



## xSeries 130

# Installation Guide

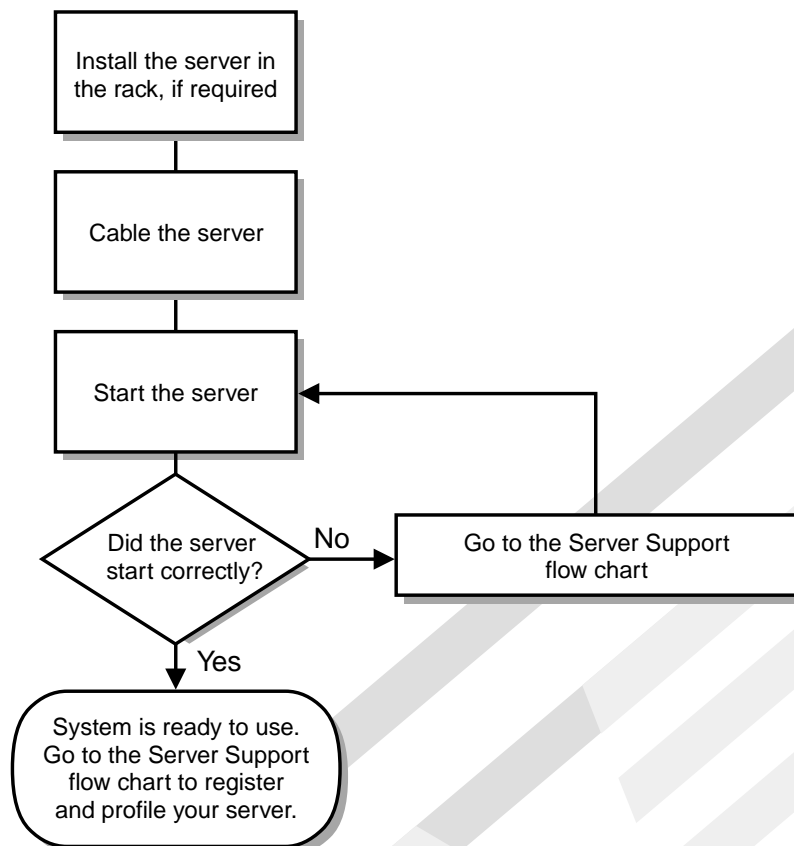
### Welcome...

Thank you for buying an IBM xSeries appliance server.

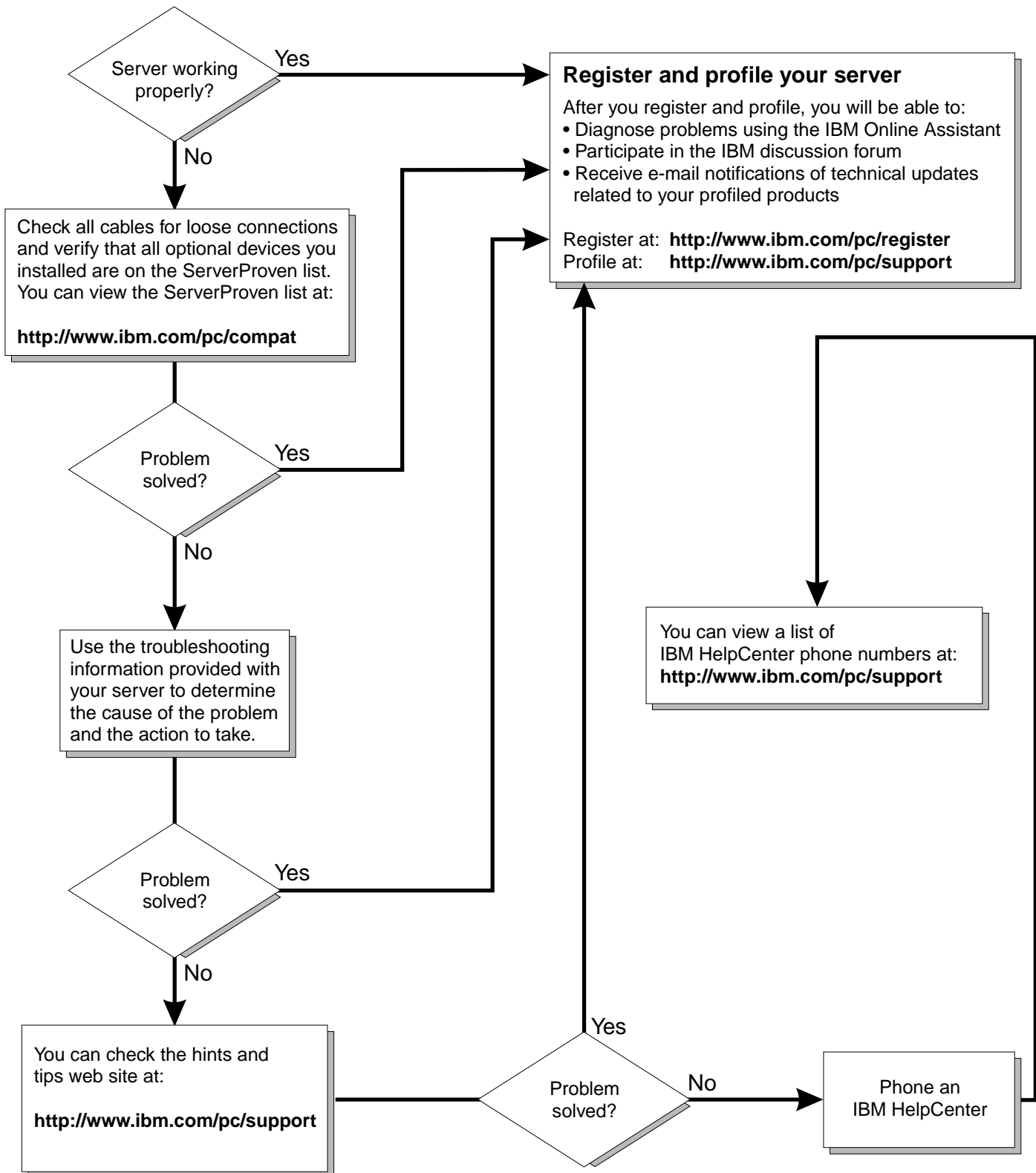
This server *Installation Guide* contains information for setting up and configuring your appliance server.

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

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



# Server Support



IBM xSeries 130



# 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 35.**

**First Edition (November 2000)**

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## Safety

Before installing this product, read the Safety Information book.

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Antes de instalar este produto, leia o Manual de Informações sobre Segurança.

安装本产品前请先阅读《安全信息》手册。

Prije instalacije ovog proizvoda pročitajte priručnik sa sigurnosnim uputama.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs hæftet med sikkerhedsforskrifter, før du installerer dette produkt.

Lue Safety Information -kirjanen, ennen kuin asennat tämän tuotteen.

Avant de procéder à l'installation de ce produit, lisez le manuel Safety Information.

Vor Beginn der Installation die Broschüre mit Sicherheitshinweisen lesen.

Πριν εγκαταστήσετε αυτό το προϊόν, διαβάστε το εγχειρίδιο Safety Information.

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

Przed zainstalowaniem tego produktu należy przeczytać broszurę Informacje Dotyczące Bezpieczeństwa.

Prima di installare questo prodotto, leggere l'opuscolo contenente le informazioni sulla sicurezza.

本製品を導入する前に、安全情報資料を御読みてください。

이 제품을 설치하기 전에, 안전 정보 책자를 읽어보십시오.

Пред да го инсталирате овој производ прочитајте ја книгата со безбедносни информации.

Lees voordat u dit product installeert eerst het boekje met veiligheidsvoorschriften.

Les heftet om sikkerhetsinformasjon (Safety Information) før du installerer dette produktet.

Prije instalacije ovog proizvoda pročitajte priručnik sa sigurnosnim uputama.

Antes de instalar este produto, leia o folheto Informações sobre Segurança.

Перед установкой продукта прочтите брошюру по технике безопасности (Safety Information).

Pred inštaláciou tohto produktu si preítajte Informa nú brožúrku o bezpečnosti.

Preden namestite ta izdelek, preberite knjižico Varnostne informacije.

Antes de instalar este producto, lea la Información de Seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

在安裝本產品之前，也請先閱讀「安全性資訊」小冊子。

Installálás el tt olvassa el a Biztonsági el írások kézikönyvét !



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:

1. Turn everything OFF.
2. First, attach all cables to devices.
3. Attach signal cables to connectors.
4. Attach power cords to outlet.
5. Turn device ON.

To disconnect:

1. Turn everything OFF.
2. First, remove power cords from outlet.
3. Remove signal cables from connectors.
4. Remove all cables from devices.

**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:

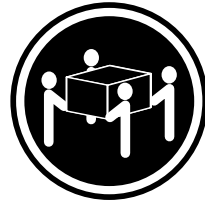
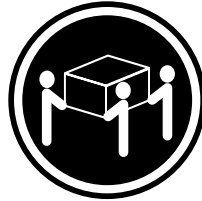
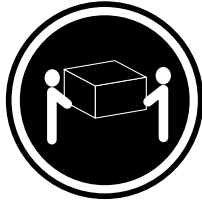
- **Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.**
- **Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous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





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## Chapter 1. Introducing the IBM xSeries 130

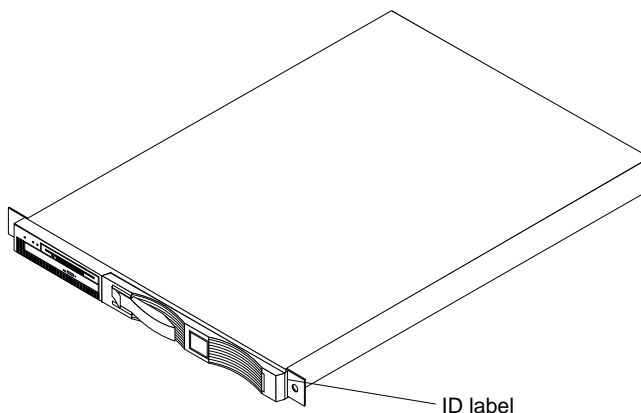
Your IBM® eServer xSeries 130 appliance server is a one-U-high<sup>1</sup> rack model server Web hosting appliance. This high-performance, symmetric multiprocessing (SMP) server is ideally suited for networking environments that require superior microprocessor performance, efficient memory management, flexibility, and reliable data storage.

Packaged with the IBM xSeries 130 appliance server is a *Quick Setup Guide* and CDs. There is an *IBM xSeries Documentation CD* that provides detailed information about your server, as well as the *xSeries 130 User's Reference*, and the *xSeries 130 Installation Guide*. The *Supplementary CD* contains the enablement diskette information, the *Recovery CD* is for reinstalling the preinstalled software, and the *Multiple Language User Interface CD*. Use the *Multiple Language User Interface CD* to install a language other than English on your system.

If you have access to the World Wide Web, you can obtain up-to-date information about your IBM xSeries 130 model and other IBM server products on the World Wide Web at <http://www.ibm.com/eserver/xseries>.

For service, assistance, or additional information on IBM Server Start Up Support on the World Wide Web, see "Getting help, service, and support" in the *xSeries 130 User's Reference*.

Your server serial number and model number are located on the ID label located on the right edge of the bezel on the server as shown in the following illustration. You need these numbers when you register your server with IBM.



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1. Racks are marked in vertical increments of 1.75 inches each. Each increment is referred to as a unit, or a "U". A one-U-high device is 1.75 inches tall.

## Features and specifications

The following table provides a summary of the features and specifications for your xSeries 130 server.

<p><b>Microprocessor:</b></p> <ul style="list-style-type: none"> <li>Intel® Pentium® III microprocessor with MMX™ technology and SIMD extensions</li> <li>256 KB level-2 cache</li> <li>Supports up to two microprocessors</li> </ul> <p><b>Memory:</b></p> <ul style="list-style-type: none"> <li>Standard: 256 MB (min)</li> <li>Maximum: 1 GB</li> <li>Type: 133 MHz, ECC, SDRAM, registered DIMMs</li> <li>Slots: 4 dual in-line</li> </ul> <p><b>Drives standard:</b></p> <ul style="list-style-type: none"> <li>Diskette: 1.44 MB</li> <li>CD-ROM: 24X IDE</li> <li>LVD hard disk drive</li> </ul> <p><b>Expansion bays:</b></p> <ul style="list-style-type: none"> <li>Two 3.5-inch slim-high bays for LVD SCSI hard disk drives</li> </ul> <p><b>PCI expansion slots:</b></p> <ul style="list-style-type: none"> <li>Two 33 MHz, 64-bit</li> </ul> <p><b>Power supply:</b></p> <p>One 200 watt (115-230 V ac)</p> <p><b>Video:</b></p> <ul style="list-style-type: none"> <li>S3 video controller (integrated on system board)</li> <li>Compatible with SVGA</li> <li>8 MB SDRAM video memory</li> </ul>	<p><b>Size</b></p> <ul style="list-style-type: none"> <li>Height 43.69 mm (1.72)</li> <li>Depth: 653.29 mm (25.72)</li> <li>Width: 439.93 mm (17.32)</li> <li>Weight: approximately 12.7 kg (28 lb) when fully configured</li> </ul> <p><b>Integrated functions:</b></p> <ul style="list-style-type: none"> <li>One Ultra160 SCSI controller</li> <li>Two 10BASE-T/100BASE-TX Intel Ethernet controllers</li> <li>Two Universal Serial Bus (USB) ports</li> <li>Two RS-485 Advanced System Management processor ports (one in, one out)</li> <li>One serial port</li> <li>Two console ports (one in, one out)</li> </ul> <p><b>Acoustical noise emissions:</b></p> <ul style="list-style-type: none"> <li>Sound power, idling: 6.1 bel maximum</li> <li>Sound power, operating: 6.2 bel maximum</li> </ul>	<p><b>Environment:</b></p> <ul style="list-style-type: none"> <li>Air temperature: <ul style="list-style-type: none"> <li>Server on: 10° to 35° C (50.0° to 95.0° F). Altitude: 0 to 914 m (2998.7 ft)</li> <li>Server on: 10° to 32° C (50.0° to 89.6° F). Altitude: 914 m (2998.7 ft) to 2133 m (6998.0 ft)</li> <li>Server off: 10° to 43° C (50.0° to 109.4° F). Maximum altitude: 2133 m (6998.0 ft)</li> </ul> </li> <li>Humidity: <ul style="list-style-type: none"> <li>Server on: 8% to 80%</li> <li>Server off: 8% to 80%</li> </ul> </li> </ul> <p><b>Heat output:</b></p> <p>Approximate heat output in British thermal units (Btu) per hour</p> <ul style="list-style-type: none"> <li>Minimum configuration: 273 Btu (80 watts)</li> <li>Maximum configuration: 751 Btu (220 watts)</li> </ul> <p><b>Electrical input:</b></p> <ul style="list-style-type: none"> <li>Sine-wave input (50-60 Hz) required</li> <li>Input voltage low range: <ul style="list-style-type: none"> <li>Minimum: 100 V ac</li> <li>Maximum: 127 V ac</li> </ul> </li> <li>Input voltage high range: <ul style="list-style-type: none"> <li>Minimum: 200 V ac</li> <li>Maximum: 240 V ac</li> </ul> </li> <li>Input kilovolt-amperes (kVA) approximately: <ul style="list-style-type: none"> <li>Minimum: 0.08 kVA</li> <li>Maximum: 0.22 kVA</li> </ul> </li> </ul>
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Table 1. Features and Specifications.

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## Notices used in this book

This information product contains notices that relate to a specific topic. The Caution and Danger notices also appear in the multilingual safety information that is provided on the xSeries 130 Documentation CD that comes with your product. Each safety notice is numbered for easy reference to the corresponding notices in the safety information on the *IBM xSeries Documentation CD*.

The following is a list of the notices and their definitions as used in this book:

- **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 notices indicate situations that can be potentially hazardous to you. A caution notice is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These notices indicate situations that can be potentially lethal or extremely hazardous to you. A danger notice is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

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## What your xSeries 130 server appliance offers

The unique design of your server takes advantage of advancements in symmetric multiprocessing (SMP), data storage, and memory management. Your server combines:

- **Impressive performance using an innovative approach to SMP**

Your server supports up to two Pentium III microprocessors. Your server comes with one microprocessor installed. You can install an additional microprocessor to enhance performance and provide SMP capability.

- **Large system memory**

The memory bus in your server supports up to 1 GB (GB equals approximately 1 000 000 000 bytes) of system memory. The memory controller provides error correcting code (ECC) support for up to four industry standard PC133, 3.3 V, 168-pin, 8-byte, registered, synchronous-dynamic-random access memory (SDRAM) dual in-line memory modules (DIMMs).

- **System-management capabilities**

See the documentation provided with your systems-management software for more information.

- **Integrated network environment support**

Your server comes with two Ethernet controllers on the system board. Each Ethernet controller has an interface for connecting to 10-Mbps or 100-Mbps networks. The server automatically selects between 10BASE-T and 100BASE-TX. Each controller provides full-duplex (FDX) capability, which enables simultaneous transmission and reception of data on the Ethernet local area network (LAN).



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## Reliability, availability, and serviceability features

Three of the most important features in server design are reliability, availability, and serviceability (RAS). These factors help to ensure the integrity of the data that is stored on your server; that your server is available when you want to use it; and that should a failure occur, you can easily diagnose and repair the failure with minimal inconvenience.

The following is an abbreviated list of the RAS features that your server supports.

- Menu-driven setup, system configuration, and diagnostic programs
- Power-on self-test (POST)
- Predictive Failure Analysis® (PFA)
- Remote system problem-analysis support
- Power and temperature monitoring
- Error codes and messages
- System error logging
- Automatic restart after a power failure
- Parity checking on the PCI buses
- CRC checking on the SCSI buses
- Error checking and correcting (ECC) memory
- Redundant Ethernet capabilities
- Light Path Diagnostics™ panel on the system board
- Vital Product Data (VPD) on the system board, and SCSI backplane
- Customer support center 24 hours per day, 7 days a week<sup>2</sup>

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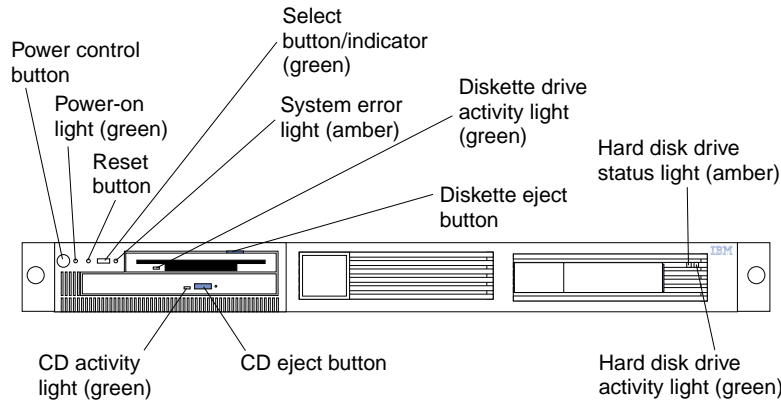
<sup>2</sup>.Service availability will vary by country. Response time will vary depending on the number and nature of incoming calls.

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## Server controls and indicators

This section identifies the controls and indicators on the front and the back of your server.

### Front view



**Power-control button:** Press this button to manually turn the server on or off.

**Power-on light:** This green LED light blinks when the server is off, and stays on when you turn on your server.

**Reset button:** Press this button to reset the server and run the power-on self-test (POST). You might need to use a pen or the end of a straightened paper clip to press the button.

**Select button/indicator:** The green LED on this button lights when the monitor, keyboard, and mouse are logically connected to this server.

**System-error light:** This amber LED lights when a system error occurs. An LED on the Light Path Diagnostic panel on the system board will also be on to further isolate the error.

**Diskette drive activity light:** When this LED is on, it indicates that the diskette drive is in use.

**Diskette-eject button:** Push this button to release a diskette from the drive.

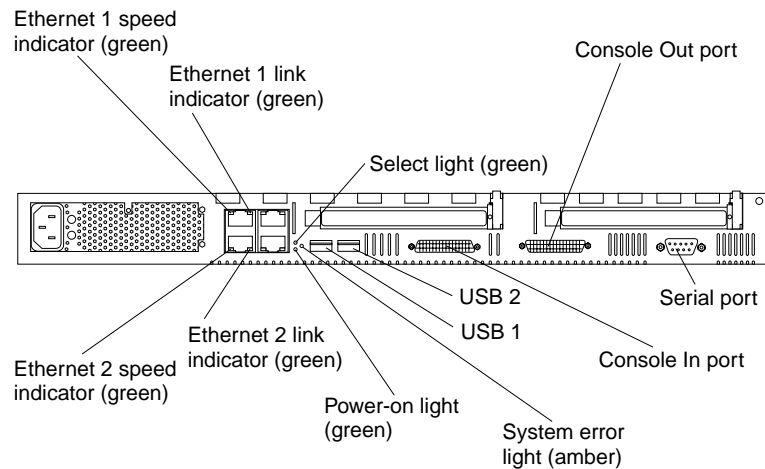
**Hard disk drive status light:** Each of the hot-swap drives has a hard disk drive status light. When this amber LED is on continuously, the drive has failed.

**Hard disk drive activity light:** Each of the hot-swap drives has a hard disk activity light. When this green LED is flashing, the controller is accessing the drive.

**CD-eject button:** Push this button to release a CD from the drive.

**CD-ROM activity light:** When this light is on, it indicates that the CD-ROM drive is in use.

## Rear view



**Ethernet 1 speed indicator:** This green LED lights when the speed of the Ethernet LAN that is connected to Ethernet port 1 is 100 Mbps.

**Ethernet 1 link indicator:** This green LED lights when there is an active link connection on the 10BASE-T or 100BASE-TX interface for Ethernet port 1.

**Select light:** This green LED lights when the monitor, keyboard, and mouse are logically connected to this server. This light duplicates the LED in the select button/indicator on the front of the server.

**Console out port:** This port is used to connect the server to a keyboard, monitor, and pointing device. It is also used to connect multiple servers together to share a single keyboard, monitor, and pointing device.

**Console in port:** This port is not supported for configuration of this appliance server.

**Serial port:** Signal cables for modems or other serial devices connect here to the 9-pin serial port connector.

**USB port 2:** This is the Universal Serial Bus 2.

**USB port 1:** This is the Universal Serial Bus 1.

**System-error light:** This amber LED lights when a system error occurs. An LED on the Light Path Diagnostic panel on the system board will also be on to further isolate the error. This light duplicates the system-error light on the front of the server.

**Power-on light:** This green LED lights and stays on when you turn on your server. This light duplicates the power-on light on the front of the server.

**Ethernet 2 link indicator:** This green LED lights when there is an active link connection on the 10BASE-T or 100BASE-TX interface for Ethernet port 2.

**Ethernet 2 speed indicator:** This green LED lights when the speed of the Ethernet LAN that is connected to Ethernet port 2 is 100 Mbps.



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## Chapter 2. Appliance configuration programs

Your xSeries 130 appliance server has a preinstalled operating system and application software. It is ready to add to a rack. Your xSeries 130 appliance server comes with programs that you can use to configure, manage, and maintain your appliance server. These programs include:

- **Universal Manageability Services**

Universal Manageability Services (UM Services) provides point-to-point remote management of client systems through a Web browser window. Use UM Services to:

- Learn detailed inventory information about your computers, including operating system, memory, network adapters, and hardware.
- Track your computers proactively with features such as power management, event log, and system monitor capabilities.

- **IBM Advanced Appliance Configuration Utility**

You can use the IBM Advanced Appliance Configuration Utility to set up and manage the network configuration on your appliance servers. The preinstalled Advanced Appliance Configuration Utility agent works with the Advanced Appliance Configuration Utility console to detect the presence of appliances on the network. When the appliance server is detected by the Advanced Appliance Configuration Utility console, use the Advanced Appliance Configuration Utility to set up and manage the network configuration for the appliance, including assigning the IP address, default gateway, subnet mask, and Domain Name System (DNS) for the appliance to use. You also can use the Advanced Appliance Configuration Utility to start UM Services on the appliance, enabling you to perform more advanced systems-management tasks. This utility enables you to automatically assign static IP addresses from a specified range to newly installed appliances. If you are using DHCP, you can reserve the range and let the IBM Advanced Appliance Configuration Utility assign them. You do not have to manually set the IP addresses for each machine.

- **Microsoft® Windows® Terminal Services Client**

Because your xSeries 130 appliance server does not have a mouse or keyboard attached to it, you must perform systems-management tasks on the appliance from a remote systems-management console. The Terminal Services Client, when installed on a workstation that is attached to the same network as the appliance server, enables remote administration of the appliance.

- **Netfinity® Web Server Accelerator**

The Netfinity® Web Server Accelerator (NWSA) is installed but disabled. Icons are provided for enabling or disabling NWSA.

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### Universal Manageability Services

Universal Manageability Services (UM Services) enhances the local or remote administration, monitoring, and maintenance of IBM systems that is found on each managed computer system. With UM Services, a client-system user or remote systems administrator can use a supported Web browser or the Microsoft Management Console (MMC) and UM Services Web console to support the inventory, monitor, and troubleshoot IBM systems.

You can use this "point-to-point" systems-management approach, in which a system administrator uses a Web browser to connect directly to a remote client system, to enhance support. This enables system administrators to maintain IBM systems without requiring the installation of additional systems-management software on the administrator consoles.

In addition to point-to-point systems-management support, UM Services also includes support for UM Services Upward Integration Modules (UIMs). UIMs enable systems-management professionals who use any supported systems-management platform (including Tivoli Enterprise™, CA Unicenter TNG Framework, and Microsoft Systems Management Server (SMS)) to integrate portions of UM Services into their systems-management console. Because it uses industry-standard information gathering technologies and messaging protocols, including Common Information Model (CIM), Desktop Management Interface (DMI), and simple network management protocol (SNMP), UM Services adds value to any of these supported workgroup or enterprise system-management platforms.

Complete documentation on how to use UM Services is found on the *IBM xSeries 130 Documentation CD*.

## System Requirements

The UM Services client is preinstalled on your xSeries appliance server. However, you must have a supported Web browser installed on your systems management console. Supported browsers include:

- Microsoft Internet Explorer 4.01 or later

**Notes:**

1. If you are using Internet Explorer 5.x, you must install the optional Java™ Virtual Machine (VM) support to access a client system running UM Services.
2. If you are using Internet Explorer and you reinstall Internet Explorer after installing UM Services, you must reapply the Microsoft VM update. The UM Services client requires Microsoft VM Build 3165 or later. Download the latest Microsoft VM from

<http://www.microsoft.com/java>

- Netscape Navigator or Netscape Communicator 4.5 or later

**Note:** If you install UM Services before you install MMC 1.1 or later, you will not have an icon for Microsoft Management Console in the IBM Universal Manageability Services section of your Start menu.

## Starting UM Services

Before you can use UM Services, you must configure the network settings (such as IP address, subnet mask, and so forth) on your appliance server. You can use IBM Advanced Appliance Configuration Utility or Microsoft Windows Terminal Services Client to configure the network setting remotely, or you can attach a keyboard and mouse to your appliance server and configure the network settings using the Windows Control Panel. After you configure the network settings for your appliance, you are ready to use UM Services.

To start UM Services:

1. Start your Web browser; in the **Address** or **Location** field of the browser, type

`http://ip_address:1411`

where *ip\_address* is the IP address of the appliance server, and then press Enter.

Or type

http://ibm-xxxxxxx:1411

where xxxxxxx is the IBM serial number of the appliance, and then press Enter. A user login window appears.

Type

Administrator

in the **Username** field, and type

password

password in the **Password** field. You can leave the **Domain** field blank. Make sure the **Save this password in your password list** check box is cleared, and then click **OK**.

**Note:** The first time you connect, you might be prompted to install XML and Swing components. Follow the on-screen instructions to install these components, and then close and restart Internet explorer before you proceed.

The system is connected to the appliance through UM Services. Complete documentation on how to use UM Services is included on the *IBM xSeries 130 Documentation CD*. In addition to the standard UM Services functionality, your xSeries 130 appliance server includes additional functionality, available from the **Appliance** tab in the UM Services console. The default view displays a Windows 2000 Terminal Services Web Connection page when you connect your appliance to the Terminal Services panel. To connect to the appliance to manage it as though you were running Terminal Services Client from your desktop:

- a. In the **IP address** field, type the IP address of the server (in the upper left corner of the UM Services pane), or type  
IBM- {xxxxxxx}  
(where xxxxxxx is the serial number that appears on the front of the appliance).
- b. Select a size, other than full screen, that the appliance desktop will appear in, and then click **Connect** to start Terminal Services Client session on the appliance. A user login window appears.
- c. Log in to the appliance. Type

Administrator

in the **Username** field, type

password

in the **Password** field, and then click **OK** to log in. After you log in, you can begin using Terminal Services Client to configure and manage your appliance.

**Note:** To ensure system security, use Windows Powered to change the administrator password from "password" to something else. After you do, or if you create another user in the Administrator group in the future, use your new user name/password combination instead of the default user name/password combination.

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## IBM Advanced Appliance Configuration Utility

You can use the IBM Advanced Appliance Configuration Utility to set up and manage the network configuration on your xSeries appliance server. The Advanced Appliance Configuration Utility agent, which is preinstalled on your IBM xSeries 130 appliance

server, works with the Advanced Appliance Configuration Utility console. This is a Java-based application that is installed on a network-attached system that you can use as a systems-management console to detect the presence of IBM xSeries appliances on the network. When other IBM xSeries appliances are detected by the Advanced Appliance Configuration Utility console, use the Advanced Appliance Configuration Utility to set up and manage the network configuration of the appliance, including assigning the IP address, default gateway, subnet mask, and DNS server to be used by the appliance. You also can use the Advanced Appliance Configuration Utility to start Universal Manageability Services (UM Services) on the appliance, enabling you to perform more advanced systems-management tasks.

If your network is not currently running Dynamic Host Configuration Protocol (DHCP) servers, the Advanced Appliance Configuration Utility is particularly useful for automatically configuring network settings for newly added appliance servers. In networks that currently have DHCP servers, using the Advanced Appliance Configuration Utility enables the system administrator to reserve and assign the appliance IP address in an orderly, automated fashion. If you decide to use DHCP and do not select to reserve an IP address for the appliance, the Advanced Appliance Configuration Utility can be used to discover appliances and to start UM Services Web-based systems management.

**Notes:**

1. The Advanced Appliance Configuration Utility configures and reports the TCP/IP settings of the first adapter on each appliance server only. The first adapter is the port 1 Ethernet controller. Be sure to connect the built-in Ethernet connector to the same physical network as your systems-management console.
2. The Advanced Appliance Configuration Utility must be running to configure newly installed appliance servers automatically.
3. The system that is running the Advanced Appliance Configuration Utility console automatically maintains a copy of its database (ServerConfiguration.dat) in the Advanced Appliance Configuration Station installation directory. To remove previous configuration data, close the Advanced Appliance Configuration Utility, delete this file, and then restart the utility. This deletes all previously configured families. However, the Advanced Appliance Configuration Utility will discover connected appliances and their network settings.

## The Advanced Appliance Configuration Utility Agent

After your appliance is connected to your network, the Advanced Appliance Configuration Utility agent automatically reports the MAC address for the appliance (of the first NIC only), serial number, type of appliance, and whether DHCP is in use by the appliance. Furthermore, it reports the host name, primary IP address, subnet mask, primary DNS address, and primary gateway address, if these are configured on the system.

The Advanced Appliance Configuration Utility agent is preinstalled on your IBM xSeries appliance.

**Note:** The Advanced Appliance Configuration Utility agent periodically broadcasts the appliance server IP settings. To prevent the service from broadcasting this data periodically, stop the Advanced Appliance Configuration Utility service.

## The Advanced Appliance Configuration Utility console

The Advanced Appliance Configuration Utility console is a Java application that you install on one system in your network that will be used as a systems-management console. For information on how to install the Advanced Appliance Configuration Utility Console, see “Using the Supplementary CD” on page 24.



**Note:** Do not install the Advanced Appliance Configuration Utility console on more than one systems-management console.

The Advanced Appliance Configuration Utility console enables you to:

- Automatically discover xSeries appliance servers that run the Advanced Appliance Configuration Utility agent and are attached to the same physical LAN segment as the Advanced Appliance Configuration Utility console.

When you start the Advanced Appliance Configuration Utility console, it automatically detects all appliance servers on your physical LAN segment that are running the Advanced Appliance Configuration Utility agent.

- Use a simple, GUI-based application to configure the network settings of servers. Use the Advanced Appliance Configuration Utility to assign IP addresses, DNS and gateway server addresses, subnet masks, host names, and more.

- Automatically group discovered appliances into function-specific families.

Appliances are added to a Family based on the appliance type. Appliances running different operating systems, but which perform the same function, appear in the same Family.

- Start UM Services Web-based systems-management console.

Start UM Services on your appliance servers and perform advanced systems-management tasks on a selected appliance server with a single mouse click.

The Advanced Appliance Configuration Utility Console is divided into two panes:

- The Tree View pane

The Tree View pane, on the left side of the Advanced Appliance Configuration Utility console window, presents a list of all discovered xSeries appliances and includes any families that are previously defined. The Tree View pane also includes groups for appliances that do not fit any of the defined families that were not configured using the Advanced Appliance Configuration Utility, or that have IP addresses that conflict with other devices on your network. When you click on any item in the Tree View, information about that item (and any items that are nested below that item in the tree view) appears in the Information Pane.

- The Information pane

The Information pane, on the right side of the Advanced Appliance Configuration Utility console, displays information about the item that is currently selected in the Tree View pane. The information that appears in the Information pane varies depending on the item that is selected. For example, if you select the **Appliance** tab from the Tree View pane, the Information pane displays configuration information (IP settings, host name, serial number, and so on) about all of the xSeries appliances that have been discovered by the Advanced Appliance Configuration Utility console. However, if you select a Family, the Information pane displays information about the Family settings for the selected Family.

The Advanced Appliance Configuration Utility console also has the following menus:

- File

Use the selections available from the File menu to import or export the Advanced Appliance Configuration Utility console configuration data, to rescan the network, or to exit from the program.

- Family

Use the selections available from the Family menu to add or delete families, or to move families up or down in the Tree View pane.

- Appliance

Use the selections available from the Appliance menu to remove a previously discovered appliance from a Family or group, and to add an appliance to the first matching Family in the tree view.

- Help

Use the Help menu to display product information.

## Discovering IBM xSeries appliances

Any IBM xSeries appliance server that is running and is connected to the same subnet as the system that is running the Advanced Appliance Configuration Utility console is automatically discovered when you start the Advanced Appliance Configuration Utility console. Discovered appliances appear in the Advanced Appliance Configuration Utility console Tree View pane (the left pane of the Advanced Appliance Configuration Utility console window). Each appliance appears in two locations in the tree view:

- In the tree view under **All Appliances**
- In one of the following portions of the tree view:

- In a Family

If the discovered appliance fits the requirements of a Family, it will automatically appear as part of a Family.

**Note:** If a discovered appliance fits the requirements of more than one Family, it is automatically added to the first appropriate Family that is listed in the tree view, starting from the top of the tree. For information on how to move appliances between families, see “Using families and groups in the tree view”.

- In the Orphaned Appliances group

If the discovered appliance does not fit a previously configured Family, it is placed in the Orphaned Appliances group.

- In the Orphaned Externally Configured Appliances group

Appliances that are running the Advanced Appliance Configuration Utility agent but have a network configuration that was not set by the Advanced Appliance Configuration Utility agent or console appear in the Orphaned Externally Configured Appliances group. If an appliance is contained in the Orphaned Externally Configured Appliances group, you can use the Adopt By First Matching Family function to add it to a previously defined Family. For more information, see “Using the Adopt by First Matching Family function” on page 17.

## Using families and groups in the tree view

Families are important elements of the Advanced Appliance Configuration Utility. They specify the parameters that the Advanced Appliance Configuration Utility uses to automatically categorize discovered appliances and to configure them with the appropriate network settings. Family rules are defined solely by appliance type or purpose. Each Family can contain only one type of appliance. The only way to automatically apply predetermined network settings to newly installed and discovered appliance servers is to create and use families.

Appliance servers that match the rules criteria for a Family group can be automatically configured to use predefined network settings. A Family can be configured to allow appliances to use DHCP to configure their IP settings, or can be defined to automatically assign IP settings (such as primary gateway and DNS server addresses, assigning an IP address from a specified IP address range, and specifying a

subnet mask). Host names for discovered appliances can also be defined so that they are allocated using either a prefix or serial number.

The IBM Advanced Appliance Configuration Utility is not the only way to configure network settings. For example, network settings can be configured using Windows Remote Terminal Services or by attaching a keyboard and mouse to the appliance and using the Windows Control Panel on the server. If the appliance network settings have been configured by a method other than using the Advanced Appliance Configuration Utility, the appliance will be discovered by the Advanced Appliance Configuration Utility and it will be added to an appropriate Family, if one exists. Appliances that have been configured using a method other than the Advanced Appliance Configuration Utility and for which no appropriate Family exists will appear in the Orphaned Externally Configured Appliances group.

The Tree View pane contains the following items:

- All Appliances

Every discovered appliance is listed in the tree view under **All Appliances**.

- Families

The Families group in the Tree View Panel shows all families that are defined, with appliance servers that are assigned to each Family nested beneath the Family name in the tree view. The appliance purpose is defined by a Family so that all appliances appearing in a Family are of the same type. If you select a Family from the Tree View Pane, a description of the Family and the rules that are used to describe the selected Family display in the Information Pane. If you select an appliance server from a Family in the Tree View Pane, the network settings display in the Information Pane.

The IBM Advanced Appliance Configuration Utility automatically assigns one IP address per appliance server, using available addresses assigned within the Family rules. When a Family IP address range is exhausted, the IBM Advanced Appliance Configuration Utility searches for other families with rules that match the appliance server being configured. If a matching Family with an available address is found, the server automatically assigns to the Family with an available IP address. This enables you to define multiple families, each of which uses a range of non-contiguous IP address ranges.

When an appliance is discovered on the network, the IBM Advanced Appliance Configuration Utility searches all previously defined families. Appliances are then added to the first Family that matches the appliance purpose. Therefore, the order in which families appears is important. To adjust the search order, right click on a Family to adjust its position within a Family list.

- Orphaned Appliances

Any discovered appliance servers that have been configured using the Advanced Appliance Configuration Utility but that do not meet the rules for any existing Family are automatically added to the Orphaned Appliances group.

- Orphaned Externally Configured Appliances

Any discovered appliance server that has been configured without using the Advanced Appliance Configuration Utility tool and that does not meet the rules for any existing Family is automatically added to the Orphaned Externally Configured Appliances group. Appliance servers that are configured without the Advanced Appliance Configuration Utility that meet the rules for any existing Family are automatically added to the matching Family. To add an Orphaned Externally configured Appliance to an appropriate Family that was created after the orphaned appliance was discovered, right-click the orphaned appliance and click **Adopt by First Matching Family**. For more information, see “Using the Adopt by First Matching Family function” on page 17.

**Note:** The Advanced Appliance Configuration Utility will not change manually configured network settings of discovered appliance servers. If the manually configured IP and Subnet addresses fit an existing Family, the Advanced Appliance Configuration Utility will place that appliance server into that Family, but will not change any other settings (such as host name or DNS or gateway addresses).

- **Conflicting Network Addresses**

Any discovered appliance server that has the same IP address as a previously discovered appliance server will be listed in the Conflicting Network Addresses group.

**Creating a Family:**

1. Click Create Family from the Family menu.

The Advanced Appliance Configuration Utility Family Setup window appears.

2. Select the Appliance Family Rules.

The Appliance Family Rules determine what purpose an appliance must serve to be included in the Family. You can select one of the following values:

- IBM xSeries 150
- IBM xSeries 130 and 135

3. Specify a Family name.

In the **Family Name** field, type the name to use for the Family.

4. Specify network resources to be used by members of the Family.

You can use the Advanced Appliance Configuration Utility to assign network resources for members of the Family, you can use a DHCP server to assign network resources.

- To use the Advanced Appliance Configuration Utility to assign network resources, clear the **Use DHCP** check box and complete the following fields:

**Min IP Address**

The lowest IP address in a range of IP addresses that can be assigned to an appliance that is a member of the Family

**Max IP Address**

The highest IP address in a range of IP addresses that can be assigned to an appliance that is a member of the Family

**Subnet Mask**

The subnet mask value that will be used by appliances that are members of the Family

**Default Gateway**

The IP address of the default gateway that will be used by appliances that are members of the Family (optional)

**DNS** The IP address of the Domain Name System server that will be used by appliances that are members of this Family (optional)

- To use a DHCP server to assign network resources, select the **Use DHCP** check box. This will enable a DHCP server on your network to assign an IP address and subnet mask and to specify the default gateway address and address of the Domain Name Server that will be used by appliances that are members of the Family.

5. Select a host name allocation type.

The host name allocation type enables you to automatically select a specific host name that members of this Family will use. If a new hostname is assigned either manually or when the appliance joins the Family that automatically assigns a host

name, you need to restart the appliance to reset it. You can select one of the following host name allocation types:

**No Allocation**

No preconfigured host name format will be assigned to appliances that are members of this Family.

**Use Serial Number**

The serial number of the discovered appliance will be used as a host name for the appliance.

**Use Prefix Name**

A user-specified prefix, along with an incremental number for each appliance, will be used for the host name of each appliance that is a member of this Family. Type the desired prefix in the **Host Name Prefix** field.

6. Click **OK** to save this Family.

**Removing appliances from families:** Use the Remove Appliance option to delete an appliance from the Advanced Appliance Configuration Utility console database. Removing an appliance that is no longer in use enables the IP address that was assigned to the appliance to be allocated to another appliance. You can also remove an appliance from a Family and then rescan the network to add it to an appropriate Family that appears higher in the Tree View pane.

To remove an appliance, right-click the appliance, and then click **Remove Appliance** from the pop-up menu.

- If the Advanced Appliance Configuration Utility is unable to communicate with the selected appliance (because, for example, it has been removed from the network or has failed) the appliance is removed immediately.
- If the Advanced Appliance Configuration Utility is able to communicate with the selected appliance, you will be asked to confirm removal of the appliance before the appliance-removal task is completed. This helps prevent accidental removal of an active and functional appliance.

**Using the Adopt by First Matching Family function:** Use the Adopt by First Matching Family function to:

- Add an Orphaned Externally Configured Appliance to an appropriate Family.  
Appliances that are configured without using the Advanced Appliance Configuration Utility and that do not meet the rules for any existing Family are automatically added to the Orphaned Externally Configured Appliances group. If, after the orphaned appliance is discovered, you create a Family that is appropriate for the orphaned appliance, right-click the orphaned appliance and click **Adopt by First Matching Family** to move the appliance from the Orphaned Externally Configured Appliances group to the newly created Family.
- Move an appliance from one Family to another appropriate Family that occurs higher in the list of previously defined families. If there is more than one appropriate Family for a newly discovered appliance, it automatically appears in the first appropriate Family in the list of families. If you want to move a discovered appliance from one appropriate Family to another appropriate Family:
  1. Right-click the Family that you want the appliance moved to.
  2. **Move Up in List** to move the selected Family up in the list of families.
  3. Repeat steps 1 and 2 until the Family that you want to add the appliance to appears above the Family that currently contains the appliance.
  4. Right-click the appliance that you want to move to another Family, and then click **Adopt by First Matching Family**.

## Starting UM Services

You can use the Advanced Appliance Configuration Utility to quickly and easily start UM Services on your xSeries 130 appliance server.

**Note:** The selected appliance server must be running Universal Manageability (UM) Services as a UM Services client. Also, the systems-management console (the system that is running the Advanced Appliance Configuration Utility console) must use a Web browser that is supported for use with UM Services. If you have never used UM Services from this system previously, you will need to install several plug-ins before proceeding. If you are using an unsupported browser, or if your browser does not have the necessary plug-ins, you will be notified when you attempt to start UM Services on the appliance. For more information on UM Services, see the following Web site:

<http://www.ibm.com/pc/ww/software/applications/ums/library.html>

To use the Advanced Appliance Configuration Utility console to start UM Services on an appliance:

1. Click the appliance in the Advanced Appliance Configuration Utility console Tree View pane.

When you select the appliance from the tree view, information about the selected appliance appears in the Information pane.

2. Click **Start Web-Based Management**.

Your default Web browser starts, starting the UM Services console automatically.

3. Log in to the UM Services console.

For more information on using UM Services to manage your appliances, see the *Universal Manageability Services User's Guide*, which is included on your *IBM xSeries 130 Documentation CD*.

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## Windows Remote Terminal Services Client

To install the Windows Remote Terminal Services Client on the remote workstation and manage your xSeries appliance server:

1. Insert the *Supplementary CD* into the workstation CD-ROM drive.
2. Click **Start-> Run**.
3. In the **Open** field, type (with quotation marks)

"x:\Terminal Services Client\Disk 1\setup.exe"

where *x* is the drive letter that is assigned to the CD-ROM drive. Then click **OK** to begin the Terminal Services Client Setup program.

4. Accept the defaults in each window that opens, or see the Microsoft Windows documentation for more instructions. When Terminal Services Client Setup program completes, proceed to the next step.
5. Check the workstation network TCP/IP protocol configuration settings.

The IP address that is used by the workstation must be obtained automatically. If the network interface card for the workstation is configured to obtain an IP address automatically, you can proceed to the next step. However, if the network interface card for the workstation is configured to use a static IP address, you must set the IP address and subnet mask properties as follows:

- a. Set the IP address in the subnet mask.

If the network interface card for the workstation is configured to use a static IP address, you must configure it to obtain an IP address automatically.

**Notes:**

- a. You might be prompted to restart the workstation after you have changed the configuration.
  - b. Do not be concerned if you do not have a DHCP server on your network. This configuration automatically assigns a random IP address to the workstation that is on the same subnet as the xSeries appliance servers that are attached to the LAN. The IP address according to the Microsoft subnet is 169.254.X.X. The system randomly generates the remaining two digits.
6. Connect your remote management system to the xSeries 130 Appliance using the Terminal Services Client.

7. In the Terminal Services Client window, type

IBM-xxxxxxx

where xxxxxx is the serial number which is located in the lower-right corner of the bezel, and then click **Connect**.

8. Log in to the xSeries 130 appliance server.

Use the following case-sensitive user name and password to log into terminal services

**User ID**

administrator

**Password**

password

When you log in to Terminal Services Client, you can view the Web Hosting Appliance graphical user interface (GUI) that is used to administer the appliance. However, when you first log in to Terminal Services, the Setup and Configuration Web page opens. This page provides links to documentation that is related to various xSeries software products.

- To complete the client installation, add to the appliance any Web content or applications that are required by your site.
- Refer to the Web page or the IBM xSeries 130 Documentation CD, or the following Web site for assistance in using preinstalled software:

<http://www.ibm.com/pc/netfinity>

After the Web page opens, click **Solutions**.





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## Chapter 3. Using the Recovery and Supplementary CDs

This chapter describes the applications that are included on the IBM *xSeries 130 Supplementary CD* and the *Recovery CD*, and how and when you should use them.

**Note:** The IBM xSeries 130 appliance server comes with preinstalled software. Changing the preinstalled software configuration in any way, including applying or installing unauthorized service packs or updates to preinstalled software, or installing additional software products that are not included in either the preinstalled software or on the *Supplementary CD* is not supported and could cause unpredictable results. To correct problems with a preinstalled software component, you must back up your user and system data; then, use the *Recovery CD* to restore the preinstalled software image. You can obtain IBM preinstalled authorized updates for the preinstalled appliance from:  
<http://www.ibm.com/eserver/xseries>.

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### Using the Recovery Enablement Diskette and Recovery CD

The *Recovery CD* contains the preinstalled software for your IBM xSeries 130 and is used to recover the manufacturing preinstalled software on your server. You must start your server using the *Recovery Enablement* diskette which is created from the *Supplementary CD*, before you can use the *Recovery CD*.

#### Important

The *Recovery Enablement* diskette (RED) enables the xSeries 130 to start from the CD-ROM drive. You will not be able to restore the preinstalled software from the *Recovery CD* without first restarting the server using the *Recovery Enablement* diskette.

To recover the preinstalled software on your server:

1. Insert the *Supplementary CD* into the CD-ROM drive of a machine other than your IBM xSeries 130.
2. Insert a new diskette into the diskette drive and run the *DiskCreator.exe* file from the *Supplementary CD* to the diskette. This creates the *Recovery Enablement* diskette.
3. Follow the instructions on your screen to create a new enablement diskette.
4. Remove the *Recovery Enablement* diskette from the diskette drive.
5. Place the *Recovery CD* in the CD-ROM drive of the appliance, and the enablement diskette in the diskette drive, and restart the server.

**Note:** The *Recovery Enablement* diskette is a one-use-only diskette. To use the *Recovery CD* again, you need to run the *DiskCreator.exe* file from the *Supplementary CD*.

The recovery process begins automatically and the original manufacturing preinstalled software is restored. After the preinstalled software is restored, the system restarts automatically, and all final operating-system configuration changes are performed.

**Important**

After the server restarts, a series of configuration and system-preparation programs that finish configuring the Network Operating System are run automatically. These programs must finish running before you use any included applications (such as the IBM Advanced Appliance Configuration Utility or the Terminal Services Client) to connect to or configure your IBM xSeries 130. Do not connect to or configure the IBM xSeries 130 for at least 15 minutes after system restart. This notice applies only to the first time the IBM xSeries 130 is started after the *Recovery* CD is used.

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## Using the Supplementary CD

The *Supplementary* CD contains documentation and copies of key software applications that are preinstalled on your IBM xSeries 130. The following table lists the names of the directories on the *Supplementary* CD and a description of the contents of each directory.

Directory name	Contents
IBM Advanced Appliance Configuration	IBM Advanced Appliance Configuration console and agent installation files. The IBM Advanced Appliance Configuration agent is preinstalled as a Windows Powered service on the xSeries 130. To install the Advanced Appliance Configuration console, run setup.exe from the x:\IBM Advanced Appliance Configuration directory, where x is the drive letter assigned to your CD-ROM drive. You need to run this file before you install an appliance.
Recovery Enablement	DiskCreator.exe creates a recovery enablement disk for use when recovering the appliance. To make a diskette, run the executable file and insert a 1.44 MB diskette into drive A when prompted.
I386	Windows Powered installation files. If you add device drivers, or operating system features, you might be prompted to insert your Windows Powered CD. If so, insert the <i>Supplementary</i> CD, and specify path x:\i386 where x is the drive letter assigned to your CD-ROM drive.
Terminal Services Client	The stand-alone Windows Terminal Services Client application. The appliance supports Web-based terminal services, so this is an optional installation.  To install the Terminal Services Client, run setup.exe from the Disk1 subdirectory.
Netfinity Web Server Accelerator (NWSA)	Netfinity Web Server Accelerator is installed and configured as part of the manufacturing preinstalled software. However, you can reinstall NWSA from this directory. Do not reinstall NWSA unless directed to do so by support personnel.
Netfinity Director Agent	Netfinity Director Agent is installed and configured as part of the manufacturing preinstalled software. If you reinstall the software incorrectly, parts of the appliance might stop functioning. Do not reinstall the Netfinity Director Agent unless directed to do so by support personnel.
Documentation	There is additional documentation for supporting the appliance server that is not found on the Documentation CD.

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## Using the Multiple Language User Interface (MUI) CD

You can change the language of the Windows Powered operating system using the *Multiple Language User Interface CD* that is included with the xSeries 130 Appliance Server. This CD changes the base operating-system language to any one of the following languages:

- Chinese (Simplified)
- Chinese (Traditional)
- Dutch
- French
- German
- Italian
- Japanese
- Korean
- Spanish
- Swedish

**Note:** The *Multiple Language User Interface CD* is provided by Microsoft, and changes the language of the base operating system only. Preinstalled applications and documentation remain in English. Languages such as Japanese or Chinese might prompt you to insert the Windows 2000 Advanced Server CD. If you are prompted to do this, insert the *Supplementary CD* instead. You may be prompted to restart, if so, select **Yes**.

To use the *Multiple Language User Interface CD*:

1. Insert the MUI CD into the CD-ROM drive of the appliance
2. Start a terminal services session, log in to the appliance, and run setup.exe from the CD.
3. When the Multi-Language User Interface Install window appears, click **Install MUI**. This begins the installation process.

You can use the MUI CD only on IBM appliances; therefore a machine mode/type check is performed before the installation begins.

4. After the machine type verifies, an information window appears. Read the notices and, then click **OK**. The MUI CD unencrypts and decompresses the contents of the CD-ROM to drive C. This takes a few minutes. The MultiLanguage File Installation window appears.
5. Select the language that you want to install in the xSeries 130 appliance server. At the bottom of the window change the default language to correspond with the language you select.
6. Click **OK**. After a few seconds, an Installation Complete message appears. Click **OK**.
7. A MUISETUP window appears stating that changes do not occur until you log off and log back on. Click **OK**. When you are prompted to delete the MUI files for the xSeries 130 appliance server, click **Yes**.

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## Using the Documentation CD

The *Documentation CD* contains the *IBM xSeries 130 User's Reference*, *IBM xSeries 130 Installation Guide*, *Safety Information* and a duplicate copy of the *Quick Start Guide*. The *User's Reference* contains detailed information pertaining to the operation of your server.



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## Chapter 4. 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, refer to the "Solving problems" section in the *User's Reference* on the *IBM xSeries Documentation* CD and the "Server Support" flowchart in the front of this booklet for additional information.

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### Diagnostic tools overview

The following tools are available to help you identify and resolve hardware-related problems:

- **Beep codes and error messages**

The power-on self-test (POST) generates beep codes to indicate successful test completion or the detection of a problem.

- One beep indicates successful completion of POST.
- More than one beep indicates that POST detected a problem. Error messages also appear during startup if POST detects a hardware-configuration problem.

See "POST beep code descriptions" on page 26 and "POST error messages" on page 26 for more information.

- **Troubleshooting chart**

This chart lists problem symptoms and suggested steps to correct the problems. See the "Troubleshooting charts" on page 28 for more information.

- **Event or error logs**

The system event or error log contains all error messages that are issued during POST and all system status messages from the Advanced System Management Processor.

To view the contents of the error logs, start the Configuration/Setup Utility program; then, select **Event/Error Logs** from the main menu.

- **Diagnostic programs and error messages**

The server diagnostic programs are stored in the read-only memory (ROM) on the system board. These programs are the primary method of testing the major components of your server.

**Note:** Refer to the "Solving Problems" section in the *User's Reference* on the *IBM xSeries Documentation* CD for more detailed information about the diagnostic programs.

- **Light Path Diagnostics**

The Light Path Diagnostics is used to quickly identify system errors. For more information about the Light Path Diagnostic refer to the "Solving Problems" section in the *User's Reference on the IBM xSeries Documentation* CD.

---

## POST beep code descriptions

POST emits one beep to signal successful completion. If POST detects a problem during startup, other beep codes might occur. You can use the following beep code descriptions to help identify and resolve problems that are detected during startup.

**Note:** Refer to the "Solving Problems" section in the *User's Reference* on the *IBM Documentation CD* for more detailed information about the POST beep codes.

Beep code	Descriptions of the POST beep codes
No beep	Call for service.
Continuous	If no video appears, the startup microprocessor failed. Verify that the startup microprocessor is installed correctly. If it is, replace the startup microprocessor. If the problem persists, call for service.
One short	POST completed successfully. One beep also occurs after POST if you enter an incorrect password.
Two short	Follow the instructions that appear on the screen.
Three short	POST detected a system memory error. Verify that the memory is installed correctly. If it is, replace the failing memory module.
Repeating short	The system board might contain a failing component. <ol style="list-style-type: none"><li>1. Verify that the keyboard and pointing devices are connected properly.</li><li>2. Ensure that nothing is resting on the keyboard.</li><li>3. Disconnect the pointing device; then, restart the server. If the problem goes away, replace the pointing device. If the problem remains, call for service.</li></ol>
One long and one short	If the video controller on the system board is being used, call for service. If you installed an optional video adapter, replace the failing adapter.
One long and two short	A video I/O adapter ROM is not readable, or the video subsystem is defective. If you installed an optional video adapter, replace the failing adapter. If the problem remains, call for service.
One long and three short	The system-board video subsystem has not detected a monitor connection to the server. Ensure that the monitor is connected to the server. If the problem persists, replace the monitor.
Two long and two short	POST does not support the optional video adapter. Replace the optional video adapter with one that is supported by the server or use the integrated video controller.
All other beep codes	<ol style="list-style-type: none"><li>1. Verify that the system memory modules are installed correctly.</li><li>2. Turn off the server; then, restart the server. If the problem remains, call for service.</li></ol>

Table 2. Post beep code descriptions.

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## POST error messages

The following table provides an abbreviated list of the error messages that might appear during POST.

**Note:** Refer to the "Solving Problems" section in the *User's Reference* on the *IBM xSeries Documentation CD* for more detailed information about POST error messages.

POST message	Failing device or problem found	Suggested action
129	L1 cache of a microprocessor	Check the installation of your microprocessors.
162	Change in device configuration	Verify that your optional devices are turned on and installed correctly.
163	Time of day has not been set	Set the correct date and time.
164	Change in memory configuration	Verify that your memory is installed properly; then, restart the server and run the Configuration/Setup Utility program.
201	Change in memory configuration	Verify that your memory is fully seated and installed properly.
229	L2 cache of a microprocessor	Check the installation of your microprocessors.
289	Failing DIMM was disabled	Verify that your memory is correct for your server and that it is installed properly.
301 303	Keyboard and keyboard controller	Ensure that the keyboard cable is connected and nothing is resting on the keyboard keys.
962	Parallel port configuration error	Start the Configuration/Setup program and verify that the parallel-port setting is correct.
11xx	Serial port error	Verify that the serial cable is connected correctly.
1162	Serial port configuration conflict	Start the Configuration/Setup program and ensure that the IRQ and I/O port assignments needed by the serial port are available.
1601	Service Processor update needed	Download and install the latest system Service Processor level.
1800	PCI adapter hardware interrupt	Start the Configuration/Setup program and verify that the interrupt resource settings are correct.
1801	PCI adapter out of ROM space error	Remove a PCI adapter or disable a PCI device in the Configuration/Setup program.
2400 2462	Video controller and memory	Verify that the monitor is connected correctly.
00019xxx	Microprocessor <i>x</i> is not functioning or failed the built-in test	Verify that microprocessor <i>x</i> is installed correctly. If the problem remains, replace microprocessor <i>x</i> .
00180xxx	A PCI adapter requested a resource that is not available	Start the Configuration/Setup program and ensure that the resources needed by the PCI adapter are available.
012980xx 012981xx	Data for microprocessor <i>x</i>	Download and install the latest version of the system BIOS.
01298200	Microprocessor speed mismatch	Install microprocessors with identical speeds.
I9990305	POST could not find an operating system.	Install your operating system.

Table 3. Post error messages.

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## Troubleshooting charts

You can use the troubleshooting charts in this section to find solutions to problems that have definite symptoms.

**Attention:** If diagnostic error messages appear that are not listed in the following tables, make sure that your server has the latest levels of BIOS and diagnostics microcode installed.

Look for the symptom in the left column of the chart. Instructions and probable solutions to the problem are in the right column. If you have just added new software or a new option and your server is not working, do the following before using the troubleshooting charts:

- Remove the software or device that you just added.
- Run the diagnostic tests to determine if your server is running correctly.
- Reinstall the new software or new device.



<b>CD-ROM drive</b>	<b>Suggested action</b>
CD-ROM drive is not recognized.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The primary IDE channel is enabled in the Configuration/Setup Utility program.</li> <li>2. All cables and jumpers are installed correctly.</li> <li>3. The correct device driver is installed for the CD-ROM drive.</li> </ol>
<b>Diskette drive</b>	<b>Suggested action</b>
Diskette drive in-use light stays on, or the system bypasses the diskette drive.	<p>If there is a diskette in the drive, verify that:</p> <ol style="list-style-type: none"> <li>1. The diskette drive is enabled in the Configuration/Setup Utility program.</li> <li>2. The diskette is good and not damaged. (Try another diskette if you have one.)</li> <li>3. The diskette contains the necessary files to start the server.</li> <li>4. Your software program is OK.</li> </ol> <p>If the diskette drive in-use light stays on, or the system continues to bypass the diskette drive, call for service.</p>
<b>General problems</b>	<b>Suggested action</b>
Problems such as broken cover locks or indicator lights not working.	Call for service.
<b>Intermittent problems</b>	<b>Suggested action</b>
A problem occurs only occasionally and is difficult to detect.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. All cables and cords are connected securely to the rear of the server and attached options.</li> <li>2. When the server is turned on, air is flowing from the rear of the server at the fan grill. If there is no air flow, the fan is not working. This causes the server to overheat and shut down.</li> </ol> <p>If the items above are correct, call for service.</p>

Table 4. Troubleshooting charts.

<b>Keyboard, mouse, or pointing-device problems.</b>	<b>Suggested action</b>
All or some keys on the keyboard do not work.	<ol style="list-style-type: none"> <li>1. Make sure that the keyboard cable is properly connected to the C2T device breakout cable.</li> <li>2. Make sure that the C2T device breakout cable is properly connected to the server.</li> <li>3. Make sure that the server and the monitor are turned on.</li> <li>4. Try using another keyboard.</li> </ol> <p><b>Note:</b> If you are using the C2T chain, refer to.</p> <p>If the items above are correct, call for service.</p>
The mouse or pointing device does not work.	<ol style="list-style-type: none"> <li>1. Verify that the mouse or pointing-device cable is securely connected and the device drivers are installed correctly.</li> <li>2. Try using another mouse or pointing device.</li> </ol> <p>If the problem remains, call for service.</p>
<b>Memory problems</b>	<b>Suggested actions</b>
The amount of memory displayed is less than the amount of memory installed.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The memory modules are seated properly.</li> <li>2. You have installed the correct type of memory.</li> <li>3. If you changed the memory, you updated the memory configuration with the Configuration/Setup Utility program.</li> <li>4. All banks of memory on the DIMMs are enabled. The server might have automatically disabled a DIMM bank when it detected a problem or a DIMM bank could have been manually disabled.</li> </ol> <p>Look in the POST error log for error message 289:</p> <ul style="list-style-type: none"> <li>• If the DIMM was disabled by a system-management interrupt (SMI), replace the DIMM.</li> <li>• If the DIMM was disabled by the user or by POST: <ol style="list-style-type: none"> <li>1. Start the Configuration/Setup Utility program.</li> <li>2. Enable the DIMM.</li> <li>3. Save the configuration and restart the server.</li> </ol> </li> <li>• If you continue to get this error, replace the DIMM.</li> </ul> <p>If the problem persists, call for service.</p>

<b>Keyboard, mouse, or pointing-device problems.</b>	<b>Suggested action</b>
All or some keys on the keyboard do not work.	<ol style="list-style-type: none"> <li>1. Make sure that the keyboard cable is properly connected to the C2T device breakout cable.</li> <li>2. Make sure that the C2T device breakout cable is properly connected to the server.</li> <li>3. Make sure that the server and the monitor are turned on.</li> <li>4. Try using another keyboard.</li> </ol> <p>If the items above are correct, call for service.</p>
The mouse or pointing device does not work.	<ol style="list-style-type: none"> <li>1. Verify that the mouse or pointing-device cable is securely connected and the device drivers are installed correctly.</li> <li>2. Try using another mouse or pointing device.</li> </ol> <p><b>Note:</b> If you are using the C2T chain, refer to “Testing the C2T chain” on page 21.</p> <p>If the problem remains, call for service.</p>
<b>Memory problems</b>	<b>Suggested action</b>
The amount of memory displayed is less than the amount of memory installed.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The memory modules are seated properly.</li> <li>2. You have installed the correct type of memory.</li> <li>3. If you changed the memory, you updated the memory configuration with the Configuration/Setup Utility program.</li> <li>4. All banks of memory on the DIMMs are enabled. The server might have automatically disabled a DIMM bank when it detected a problem or a DIMM bank could have been manually disabled.</li> </ol> <p>Look in the POST error log for error message 289:</p> <ul style="list-style-type: none"> <li>• If the DIMM was disabled by a system-management interrupt (SMI), replace the DIMM.</li> <li>• If the DIMM was disabled by the user or by POST: <ol style="list-style-type: none"> <li>1. Start the Configuration/Setup Utility program.</li> <li>2. Enable the DIMM.</li> <li>3. Save the configuration and restart the server.</li> </ol> </li> <li>• If you continue to get this error, replace the DIMM.</li> </ul> <p>If the problem persists, call for service.</p>
<b>Microprocessor problems</b>	<b>Suggested action</b>
The server emits a continuous tone during POST.	<p>The startup (boot) microprocessor is not working properly.</p> <p>Verify that the startup microprocessor is seated properly. If it is, replace the startup microprocessor.</p> <p>If the problem remains, call for service.</p>

Monitor problems	Suggested action
Testing the monitor.	<p>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.</p> <p>If you still cannot find the problem, call for service.</p>
The screen is blank.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The server power cord is plugged into the server and a working electrical outlet.</li> <li>2. The monitor cables are connected properly.</li> <li>3. The monitor is turned on and the Brightness and Contrast controls are adjusted correctly.</li> </ol> <p><b>Attention:</b> In some memory configurations, the 3-3-3 beep code might sound during POST followed by a blank display screen. If this occurs and the Boot Fail Count feature in the Start Options of the Configuration/Setup Utility is set to Enabled (its default setting), you must restart the server three times to force the system BIOS to reset the memory connector or bank of connectors from Disabled to Enabled.</p> <p>If the items above are correct and the screen remains blank, call for service.</p>
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.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The primary monitor cable is connected to the C2T device breakout cable.</li> <li>2. You installed the necessary device drivers for the applications.</li> </ol> <p>If the items above are correct and the screen remains blank, call for service.</p>
Wavy, unreadable, rolling, distorted screen, or screen jitter.	<p>If the monitor self-tests show the monitor is OK, 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.</p> <p><b>Notes:</b></p> <ol style="list-style-type: none"> <li>1. To prevent diskette drive read/write errors, be sure the distance between monitors and diskette drives is at least 76 mm (3 in.).</li> <li>2. Non-IBM monitor cables might cause unpredictable problems.</li> <li>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.</li> </ol> <p>If the problem remains, call for service.</p>
Wrong characters appear on the screen.	<p>If the wrong language is displayed, update the BIOS with the correct language.</p> <p>If the problem remains, call for service.</p>

Option problems	Suggested action
An IBM option that was just installed does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The option is designed for the server. Refer to the "Support for Servers" flowchart for information about obtaining ServerProven™ compatibility information from the World Wide Web.</li> <li>2. You followed the installation instructions that came with the option.</li> <li>3. The option is installed correctly.</li> <li>4. You have not loosened any other installed options or cables.</li> <li>5. You updated the configuration information in the Configuration/Setup Utility program. Whenever memory or an option is changed, you must update the configuration.</li> </ol> <p>If the problem remains, call for service.</p>
Power problems	Suggested action
The server does not power on.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The power cables are properly connected to the server.</li> <li>2. The electrical outlets are operating properly.</li> <li>3. The type of memory installed is correct.</li> <li>4. If you have just installed adapter, remove it, and restart the server. If the server now powers on, you might have installed more options than the power supply supports.</li> </ol> <p>If the problem still exists, call for service.</p>
Serial port problems	Suggested action
The number of serial ports identified by the operating system is less than the number of serial ports installed.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. Each port is assigned a unique address by the Configuration/Setup Utility program and none of the serial ports are disabled. <p><b>Note:</b> The Management connector is the same as a serial port connector, but it is used only by the integrated Advanced Systems Management Processor, and is not available for use by the operating system. This port does not appear in the Configuration/Setup Utility program menus; it can be configured using Netfinity Manager.</p> </li> <li>2. The serial-port adapter, if you installed one, is seated properly.</li> </ol> <p>If the problem still exists, call for service.</p>
A serial device does not work. For more information about the serial port see the <i>User's Reference</i> on the <i>IBM xSeries Documentation</i> CD.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>1. The device is compatible with the server.</li> <li>2. The serial port is enabled and is assigned a unique address.</li> <li>3. Make sure that the device is not connected to the management port C. <p><b>Note:</b> The management C connector is the same as a serial port connector, but it is used only by the integrated Advanced Systems Management Processor and is not available for use by the operating system. This port does not appear in the Configuration/Setup Utility program menus; it can be configured using Netfinity Manager.</p> </li> </ol> <p>If the problem still exists, call for service.</p>

<b>Software problem</b>	<b>Suggested action</b>
Suspected software problem.	<p>To determine if problems are caused by the software, verify that:</p> <ol style="list-style-type: none"> <li>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. <b>Note:</b> If you have just installed an adapter or memory, you might have a memory address conflict.</li> <li>2. The software is designed to operate on your server.</li> <li>3. Other software works on your server.</li> <li>4. The software that you are using works on another system.</li> </ol> <p>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.</p> <p>If the items above are correct and the problem remains, contact your place of purchase.</p>
<b>Universal Serial Bus (USB) port problems</b>	<b>Suggested action</b>
A USB device does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> <li>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. <b>Note:</b> 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.</li> <li>2. The correct USB device driver is installed.</li> <li>3. Your operating system supports USB devices.</li> </ol> <p>If the problem still exists, call for service.</p>

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## Appendix A. Product warranties and notices

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

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### Warranty Statements

The warranty statements consist of two parts: Part 1 and Part 2. Part 1 varies by country. Part 2 is the same for all countries. Be sure to read both the Part 1 that applies to your country and Part 2.

- **United States, Puerto Rico, and Canada (Z125-4753-05 11/97)**  
("IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (Part 1 - General Terms)")
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**  
("IBM Statement of Warranty Worldwide except Canada, Puerto Rico, Turkey, United States (Part 1 – General Terms)" on page 38)
- **Worldwide Country-Unique Terms**  
("Part 2 - Worldwide Country-Unique Terms" on page 40)

### IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (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 may 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 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.

Machine - IBM @server **xSeries 130**

Warranty Period\* - Three Years

\*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.

#### 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. 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.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

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. The replacement may not be new, but will be in good working order.

#### **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.

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

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 the Machine, contact your reseller or IBM. In the United States, call IBM at 1-800-772-2227. In Canada, call IBM at 1-800-565-3344. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, 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. IBM may repair the failing Machine or exchange it at its discretion.

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.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or



upgrade. 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.

#### **Production Status**

Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

#### **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), 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 greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

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 (INCLUDING LOST PROFITS OR 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.

## **IBM Statement of Warranty Worldwide except Canada, Puerto Rico, Turkey, United States (Part 1 – General Terms)**

This Statement of Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. **The terms of Part 2 may replace or modify those of Part 1.** The warranties provided by IBM in this Statement of 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 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.

Machine - IBM @server **xSeries 130**

Warranty Period\* - Three Years

\*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.

### **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. 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.

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

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. The replacement may not be new, but will be in good working order.

### **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.

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

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 the Machine, contact your reseller or IBM. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, 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. IBM may repair the failing Machine or exchange it at its discretion.

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.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. 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.

#### **Production Status**

Each IBM Machine is manufactured from new parts, or new and used parts. In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's appropriate warranty terms apply.

#### **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), 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 greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

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 (INCLUDING LOST PROFITS OR 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.**

## **Part 2 - Worldwide Country-Unique Terms**

### **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 legislation and are only limited to the extent permitted by the applicable legislation.

**Extent of Warranty:** The following replaces the first and second sentences of this Section:

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment,

operation in other than the Specified Operating Environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible.

**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, 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.

**PEOPLE'S REPUBLIC OF CHINA: Governing Law:** The following is added to this Statement:

The laws of the State of New York govern this Statement.

**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 Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

**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.

### **EUROPE, MIDDLE EAST, AFRICA (EMEA)**

**The following terms apply to all EMEA countries.**

The terms of this Statement of Warranty apply to Machines purchased from an IBM reseller. If you purchased this Machine from IBM, the terms and conditions of the applicable IBM agreement prevail over this warranty statement.

#### **Warranty Service**

If you purchased 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 purchased 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.

The applicable laws, Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided. However, the laws of Austria govern this Statement if the warranty service is provided in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Federal Republic of Yugoslavia, Georgia, Hungary, Kazakhstan, Kirghizia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

**The following terms apply to the country specified:**

**EGYPT: Limitation of Liability:** The following replaces item 2 in this Section:  
2. 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.

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).

**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 are 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.

**Production Status:** The following paragraph replaces this Section:

Each Machine is newly manufactured. It may incorporate in addition to new parts, re-used parts as well.

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

The limitations and exclusions specified in the Statement of Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

In item 2, replace "U.S. \$100,000" with "1.000.000 DEM."

The following sentence is added to the end of the first paragraph of item 2:

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

**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 the greater of Irish Pounds 75,000 or 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: (item 1 unchanged) 2) as to any other actual damage arising in all situations involving non-performance 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 second 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.

**TURKIYE: Production Status:** The following replaces this Section:

IBM fulfills customer orders for IBM Machines as newly manufactured in accordance with IBM's production standards.

**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 the greater of Pounds Sterling 150,000 or 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 will be limited to damages.

## **NORTH AMERICA**

**CANADA: Warranty Service:** The following is added to this section:

To obtain warranty service from IBM, call **1-800-565-3344**.

**UNITED STATES OF AMERICA: Warranty Service:** The following is added to this section:

To obtain warranty service from IBM, call **1-800-772-2227**.

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## 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 1000000 bytes and GB stands for 1000000000 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.

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## Electronic emission notices

### Federal Communications Commission (FCC) Statement

#### *Federal Communications Commission (FCC) Class A 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。

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## 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.

<b>IBM power cord part number</b>	<b>Used in these countries and regions</b>
13F9940	Argentina, Australia, China (PRC), New Zealand, Papua New Guinea, Paraguay, Uruguay, Western Samoa
13F9979	Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep., Chad, Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Macau, Malagasy, Mali, Martinique, Mauritania, Mauritius, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe
13F9997	Denmark
14F0015	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka
14F0033	Antigua, Bahrain, Brunei, Channel Islands, Cyprus, Dubai, Fiji, Ghana, Hong Kong, India, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia
14F0051	Liechtenstein, Switzerland
14F0069	Chile, Ethiopia, Italy, Libya, Somalia
14F0087	Israel
1838574	Thailand
6952300	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States of America, Venezuela



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