For lower Total Cost of Ownership, full operating system support and high performance

IBM Token-Ring LAN Adapter Family

- **Leader in manageability**

  - *Wake on LAN®*
  - *OnNow*
  - *Alert on LAN™*
  - *Tivoli-ready*
  - *LCCM-ready*
  - *SNMP and DMI management protocols*

- **Latest operating systems**

  - *Windows® 98*
  - *Windows 2000*
  - *Novell NetWare 5.0*
  - *DOS 2000*

- **Microsoft® PC98 logo**

  - *Designed to PC99 logo specifications*

- **Automatic ring-speed detection and selection**

- **Dedicated Token-Ring (DTR) operation when connected to a full-duplex switch**

- **Support for UTP and STP cable via RJ-45 and D-shell connectors**

- **Low memory usage**

When you're responsible for managing mission-critical data, you need assurance that the products you select for your token-ring network provide you with the best possible performance, guaranteed reliability and lowest Total Cost of Ownership. IBM's family of token-ring adapters, backed by a lifetime warranty, provides that assurance. Features such as Wake on LAN and Alert on LAN are examples of industry-leading functions that were first brought to market by IBM.

IBM token-ring adapters also provide industry-leading performance combined with low CPU utilization and low DOS memory requirements. So, whether it is cost of ownership or performance that is important, IBM is the choice for token-ring adapters.

Product Overview

Token-ring adapters for PCI, PCMCIA and ISA systems

IBM offers the following token-ring adapters for computers with PCI, PCMCIA and ISA buses:

- IBM 16/4 Token-Ring PCI Adapter 2 with Wake on LAN
- IBM 16/4 Token-Ring PCI Adapter 2
- IBM High-Speed 100/16/4 Token-Ring PCI Adapter
- IBM Turbo 16/4 Token-Ring PC Card 2
- IBM Turbo 16/4 Token-Ring ISA Adapter

PCI token-ring adapters

IBM 16/4 Token-Ring PCI Adapter 2 with Wake on LAN

The IBM 16/4 Token-Ring PCI Adapter 2 with Wake on LAN is the industry's first token-ring adapter to offer IBM/Intel Alert on LAN technology. This allows token-ring network administrators to manage their PCs in addition to their networks. This adapter also offers IBM's legacy Wake on LAN technology and conforms to the Microsoft OnNow specification.

The Wake on LAN adapter offers unparalleled manageability, allowing two-way communication between network management applications and the adapter. Not only is the network manager able to "wake up" the adapter (for example, to download software), the adapter informs the manager of changes to the status of the system even when the system is powered off. This standards-based solution can provide notification when a system is tampered with or when it is experiencing a problem.

The IBM 16/4 Token-Ring PCI Adapter 2 with Wake on LAN is recommended for your token-ring network if you are concerned about the Total Cost of Ownership and need the best available management features for your client and server machines. If you're looking for one adapter to best use in your clients and servers, this is it.

IBM 16/4 Token-Ring PCI Adapter 2

The IBM 16/4 Token-Ring PCI Adapter 2 is intended for networks that use standard 4- or 16-Mbps token-ring connectivity and do not need higher speed and improved manageability features, other than OnNow. This adapter, just like all of the IBM PCI family of adapters, has the PC98 logo for full Microsoft and IBM support. It is also designed to PC99 specifications. The family of IBM PCI adapters also supports the latest operating systems, such as Windows 98, Windows 2000 and NetWare 5.0. They also employ full Tivoli management agents and are LCCM-ready for ease of installation and upgrade for low Total Cost of Ownership.

IBM High-Speed 100/16/4 Token-Ring PCI Adapter

IBM's first High-Speed Token-Ring adapter implements 100-Mbps technology for high-end clients and servers. Like all of the PCI adapters, this adapter offers the latest operating systems, is Tivoli- and LCCM-ready and offers both Wake on LAN and OnNow capabilities. This innovative high-speed token-ring adapter also provides auto-sensing for all three speeds. By providing 100-Mbps operation for both UTP Category 5 and STP Type 1A cable, the adapter offers high performance without requiring cabling changes. The IBM High-Speed 100/16/4 Token-Ring PCI Adapter supports large frame sizes (up to 18 207 bytes), source route bridging and eight levels of priority. In 16- and 4-Mbps modes, the High-Speed Token-Ring adapter supports both shared and switched connectivity.

IP-specific software support

All three of the PCI adapters ship with software that is designed to improve the performance of IP networks. Route Switching Client and Peer software allows the end stations to cooperate to establish a Layer 2 switched connection, avoiding overburdened routers. These adapters also make use of the token ring's built-in priority. An IP data flow such as multimedia traffic can be assigned a high priority, offering higher end-to-end network performance.

Redundant NIC

This function enables you to provide redundancy to Microsoft and Novell servers with the addition of another adapter. The software allows the backup adapter to take over if the path to the primary adapter fails, thus providing true adapter tolerance in the server.

IBM Turbo 16/4 Token-Ring PC Card 2

The IBM Turbo 16/4 Token-Ring PC Card 2 offers industry-leading manageability for token-ring networks. It is compatible with Tivoli management systems as well as LCCM 2.5, both of which allow you to lower your Total Cost of Ownership. This adapter offers the same high level of performance, the same features and functions, and is fully device-driver compatible with the card it replaces.

Manageability

The Turbo 16/4 Token-Ring PC Card 2 ships with Tivoli management agents for full enterprise management capability. LCCM compliance allows you to lower your Total Cost of Ownership managing laptop installations in the networks. The card ships with SNMP and DMI management protocols.

*Operating system support
and PC98 logo*
The PC Card adapter is fully tested and shipped with Microsoft Windows 98, Windows NT® 4.0, Windows 2000, NetWare 5.0 and PC DOS 2000. Comprehensive testing in a Microsoft environment has earned this adapter the PC98 logo and it has been designed to PC99 specifications.

Installation and increased efficiency
This adapter is easy to install with Plug and Play configuration in any PCMCIA and CardBus Type II or III slot. It also offers full-duplex operation at either 16 Mbps or 4 Mbps over UTP or STP cabling.

**Turbo 16/4 Token-Ring
ISA Adapter**
The Turbo 16/4 Token-Ring ISA Adapter is designed to operate in any ISA-compliant PC. This adapter has IBM's LAN Client memory-reduction software. It also outperforms the competition with hardware and device drivers that achieve turbo speeds—up to 90% faster than its predecessor.

**Token-Ring LAN Adapter family
capabilities**
Ease of installation and use
Installing our token-ring adapters is fast and easy.

• Automatic adapter installation with Plug and Play card services.

• Customized token-ring network configuration using LANAID, the installation tool included with the adapter—no switches to set.

To help eliminate conflicts with existing devices, we provide flexible configuration options with several interrupts and more I/O addresses to choose from. The LANAID tool automates configuration and installation of drivers and protocols for all IBM token-ring adapters. It can automatically install IBM LAN Client for NetBIOS, TCP/IP, IEEE 802.2 and IPX/SPX protocols. You can choose either a graphical or command-line interface—LANAID provides both.

*Automatic ring-speed detection
and selection*
Using IBM token ring is even easier because the entire family of adapters automatically detects the current ring speed—even when the speed is selected manually. This feature prevents insertions into the ring at the wrong speed. And if you select the automatic ring-speed selection, these adapters adjust their speed to the correct ring speed—even when you're connected to speed-sensing hubs. Automatic ring-speed detection simplifies installation and eliminates network disruptions caused by incorrect adapter ring speeds.

Help in troubleshooting problems
As an aid to quick and easy troubleshooting without disrupting the operation of your network, LEDs on our ISA and PCI adapters provide status on the adapter and the ring. All of these features add up to a significant reduction in the time, cost and complexity of installation and use.

IBM 16/4 Token-Ring PCI Adapter 2

*IBM High-Speed 100/16/4 Token-Ring
PCI Adapter*

*IBM 16/4 Token-Ring PCI Adapter 2
with Wake on LAN*

Features	Benefits
Year 2000 ready	Year 2000 ready when used in accordance with its associated documentation and is capable of correctly processing, and receiving data within and between the 20th and 21st centuries, provided that all other hardware, software, and/or firmware used with the product properly exchange accurate data with it.
Wake on LAN	Enables Network Manager applications to "wake up" a system (for example, to download software).
Alert on LAN	Enables a system to communicate its status to a Network Manager even when powered off.
OnNow	Microsoft version of Wake on LAN.
Multiprotocol Switched Services (MSS) Route Switching Client and Peer	• Alleviates performance delays that may occur in router-based networks by setting up an end-to-end Layer 2 connection for IP traffic. • Provides prioritization for IP data flows.
LAN Adapter Management Agent	Provides Tivoli, DMI Version 2, and SNMP management of adapters.
Redundant NIC feature	Minimizes downtime due to adapter, cable or connector failures in server connections.
Remote Program Load (RPL)	Provides consistent IPL levels across the LAN.
Plug and Play	Enables fast and easy automatic configuration.
LANAID	Simplifies configuration and installation of drivers and protocols.
Multiple interrupt levels and I/O addresses	Offers more choices and reduces conflicts between devices.
Automatic ring-speed detection	Prevents network disruptions caused by incorrectly set adapter ring speed.
Automatic ring-speed selection	Simplifies installation by automatically setting the adapter ring speed to the actual ring speed even when connected to speed-sensing hubs.
High-Speed Token Ring	Relieves congestion.
Lifetime limited warranty	High reliability, worry-free operation.

IBM Token-Ring LAN Adapter Family Specifications

IBM Turbo 16/4 Token-Ring PC Card

Part numbers	Single: 34L1401 (with RJ-45, balun, CD-ROM and safety card)
	Card pack: 34L1410 (with RJ-45, balun, without CD-ROM and safety card)
Physical specifications	Width: 54.0 mm (2.1 in.)
	Depth: 85.6 mm (3.4 in.)
	Height: 5.0 mm (0.2 in.)
	Weight: 42.0 kg (92.8 lb)
Operating environment	Temperature: 0° to 55°C (32° to 131°F)
	Relative humidity: 5% to 95%
	Wet-bulb temperature: 23°C (73°F)
	Power: 5 V dc
Media connectors	RJ-45 (UTP) and STP
Systems	Supported on IBM and non-IBM systems with PCMCIA Type II and Type III slots
Software and operating systems	Microsoft DOS 5.0, 6.22
	IBM DOS 6.3, 7.0
	DOS 2000
	IBM LAN Support Program 1.33 or later
	IBM Personal Communications/3270 4.0
	IBM OS/2® LAN Server 3.0 and 4.0
	IBM OS/2 Communications Manager/2
	IBM LAN Network Manager 2.0
	IBM LAN Client Control Manager (Remote Program Load)
	Novell NetWare 3.12, 3.2, 4.11, 4.2, 5.0
	Windows 3.1
	Windows 95
	Windows 98
	Windows NT 3.5 and 4.0
	Windows for Workgroup
	Windows 2000
Installation features	Multiple interrupts and flexible I/O addressing
Certification	FCC Class B, European CE mark
Warranty	Limited lifetime

IBM Token-Ring PCI Adapters

	IBM High-Speed 100/16/4 Token-Ring PCI Adapter	IBM 16/4 Token-Ring PCI Adapter 2	IBM 16/4 Token-Ring PCI Adapter 2 with Wake on LAN
Part numbers			
Retail	34L0501	34L0601	34L0701
Card pack	34L0510	34L0610	34L0710
Physical specifications			
Width	100.0 mm (3.93 in.)	72.4 mm (2.85 in.)	72.4 mm (2.85 in.)
Depth	19.1 mm (0.75 in.)	19.1 mm (0.75 in.)	19.1 mm (0.75 in.)
Height	139.7 mm (5.5 in.)	165.0 mm (6.48 in.)	171.9 mm (6.75 in.)
Weight	0.21 kg (0.45 lb)	0.21 kg (0.45 lb)	0.21 kg (0.45 lb)
Operating environment			
Temperature	10° to 35°C (50° to 95°F)	10° to 35°C (50° to 95°F)	10° to 35°C (50° to 95°F)
Relative humidity	8% to 80%	8% to 80%	8% to 80%
Maximum wet-bulb temperature	23°C (73°F)	23°C (73°F)	23°C (73°F)
Maximum power	2 W at 5 V dc	1 W at 5 V dc	1.5 W at 5 V dc
Hardware requirements			
Minimum system	• Personal computer that complies with PCI Version 2.0 or later and has one PCI, Version 2.0 or later, 32- or 64-bit, busmaster-enabled slot. • Cabling supported: – Shielded twisted pair (STP) Type 1A or equivalent. – Unshielded twisted pair (UTP) Category 5. • Wake on LAN feature requires a Wake on LAN-capable system.	• Personal computer that complies with PCI Version 2.0 or later and has one PCI, Version 2.0 or later, 32- or 64-bit, busmaster-enabled slot. • Cabling supported: – Shielded twisted pair (STP) – Unshielded twisted pair (UTP)	• Personal computer that complies with PCI Version 2.0 or later and has one PCI, Version 2.0 or later, 32- or 64-bit, busmaster-enabled slot. • Cabling supported: – Shielded twisted pair (STP) – Unshielded twisted pair (UTP) • Alert on LAN feature requires an Alert on LAN-capable system. • Wake on LAN feature requires a Wake on LAN-capable system.
Connectors	Single RJ-45/9-Pin D-Shell	Single RJ-45/9-Pin D-Shell	Single RJ-45/9-Pin D-Shell
Features			
LEDs	Yes	Yes	Yes
Auto-speed adjust	Yes	Yes	Yes
Full-duplex enabled	Yes	Yes	Yes
Remote Program Load	Yes	Yes	Yes
DHCP	Yes	Yes	Yes
LAN Client	Yes	Yes	Yes
OnNow	Yes	Yes	Yes
Wake on LAN	Yes	No	Yes
Alert on LAN	No	No	Yes
R-NIC	Yes	Yes	Yes
Fault tolerance	Yes	Yes	Yes
PC98, PC99	Yes	Yes	Yes
Software configurable	Yes	Yes	Yes
Certification	FCC Class B*, CISPR B	FCC Class B*, CISPR B	FCC Class B*, CISPR B
Warranty	Limited lifetime	Limited lifetime	Limited lifetime

* A shielded power cord on the PC is required to meet this requirement.

Part number	Diskette single pack: 72H3482
	Card pack: 72H3514
Operating environment	Temperature: 10° to 35°C (50° to 95°F)
	Relative humidity: 8% to 80%
	Maximum wet-bulb temperature: 23°C (73°F)
	Electrical power: 5 V dc
Certification	FCC Class B, CIPSR Class B, CISPR22 Class B Limits and
	VCCI Class A certified for STP and UTP connections
Warranty	Lifetime

Key Customer Benefits

- Provides the best possible performance, guaranteed reliability and lowest Total Cost of Ownership
- Provides industry-leading performance combined with low CPU utilization and low DOS memory requirements
- Offers industry-leading manageability
- Automatic adapter installation with Plug and Play card services
- Earned the Microsoft PC98 logo for full Microsoft and IBM support (IBM PCI adapters only)
- Designed to PC99 specifications

Supplementary Information

The following sales tools are available for the Token-Ring PCI Adapter Family:

- Specification sheet:
  IBM Token-Ring LAN Adapter Family, G224-4512

- Information on the Token-Ring LAN Adapter Family is available at:
  www.ibm.com/networking