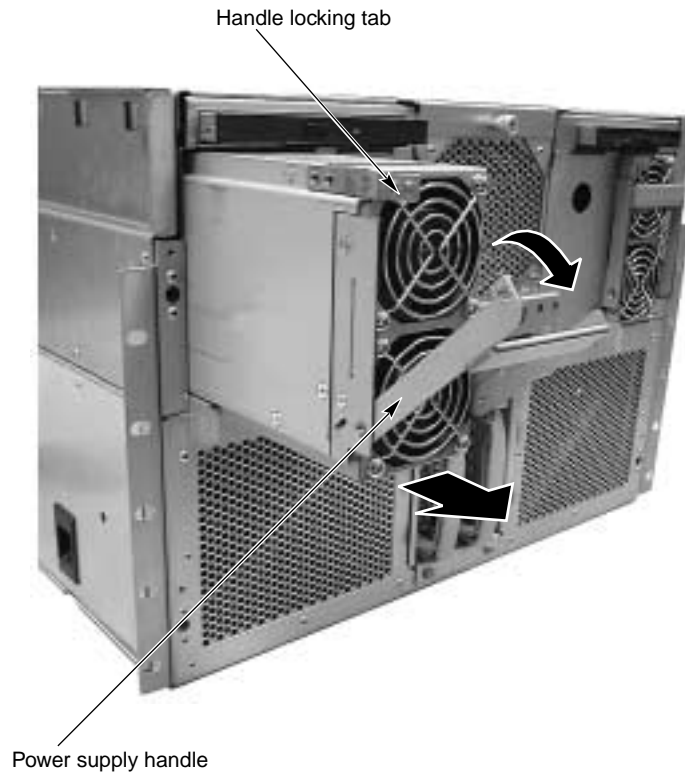
Complete the following steps to replace a hot-swap power supply:

1. Review the information in "Before you begin" on page 3.

2. Press the handle-locking tab to the left, and pull the power-supply handle down.

3. Slide the power-supply out of the server.

4. Remove the new power-supply from the protective packaging, and place it on a static-protective surface.

5. With the handle in the open position (pulled down), slide the power supply into the power-supply bay.

6. Push the handle up and into the locked position.

7. Check the power-supply status indicators to verify the power supply is functioning properly.

Working with cables

Refer to the following illustration for the location of the input and output connectors on your server.

Notes:

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

2. To install your server in a rack, refer to the *Rack Installation Instructions* for complete installation and removal instructions.

3. If you install your server in a rack, ensure that you route all cables through the cable-management assembly on the rack. Refer to the *Rack Installation Instructions* for complete instructions.

Keyboard port

Auxiliary-device (pointing device) port

Power cord connector

Parallel port

External SCSI connector

Serial ports A - top
B - bottom

ICMB ports # 2 - top
1 - bottom

USB ports

Video port

Power cord connector

Expansion slot

Hot-plug PCI status lights

Power cord connector

Ethernet port
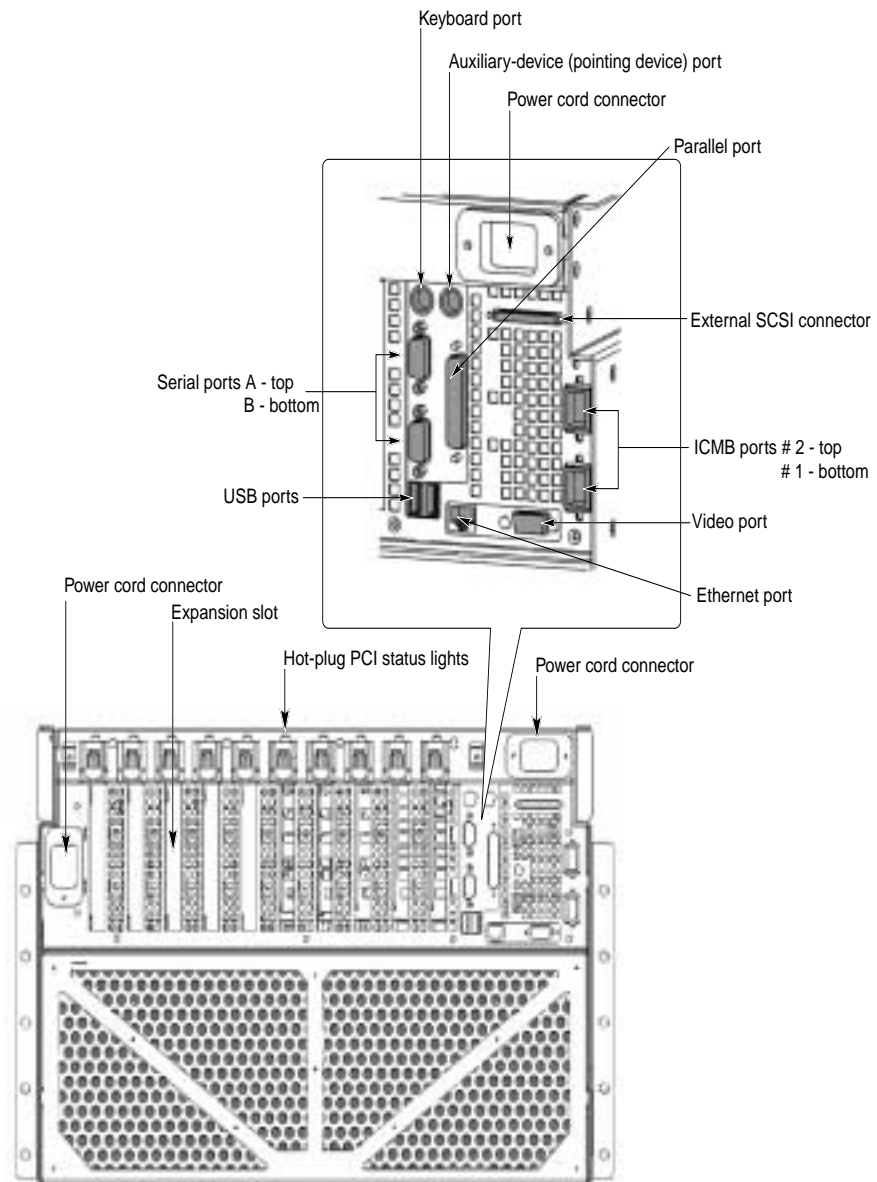
Chapter 3. Server power, controls, and indicators

This chapter describes how to turn on and turn off the server, and describes the guidelines for working with hot-plug, hot-add, and hot-swap devices while the server is turned on. This chapter also describes what the controls and indicators mean.

Turning on the server for the first time

Starting the server for the first time involves plugging the two power cables of your server into a power distribution unit (PDU) and configuring the system before installing and starting the operating system. Packaged with your server are two power cables to connect your server to a PDU. You can use one of the following PDU options:

- NetBAY Front-end Power Distribution Unit
- NetBAY Server Dual-cord Power Distribution Unit
- NetBAY Rack Power Distribution Unit

If you choose to plug your server into outlets, refer to "Power cords" on page 35 for information.

The first time you start the server, you will need to run the BIOS Setup utility, set the correct date and time, and then let the server run its power-on self-test (POST) and pass control to the boot manager. For more information, see the *User's Reference* on the *IBM xSeries Documentation* CD.

Complete the following steps to start your server for the first time:

1. Make sure that all external devices, such as the monitor, keyboard, and mouse are connected to the server.
2. Remove the drive protection card from the LS120 diskette drive.
3. Plug one end of the two power cables into the server.
4. Plug the opposite end of the two power cables into a PDU. Alternatively, use an optional power cord (see "Power cords" on page 35) to plug the server directly into the power source.
5. Turn on the monitor by pressing the monitor power-on button.
6. Press the power-control button on the front of the server.
7. Insert the installation CD for your operating system.

   Notes:

   a. Before you can use your computer, you must obtain and install an operating system. Refer to the information provided with your operating system for installation instructions.
   b. If you do not insert the installation CD in time, the system will not recognize the CD and you will need to restart the server.
8. When the startup process is complete, refer to the documentation that comes with your operating system for instructions on how to complete the installation.
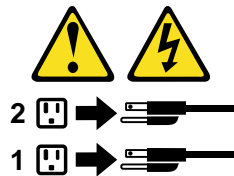
Turning off the server

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.

2

1

Complete the following steps to turn off the server:

Note: Turning off the server refers to the act of disconnecting the server from the power source.

1. Refer to your operating system documentation for the proper procedure to shut down the operating system.

    Note: Each operating system is different. Some will allow an immediate shutdown; others require an orderly shutdown procedure.

2. Press and hold the power-control button on the front of the server for several seconds. This will put the server into standby mode.

3. Disconnect the server from the power source.

    Note: After you turn off the server, wait at least 5 seconds before you turn on the server again.

Working inside the server with the power on

Your server supports hot-plug, devices and is designed to operate safely while turned on with the cover removed. Follow these guidelines when you work inside a server that is turned on:

- Avoid loose-fitting clothing on your forearms. Button long-sleeved shirts before working inside the server; do not wear cufflinks while you are working inside the server.

- Do not allow your necktie or scarf to hang inside the server.

- Remove jewelry, such as bracelets, necklaces, rings, and loose-fitting wrist watches.

- Remove items from your shirt pocket (such as pens or pencils) that could fall into the server as you lean over it.
- Take care to avoid dropping any metallic objects, such as paper clips, hair pins, or screws, into the server.

Controls and indicators

The following section identifies the controls and indicators on the front of your server.

Note: The illustrations in this document might differ slightly from your hardware.
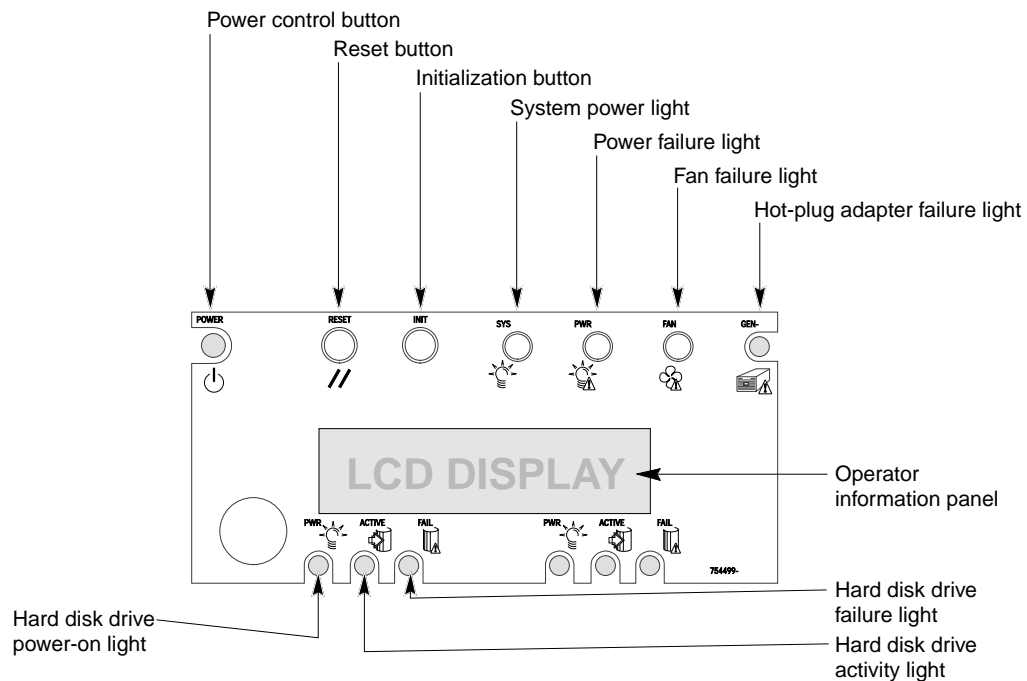
Power control button: Press this button to turn the server on or off.

Reset button: Press this button to reset the server and run the power-on self-test (POST).

Initialization button: Press this button to move register information into a file or output device, provided the operating system supports copying or moving of the register information.

System power light: When this light is on, power is present in the server. When this light is off, it indicates that power is turned off or the power source is disrupted.

Power failure light: When this light is flashing, it indicates that the power source failed. When this light is on, it indicates a catastrophic power failure.

**Fan failure light:** When this light is flashing, it indicates that a fan has failed.

Hot-plug adapter failure light: When this light is on, it indicates that a hot-plug adapter has failed.

Operator information panel: System monitor information appears on this display.

Hard disk drive failure light: When this light is on, a hard disk drive has failed. When flashing, this light indicates that a drive reset is in progress.

Hard disk drive activity light: When this light is on, the server is accessing the hard disk drive.

Hard disk drive power-on light: When this light is on, power to the hard disk drive is present.
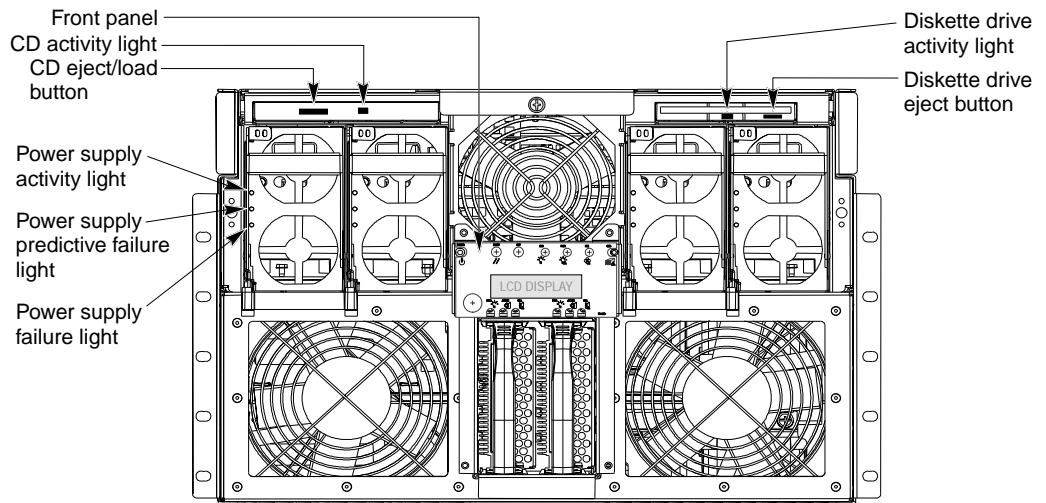
CD eject/load button: Press this button to eject or retract the CD tray so that you can insert or remove a CD.

CD activity light: When this light is on, the CD drive is being accessed.

Front panel: The front panel contains status lights.

Diskette drive activity light: When this light is on, the diskette drive is being accessed.

Diskette eject button: Press this button to eject a diskette from the drive.

Power supply failure light: When this light is on, the power supply has failed. When this light is blinking, the power supply has reached its current limit of power output.

Power supply predictive failure light: When this light is blinking, the power supply is about to fail.

Power supply activity light: When this light is on, the power supply is functioning properly. When this light is blinking, the power supply is in standby mode.

Chapter 4. Configuring your server

Use these procedures to configure the basic hardware during the initial startup of your server.

1. Start your server and watch the monitor screen.

2. Insert the operating system CD into the CD-ROM drive.

   Notes:

   a. Before you can use your computer, you must obtain and install an operating system. Refer to the information provided with your operating system for installation instructions.

   b. If you do not insert the CD in time, the system will not recognize the CD and you will need to restart the server.

3. Press F2 repeatedly to start the BIOS Setup Utility. If you are prompted for the system password, press Enter.

   Note: You must immediately and repeatedly press F2 after you first start the server. Doing so interrupts the startup process and enables you to access the BIOS Setup Utility.

4. Use the arrow keys to set the system date and time in the BIOS Setup Utility program.

5. Press Tab to access the Exit menu, and select to save changes and exit from the BIOS Setup Utility. You can monitor the remainder of the start process on the monitor or on the Operator information panel.

   Note: POST checks the drives, processors, memory, keyboard, and most optional devices. During the memory test, POST displays the amount of memory it is able to access and test. The length of time needed to test memory depends on the amount of memory installed.

   The BIOS Setup Utility displays the versions of the BIOS, Processor Abstraction Layer (PAL), System Abstraction Layer (SAL), and Extensible Firmware Interface (EFI).

   Attention: If the following message displays during POST, press Reset before continuing system startup:

   ```
   ERRORS FOUND IN MEMORY SUBSYSTEM, FAILING ROWS WILL BE MAPPED OUT ON THE NEXT
   RESET. IT IS STRONGLY SUGGESTED THAT YOU RESET THE SYSTEM NOW.

   ALLOWING THE SYSTEM TO CONTINUE TO BOOT MAY RESULT IN UNSTABLE SYSTEM BEHAVIOR
   AND/OR HARD DISK CORRUPTION

   Hit F1 to load defaults or F2 to run setup or ESC to continue
   ```

6. Press Alt+Q to use the QLogic SCSI utility. The QLogic SCSI utility enables you to manage and configure the SCSI devices. POST completes and passes control to the Boot Manager. The Boot Manager checks for an operating system installation CD.

7. Install the operating system. Refer to the information provided with the operating system for installation instructions.

17

Chapter 5. Solving problems

This section provides basic troubleshooting information to help you resolve some common problems that might occur while setting up your server.

If you cannot locate and correct the problem using the information in this section, see the "Solving problems" section in the *User's Reference* on the *xSeries Documentation* CD and the "Server Support" flowchart in the front of this booklet.

Troubleshooting chart

Note: If you cannot find the problem in the troubleshooting charts, run the diagnostic programs. If you have run the diagnostic programs, or if running the tests does not reveal the problem, call for service.

Device	Suggested action
CD-ROM drive CD-ROM drive is not recognized.	Verify that: 1. The primary IDE channel is enabled in the BIOS Setup Utility program. 2. The correct device driver is installed for the CD-ROM drive. If the problem remains, call for service.
Diskette drive Diskette drive in-use light stays on, or the system bypasses the diskette drive.	If there is a diskette in the drive, verify that: 1. The diskette drive is enabled in the BIOS Setup Utility program. 2. The diskette is good and not damaged. (Try another diskette if you have one.) 3. Your software program is OK. If the diskette drive in-use light stays on, or the system continues to bypass the diskette drive, call for service.
Expansion enclosure problems The SCSI expansion enclosure used to work, but does not work now.	Verify that: 1. The cables for all external SCSI options are connected correctly. 2. The last option in each SCSI chain, or the end of the SCSI cable, is terminated correctly. 3. Any external SCSI option is turned on. You must turn on an external SCSI option before turning on the server. For more information, see your expansion enclosure documentation.
General problems Problems such as broken cover locks or indicator lights not working.	Call for service.
Intermittent problems A problem occurs only occasionally and is difficult to detect.	Verify that: 1. All cables and cords are connected securely to the rear of the server and attached options. 2. When the server is turned on, verify that the power supply and fan indicator lights are off. 3. Ensure that the SCSI bus and devices are configured correctly and that the last external device in each SCSI chain is terminated correctly. If the items above are correct and the problem remains, call for service.

Device	Suggested action
Keyboard, mouse, or pointing-device problems. All or some keys on the keyboard do not work.	1. Make sure that the keyboard cable is properly connected to the server. 2. Make sure that the server and the monitor are turned on. 3. Try using another keyboard. If the items above are correct and the problem remains, call for service.
The mouse or pointing device does not work.	1. Verify that the mouse or pointing-device cable is securely connected and the device drivers are installed correctly. 2. Try using another mouse or pointing device. If the problem remains, call for service.
Monitor problems Testing the monitor.	Some IBM monitors have their own self-tests. If you suspect a problem with your monitor, refer to the information that comes with the monitor for adjusting and testing instructions. If you still cannot find the problem, call for service.
The screen is blank.	Verify that: 1. The server power cord is plugged into the server and a working electrical outlet. 2. The monitor cables are connected properly. 3. The monitor is turned on and the Brightness and Contrast controls are adjusted correctly. If the items above are correct and the screen remains blank, call for service.
Only the cursor appears.	Call for service.
The monitor works when you turn on the server, but goes blank when you start some application programs.	Verify that: 1. The primary monitor cable is connected to the server. 2. You installed the necessary device drivers for the applications. If the items above are correct and the screen remains blank, call for service.
Wavy, unreadable, rolling, distorted screen, or screen jitter.	If the monitor self-tests show the monitor is working properly, consider the location of the monitor. Magnetic fields around other devices (such as transformers, appliances, fluorescent lights, and other monitors) can cause screen jitter or wavy, unreadable, rolling, or distorted screen images. If this happens, turn off the monitor. (Moving a color monitor while it is turned on might cause screen discoloration.) Then move the device and the monitor at least 305 mm (12 in.) apart. Turn on the monitor. **Notes:** 1. To prevent diskette drive read/write errors, be sure the distance between monitors and diskette drives is at least 76 mm (3 in.). 2. Non-IBM monitor cables might cause unpredictable problems. 3. An enhanced monitor cable with additional shielding is available for the 9521 and 9527 monitors. For information about the enhanced monitor cable, see your IBM reseller or IBM marketing representative. If the problem remains, call for service.
Wrong characters appear on the screen.	If the wrong language is displayed, update the BIOS with the correct language. If the problem remains, call for service.

Device	Suggested action
Option problems	Verify that:
An IBM option that was just installed does not work.	1. The option is designed for the server. Refer to the "Server Support" flowchart for information about obtaining ServerProven® compatibility information from the World Wide Web. 2. You followed the installation instructions that came with the option. 3. The option is installed correctly. 4. You have not loosened any other installed options or cables. 5. You updated the configuration information in the BIOS Setup Utility program. Whenever memory or an option is changed, you must update the configuration. If the problem remains, call for service.
An IBM option that used to work does not work now.	Verify that all of the option hardware and cable connections are secure. If the option comes with its own test instructions, use those instructions to test the option. If the failing option is a SCSI option, verify that: 1. The cables for all external SCSI options are connected correctly. 2. The last option in each SCSI chain, or the end of the SCSI cable, is terminated correctly. 3. Any external SCSI option is turned on. You must turn on an external SCSI option before turning on the server. If the problem remains, call for service.
Power problems	Verify that:
The server does not power on.	1. The power cables are properly connected to the server. 2. The electrical outlet functions properly. 3. The type of memory installed is correct. 4. If you just installed an option, remove it, and restart the server. If the server now powers on, you might have installed more options than the power supply supports. If the problem remains, call for service.
Serial port problems	Verify that:
The number of serial ports identified by the operating system is less than the number of serial ports installed.	1. Each port is assigned a unique address by the BIOS Setup Utility program and none of the serial ports are disabled. 2. The serial-port adapter, if you installed one, is seated properly. If the problem remains, call for service.
A serial device does not work.	Verify that: 1. The device is compatible with the server. 2. The serial port is enabled and is assigned a unique address. If the problem remains, call for service.

Device	Suggested action
Software problem	To determine if problems are caused by the software, verify that:
Suspected software problem.	1. Your server has the minimum memory requirements needed to use the software. For memory requirements, refer to the information that comes with the software. **Note:** If you have just installed an adapter or memory, you might have a memory address conflict. 2. The software is designed to operate on your server. 3. Other software works on your server. 4. The software that you are using works on another system. If you received any error messages when using the software program, refer to the information that comes with the software for a description of the messages and solutions to the problem. If the items above are correct and the problem remains, contact your place of purchase.
Universal Serial Bus (USB) port problems A USB device does not work.	Verify that: 1. You are not trying to use a USB device during POST if you have a standard (non-USB) keyboard attached to the keyboard port. **Note:** If a standard (non-USB) keyboard is attached to the keyboard port, then the USB is disabled and no USB device will work during POST. 2. The correct USB device driver is installed. 3. Your operating system supports USB devices. If the problem remains, call for service.

Appendix A. Product warranties and notices

This chapter contains warranty and emission notices. It also contains trademarks and general-information notices.

Warranty Information

This section contains the warranty period for your product and the IBM Statement of Limited Warranty.

Warranty Period

Contact your place of purchase for warranty service information. Some IBM Machines are eligible for on-site warranty service depending on the country where service is performed.

Machine - IBM @server xSeries 380

Warranty Period - Three Years

IBM Statement of Limited Warranty

Z125-4753-06 8/2000

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 replace or modify those of Part 1. The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Limited Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.

The IBM Warranty for Machines

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications ("Specifications"). The warranty period for a Machine is a specified, fixed period commencing on its Date of Installation. The date on your sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

Warranty Service

To obtain warranty service for a Machine, contact IBM or your reseller. If you do not register your Machine with IBM, you may be required to present proof of purchase.

During the warranty period, IBM or your reseller, if approved by IBM to provide warranty service, provides without charge certain types of repair and exchange service to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. At its discretion, IBM or your reseller will 1) either repair or exchange the failing Machine and 2) provide the service either at your location or a service center. IBM or your reseller will also manage and install selected engineering changes that apply to the Machine.

Some parts of IBM Machines are designated as Customer Replaceable Units (called "CRUs"), e.g., keyboards, memory, or hard disk drives. IBM ships CRUs to you for replacement by you. You must return all defective CRUs to IBM within 30 days of your receipt of the replacement CRU. You are responsible for downloading designated Machine Code and Licensed Internal Code updates from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided:
   a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides;
   b. secure all programs, data, and funds contained in a Machine;
   c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations; and
   d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except for any liability that cannot be waived or limited by applicable laws, IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and

2. the amount of any other actual direct damages, up to the charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code.

   This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES, LOST PROFITS OR LOST SAVINGS, EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Governing Law

Both you and IBM consent to the application of the laws of the country in which you acquired the Machine to govern, interpret, and enforce all of your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Agreement, without regard to conflict of law principles.

Part 2 - Country-unique Terms

AMERICAS

BRAZIL

Governing Law: *The following is added after the first sentence:*
Any litigation arising from this Agreement will be settled exclusively by the court of Rio de Janeiro.

NORTH AMERICA

 Warranty Service: *The following is added to this Section:*
To obtain warranty service from IBM in Canada or the United States, call 1-800-IBM-SERV (426-7378).

CANADA

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws in the Province of Ontario.

UNITED STATES

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State of New York.

ASIA PACIFIC

AUSTRALIA

The IBM Warranty for Machines: *The following paragraph is added to this Section:*
The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other similar legislation and are only limited to the extent permitted by the applicable legislation.

Limitation of Liability: *The following is added to this Section:*
Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State or Territory.

CAMBODIA, LAOS, AND VIETNAM

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State of New York.

The following is added to this Section:
Disputes and differences arising out of or in connection with this Agreement shall be finally settled by arbitration which shall be held in Singapore in accordance with the rules of the International Chamber of Commerce (ICC). The arbitrator or arbitrators designated in conformity with those rules shall have the power to rule on their own competence and on the validity of the Agreement to submit to arbitration. The arbitration award shall be final and binding for the parties without appeal and the arbitral award shall be in writing and set forth the findings of fact and the conclusions of law.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator.

The two arbitrators appointed by the parties shall appoint a third arbitrator before proceeding upon the reference. The third arbitrator shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the ICC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

The English language version of this Agreement prevails over any other language version.

HONG KONG AND MACAU

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of Hong Kong Special Administrative Region.

INDIA

Limitation of Liability: *The following replaces items 1 and 2 of this Section:*
1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence;
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Limited Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

JAPAN

Governing Law: *The following sentence is added to this Section:*
Any doubts concerning this Agreement will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

NEW ZEALAND

The IBM Warranty for Machines: *The following paragraph is added to this Section:*
The warranties specified in this Section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability: *The following is added to this Section:*

Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

PEOPLE'S REPUBLIC OF CHINA (PRC)

Governing Law: *The following replaces this Section:*
Both you and IBM consent to the application of the laws of the State of New York (except when local law requires otherwise) to govern, interpret, and enforce all your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Agreement, without regard to conflict of law principles.

Any disputes arising from or in connection with this Agreement will first be resolved by friendly negotiations, failing which either of us has the right to submit the dispute to the China International Economic and Trade Arbitration Commission in Beijing, the PRC, for arbitration in accordance with its arbitration rules in force at the time. The arbitration tribunal will consist of three arbitrators. The language to be used therein will be English and Chinese. An arbitral award will be final and binding on all the parties, and will be enforceable under the Convention on the Recognition and Enforcement of Foreign Arbitral Awards (1958).

The arbitration fee will be borne by the losing party unless otherwise determined by the arbitral award.

During the course of arbitration, this Agreement will continue to be performed except for the part which the parties are disputing and which is undergoing arbitration.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:
The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

Warranty Service:

If you purchase an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland or United Kingdom, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM. If you purchase an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchase an IBM Machine in a Middle Eastern or African country, you may obtain warranty service for that Machine from the IBM entity within the country of purchase, if that IBM entity provides warranty service in that country, or from an IBM reseller, approved by IBM to perform warranty service on that Machine in that country. Warranty service in Africa is available within 50 kilometers of an IBM authorized service provider. You are responsible for transportation costs for Machines located outside 50 kilometers of an IBM authorized service provider.

Governing Law:

The applicable laws that govern, interpret and enforce rights, duties, and obligations of each of us arising from, or relating in any manner to, the subject matter of this Statement, without regard to conflict of laws principles, as well as Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided, except that in 1) Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Hungary, Former Yugoslav Republic of Macedonia, Romania, Slovakia, Slovenia, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan, the laws of Austria apply; 2) Estonia, Latvia, and Lithuania, the laws of Finland apply; 3) Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Djibouti, Democratic Republic of Congo, Equatorial Guinea, France, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Mali, Mauritania, Morocco, Niger, Senegal, Togo, and Tunisia, this Agreement will be construed and the legal relations between the parties will be determined in accordance with the French laws and all disputes arising out of this Agreement or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 4)

Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe, this Agreement will be governed by English Law and disputes relating to it will be submitted to the exclusive jurisdiction of the English courts; and 5) in Greece, Israel, Italy, Portugal, and Spain any legal claim arising out of this Statement will be brought before, and finally settled by, the competent court of Athens, Tel Aviv, Milan, Lisbon, and Madrid, respectively.

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA AND GERMANY

The IBM Warranty for Machines: *The following replaces the first sentence of the first paragraph of this Section:*
The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this Section:

The minimum warranty period for Machines is six months. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

Extent of Warranty: *The second paragraph does not apply.*

Warranty Service: *The following is added to this Section:*
During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

Limitation of Liability: *The following paragraph is added to this Section:*
The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

The following sentence is added to the end of item 2:
IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

EGYPT

Limitation of Liability: *The following replaces item 2 in this Section:*
as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code.

Applicability of suppliers and resellers (unchanged).

FRANCE

Limitation of Liability: *The following replaces the second sentence of the first paragraph of this Section:*
In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: *(items 1 and 2 unchanged).*

IRELAND

Extent of Warranty: *The following is added to this Section:*
Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing

all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

Limitation of Liability: *The following replaces items one and two of the first paragraph of this Section:*
1. death or personal injury or physical damage to your real property solely caused by IBM's negligence; and
2. the amount of any other actual direct damages, up to 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of this Section:
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

ITALY

Limitation of Liability: *The following replaces the second sentence in the first paragraph:*
In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than:
1. *(unchanged)*
2. as to any other actual damage arising in all situations involving nonperformance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.
Applicability of suppliers and resellers (unchanged).

The following replaces the third paragraph of this Section:
Unless otherwise provided by mandatory law, IBM and your reseller are not liable for any of the following: *(items 1 and 2 unchanged)* 3) indirect damages, even if IBM or your reseller is informed of their possibility.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

Limitation of Liability: *The following is added to this Section:*
IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

UNITED KINGDOM

Limitation of Liability: *The following replaces items 1 and 2 of the first paragraph of this Section:*

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;
2. the amount of any other actual direct damages or loss, up to 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim;

The following item is added to this paragraph:
3. breach of IBM's obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982.

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

Notices

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

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this publication to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product, and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Edition notice

© COPYRIGHT INTERNATIONAL BUSINESS MACHINES CORPORATION, 2001. All rights reserved.

Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Processing date data

This IBM hardware product and IBM software products that might be packaged with it have been designed, when used in accordance with their associated documentation, to process date data correctly within and between the 20th and 21st centuries, provided all other products (for example, software, hardware, and firmware) used with these products properly exchange accurate date data with them.

IBM cannot take responsibility for the date data processing capabilities of non-IBM products, even if those products are preinstalled or otherwise distributed by IBM. You should contact the vendors responsible for those products directly to determine the capabilities of their products and update them if needed. This IBM hardware product cannot prevent errors that might occur if software, upgrades, or peripheral devices you use or exchange data with do not process date data correctly.

The foregoing is a Year 2000 Readiness Disclosure.

Trademarks

The following terms are trademarks of the IBM Corporation in the United States, other countries, or both:

EtherJet	xSeries
HelpCenter	Predictive Failure Analysis
HelpWare	ServerProven
IBM	TechConnect
the e-business logo	

Lotus and Domino are trademarks of Lotus Development Corporation in the United States, other countries, or both.

Tivoli and NetView are trademarks of Tivoli Systems Inc. in the United States, other countries, or both.

Intel, MMX, LANDesk, Itanium, Pentium, Pentium II Xeon, and Pentium III Xeon are trademarks of Intel Corporation in the United States, other countries, or both.

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Other company, product, and service names may be trademarks or service marks of others.

Important notes

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

When referring to hard disk drive capacity, 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.

Unless otherwise stated, IBM makes no representations or warranties with respect to non-IBM products. Support (if any) for the non-IBM products is provided by the third party, not IBM.

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

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 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.

Taiwan electrical emission 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。

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 14 AWG, Type SJT,three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 20 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 14 AWG, Type SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated15 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 cord part number	Used in these countries and regions
24P6887	Antigua, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Caicos Island, Canada, Cayman Islands, Costa Rica, Columbia, Dominican Republic, Guam, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Japan, Mexico, Netherlands Antilliles, Nicaragua, Panama, Peru, Phillipines, Saudi Arabia, Thailand, Taiwan, United States, Venezuela
12J5120	Antigua, Aruba, Bahamas, Barbados, Belize, Bermuda, Bolivia, Brazil, Caicos Island, Canada, Cayman Islands, Costa Rica, Columbia, Dominican Republic, Guam, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Japan, Mexico, Netherlands Antilliles, Nicaragua, Panama, Peru, Phillipines, Taiwan, United States, Venezuela
55H6643	Afghanistan, Albania, Algeria, Andorra, Angola, Armenia, Austria, Azerbaidjan, Belarus, Benin, Belgium, Bosnia, Burkina Faso, Burundi, Cameroon, Cambodia, Cape Verde, Central African Republic, Chad, Congo (Republic of), Comoros, Congo (Democratic Republic of), Cote D'Ivoire (Ivory Coast), Croatia, Czech Rep, Dahomey, Djibouti, Equatorial Guinea, Eqypt, Eritrea, Estonia, Ethiopia, Finland, France, French Guyana, French Polynesia, Gabon, Georgia, Germany, Greece, Guadeloupe, Guinea, Guinea Bissau, Hungary, Iceland, Indonesia, Iran, Kazakhstan, Korea (South), Kyrgyzstan, Laos, Latvia, Lebanaon, Lithuania, Luxemborg, Macedonia, Madagascar, Mali, Martinique, Mauritania, Mauritus, Mayotte, Moldavia, Monaco, Mongolia, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Nigeria, Norway, Poland, Portugal, Reunion, Romania, Russia, Rwanda, Sao Tome, Saudi Arabia, Senegal, Serbia, Slovakia, Solvenia, Somalia, Spain, Suriname, Sweden, Syria, Tajikistan, Togo, Tunisia, Turkey, Turkmenistan, Ukraine, Upper Volta, USSR (C.I.S.), Uzbekistan, Vanuatu, Vietnam, Wallia and Futuna, Yugoslavia, Zaire
36L8822	Denmark, Lichtenstein, Switzerland
12J5122	Israel

IBM power cord part number	Used in these countries and regions
12J5126	Chile, Italy, Libya
12J5124	Bangladesh, India, Lesotho, Maldives, Nambia, Nepal, Pakistan, Samoa, South Africa, Sri Lanka, Swaziland, Uganda
12J5987	Bahrain, Brunei, Botswana, Channel Islands, Cyprus, Dominica, Gambia, Ghana, Grenada, Guyana, Hong Kong, Iraq, Ireland, Jordan, Kenya, Kuwait, Liberia, Malawi, Malaysia, Malta, Myanmar (Burma), Nigeria, Oman, Qatar, Seychelles, Saint Kitts & Nevis, Saint Lucia, Saint Vincent and the Grenadines, Sierra Leone, Singapore, Sudan, Tanzania, Trinidad & Tobago, United Arab Emirate (Dubai), United Kingdom, Yemen, Zambia, Zimbabwe
12J5128	Australia, Fiji, New Zealand, Papua New Guinea
01K9851	China
36L8884	Argentina, Paraguay, Uruguay

Index

A

B

C

D

E

F

H

I

K

L

M

N

O

P

Q

R

S

T

U

V

W

IBM