



# IBM 10/100 Ethernet Server Adapters Family

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*User's Guide*

OPTIONS  
*by IBM*

**Note:** Before using this information and the product it supports, read the information under Appendix D, “Product warranties and notices” on page D-1.

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## Safety

Before installing this product, read the Safety Information.

مج، يجب قراءة دات السلامة

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

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

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

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

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

安裝本產品之前，請先閱讀「安全資訊」。

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## Preface

This manual contains the information you need to install and use your adapter. The manual is divided into two parts:

### Installation and user's guide

This guide contains abbreviated installation instructions.

This guide is available in the following languages:

- English
- French
- German
- Spanish
- Italian
- Brazilian Portuguese
- Traditional Chinese
- Japanese

### Appendixes

The appendixes contain product specifications, help and service information the product warranties, and notices.

**Note:** The illustrations in this manual might be slightly different from your hardware.

For detailed adapter hardware information, driver installation procedures, and advanced features, please go to the \info directory of the CD-ROM and view the appropriate help files. For driver installation, view the drivers.htm file.

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## Registering your option

Thank you for purchasing OPTIONS by IBM. Please take a few moments to register your product and provide us with information that will help IBM to better serve you in the future. Your feedback is valuable to us in developing products and services that are important to you, as well as in developing better ways to communicate with you. Register you option on the IBM Web site at

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

IBM will send you information and updates on your registered product unless you indicate on the Web site questionnaire that you do not want to receive further information.





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## Installation and user's guide

This book contains the information you need to install and use your IBM® 10/100 Ethernet Server Adapter and 10/100 Dual Port Server Adapter.

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### System requirements

Before installing the adapter, check your computer for the following configuration requirements:

- One open 32-bit PCI slot.
- One open 32-bit or 64-bit PCI slot for the 10/100 Dual Port Server Adapter
- The latest BIOS for your computer.
- Microsoft® Windows® 2000, Microsoft Windows NT® 4.0, Windows Millennium Edition (Me), Windows 98, Windows 95, Novell NetWare 3x or later, Linux, Solaris, UnixWare, or DOS.
- Windows NT requires Service Pack 5 or later.
- For NetWare, update to the latest Support Pack available. The required NLMs are included on this CD.

You can also download the necessary software from Microsoft and Novell sites.

### Microsoft service packs

Go to the following Microsoft Web site for the latest Service Pack information: <http://www.microsoft.com/ntserver>. If the Web address has changed, go to the main Microsoft site and search for the term 'Service Pack'.

### Novell NetWare support packs

Go to the following Novell Web site for the latest Support Pack information: <http://support.novell.com/misc/patlst.htm>.

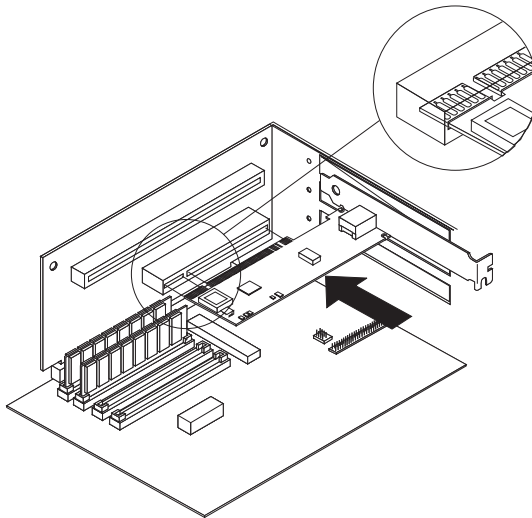
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## Installing the adapter

1. Turn off your computer and all attached devices, and unplug all cables from your computer and all attached devices.

**Attention:** Turn off and unplug the computer before removing the cover. Failure to do so could endanger you and might damage either the adapter, the computer, or both. For servers that support Hot Plug technology, see your server documentation

2. Remove the cover bracket from an unused 32-bit slot by unscrewing the screw that secures it. Make sure that the cover bracket does not come into contact with any conducting part of the system board.
3. If you want to enable the Wake on LAN<sup>®</sup> feature, see “Using the Wake on LAN feature” on page 1-4 before completing the rest of these steps.



4. Push the adapter into the slot until the adapter is firmly seated, and then secure the adapter bracket with the screw that you removed in step 2.
5. Repeat steps 2 through 4 for each adapter that you want to install.
6. Replace the computer cover, attach all cables, and connect the computer to an electrical outlet.
7. Turn on the computer. The computer BIOS automatically assigns resources to the adapters. If you get a PCI configuration error, see the section on PCI configuration troubleshooting in Appendix A.

## Attaching the network cable

Connect the network cable to the adapter using Category 3, 4, or 5 Twisted Pair Ethernet (TPE) network cable for a 10 Mbps networks or a Category 5 TPE cable for a 100 Mbps networks. For more details, see Appendix B.

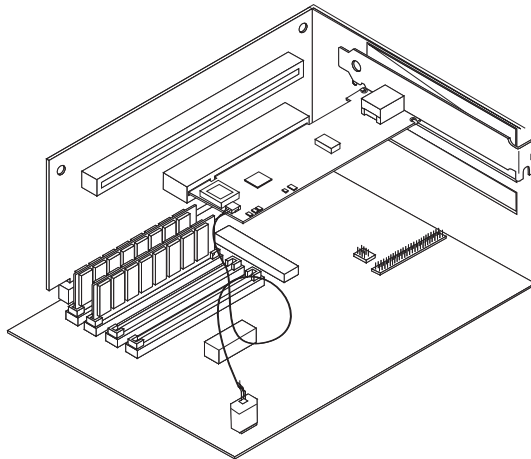
To configure the adapter, see the instructions for your operating system in “Installing the network device drivers” on page 1-5.

## Connecting the Wake on LAN power cable

**Note:** The Wake on LAN cable is not necessary for PCI 2.2 compliant systems. However, you can connect the cable on these systems with no adverse effect.

For the Wake on LAN feature to work correctly, the adapter must be connected to a continuous power source. This enables the adapter to monitor the network, even when the computer is turned off. To install the Wake on LAN power cable, follow these instructions:

1. Turn off the computer and all attached devices. Unplug all cords and cables from the computer.
2. Remove the computer cover.
3. Locate the 3-pin Wake on LAN connector on the adapter. Attach one end of the Wake on Lan cable to the adapter as shown in the following illustration.



4. Attach the other end of the Wake on Lan cable to the system board, as shown in the illustration.
5. Some computers might require you to change a setting in your computer BIOS or Setup program to enable the Wake on Lan feature. Check the documentation that comes with your computer for more information.
6. Replace the computer cover and plug in the computer.

## **Using the Wake on LAN feature**

The Wake on LAN feature operates according to a published specification for network adapters that are capable of monitoring to network activity even when the computer is turned off.

Wake on LAN adapters have a low-power standby mode that is active when the rest of the computer is without power. The adapter responds to a wake-up packet sent by another computer or network device. Typically, this wake-up packet causes the adapter to signal the computer to turn on and run a predefined program.

For more information about setting up and using the Wake on LAN feature, see the Wake on LAN information brief at <http://www.ibm.com/pc/us/infobrf/iblan.html>

See Appendix A for general troubleshooting and a listing of common problems and solutions for Wake on LAN operability.

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## Installing the network device drivers

This section includes device-driver installation procedures for the following operating systems:

- Windows 2000 (for Windows 95, Windows 98, and Windows Me, see the online User's Guide)
- Windows NT 4.0 Server
- Novell NetWare 5.x (for 3.x, 4.x, and DOS clients, see the online User's Guide)
- Linux, Solaris, UnixWare 2.x and 7.0 (see the User's Guide on the CD)

You can install device drivers directly from the CD, or you can create installation diskettes. To create installation diskettes, see "Making a diskette" on page 1-8.

### Windows 2000

After you install the adapter in the computer, connect the cable, plug in the power cord, and start the computer, Windows displays the Found New Hardware window opens, and Found New Hardware Wizard starts. Follow this procedure to install the correct device driver:

1. Insert the *IBM 10/100 Ethernet Server Adapter Family* CD into the CD-ROM drive. If the CD starts automatically, close the window.
2. In the Wizard Welcome window, click **Next**.
3. Click **Search**, and then click **Next**.
4. In the Locate Driver window, select the **CD-ROM** check box, and then click **Next**.
5. Click **Next**.
6. Click **Finish**.
7. Restart your computer.

**Note:** For Windows 2000, the adapter properties PROSet 2 utility is not automatically installed with the network device driver installation. To install PROSet 2, do the following:

- Go to Install Advanced Features option from the Autorun.exe program on the CD.
- Or, run the setup.exe program from the Setup directory on the CD.

### Windows NT 4.0 Server

The E100NT4.SYS NDIS 4.0 device driver supports Windows NT 4.0 Server. It is not supported by Windows NT 3.51 or earlier versions of Windows NT.

**Note:** Before installing this device driver, review the Service Pack requirements in “System requirements” on page 1-1. If you are also installing Windows NT 4.0 at this time, you must first create a diskette for the driver installation. See “Making a diskette” on page 1-8.

To install the device driver, follow these instructions:

1. Click **Start**, then click **Settings**, and then click **Control Panel**.
2. Click the **Network** icon.
3. Click **Adapters**, and click **Add**.
4. Click **Have Disk**.
5. Insert the *IBM 10/100 Ethernet Server Adapter Family* CD into the CD-ROM drive.
6. Type the path to your CD-ROM drive, and then click **OK**.
7. Follow the instructions on the screen to install the device drivers. When the adapter is added, is displayed in the Network adapters list.
8. Click **OK**, and then click **Close**. When prompted, restart your computer.

## Novell NetWare 5.x

**Note:** For other NetWare server and client operating systems, see the online User’s Guide on your CD.

Use the NetWare Install program to install the adapter device driver (the device driver name: ce100b.LAN in the /nwserver folder). Review the Service pack requirements in “System requirements” on page 1-1.

**Note:** Before installing the device driver, either load DOS or NetWare drivers for your server CD-ROM drive or create a diskette from the *IBM 10/100 Ethernet Server Adapter Family* CD on a different computer. See “Making a diskette” on page 1-8.

To install the device driver, follow these instructions.

1. From the NetWare console, type nwconfig and press Enter.
2. Click **Driver options**, and then press Enter.
3. Click **Configure network drivers**, and then press Enter.
4. Click **Load an additional driver**, and then press Enter.
5. Insert the *IBM 10/100 Ethernet Server Adapter Family* CD into the CD-ROM drive, or insert the diskette that you created into the diskette driver and select **Install an unlisted driver** by pressing Insert.
6. If you are using a diskette, press Enter. If you are using the CD, press F3 and specify the CD-ROM drive as the source path.
7. Press Enter to select the driver.

8. Click **Yes**, and then press Enter.
9. To modify any device driver parameters or protocols, click **Select/Modify driver parameters and protocols**, and then press Enter. The slot number is a required parameter and must be specified. If you have multiple adapters, specify the slot number for the adapter that you are currently configuring. When you are finished configuring the device driver, click **Save parameters and load driver** to continue.

**Note:** If your computer contains a single IBM 10/100 Ethernet Server adapter, you may specify any number for the slot. The driver automatically detects the correct slot number and is loaded successfully.

If your system contains more than one IBM 10/100 Ethernet Server adapter, press Alt+Esc to switch to the console screen in NetWare to find the valid slot numbers for your adapters. Type LOAD CE100 and press Enter. The device driver attempts to load and prompts you with the available slot numbers. Write down the slot numbers, and then press Esc to stop loading the device driver. Press Alt+Esc to switch back to the Install window and specify the correct slot number.

10. For device driver window installation, press Esc until the Configuration Options window is displayed, and then follow the on-screen instructions.
11. Click **Exit** to return to the server console prompt.
12. If you are installing multiple adapters, repeat the device driver installation process for each new adapter in the server.

**Note:** If the adapter does not work after the installation, you might need to modify the frame type or LOAD and BIND statements in the AUTOEXEC.NCF file.

## Other operating systems

For instructions to install the network device drivers in other operating systems, look for help information in the \info directory or the Readme file in the directory where the device drivers are.

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## Making a diskette

If you need to use a diskette to install the adapter device drivers, run the `makedisk.bat` utility that corresponds to your OS. The following utility files are in the root directory of *IBM 10/100 Ethernet Server Adapters Family CD*:

Windows NT 4.0	MAKENT.BAT
Windows 2000	MAKEW2K.BAT
Windows 9x	MAKEW9X.BAT
NetWare 4.x and 5.x	MAKENW.BAT

For more details on this utility, see the `Readme.txt` file in the root directory of the *IBM 10/100 Ethernet Server Adapters Family CD*.

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## Additional setup and configuration

The IBM 10/100 Ethernet Server Adapter family supports many advanced networking features:

**Adapter Teaming:** Maximize throughput and fault tolerance in your servers with the following features:

- **Adapter Fault Tolerance (AFT)** - Provides automatic redundancy for your adapter. If the primary adapter fails, the secondary adapter takes over. AFT supports two to eight adapters per team. This feature works with any hub or switch.
- **Adaptive Load Balancing (ALB)** - Enables balancing the transmission data flow among two to eight adapters. Also includes built-in AFT option. Note that, with ALB, for reception, only the primary adapter can receive in-bound traffic. This feature works with any switch.
- **Intel Link Aggregation or Cisco Fast EtherChannel (FEC)** - Creates a team of two to eight adapters to increase both transmission and reception throughput. Also includes built-in fault tolerance and load balancing. Requires a switch with Link Aggregation or FEC capability.
- **802.3ad - IEEE 802.3ad** - Performance technology standard similar to the Fast EtherChannel (FEC) standard with the addition of dynamic team aggregation. Requires an 802.3ad capable switch, configure to match static or dynamic capabilities.

**Virtual LAN:** Create VLANs for your workgroups to improve network security and efficiency.

**PROSet 2:** Use this utility to configure your adapter.

**Management features:** configure Wake on LAN and Boot Agent.



**Priority Packet:** Use these features to set up priority filters on your network traffic.

**Packet Protect:** Use this encryption utility to protect the confidentiality and authenticity of IP traffic on your LAN.

For more information on these features, see the \info directory on the CD.



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## Appendix A. Troubleshooting

This appendix describes corrective actions for common problems.

### 1. Check the LEDs on the adapter.

If the LINK light is not on, check all the connections at the adapter and link partner. Make sure that the link partner is set to 100 Mbps and full duplex, and that the device driver is running.

### 2. Make sure that the cable is installed properly.

The network cable must be securely attached at all connections. If the cable is attached but the problem persists, try a different cable.

### 3. Test the adapter.

From DOS, run the adapter and network tests in *diag100.exe*, located in the root directory of the *IBM 10/100 Ethernet Server Adapter CD*.

### 4. Check the following table for solutions to fit your problem.

If none of these steps work, see Appendix C.

Problem	Solution
The computer cannot find the adapter	<ul style="list-style-type: none"><li>• Make sure the adapter is seated firmly in the slot.</li><li>• Try a different PCI busmaster slot. See your server documentation to identify busmaster slots.</li><li>• Try a different IBM 10/100 Ethernet Adapter</li></ul>
Diagnostics pass but the connection fails	<ul style="list-style-type: none"><li>• Try running the Sender-Responder diagnostic test.</li><li>• Make sure the network cable is securely attached.</li></ul>
An adapter stopped working after you installed the IBM 10/100 Ethernet family adapter	<ul style="list-style-type: none"><li>• Make sure the cable is connected to the IBM 10/100 Ethernet Adapter and not another adapter.</li><li>• Check for a resource conflict. See "PCI configuration troubleshooting" on page A-2.</li><li>• Make sure both adapters are seated firmly in the slots.</li><li>• Check all cables</li></ul>

Problem	Solution
The adapter stopped working without apparent cause.	<ul style="list-style-type: none"> <li>• Try reseating the adapter</li> <li>• The network device driver files may be damaged or deleted. Try reinstalling the device drivers.</li> <li>• Try a different IBM 10/100 Ethernet adapter</li> <li>• Try enabling or disabling the auto-negotiation setting on the link partner (this setting must be set the same on both the switch and the adapter).</li> </ul> <p><b>Note:</b> The adapter LNK LED might light even if communications between the adapter and its link partner have not been properly established. Proper configuration of link partners consists of both sides being set to auto-negotiate or set with the same speed and duplex settings.</p>
The LNK LED does not light.	<ul style="list-style-type: none"> <li>• Make sure you installed the adapter device driver.</li> <li>• Check all connections at the adapter or switch.</li> <li>• Try another port on the buffered repeater or switch.</li> <li>• Try enabling or disabling the auto-negotiation setting on the link partner (this setting must be set the same on both the switch and the adapter).</li> </ul>
The Wake on LAN feature is not working.	<ul style="list-style-type: none"> <li>• Make sure the Wake on LAN cable is attached and that power is being applied to the computer.</li> <li>• Check the BIOS for its Wake on LAN setting. Some computers may need to be configured for Wake on LAN. See the documentation that comes with your computer.</li> <li>• Make sure the network cable is fully attached to the adapter.</li> </ul>

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## PCI configuration troubleshooting

Some PCI computers require additional steps to configure a PCI adapter. Try the following if you are having problems configuring the adapter.

- Disable Plug and Play in the BIOS. In some computers, you may need to use the BIOS setup program to disable Plug and Play if resources are not properly assigned.
- Enable the PCI slot. In some PCI computers, you might need to use the BIOS Setup program to enable the PCI slot. This is especially common in PCI computers with the PhoenixBIOS code.
- Enable the slot for busmaster. You must install the IBM 10/100 Ethernet Server adapter in a busmaster slot. Some BIOS setup programs require you to enable the slot for busmaster/master. Check your BIOS setup program and the computer documentation to make sure the slot is set for busmaster/master.

- Configure the slot for level-triggered interrupts. The PCI slot that the adapter is using must be configured for level-triggered interrupts instead of edge-triggered interrupts. Check your BIOS setup program to make sure level-triggering is set up.
- Reserve interrupts and memory addresses for ISA adapters. This prevents PCI adapters from trying to use the same settings as ISA adapters. Check your BIOS setup program; there might be IRQ options such as Enable for ISA or Disable for PCI.

Here are some examples of BIOS setup program parameters:

PCI slot number:	slot where the adapter is installed (1-3)
Master:	Enabled
Slave:	Enabled
Latency timer	40 - 80
Interrupt:	Choose any one of several that the BIOS Setup provides
Edge/Level:	Level

The exact wording of the parameters varies with different computers.

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## Web sites for software updates

You can download Microsoft and Novell software updates from the following sites:

- **Microsoft Service Pack 5:**<ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/ussp5/>
- **Microsoft Service Pack 4:**<ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/ussp4/>
- **Microsoft Service Pack 3:**<ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/ussp3/>
- **Microsoft NDIS Driver Hotfix:**<ftp://ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt40/hotfixes-postsp3/ndis-fix/>
- **Novell Support Pack 6 for NetWare 4.11 or Support Pack 1 for NetWare 5.0:**<http://support.novell.com/misc/patlst.htm>



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## Appendix B. Adapter specifications

Compatibility	PCI v2.2 systems
Media (cable) connectors and wiring	<ul style="list-style-type: none"><li>• RJ-45</li><li>• Use Category 5 cabling at 100 Mbps</li><li>• Supports 100BASE-TX Fast Ethernet</li></ul>
Data rate mode	10 or 100 Mbps
Interrupt levels	PCI: INTA (INTA and INTB for 10/100 Ethernet Dual Port Server Adapters)
SRAM transmit/receive buffer	6 KB
Power requirements	300 mA @ +5 V dc (1.5 watts) (3 watts @ 5V dc for 10/100 Dual Port Server Adapters)
Interrupt	PCI: INTA (INTA and INTB for 10/100 Dual Port Server Adapters)
LEDs	Link/Activity
Dimensions	5.1 cm x 11.9 cm (2 in. x 4.7 in.) excluding bracket
Operating temperature	0° to 55° C (32° to 131° F)
Humidity	10% to 90% non-condensing
Standards conformance	IEEE 802.3, IEEE 802.3x, IEEE 802.1p, IEEE 802.1q
Diagnostic software	<ul style="list-style-type: none"><li>• On-board</li><li>• PROSet</li><li>• Responder</li></ul>
Compliance and Certification	<ul style="list-style-type: none"><li>• Safety - UL</li><li>• FCC Class B</li><li>• CE and Immunity</li><li>• C-tick (Australian)</li></ul>
Duplex mode	Full duplex/Half duplex





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## Appendix C. Help and service

This section contains information on how to obtain online and telephone technical support.

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### Online technical support

Online technical support is available during the life of your product. Online assistance can be obtained through the Personal Computing Support Web site and the IBM Automated Fax System.

<i>Online technical support</i>	
IBM Personal Computing Support Web site	<a href="http://www.ibm.com/pc/support">http://www.ibm.com/pc/support</a>
IBM Automated Fax System	1-800-426-3395 (U.S. and Canada)

During the warranty period, assistance for replacement or exchange of defective components is available. In addition, if your IBM option is installed in an IBM computer, you might be entitled to service at your location. Your technical support representative can help you determine the best alternative.

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### Telephone technical support

Installation and configuration support through the HelpCenter will be withdrawn or made available for a fee, at IBM's discretion, 90 days after the option has been withdrawn from marketing. Additional support offerings, including step-by-step installation assistance, are available for a nominal fee.

To assist the technical support representative, have available as much of the following information as possible:

- Option name
- Option number
- Proof of purchase
- Computer manufacturer, model, serial number (if IBM), and manual
- Exact wording of the error message (if any)
- Description of the problem
- Hardware and software configuration information for your system

If possible, be at your computer. Your technical support representative might want to walk you through the problem during the call.

For the support telephone number and support hours by country, refer to the following table or to the enclosed technical support insert. Support phone numbers are also available by clicking **HelpCenter phone list** on the IBM support Web page at

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

If the number is not provided, contact your IBM reseller or IBM marketing representative. Response time might vary depending on the number and nature of the calls received.

<i>Support 24 hours a day, 7 days a week</i>	
Canada (Toronto only)	416-383-3344
Canada (all other)	1-800-565-3344
U.S.A. and Puerto Rico	1-800-772-2227

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## Appendix D. Product warranty and notices

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

**Machine** - 10/100 Ethernet Server and 10/100 Dual Port Server Adapters **Warranty period\*** - One Year

*\* 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.*

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### IBM Statement of Limited Warranty

#### Part 1 - General Terms

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

#### The IBM Warranty for Machines

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

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

#### Extent of Warranty

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

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

### **Items Not Covered by Warranty**

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

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

### **Warranty Service**

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

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

Some parts of IBM Machines are designated as Customer Replaceable Units (called “CRUs”), e.g., keyboards, memory, or hard disk drives. IBM ships CRUs

to you for replacement by you. You must return all defective CRUs to IBM within 30 days of your receipt of the replacement CRU. You are responsible for downloading designated Machine Code and Licensed Internal Code updates from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides.

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

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

You also agree to

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

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

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

### **Limitation of Liability**

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance,

regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except for any liability that cannot be waived or limited by applicable laws, IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code.

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

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

## **Governing Law**

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

## **Part 2 - Country-unique Terms**

### **AMERICAS**

#### **BRAZIL**

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

### **NORTH AMERICA**

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

## CANADA

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

## UNITED STATES

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

## ASIA PACIFIC

### AUSTRALIA

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

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

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

### CAMBODIA, LAOS, AND VIETNAM

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

*The following is added to this Section:* Disputes and differences arising out of or in connection with this Agreement shall be finally settled by arbitration which shall be held in Singapore in accordance with the rules of the International Chamber of Commerce (ICC). The arbitrator or arbitrators designated in conformity with those rules shall have the power to rule on their own competence and on the validity of the Agreement to submit to arbitration. The

arbitration award shall be final and binding for the parties without appeal and the arbitral award shall be in writing and set forth the findings of fact and the conclusions of law.

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

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

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

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

## HONG KONG AND MACAU

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

## INDIA

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

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

## JAPAN

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



## NEW ZEALAND

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

**Limitation of Liability:** *The following is added to this Section:* Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

## PEOPLE'S REPUBLIC OF CHINA (PRC)

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

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

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

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

## EUROPE, MIDDLE EAST, AFRICA (EMEA)

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

**Warranty Service:**

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

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

### **Governing Law:**

The applicable laws that govern, interpret and enforce rights, duties, and obligations of each of us arising from, or relating in any manner to, the subject matter of this Statement, without regard to conflict of laws principles, as well as Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided, except that in 1) Albania, Bosnia-Herzegovina, Bulgaria, Croatia, Hungary, Former Yugoslav Republic of Macedonia, Romania, Slovakia, Slovenia, Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan, the laws of Austria apply; 2) Estonia, Latvia, and Lithuania, the laws of Finland apply; 3) Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Congo, Djibouti, Democratic Republic of Congo, Equatorial Guinea, France, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Mali, Mauritania, Morocco, Niger, Senegal, Togo, and Tunisia, this Agreement will be construed and the legal relations between the parties will be determined in accordance with the French laws and all disputes arising out of this Agreement or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 4) Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe, this Agreement will be governed by English Law and disputes relating to it

will be submitted to the exclusive jurisdiction of the English courts; and 5) in Greece, Israel, Italy, Portugal, and Spain any legal claim arising out of this Statement will be brought before, and finally settled by, the competent court of Athens, Tel Aviv, Milan, Lisbon, and Madrid, respectively.

**THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:**

**AUSTRIA AND GERMANY**

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

*The following paragraphs are added to this Section:*

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

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

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

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

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

**EGYPT**

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

*Applicability of suppliers and resellers (unchanged).*

## FRANCE

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

## IRELAND

**Extent of Warranty:** *The following is added to this Section:* Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

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

*Applicability of suppliers and resellers (unchanged).*

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

## ITALY

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

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

## SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

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

## UNITED KINGDOM

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

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

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

*Applicability of suppliers and resellers (unchanged).*

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

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## **Processing date data**

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

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Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments

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Wake on LAN

HelpCenter

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

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## Electronic emission notices

10/100 Ethernet Server and 10/100 Dual Port Server Adapters

### Federal Communications Commission (FCC) statement

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

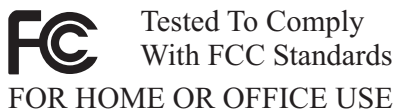
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. 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.

Responsible party:

International Business Machines Corporation  
New Orchard Road  
Armonk, NY 10504  
Telephone: 1-919-543-2193



### **Industry Canada Class B emission compliance statement**

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

### **Avis de conformité a la réglementation d'Industrie Canada**

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

### **Deutsche EMV-Direktive (electromagnetische Verträglichkeit)**

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM UK, Greenock.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

### **European Union - emission directive**



This product is in conformity with the protection requirements of EU Council Directive 89/366/ECC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

IBM can not accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended 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 B Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

### **Union Européenne - Directive Conformité électromagnétique**

Ce produit est conforme aux exigences de protection de la Directive 89/336/EEC du Conseil de l'UE sur le rapprochement des lois des États membres en matière de compatibilité électromagnétique.

IBM ne peut accepter aucune responsabilité pour le manquement aux exigences de protection résultant d'une modification non recommandée du produit, y compris l'installation de cartes autres que les cartes IBM.

Ce produit a été testé et il satisfait les conditions de l'équipement informatique de Classe B en vertu de CISPR22/Standard européen EN 55022. Les conditions pour l'équipement de Classe B ont été définies en fonction d'un contexte résidentiel ordinaire afin de fournir une protection raisonnable contre l'interférence d'appareils de communication autorisés.

### **Unione Europea - Directiva EMC (Conformidad electromagnética)**

Este producto satisface los requisitos de protección del Consejo de la UE, Directiva 89/336/CEE en lo que a la legislatura de los Estados Miembros sobre compatibilidad electromagnética se refiere.

IBM no puede aceptar responsabilidad alguna si este producto deja de satisfacer dichos requisitos de protección como resultado de una modificación no recomendada del producto, incluyendo el ajuste de tarjetas de opción que no sean IBM.

Este producto ha sido probado y satisface los límites para Equipos Informáticos Clase B de conformidad con el Estándar CISPR22 y el Estándar Europeo EN 55022. Los límites para los equipos de Clase B se han establecido para entornos residenciales típicos a fin de proporcionar una protección razonable contra las interferencias con dispositivos de comunicación licenciados.

## Union Europea - Normativa EMC

Questo prodotto è conforme alle normative di protezione ai sensi della Direttiva del Consiglio dell'Unione Europea 89/336/CEE sull'armonizzazione legislativa degli stati membri in materia di compatibilità elettromagnetica.

IBM non accetta responsabilità alcuna per la mancata conformità alle normative di protezione dovuta a modifiche non consigliate al prodotto, compresa l'installazione di schede e componenti di marca diversa da IBM.

Le prove effettuate sul presente prodotto hanno accertato che esso rientra nei limiti stabiliti per le apparecchiature di informatica Classe B ai sensi del CISPR 22/Norma Europea EN 55022. I limiti delle apparecchiature della Classe B sono stati stabiliti al fine di fornire ragionevole protezione da interferenze mediante dispositivi di comunicazione in concessione in ambienti residenziali tipici.

이 기기는 가정용으로 전자파 적합등록을 기기로서

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Japanese statement of compliance for products less than or equal to 20 A per phase

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