



Intel[®] PRO/100 SP Mobile Combo Adapter

User's Guide

OPTIONS
by IBM

Note: Before using this information and the product is supports, read the information under “Appendix E. Product warranty and notices” on page E-1.

First Edition (February 2001)

© Copyright International Business Machines Corporation 2001. All rights reserved.
US Government Users Restricted Rights – Use, duplication or disclosure restricted by
GSA ADP Schedule Contract with IBM Corp.

Download from Www.Somanuals.com. All Manuals Search And Download.

Contents

Safety: Read first	v
About this book	vii
Part 1: Installation and user's guide	1-1
Appendix A. Troubleshooting	A-1
Appendix B. Modem function	B-1
Appendix C. Specifications	C-1
Appendix D. Help and service information.	D-1
Appendix E. Product warranty and notices	E-1
Appendix F. User notices	F-1

Safety: Read first

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 přečtete 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」。

About this book

This manual contains instructions for installing and using your Intel® PRO/100 SP Mobile Combo Adapter. The manual is divided into two parts:

Part 1: Installation and user's guide:

This guide contains the product description, hardware and software installation.

Part 2 Appendixes

This section contains troubleshooting, modem function, specifications, help and service information, and warranty and notices.

Online user's guide

The complete User's Guide is located on the Intel CD. Use your Web browser to view or print topics from the User's Guide. The guide covers additional configuration topics. To view the guide, insert the CD into your CD-ROM and wait for the Autorun screen to display. Click the User's Guide button. Or, from your Web browser, open \INFO\INDEX.HTM on your Intel CD.

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 your 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.

Part 1: Installation and user's guide

This section contains instructions on how to install and use the Intel PRO/100 SP Mobile Combo Adapter.

System requirements

Before installing the PRO/100 adapter, be sure that your system has the following:

- One open Mini-PCI slot
- The latest BIOS for your computer
- Microsoft® Windows® Millennium Edition (Me), Microsoft Windows 2000 Professional, Microsoft Windows NT® 4.0 Workstation, Windows 98 or Windows 95
- Windows NT 4.0 requires Service Pack 4 or later to use VLAN, or Service Pack 5 or later for PROSet II

To download the necessary software patches from Microsoft and Novell visit the following Microsoft Web site for the latest Service Pack information. If this site has changed, go to the main Microsoft site and search for the term, **Service Pack**.

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

Attach the network and modem cables

Connect the cable to the mobile computer using Category 3, 4, or 5 Twisted Pair Ethernet (TPE) network cable for 10 Mbps (Mbps equals 1 000 000 bits per second) networks, and only Category 5 TPE for 100 Mbps networks and 10/100 Mbps residential networks. The modem cable is an RJ-11 standard phone line.

Installing Ethernet and modem device drivers

PCI Ethernet Controller driver and Lucent Win Modem driver installation procedures are included for:

- Windows Me
- Windows 2000
- Windows 98
- Windows 95
- Windows NT 4.0

Installing the Ethernet and modem device drivers in Windows Me

To install the PCI Ethernet Controller device driver and the Lucent Win Modem device driver in Windows Me, do the following:

Note: Use the Add New Hardware Wizard for installing only the PCI Ethernet Controller. See instructions below.

1. Start Windows Me. The Add New Hardware Wizard window opens and indicates that the PCI Ethernet Controller was found.
2. Insert the Intel Driver CD in the CD-ROM drive and click **Next**.
3. Make sure that **Automatic search for a better driver (Recommended)** is selected and click **Next**. Windows installs the device driver from the CD. The Wizard window displays the adapter name, and indicates it has finished installing the new device driver.
4. Click **Finish** to complete the PCI Ethernet Controller device driver installation, and click **Yes** to restart the computer.
5. When the computer restarts and the Wizard finds the PCI Serial Controller, click **Cancel**.
6. Click **Start+Run** and then type `x:\modem\winme\setup.exe` where *x* is the drive letter of the CD-ROM drive.
7. Click **OK** on **Do you want to install the modem driver?**
The **Installing Modem Drivers** displays and the Wizard finds a Lucent Win Modem.
8. Restart the computer to complete the Lucent Win Modem installation.

Installing the Ethernet and Modem device drivers in Windows 2000

To install the PCI Ethernet Controller device driver and the Lucent Win Modem device driver in Windows 2000, do the following:

1. Start Windows 2000.
The Found New Hardware Wizard window opens.
2. Click **Cancel**. The window opens for the Ethernet Controller.
3. Insert the Intel Driver CD into the CD-ROM drive.
4. Click **Next**. The Ethernet Controller window opens.
5. Select **Search for a suitable driver for my device (Recommended)**.
6. Click **Next**.
7. Select **CD-ROM drive (default)** and click **Next**. The Wizard indicates that it found a driver for the Ethernet Controller and shows the driver's location on the CD.

8. Click **Next** on **Driver Files Search Results**.
9. If **The Digital Signature Not Found** window opens, click **Yes** to continue.
10. When installation of the PCI Ethernet Controller completes, click **Finish**.
11. Click **Start→Run**.
12. Type `x:\modem\win2k\setup.exe` where *x* is the drive letter of the CD-ROM drive.
13. Click **OK** on **Do you want to install the modem driver?**
14. If the **Digital Signature Not Found** window opens, click **Yes** to continue. The Lucent Win Modem driver will complete loading.

Installing the Ethernet and modem device drivers in Windows 98

To install the PCI Ethernet Controller device driver and the Lucent Win Modem device driver in Windows 98, do the following:

1. Start Windows 98. The Add New Hardware Wizard window opens for the PCI Ethernet Controller.
2. Click **Next**.
3. Insert the Intel Driver CD into the CD-ROM drive.
4. Select **Search for the best driver for your device (Recommended)**.
5. Click **Next**. You are prompted to select the locations from where you wish to search for new device drivers.
6. Select **Specify a location** and specify *x*: where *x* is the driver letter of the CD-ROM drive.
7. Click **Next**.
8. Select **The Updated Driver (Recommended)** and click **Next**.
9. If the displayed driver is Intel PRO/100 SP Mobile Combo Adapter, click **Next**; otherwise click **Back** and repeat Step 8.
10. At the Insert Disk window, click **OK**.
11. In the Copying files from the pulldown menu, select the CD-ROM drive and click **OK**. A window opens, indicating that the PCI Ethernet Controller device driver is being loaded. The Wizard then indicates that the device driver has finished installing.
12. Click **Finish** to complete the installation of the PCI Ethernet Controller device driver.
13. Click **Yes** to restart your computer.
14. When the computer restarts and the Wizard finds the PCI Serial Controller, click **Cancel**.
15. Click **Start→Run**. Type `x:\modem\win9x\setup.exe` where *x* is the drive letter of the CD-ROM drive.
16. Click **OK** on **Do you want to install the modem driver?**

The **Installing Modem Drivers** window opens and the Wizard finds a Lucent Win Modem.

17. Restart the computer to finish the Lucent Win Modem installation.

Installing the Ethernet and modem device drivers in Windows 95

To install the PCI Ethernet Controller device driver and the Lucent Win Modem device driver in Windows 95, do the following:

Note: You will need your Windows 95 installation CD or diskette to install the device driver.

For Windows 95 OSR0 or OSR1

1. Start Windows 95. The New Hardware Found window for the PCI Ethernet Controller opens.
2. Click **Driver** from the disk provided by hardware manufacturer.
3. Click **OK**.
4. Insert the device drivers for the CD-ROM.
5. When you are prompted to specify the path where the device driver is located, enter *x:* where *x* is the drive letter of the CD-ROM drive.
6. Click **OK**.
7. Follow the instructions on the screen.
8. When you are prompted to specify the path that the device driver is in, type *x* where *x* is the drive letter of the CD-ROM drive.
9. Follow the instructions on the screen.
10. When you are prompted, restart your computer to complete the PCI Controller Modem device driver installation.

Note: If you cannot connect to a server, or if Windows 95 reports an error after you double-click **Network Neighborhood**, do the following:

- Make sure that you are using the device drivers from the driver CD that came with the Combo card.
 - Make sure that the device driver is installed and the protocols are bound. Check the Device Properties list for trouble indicators (if there is trouble, an X or ! symbol appears beside the icon.)
 - Ask your LAN administrator whether you need to install additional networking software.
11. Restart Windows. The New Hardware Found window or the Update Device Driver Wizard window for the PCI Card opens.
 12. Click **Do not install a driver**.
 13. Insert the device drivers CD into the CD-ROM.

14. Click **Start→Run**.
15. Enter `x:\modem\win9x\setup.exe` where *x* is the drive letter of the CD-ROM drive.
16. Follow the instructions on the screen.
17. Restart the computer. As you configure your communication software, you will be prompted to select a modem.
18. Select Lucent Win Modem to finish the Lucent Win Modem device driver installation.

For Windows 95 OSR2.1 or OSR2.5

1. Start Windows 95. The Update Device Driver Wizard window opens for the PCI Ethernet Controller.
2. Insert the device drivers CD into the CD-ROM drive.
3. Click **Next**.
4. Click **Other Location...**
5. Enter *x*: where *x* is the drive letter of the CD-ROM drive.
6. When Windows finds the following update driver for this device: Intel PRO/100+ MiniPCI message displays, click **Finish**.
7. When you are prompted to specify the path that the device driver is in, type *x*: where *x* is the drive letter of the CD-ROM drive.
8. Click **OK**.
9. Follow the instructions on the screen.
10. When you are prompted, restart your computer to complete the PCI Controller Modem device driver installation.

Note: If you cannot connect to a server, or if Windows 95 reports an error after you double-click **Network Neighborhood**, do the following:

- Make sure that you are using the drivers from the device driver CD shipped with the Combo card.
 - Make sure that the device driver is installed and the protocols are bound. Check the Device Properties list for trouble indicators (if there is trouble, an X or ! symbol appears beside the icon).
 - Ask your LAN administrator whether you need to install additional networking software.
11. Restart Windows. The Hardware Found or the Update Device Driver Wizard window for the PCI Serial Controller opens.
 12. Click **Cancel**.
 13. Insert the device drivers CD into the CD-ROM.
 14. Click **Start→Run**.
 15. Enter `x:\modem\win9x\setup.exe` where *x* is the drive letter of the CD-ROM drive.

16. Follow the instructions on the screen.
17. Restart the computer. As you configure your communication software, you will be prompted to select a modem.
18. Select Lucent Win Modem to complete the Lucent Win Modem device driver installation.

Installing the Ethernet and modem device drivers in Windows NT 4.0

To install the PCI Ethernet Controller driver and the Lucent Win Modem in Windows NT 4.0, do the following:

1. Start Windows.
 2. Click the **Network** icon in the **Control Panel**.
 3. Click **Yes** to install Windows NT networking. The Network Setup Wizard window opens.
 4. Select **Wired to the network (default)** and click **Next**.
 5. Click **Select from list**.
 6. Click **Have Disk**.
 7. In the Insert Disk window, type the location of the CD-ROM drive. The Ethernet Adapter displays on the Select OEM Option window as "IBM® or Intel® 10/100 Ethernet Adapter."
 8. Click **OK**.
 9. Click **Next**.
 10. Under Network Protocols, select **TCP/IP Protocol (default)** and click **Next**.
 11. Click **Next** in the Network Service window to select all the services listed.
 12. Click **Next** to install selected components.
 13. On the Windows NT Setup Screen, enter C:\i386 and click **Continue**. The PCI Ethernet Controller device driver is installed.
 14. In the TCP/IP Setup window, click **Yes**.
 15. On the window that requests network bindings, click **Next**.
 16. Click **Next** to install and initialize the network services.
- Note:** If you are disconnected from the network, the DHCP Client window opens and you need to click **Yes**.
17. When your computer name and your workgroup displays, click **Next**.
 18. Click **Finish** to complete the installation.
 19. Click **Yes** to restart the computer to finish installation of the PCI Ethernet Controller.
 20. When the computer restarts, click **Start→Run**.

21. Type `x:\modem\winnt\setup.exe` where *x* is the drive letter of the CD-ROM drive.
22. Click **OK** on **Do you want to install the modem driver?** After the Lucent Win Modem driver installs, click **OK** to restart your computer.
23. Exit Windows Explorer and restart to complete installation of the Lucent Win Modem driver.

Using the modem abroad

This section provides information for using the modem outside your country. For the list of regions which support the use of the Combo card, see the online information on your computer.

Setting up the dialing properties

When you use the Combo card outside of the country where it was set up, reset the dialing properties, as follows:

1. Click **Start** and move the cursor to **Settings**; then click **Control Panel**.
2. Double-click **Modem**.
3. Double-click **Dialing Properties**.
4. In the **Country/Region** section, select the region where you are going to use the modem.

The regions where IBM supports the use of your modem are listed in the online manual. If you select a region not on that list, your modem might not work correctly.

Performing an Unattended Install

Unattended installation procedures are available for:

- Windows 2000
- Windows 95/98
- Windows NT 4.0

To perform an unattended install, refer to the online User's Guide located on your Intel CD and select the topic called Windows Push Installation.

Additional setup and configuration

The PRO/100 adapter supports a wide range of advanced networking features. Such features are fully described in the online User's Guide located on your Intel CD. To view the guide, insert the Intel CD in your computer and wait for the Autorun window to open. Click the **User's Guide** button to start your Web browser and view the guide.

Advanced features

This section presents advanced information for adapters that support the advanced features listed. Tasks within this section should be handled only by system administrators.

Advanced adapter features

To access the advanced features of the adapter, perform the following:

1. In the **Control Panel**, double-click **Network**.
2. Select the adapter and click **Properties**.
3. Click the **Advanced** tab.

The Combo card has the following advanced features:

802.1p/802.1Q Tagging

IEEE 802.1p is a new IEEE standard for tagging packets—that is, assigning packets priorities. Each packet is tagged with four additional bytes, which increase its size and indicate its priority—from 0 (low) to 7 (high). This process is called priority packet tagging or traffic class expediting. It enables the adapter, working with the switches and routers in the network, to send packets with higher priorities first.

To use priority packet tagging, your network infrastructure—specifically, the routing devices that receive and transfer packets, and the adapters for those devices—must support 802.1 p/802.1Q tagging. Using the Priority Packet utility, set up the priority filter. Then, set the 802.1p/802.1Q tagging option to Enabled. If the priority filter is set up but the setting is Disabled, the tagged packets will still be processed by priority if the Combo card uses an Intel 82558 or later Ethernet controller. There are two requirements for using IEEE 802.1p tagging effectively:

- The other devices receiving and routing 802.1p tagged packets must support 802.1p
- The adapters must support 802.1p.

ACPI Wake On LAN

Enables or disables the Magic Packet service for IBM Wake on LAN[®] when used in Windows 98 Version 4.10.1998 without the Service Pack. If you are using a later version of Windows 98, or have Service Pack 1 or later installed, this option will be ignored and the ACPI Wake on LAN services will be used.

Note: To determine your version of Windows 98:

1. From the Windows 98 desktop, right-click on **My Computer** and choose **Properties**.
2. The System Properties window opens. Your Windows 98 version is listed under **System**.

Enable PME

Use this setting to adjust the power management compatibility of the adapter. The default setting is **Disable**. To explicitly allow wake up with a Magic Packet from shutdown under APM power management mode, change the setting to **Enable**. To explicitly turn the 82550 LAN controller off in shutdown under ACPI power management mode, leave this setting at **Disable**.

Adaptive Inter-Frame Spacing

This is a performance setting that compensates for excessive Ethernet packet collisions on your network. For most computers and networks, the default setting works best by dynamically adapting to the network traffic conditions. However, in some rare cases, you might obtain better performance by setting the spacing manually. Setting a value forces a static gap between packets. Increasing the value increases the delay between frames transmitted.

Default: 1

Range: 1 – 255

Adaptive Technology

The recommended value for this is **On**. This parameter either enables or disables the Adaptive Technology performance enhancement feature. To enable the feature, click **ON**. To disable the feature, click **OFF**. To minimize CPU use for better system performance, leave this parameter **ON**.

Adaptive Transmit Threshold

The recommended value for Adaptive Transmit Threshold is 16. This specifies the number of bytes before the adapter empties its internal transmit FIFO onto the wire.

The value is multiplied by 8 to produce the number of bytes. For example, if Transmit Threshold = 200, the number of bytes is 1600. Because this is greater than the maximum packet size for Ethernet, the adapter will not attempt early transmits.

Although this is the safest setting, the best performance is achieved when the threshold parameter is as low as possible without producing underruns. To experiment, set the parameter to 16. Then, if performance drops significantly, increase the value in small increments.

Coalesce Buffers

The recommended value is 8 with a range of 1–32. This specifies the number of memory buffers available to the driver in case the driver runs out of available Map Registers. This buffer area is also used when a packet consists of many fragments. If no coalesce buffers or map registers are available, the driver will be forced to queue the packet for later transmission. The most effective method of transmitting data, however, is to use map registers.

Link Speed & Duplex

The recommended setting is Auto Detect (default). This parameter lets the adapter know what speed to use on the Ethernet wire, and how to send and receive packets, either full or half duplex. The following options are available:

- Auto Detect

The adapter detects whether its environment can support a speed of 100Mbps, and uses that speed if possible. It also negotiates with the switch on whether to send and receive packets at full or half duplex.

- 10Mbps/Half Duplex

The adapter uses a speed of 10Mbps and performs one operation at a time. It either sends or receives.

- 10Mbps/Full Duplex

The adapter uses a speed of 10Mbps and sends and receives packets at the same time. This improves the performance of your adapter. Select this mode only if you have a full-duplex switch.

Locally Administered Address (LAA)

You can optionally override the factory default network address of the adapter. To enter a new network address, type a 12-digit hexadecimal number in this box. The address entered should be in the range of 000000000000—FFFFFFFFFFFF. Exceptions: Do not use a multicast address (LSB of the high byte = 1). For example, in the address 0X123456789AB, X cannot be an odd number. A value of 000000000000 will default to the address set at the factory.

PCI Bus Efficiency

When enabled, this option causes all transmit packets to be coalesced into a single buffer before being sent to the network card. Because the entire frame

requires only one PCI transaction, the PCI bus is more efficient, but transmit time is slightly longer. When the option is disabled, the packets are not coalesced, and each packet requires several PCI transactions. The PCI bus is less efficient, but transmit time is faster.

Receive Buffers

The recommended value is 32 and the range is 1–1024. This specifies how many buffers the driver is to use when copying data to the protocol memory. When the network load is high, increasing receive buffers can increase performance. The tradeoff is that this also increases the amount of system memory used by the driver. If too few receive buffers are used, performance will suffer. If too many are used, the driver will unnecessarily consume memory resources.

Transmit Control Blocks

The recommended value is 16 and the range is 1–80. This specifies how many transmit control blocks the driver allocates for adapter use. This directly corresponds to how many outstanding packets the driver can have in its "send" queue. If too few transmit control blocks are used, performance will suffer. If too many transmit control blocks are used, the driver will unnecessarily consume memory resources. Transmit Control Blocks Range: 1–80.

Smart Power Down

The recommended value is enabled. Designed for mobile computers, this feature helps extend battery life. When the feature is enabled, the adapter automatically removes power from the adapter when the LAN cable is disconnected from the adapter. Later, when the LAN cable is connected, power to the adapter is restored. If the feature is off, power is applied to the adapter at all times.

Intel Priority Packet: An Overview

Priority Packet is a traffic-prioritization utility that enables you to set up filters to process high-priority traffic before normal traffic. Using Priority Packet, you can set up filters to give priority to critical applications or users.

Prioritizing Network Traffic

To set up priority filters so that information from critical nodes or applications will be sent according to priority, use Intel's Priority Packet.

When traffic is prioritized at the host or entry point of the network, network devices can base forwarding decisions on priority information defined in the packet.

Priority Packet prioritizes traffic on the basis of priority filters—parameters you assign to be applied to outgoing (transmit) packets. Using the Priority Filter Wizard, you can set up predefined or custom priority filters on the basis of node (MAC) address, Ethernet type, or various properties of the protocol and port.

Priority Packet provides two methods for prioritizing traffic, IEEE_802.1p tagging and Intel High Priority Queue. To use Priority Packet, you need to enable IEEE_802.1p Tagging and then install Priority Packet.

To enable IEEE_802.1p tagging on an adapter, do as follows:

1. In the Control Panel, double-click **Network**.
2. Select the adapter and click **Properties**.
3. Select the **Advanced** tab and enable **IEEE_802.1p** tagging.

To install Priority Packet, run the setup program on the Drivers CD. This program is located at `x:\prt(pkt)\setup.exe`, where `x` is the drive letter of the CD-ROM drive.

Note: IEEE_802.1p tagging increases the size of the packets it tags. Some hubs and switches will not recognize the larger packets and will drop them. Check the documentation for your hubs and switches to see whether they support 802.1p. If they do not or if you are not sure, you have two choices.

- You can use High Priority Queue (HPQ) instead (see the next section), or
- You can configure the switch to strip the tags from the packets and send them on to the next destination as normal traffic.

Intel High Priority Queue

If your network infrastructure devices do not support IEEE_802.1p, or if you're not sure, you can still define filters and send packets as high priority by assigning them to the High Priority Queue (HPQ).

To do this, you use Priority Packet when you create or assign a filter. This method does not provide the precise priority levels of 802.1p tagging, but it does assign high or low priority to traffic and sends packets having high priority first. Therefore, if there are multiple applications on a system sending packets, the packets from the application with a filter are sent out first. HPQ does not change network routing, nor does it add any information to the packets.

Wake on LAN

The Wake on LAN (WOL) feature operates according to a published specification. In simple terms, the specification enables designers to build network adapters that are capable of “listening” to network activity even when the computer is turned off.

WOL adapters have a special low-power standby mode that is active when the rest of the computer is without power. The adapter will respond to a special wake-up packet sent by another computer or network device. Typically, this wake-up packet causes the adapter to signal the computer to restart and run a predefined program.

Virtual LAN

A Virtual LAN (VLAN) is a logical grouping of network devices put together as a LAN regardless of their physical grouping or collision domains. If you use the VLAN, the following is required:

- Windows NT 4.0 with Service Pack 4.0 (or later) or Service Pack 3.0 and the NDIS driver hotfix from Microsoft.

When a VLAN is used, a user can see and access only specified network segments. This improves network performance and improves network security. VLANs offer the ability to group users and stations together into logical work-groups. This can simplify network administration when clients are connecting to servers that are geographically dispersed across a building, a campus, or an enterprise network.

Typically, VLANs consist of co-workers within the same department but in different locations, groups of users running the same network protocol, or a cross-functional team working on a joint project. Joining workers with VLANs forms logical working groups.

Normally, VLANs are configured at the switch and any computer can be a member of one VLAN per installed network adapter. The PRO/100 adapter supersedes this by communicating directly with a switch, so that up to 64 VLANs can be on a single adapter. To set up VLAN membership, your adapter must be attached to a switch that has VLAN capability.

How to Join a VLAN From Windows NT 4.0

To join a VLAN, do as follows:

1. Create a VLAN on the switch. Use the parameters you assign there to join the VLAN from the server. For more information for your switch, see the documentation.
2. Double-click **Network** in **Control Panel**.

3. On the **Adapters** tab, select the adapter you want to be on a VLAN.
4. Click **Properties**.
5. In PROSet, click **Join VLAN**.
6. Type the VLAN ID and the VLAN Name.

Note: The VLAN ID must match the VLAN ID on the switch. The Valid ID range is from 0–4095. The VLAN Name is for informational purposes only, and does not have to match the name on the switch.

7. Click **Join VLAN**.
8. Repeat Steps 3 to 6 for each VLAN you want the server to join. The VLANs you add are listed on the **Adapters** tab.
9. Click **Close** and restart the computer.

Boot Agent

The Intel Boot Agent is a software product that allows your networked client computer to boot start using a program code image supplied by a remote server. The features offered by this product are:

- Compliant with the Wired for Management Baseline 2.0 (WfM 2.0) specification
- Incorporates the software defined in the Pre-boot eXecution Environment Version 2.0 (PXE 2.0 and 2.1) specification
- Some versions of the Boot Agent also include support for Remote Program Load (RPL) runtime and loader software (10/100 adapters only)
- Compatible with legacy boot agent environments that use BOOTP protocol
- Customizable in pre-boot, Windows, and DOS environments

Product Contents

When you purchase an Intel WfM-compatible adapter, the product package includes the following items related to the Boot Agent:

- A Boot Agent software image integrated into the adapter's flash ROM device.
IBM may occasionally provide Boot Agent software updates. A Boot Agent software update package consists of:
 - A Boot Agent software image that can be loaded onto your client network adapter's flash ROM device.

This software and documentation as well as updates are available at the following web site:

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

Then, search for **Boot Agent**.

Configuration Setup

The Boot Agent software provides configuration options that allow you to customize the behavior of the Boot Agent software. Changing the Boot Agent configuration will usually be required only the first time you add a new network adapter to a client computer within your network. You can configure the Boot Agent within any of the following environments:

- Pre-boot environments (before operating system is loaded)
- Windows environments
- DOS environments

Packet Protect

Packet Protect enables you to:

- Protect confidentiality and authenticity of IP traffic on your LAN using Internet Protocol Security (IPSec), including Internet Key Exchange (IKE).
- Offload security tasks to an Intel PRO/100 S Management or Server Adapter to optimize network performance.

Adaptive Link Response

The Adaptive Link Response feature allows the MiniPCI adapter installed in a mobile product to recognize whether or not the network cable is connected to the LAN card. This will avoid the Domain Login error "No Domain Server was available to validate your password."

- If no network link is detected, the operating system will display a two-line login window, and will not fully load the LAN driver.
- If a network link is detected, the operating system will display a three-line login window, and will fully load the LAN driver.

Appendix A. Troubleshooting

This section contains information on troubleshooting for the network adapter and modem.

Troubleshooting network adapter

The following table describes troubleshooting for the network adapter.

Problem	Action
The Combo card can't connect to the Network.	<ul style="list-style-type: none">• Make sure that the cable is installed properly. The network cable must be securely attached to the Ethernet connector and hub. The maximum allowable distance from adapter to hub is 100 meters. If the problem persists though the cable is attached and the distance is within acceptable limits, try a different cable. If you're directly connecting two computers without a hub or a switch, use a crossover cable.• Make sure that you're using the correct device drivers.• Make sure that you're using the device drivers that come with the Combo card.• Make sure that the switch port and the adapter have the same duplex setting. If you configured the adapter for full duplex, make sure that the switch port is also configured for full duplex. Setting the wrong duplex mode can degrade performance, cause data loss, or result in lost connections.
The connection fails or errors occur.	<ul style="list-style-type: none">• At 100 Mbps, use Category 5 wiring and make sure that the network cable is securely attached.• At 100 Mbps, connect to a 100BASE-TX hub/switch (not 100BASE-T4).• Make sure that the duplex mode setting on the adapter matches the setting on the switch.
The adapter stopped working without apparent cause.	<ul style="list-style-type: none">• The network driver files may be corrupt or missing. Remove the drivers and then reinstall them.
The Wake on LAN (WOL) feature is not working.	<ul style="list-style-type: none">• Check the BIOS for its WOL setting.• Make sure that the network cable is fully attached to the adapter.
Resuming normal operation from hibernation or suspend mode takes a long time.	<ul style="list-style-type: none">• This is not a problem. If you have not connected the network cable, the computer queries the Ethernet until the timeout timer is reached. Connect the network.

Troubleshooting modem

The following table describes troubleshooting the modem.

Problem	Action
Your modem does not work properly after you install the device driver.	<p>Check the following:</p> <ul style="list-style-type: none">• The cable is connected to the modem card correctly.• You selected Intel PRO/100 SP Mobile Combo Adapter application setting.• You are using the driver that is on the device drivers CD shipped with the combo card.• For Windows 95, Windows 98, or Windows 2000, the trouble indicator (an X or ! symbol) appears on the modem icon in the "Device Manager."• For Windows NT 4.0, the Windows NT 4.0 Event Viewer shows an error message. <p>If these items are OK, do the following:</p> <ol style="list-style-type: none">1. Click Start.2. Move the cursor to Settings, and click Control Panel.3. Double-click Modem.4. Click Properties.5. Click the Connection tab.6. Clear the Wait for dial tone before dialing check box.7. Click Advanced.8. Clear the Use error control check box.9. Select the Use flow control check box, and make sure that Hardware (RTS/CTS) is selected.10. Click the OK button to return to the Modem Properties window.11. Click Dialing Properties, and click either Tone dialing or Pulse dialing. Most telephones today use tone dialing.12. Close all windows opened in this process.

Appendix B. Modem function

This section describes information about general modem hardware function, AT command summary, and AT commands reference S-registers. For additional information, refer to Lucent Technologies, Host-Based Controller Modem AT Command Set, Version 1.1, June 15, 1998.

General Modem Hardware Function

Table 3 below contains the general modem hardware functions supported.

Table 3: Supported Functions

Data Modes: ITU V.90, V.34, V.32bis, V.32, V.22bis, V.22, V.21; Bell 103, 212A
V.92 hardware ready [requires Lucent software upgrade]
V.8bis Signaling
V.23 for France Minitel
V.25 & V.25ter
V.250 (PC98 compliant subset)
Error Control/Data Compression: V.42 & V.42bis
MNP 1-5
Fax Modes: ITU-T V.34 (28.8Kbps Fax) [Except OS/2]
Fax Modes: V.17, V.21, V.27ter, V.29
Hayes Compatible AT command
WW DAA - Off Hook Detection - Remote Hang up detection
Over current/voltage protection for PBX, WT
OC/OV status via AT#UD
Applet to display message for Over current/voltage condition
Power Management
Wake-Up on Ring - powered D3hot
Wake-Up on Ring from D3cold both in APM and ACPI. Supported as long as the system supplies 3.3 V_AUX to the MiniPCI connector.
Plug and Play dynamic configuration [Except Windows NT4]
PC99 Compliant
V.34 Seamless Rate Change
PWM Call Monitor interface with volume control and on/off control via AT commands
Dial tone detection for all supported countries
Tone and Pulse dialing support [Pulse dialing supported in all countries except those requiring pulse clamping]

Table 3: Supported Functions

Separate Homologation Country parameters in binary file [Except OS/2]
CLKRUN# support. CLKRUN# should not be asserted if no data transaction for modem (or LAN)
NT 4.0 APM Support through TP port DD for Windows NT 4.0 with the latest service pack

Note: Meter Tone (billing tone) filtering for Switzerland and Germany is not included and must be provided by the user.

AT command summary

The following tables summarize the commands implemented by the modem. Commands may be executed when the modem is in COMMAND mode. COMMAND mode is entered upon under one of the following conditions:

- After restart
- At the termination of a connection
- After the execution of a command other than dial or answer commands (ATO or AT&T)
- Upon the receipt of the ESCAPE SEQUENCE (three consecutive characters matching the contents of S register 2) while on-line mode
- Upon the on-to-off transition of DTR if & D1, D2 or &D3 has been set

Table 4: AT Command Set Summary. The following table is from Lucent Technologies, Host-Based Controller Modem AT Command Set, Version 1.1, June 15, 1998.

Command	Description	Command	Description
A/	Repeat last command	&J	Auxiliary relay options
A	Answer command	&K	Local flow control selection
B	Communication standard	&M	Asynchronous communications mode
C	Carrier control	&Q	Asynchronous communications mode
D	Dial command	&S	Data set ready (DSR) option
E	Echo command	&T	Self-test commands
F	On-line data character echo command	&V	View the active configuration
H	Hook control	&W	Store current configuration
I	Request ID information	&Y	Select stored profile for hard reset
L	Monitor speaker volume	&Z	Store telephone number

Table 4: AT Command Set Summary. The following table is from Lucent Technologies, Host-Based Controller Modem AT Command Set, Version 1.1, June 15, 1998.

Command	Description	Command	Description
M	Monitor speaker mode	\A	MNP block size
N	Modulation handshake	\B	Send break
O	Return to online data	\G	Modem port flow control
P	Select pulse dialing	\J	Adjust bits/s rate control
Q	Result code control	\K	Set break control
T	Select tone dialing	\N	Error control mode selection
V	DCE response format	\Q	Local flow control selection
W	Result code option	\R	Ring indicator off after answer
X	Result code selection and call progress monitoring	\T	Inactivity timer
Y	Long-space disconnect	\V	Protocol result code
Z	Reset and recall stored profile	\X	XON/OFF pass through
&B	V.32 auto retrain	%B	View numbers in blacklist
&C	Data carrier detect (DCD) control	%C	Data compression control
&D	Data terminal ready (DTR)	%E	Automatic rate change
&F	Local factory settings	-C	Data calling tone
&G	V.22bis guard tone control	-V90	Enable/disable V.90 settings

Table 5: The S-Register Summary. The S-registers 42 and 43 are for testing and debugging purposes only.

Register	Default	Description
S0	0	Automatic answer ring number
S1	0	Ring counter
S2	43	AT escape character
S3	13	Command line termination character
S4	10	Response formatting character
S5	8	Command line editing character
S6	2	Wait before dialing
S7	50	Connection completion time-out
S8	2	Comma dial modifier time

Table 5: The S-Register Summary. The S-registers 42 and 43 are for testing and debugging purposes only.

Register	Default	Description
S10	20	Automatic disconnect delay
S11	95	DTMF dialing speed
S12	50	Escape guard time
S14	8	General bit-mapped options status
S21	48	V.24 bit-mapped options status
S22	112	Results bit-mapped options status
S24	10	Timer to control sleep mode
S28	1	V.34 modulation enable/disable
S30	0	Inactivity timer
S32	16	Synthetic ring volume
S33	0	Synthetic ring frequency
S35	0	Data calling tone
S36	7	Negotiation fallback
S37	0	Dial line rate
S38	1	Enable/disable K56flex settings
S42	1	Auto rate
S43 ^b	1	Auto mode
S48	7	LAPM error control and feature negotiation
S89	10	Timer to control sleep mode
S90	10	Local phone status
S91	5	Line transmit level
S108	7	Network codec type

AT commands reference S-Registers¹

S-registers generally affect how the AT commands perform. Contents of the registers can be displayed or modified when the modem is in command mode.

To display the value of an S-register:

TYPE: ATSn where n is the register number.

PRESS: Enter

1. Lucent Technologies, Host-Based Controller Modem AT Command Set, Version 1.1, June 15, 1998.

To modify the value of an S-register:

TYPE: $ATS_n = r$

where n is the register number, and r is the new register value.

PRESS: Enter

S0 Auto Answer Ring Number

This register determines the number of rings the modem will count before automatically answering a call. Enter 0 (zero) if you do not want the modem to automatically answer at all. When disabled, the modem can only answer with an ATA command.

Range: 0-255

Default: 0

Units: rings

S1 Ring Counter

This register, Ring Counter, is read only. The value of S1 is incremented with each ring. If no rings occur over a six-second interval, this register is cleared.

Range: 0-255

Default: 0

Units: rings

S2 AT Escape Character (user defined)

This register determines the ASCII valued used for an escape sequence. The default is the + character. The escape sequence allows the modem to exit data mode and enter command mode when on-line. Values greater than 127 disable the escape sequence.

Range: 0-255

Default: 43

Units: ASCII

S3 Command Line Termination Character (user defined)

This register determines the ASCII values as the carriage return character. This character is used to end command lines and result codes.

Range: 0-127, ASCII decimal

Default: 13 (carriage return)

Units: ASCII

Note: This register value is not stored with &W command.

S4 Response Formatting Character (user defined)

This register determines the ASCII value used as the line feed character. The modem uses a line feed character in command mode when it responds to the computer.

Range: 0-127, ASCII decimal

Default: 10 (line feed)

Units: ASCII

Note: This register value is not stored with &W command.

S5 Command Line Editing Character (user defined)

This register sets the character recognized as a backspace and pertains to asynchronous only. The modem will not recognize the backspace character if it is set to a value that is greater than 32 ASCII. This character can be used to edit a command line. When the echo command is enabled, the modem echoes back to the local DTE the backspace character, an ASCII space character, and a second backspace character. This means a total of three characters are transmitted each time the modem processes the backspace character.

Range: 0-127, ASCII decimal

Default: 8 (backspace)

Units: ASCII

Note: This register value is not stored with &W command.

S6 Wait Before Dialing

This register sets the length of time, in seconds, that the modem must wait (pause) after going off-hook before dialing the first digit of the telephone number. The modem always pauses for a minimum of two seconds, even if the value of S6 is less than two seconds. The wait for dial tone call progress feature (W dial modifier in the dial string) will override the value in register S6. This operation, however, may be affected by some ATX options according to country restrictions.

Range (All Countries): 2-65

Range (Japan): 3-65

Default (All Countries): 2

Default (Japan): 3

Units: seconds

S7 Connection Completion Time-Out

This register sets the time, in seconds, that the modem must wait before hanging up because carrier is not detected. The timer is started when the modem finishes dialing (originate), or goes off hook (answer). In originate mode, the timer is reset upon detection of an answer tone if allowed by country restriction. The timer also specifies the wait for silence time for the @ dial modifier in seconds. S7 is not associated with the W dial modifier.

Range: 1-255

Range (for Japan): 35-59

Default: 50

Units: seconds

S8 Comma Dial Modifier Time

This register sets the time, in seconds, that the modem must pause when it encounters a comma (,) in the dial command string.

Range: 0-65

Default: 2

Units: seconds

S10 Automatic Disconnect Delay

This register sets the length of time, in tenths of a second, that the modem waits before hanging up after a loss of carrier. This allows for a temporary carrier loss without causing the local modem to disconnect.

The actual interval the modem waits before disconnecting is the value in register S10.

Range: 1-254

Default: 20

Units: .1 seconds

S11 DTMF Dialing Speed

This register determines the dialing speed which is prefixed for each country.

Range: 50-150

Default: 95

Units: .001 seconds

S12 Escape Guard Time

This register sets the value (in 20 ms increments) for the required pause after the escape sequence (default 1 s).

Range: 0-255

Default: 50

Units: .02 seconds

S14 General Bit Mapped Options Status

Indicates the status of command options. Only bit 3 and bit 6 are used, read-only.

Bit 3 Result codes (Vn)

0 = Numeric (V0)

1 = Verbose (V1) (Default)

Bit 6 Pulse dial PPS selection (&Pn)

0 = 10 PPS (&p0, &p1) (Default)

1 = 20 PPS (&p2)

Default: 8 (00001000b)

S21 V.24/General Bit Mapped Options Status

Indicates the status of command options. Only bits 3, 4, and 5 are used, read-only.

Bits 3-4 DTR behavior (&Dn)

0 = &D0 selected

1 = &D1 selected

2 = &D2 selected (Default)

3 = &D3 selected

Bit 5 DCD behavior (&Cn)

0 = &C0 selected

1 = &C1 selected (Default)

Default: 48 (00110000b)

S22 Results Bit Mapped Options Status

Indicates the status of command options. Only bits 4, 5, and 6 are used, read-only.

Bits 4-6 result codes (Xn)

0 = X0 selected

4 = X1 selected

5 = X2 selected

6 = X3 selected

7 = X4 selected (Default)

Bit 7 Pulse dial make/break ratio (&Pn)

0 = 33/67 make/break ratio (&P1, &P2) (Default)

1 = 39/61 make/break ratio (&P0)

Default: 112 (01110000b)

S24 Timer to Control Sleep Mode

This command displays the number of seconds of inactivity (no characters sent from the DTE, no RING) in the off-line command state before the modem places itself into standby mode. A value of zero prevents standby mode. S24 is an alias for S89.

Note: If a number between 1 and 4 is entered for this register, it will set the value to 5, and the inactivity before standby will be 5 seconds. This is done for compatibility with previous products which allowed time-outs down to 1 s.

Range: 0, 5-65

Default: 10

S28 V.34 Modulation Enable/Disable

This register enables/disables V.34 modulation.

0 = disabled, 1 = enabled

Range: 0 -1

Default: 1

S30 Inactivity Timer

S30 specifies the length of time (in minutes) that the modem will wait before disconnecting when no data is sent or received. This function is only applicable to buffer mode.

Range: 0-255

Default: 0

S32 Synthetic Ring Volume

This register specifies a synthetic ring volume.

Range: 0-255 (allowed, but not meaningful)

Default: 10

S33 Synthetic Ring Frequency

This register specifies a synthetic ring frequency. There are five choices, with 0 meaning disabled.

Range: 0-5

Default: 0

S35 Data Calling Tone

Data Calling Tone is a tone of certain frequency and cadence as specified in V.25 which allows remote Data/FAX/Voice discrimination. The frequency is 1300 Hz with a cadence of .5 s on and 2 s off.

0 = disabled, 1 = enabled

Range: 0-1

Default: 0

S37 Dial Line Rate (default 0)

This register sets the maximum line data rate. In K56flex and V.90 mode, S37 controls the upstream V.34 rate.

S37 = 0 auto rate

S37 = 1 reserved

S37 = 2 1200/75 bit/s (V.23)

S37 = 3 300 bit/s

S37 = 4 reserved

S37 = 5 1200 bit/s

S37 = 6 2400 bit/s

S37 = 7 4800 bit/s

S37 = 8 7200 bit/s

S37 = 9 9600 bit/s

S37 = 10 12000 bit/s

S37 = 11 14400 bit/s

S37 = 12 16800 bit/s

S37 = 13 19200 bit/s

S37 = 14 21600 bit/s

S37 = 15 24000 bit/s

S37 = 16 26400 bit/s

S37 = 17 28800 bit/s

S37 = 18 31200 bit/s

S37 = 19 33600 bit/s

S38 K56flex Downstream Rate

To force a particular K56flex downstream rate, use S-register S38. S38=0 disables K56flex, and may allow a more reliable V.34 connection. S38=1 default allows the modem to select the downstream rate automatically. Other values of S38 force the downstream rate, with fallback to V.34 if unsuccessful at the con-figured rate:

S38=0 Disable K56flex

S38=1 Automatic rate selection (default)

S38=2 32 kbit/s

S38=3 34 kbit/s

S38=4 36 kbit/s

S38=5 38 kbit/s

S38=6 40 kbit/s

S38=7 42 kbit/s

S38=8 44 kbit/s

S38=9 46 kbit/s

S38=10 48 kbit/s

S38=11 50 kbit/s

S38=12 52 kbit/s

S38=13 54 kbit/s

S38=14 56 kbit/s

The number of robbed-bit signaling (RBS) frames detected decreases the true DCE rate per the following table:

Table 6: Effect of RBS Frames on DCE Rate

RBS Links	Rate Hit (kbit/s)
0	0
1	2
2	4
3	4
4	6
5	8
6	8

For example, if S38=10 and there are 3 RBS links, the K56flex downstream rate will be 48-4=44 kbit/s. The exception to this is for 32 kbit/s and 34 kbit/s, which are the true rates regardless of the number of RBS frames detected.

One special value of S38, S38 = 251, is used for back-to-back (factory) testing of V.34 rates, with DSP code running in external memory. Set S38=251 on both originating and answering modems. (This feature is not valid with ramless solution.)

S42 Auto Rate (default 1, range 0-1)

This command is used for testing and debugging only. V.32bis and V.22bis auto rate is disabled. Retrain operation is disabled or enabled in data mode, and fallback is disabled in data mode. In K56flex mode, S42=0 forces connection at the rate specified by S38 (even if the rate cannot be sustained), without fallback to V.34.

0 = auto rate disabled, 1 = enabled.

Range: 0-1

Default: 1

S43 Auto Mode (default 1, range 0-1)

This command is used for testing and debugging only.

V.32bis startup auto mode operation disabled.

0 = auto mode disabled, 1 = enabled.

Range: 0-1

Default: 1

S48 LAPM Error Control and Feature Negotiation (default 7)

S48 = 7 Negotiation enabled

S48 = 128 Negotiation disabled; forces immediate fallback options specified in S36

The following chart lists the S36 and S48 configuration settings necessary to negotiate certain types of connections:

Table 7: S36 and S48 Configuration Settings

	S48 = 7	S48 = 128
S36 = 0,2	LAPM or hangup	do not use

Table 7: S36 and S48 Configuration Settings

	S48 = 7	S48 = 128
S36 = 1, 3	LAPM or async	async
S36 = 4, 6	LAPM, MNP, or hangup	MNP or hangup
S36 = 5, 7	LAPM, MNP, or async	MNP or async

S89 Timer to Control Sleep Mode

This command displays the number of seconds of inactivity (no characters sent from the DTE, no RING) in the off-line command state before the modem places itself into standby mode. A value of zero prevents standby mode.

Note: If a number between 1 and 4 is entered for this register, it will set the value to 5, and the inactivity before standby will be 5 seconds. This is done for compatibility with previous products which allowed time-outs down to 1 s.

Range: 0, 5-65

Default: 10

S90 Read-only Local Phone

This register tells the status of the Local Phone. It is read-only.

0 = on-hook

1 = off-hook

S91 Line Transmit Level

This register is effective only for Japan. It specifies the line transmit level in dBm with an implied minus sign.

Range: 6-15

Default: 15

Units: 1 dB

S108 Network Codec Type

S108=22 m-Law

S108=33 A-law

S108=7 default, or any other value: Coding as specified by digital modem in V.8bis information. If an old server does not tell its code type in V.8bis, then the client modem chooses based on its country ID. m-law regions are Japan, Taiwan, Korea, Hong Kong, North America, and Latin America. Everywhere else is A-law. (This S - Register is valid only in K56flex mode.)

Appendix C. Specifications

This section provides information about the Adapter and LAN specifications.

Adapter specifications

Table 8: Specifications

Feature	Value
Power requirements	300mA @ =5Vdc (1.5 w)
Interrupt	PCI: INTA
LEDs	Link, Activity
Operating temperature	(0 - 55° C), 32 - 131° F
Humidity	10% - 90% non-condensing
Compliance & Certification	<ul style="list-style-type: none">• Microsoft WHQL PC99• FCC Part 15, Subpart B, Class B, Part 68• EN55022 (CISPR 22) Class B• A-Tick• VCCI Class B• EN55024 (Immunity)• CE Mark (1999/5/EC)• EN60950• DGT

LAN specifications

Table 9: Specifications

Feature	Value
Media (Cable) Connectors and Wiring	RJ45 Use Category 5 TPE cabling at 100 Mbps Supports 100BASE TX Fast Ethernet
Data Rate Mode	10 or 100 Mbps
Standards Conformance	IEEE 802.3, IEEE 802.3x, IEEE 802.1p, IEEE802.1Q

Table 9: Specifications

Feature	Value
Diagnostic Software	On-board PROSet Responder
Duplex mode	Full duplex / Half duplex

Appendix D. Help and service information

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

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

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. If the number is not provided, contact your IBM reseller or IBM marketing representative. Response time may 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
All other countries	Go to http://www.ibm.com/pc/support/ , and click HelpCenter Phone List .

Appendix E. Product warranty and notices

This section contains produce warranty information and notices. and

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 both statements. 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)** (Part 1 - General Terms on page E-1.)
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)** (Part 1 - General Terms on page E-5.)
- **Worldwide Country-Unique Terms** (Part 2 - Country-Unique Terms on page E-8.)

IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (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 - Intel PRO/100 SP Mobile Combo Adapter **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.*

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. (In Toronto, call 416-383-3344.) 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 - Intel PRO/100 SP Mobile Combo Adapter **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.*

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. In Toronto, call 416-383-3344.

UNITED STATES OF AMERICA: Warranty Service: The following is added to this section: To obtain warranty service from IBM, call 1-800-772-2227.

Notices

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

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

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

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

The following paragraph does not apply to the United Kingdom or any country where such provisions are inconsistent with local law:

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

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

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

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

Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements

will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Trademarks

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

IBM

HelpCenter

Wake on LAN

Intel is a trademark of the Intel Corporation in the United States other countries, or both.

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

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

Electronic emission notices

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:

Intel Corporation
5200 N.E. Elam Young Parkway
Hillsboro, OR 97124
Telephone: 1-800-628-8686



Tested To Comply
With FCC Standards

FOR HOME OR OFFICE USE

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.

Korean B급 규격 증명서

이 장치는 옥내용으로 보증되었으며 모든 환경에서 사용할 수 있습니다.

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B情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。

Federal Communications Commission (FCC) and telephone company requirements

1. This device complies with Part 68 of the FCC rules. A label is affixed to the device that contains, among other things, the FCC registration number, USOC, and Ringer Equivalency Number (REN) for this equipment. If these numbers are requested, provide this information to your telephone company.

Note: If the device is an internal modem, a second FCC registration label is also provided. You may attach the label to the exterior of the computer in which you install the IBM modem, or you may attach the label to the external DAA, if you have one. Place the label in a location that is easily accessible, should you need to provide the label information to the telephone company.

2. The REN is useful to determine the quantity of devices you may connect to your telephone line and still have those devices ring when your number is called. In most, but not all areas, the sum of the RENs of all devices should not exceed five (5). To be certain of the number of devices you may connect

to your line, as determined by the REN, you should call your local telephone company to determine the maximum REN for your calling area.

3. If the device causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance; if advance notice is not practical, you will be notified as soon as possible. You will be advised of your right to file a complaint with the FCC.
4. Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice to give you an opportunity to maintain uninterrupted service.
5. If you experience trouble with this product, contact your authorized reseller, or call 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.

The telephone company may ask you to disconnect the device from the network until the problem has been corrected, or until you are sure the device is not malfunctioning.

6. No customer repairs are possible to the device. If you experience trouble with the device, contact your Authorized Reseller or see the Diagnostics section of this manual for information.
7. This device may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs. Contact your state public utility commission or corporation commission for information.
8. When ordering network interface (NI) service from the local Exchange Carrier, specify service arrangement USOC RJ11C.

Canadian Department of Communications certification label

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements documents. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

Étiquette d'homologation du ministère des Communications du Canada

AVIS : L'étiquette d'Industrie Canada identifie le matériel homologué. Cette étiquette certifie que le matériel est conforme aux normes de protection, d'exploitation et de sécurité des réseaux de télécommunications, comme le prescrivent les documents concernant les exigences techniques relatives au matériel terminal. Le ministère n'assure toutefois pas que le matériel fonctionnera à la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunications. Le matériel doit également être installé en suivant une méthode acceptée de raccordement. L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empêche pas la dégradation du service dans certaines situations.

Les réparations de matériel homologué doivent être coordonnées par un représentant désigné par le fournisseur. L'entreprise de télécommunications peut demander à l'utilisateur de débrancher un appareil à la suite de réparations ou de modifications effectuées par l'utilisateur ou à cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise à la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Avertissement : L'utilisateur ne doit pas tenter de faire ces raccordements lui-même; il doit avoir recours à un service d'inspection des installations électriques ou à un électricien, selon le cas.

AVIS : L'indice d'équivalence de la sonnerie (IES) assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface. La terminaison d'une interface téléphonique peut consister en une combinaison de quelques dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

EUROPE (Directive 1999/5/EC) Declaration of Conformity

We, Intel Corporation, declare under our sole responsibility that the product:

- Name/Machine Type: **Intel PRO/100 SP Mobile Combo Adapter**
- Hardware Part/Number: **PBA A30469-007**
- Software version: **5.85**

To which this declaration relates; is in compliance with the essential requirements and other relevant provisions of the European Directive.

1995/5/EC

This product will bear the CE mark.

Product compliance has been demonstrated on the basis of:

- **EN 60950:1992 with Ammendments 1, 2, 3, and 4 and National Deviations**
- **EN 55022: 1994 (Class B)**
- **EN 55024:1998**

This conformity assessment procedure used for this declaration is:

Annex II of the Directive

The technical file is kept by

Gilles Catala

at

Intel Corporation
1681, route des Dolines
BP 293
069505 Sophia-Antipolis Cedex
France

Network Compatibility Declaration

This equipment is intended for connection to the Public Switched Telephone Network, and supports both DTMF signalling and pulse dialing for the network addressing.

It has been designed to be compatible and interwork with the European networks in EC and EFTA countries, which are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

This product follows the provisions of the European Directive 1999/5/EC.

Dette produkt er i overensstemmelse med det europæiske direktiv 1999/5/EC.

Dit product is in navolging van de bepalingen van Europees Directief 1999/5/EC.

Tämä tuote noudattaa EU-direktiivin 1999/5/EC määräyksiä.

Ce produit est conforme aux exigences de la Directive Européenne 1999/5/EC.

Dieses Produkt entspricht den Bestimmungen der Europäischen Richtlinie 1999/5/EC.

essi vara stenst regluger Evrópska Efnahags Bandalagsins númer 1999/5/EC.

Questo prodotto è conforme alla Direttiva Europea 1999/5/EC.

Dette produktet er i henhold til bestemmelsene i det europeiske direktivet 1999/5/EC.

Este produto cumpre com as normas da Diretiva Europeia 1999/5/EC.

Este producto cumple con las normas del Directivo Europeo 1999/5/EC.

Denna produkt har tillverkats i enlighet med EG-direktiv 1999/5/EC.

New Zealand Compliance Statement

The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of

Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Tel ecom's network services.

Some parameters required for compliance with Telecom's Telepermit requirements are dependent on the equipment (PC) associated with this device. The associated equipment shall be set to operate within the following limits for compliance with Telecom's Specification:

- There shall be no more than 10 call attempts to the same number within any 30 minute period for any single manual call initiation, and
- The equipment shall go off-line for a period of not less than 30 seconds between the end of one call attempt and the beginning of the next attempt.

Where automatic calls are made to different numbers, the equipment shall go off-line for a period of not less than 5 seconds between the end of one call attempt and the beginning of the next attempt.

When used in the automatic answer mode, the equipment shall be set to answer within 3 to 30 seconds of the receipt of ringing.

Appendix F. User notices



- This card is intended for use with UL1950/EN60950/IEC60950 (or other NTRL) listed ITE computers that contain a Mini PCI type 3A connector.
- Care should be taken to avoid damaging the insulation tape on the Xircom Mini PCI Modem 56 + 10/100 Ethernet card. Do not cut, tear, pierce, or remove the insulation tape.
- (English) CAUTION: To reduce the risk of fire, use only No. 26 AWG telecommunication line cord.
- (Francais) CAUTION: Pour reduire le risque d'incendie, utiliser des conducteurs de telecommunications 26 AWG ou de section superieure.

The A30469 is designed only for connection to the analogue public switched telephone network (PSTN). Please connect the cable from the A30469 with the wired plug connector code F with the wire down in the wall socket (TAE 6) code F. The A30469 can be used as a single device.



Part Number: 06P3814



Printed in the United States of America
on recycled paper containing 10%
recovered post-consumer fiber.

(1P) P/N: 06P3814



Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>