

# IBM 8271 Nways Ethernet LAN Switch Models 612, 624 and 712

- **High-performance, cost-effective Ethernet switching for the desktop, workgroup or campus LAN**
- **Based on state-of-the-art application-specific integrated circuits (ASICs)**
- **Standard 10BASE-T and 100BASE-TX MDI-X ports via RJ-45 connectors**
- **Optional 10/100BASE-TX, 100BASE-FX or 155-Mbps ATM OC3 uplink port**
- **SNMP management, in-band or out-of-band, locally or remotely**
- **Cut-through and store-and-forward switching modes**
- **Full-duplex (FDX) on all ports**
- **Virtual networking (VLANs) for up to 16 domains**
- **Resilient links and Spanning Tree support**
- **Integrated RMON support**
- **155-Mbps ATM OC3 solution**



Model 612



Model 624



Model 712

The IBM 8271 Nways® Ethernet LAN Switch Models 612, 624 and 712 are members of the popular family of Ethernet switches currently available from IBM. These switches are cost-effective means for extending the benefits of LAN switching to the user's desktop. These switches are also ideal for upgrading workgroup and campus LANs in small-to-medium-size establishments that are experiencing Ethernet LAN congestion. With the integrated Fast Ethernet and optional ATM uplink ports that provide connections to high-speed backbones, these switches offer an extremely attractive, cost-effective, scalable enhancement to networks of any size.

Model 612 has twelve 10-Mbps Ethernet ports, each suitable for a desktop or hub segmentation, and one 100-Mbps Fast Ethernet port. Model 624 has twenty-four 10-Mbps Ethernet ports, each suitable for a desktop or hub segmentation, with one 100-Mbps Fast Ethernet port. Model 712 uniquely provides 12 auto-sensing Ethernet ports that run at either 10 or 100 Mbps. All models have an additional, optional high-speed port that can be either Fast Ethernet or 155-Mbps ATM.

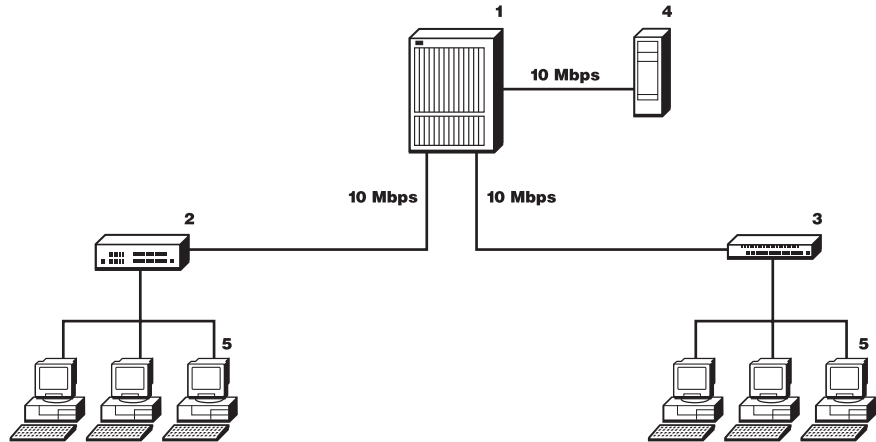
# Positioning and Benefits

The 8271 allows you to make incremental changes in your network to address both immediate and long-range performance problems.

**Problem: An Ethernet LAN beginning to experience performance problems as a result of increased traffic. The network is migrating to 155-Mbps ATM.**

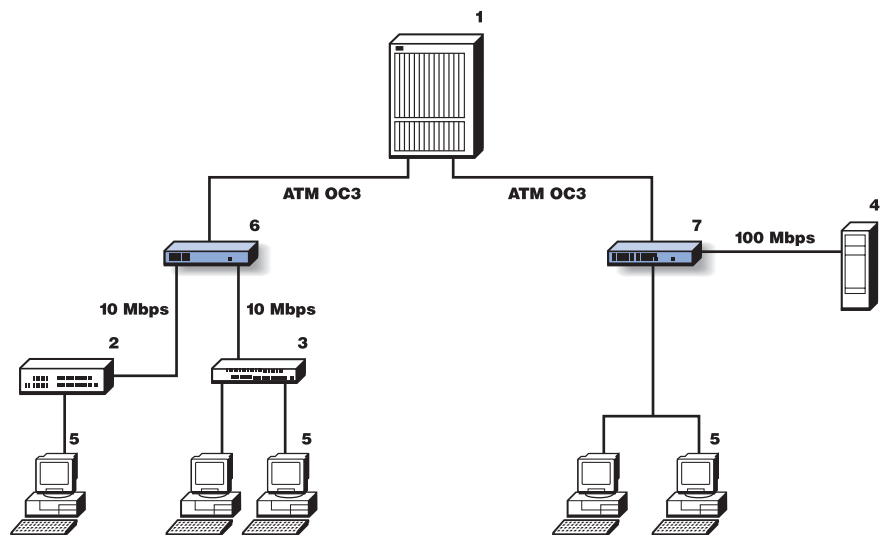
**Environment:** 10-Mbps Hubs (managed and unmanaged) connecting to an IBM 8260 Nways Multiprotocol Switching Hub.

- 1. IBM 8260
- 2. IBM 8242 10-Mbps Hub
- 3. IBM 8237 10-Mbps Managed Hub
- 4. Server
- 5. Workstations



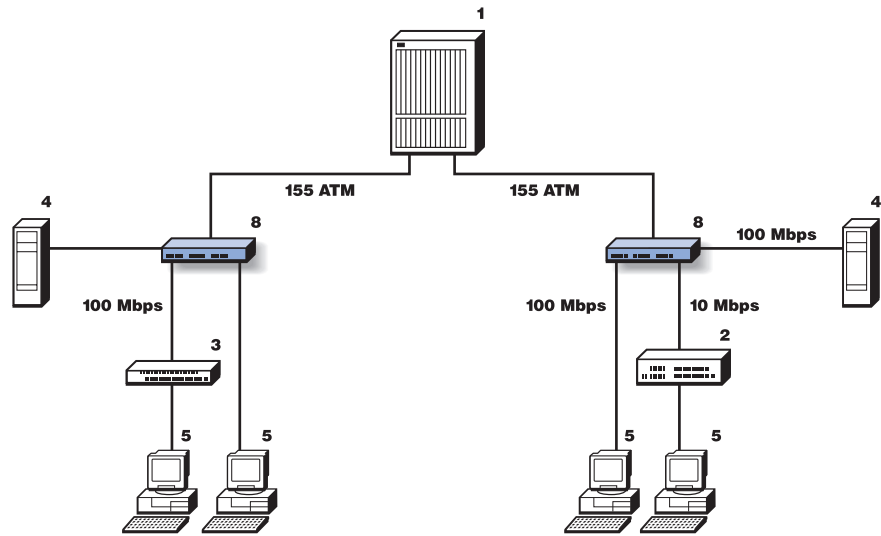
**Solution —10 Mbps:** Segment the LAN with 10-Mbps switches providing high-speed/high-availability ATM links to the 8260. This increases network performance and access to the servers. It also provides dedicated 10-Mbps bandwidth to the desktop. Add ATM OC3 modules to the 8260.

- 1. IBM 8260
- 2. IBM 8242 10-Mbps Hub
- 3. IBM 8237 10-Mbps Managed Hub
- 4. Server
- 5. Workstations
- 6. IBM 8271 Model 612
- 7. IBM 8271 Model 624



**Solution — 10/100 Mbps:** Segment the LAN with 10/100 Mbps switch providing high-speed/high-availability ATM link to the 8260. This increases network performance and provides 100-Mbps connectivity to the desktop for power users.

1. IBM 8260
2. IBM 8242 10-Mbps Hub
3. IBM 8237 10-Mbps Managed Hub
4. Server
5. Workstations
6. IBM 8271 Model 612
7. IBM 8271 Model 624
8. IBM 8271 Model 712



### Benefits

- ATM connectivity and migration
- Network performance improvement
- High-speed dedicated connectivity to desktop

# Product Overview

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Workgroup Switches

Fast Ethernet/Ethernet

With these models, a business of any size can upgrade its workgroup or campus LANs to relieve existing Ethernet LAN congestion. Models 612 and 624 provide twelve and twenty-four 10-Mbps Ethernet ports, respectively. Each of these ports can connect to a dedicated workstation or hub. In addition to the fixed 10-Mbps ports, Models 612 and 624 provide one integrated 100BASE-TX port. All of the models provide an additional, optional high-speed port that can be either Fast Ethernet (10/100BASE-TX or 100BASE-FX) or 155-Mbps ATM OC3c.

Model 712 provides 12 auto-sensing Ethernet ports that run at either 10 or 100 Mbps. As with the other 8271 models, a high-speed Ethernet or ATM port can be added.

Consistent with other members of the IBM Ethernet switch family, the new 8271 models support FDX communications on all ports, cut-through switching, store-and-forward switching, Virtual LANs (VLANs), Spanning Tree protocol, SNMP, BootP initialization and a local EIA-232 port for out-of-band management. In addition to these familiar features, the new switches provide integrated RMON for seven standard groups, Intelligent Flow Management to minimize packet loss and Resilient Links to bypass failed links, thereby preventing network downtime. The switches come fully loaded with all the software necessary for Plug and Play installation.

The switches can be mounted in standard 19-inch racks or placed on horizontal surfaces (for example on a tabletop). LEDs on the front panel provide status information for all of the ports including both the integrated and optional high-speed ports, and the base unit. Each port has two LEDs. One LED indicates when packets are being transmitted or received while the other indicates whether the link is present or not, and if present whether it is enabled or not. The base unit LEDs indicate when power is on and the state of the unit with respect to diagnostic mode or software downloads.

## Virtual switching magnifies your hardware

As an alternative to connecting LANs as a single large segment, the 8271 ports can be allocated through configuration to as many as 16 separate domains. Each domain acts as a separate switch that is independently managed and has its own IP address. Packets are transparently forwarded between ports in the same domain.

## Management to smooth the way

Support for the industry-standard SNMP management MIBs allows the 8271 to be managed by any SNMP-based management system.

Support for BootP and TFTP helps you manage the 8271 from a remote location in RFC 951-compliant environments by virtually eliminating the need to go to the switch for configuration or to download microcode.

Finally IBM Nways® Workgroup Manager for Windows NT V1.1 and Nways Manager for AIX® V1.2 provide:

- Device management via generic Java-based element managers
- RMON management
- Discovery and topology for these switches

Administrators working from Java-capable browsers anywhere on a corporate intranet will be able to access information and perform a full range of management tasks.

## Optional module slots

The long-term usefulness of the 8271 is in large part due to the flexibility provided by the optional module slots. IBM offers three high-speed modules for connection to network backbones such as Fast Ethernet or ATM. The modules currently available are:

## Uplink modules

- 100BASE-TX
- 100BASE-FX
- 155-Mbps ATM

Multiprotocol ATM OC3c high-speed modules are installed in a slot on the rear of the unit. Each of the available modules has a full set of port status LEDs on the module faceplate.

See the Optional Uplink Modules table for more information.

## Benefits

- 12- or 24-port switch:
  - Extends network bandwidth for data-intensive applications such as multimedia, CAD and client/server.
  - Delivers high performance at lower cost where bridge or router technologies are not required.
  - Interconnects dedicated or shared LAN segments on any port.
- Optional module slots:
  - Expansion of Ethernet capacity.
  - Uplinks to high-speed, switched and shared-media backbones.
- Ease of use. Enables hassle-free migration of 10BASE-T to Fast Ethernet with automatic sensing and automatic configuring for power users on the Model 712.
- FDX operation:
  - Permits simultaneous, two-way transmission between the switch and a device with an FDX-capable adapter.
  - Improves server throughput by doubling available bandwidth when used on a dedicated LAN segment.
  - Relieves congestion at network access point or server adapter.
- Interconnectivity. Permits greater LAN segmentation by allowing you to interconnect multiple IBM Ethernet LAN switches.
- SNMP management. Supports remote network management via SNMP.
- Standards support. Protects your investment by interoperating with existing IEEE 802.3 Ethernet adapters, hubs and other components.

# 8271 Ethernet LAN Switch Models 612, 624 & 712 Specifications

## What you get

The 8271 package includes:

- Ethernet LAN switch
- Mounting hardware for tabletop or 19-inch rack
- *Quick Reference Card*
- *User Guide*
- *Quick Installation Guide*
- *Safety Guide*

Machine type	Model	PN
8271	612	86H2793
8271	624	86H2794
8271	712	86H2797

LAN ports	Model	Ports
	Model 612	Twelve 10BASE-T, one 100BASE-TX, one optional 100BASE-TX or FX slot
	Model 624	Twenty-four 10BASE-T, one 100BASE-TX, one optional 100BASE-TX or FX slot
	Model 712	Twelve auto-sensing 10BASE-T/100BASE-TX, one optional 100BASE-TX or FX slot

\*Note: All integrated 10BASE-T and 100BASE-TX ports are configured as MDI-X with shielded RJ-45 connectors.

MAC addresses	Model	Count
	Model 612 or 624	500 per switch, unlimited on backbone ports
	Model 712	8160 per switch

ATM port	Model	Port Type
	All models	One optional, 155-Mbps multimode fiber (MMF) OC3c

Data rate	Port Type	Speeds
	LAN ports	10BASE-T or FL: 10-Mbps half-duplex (HDX) 100BASE-TX: 100-Mbps HDX or FDX AUI: 10-Mbps HDX
	Uplink ports	100BASE-TX or FX: 100-Mbps HDX or FDX ATM: 155-Mbps HDX or FDX

Standards	Standards
	<ul style="list-style-type: none"> <li>• Functional: IEEE 802.3</li> <li>• Safety: EN 60950, UL 1950, CSA 22.2 No. 950</li> <li>• Environmental: EN 60068</li> <li>• Electromagnetic Compliance: FCC Class A (USA), EN50082-1 (IEC801 Parts 2–5), EN 55022 Class B/VCCI-B with shielded cables, EN55022 Class A/VCCI-A with unshielded cables, EN60555 Part 2</li> <li>• Protocols: IEEE 802.1d, RFC 768, RFC 791, RFC 792, RFC 793, RFC 826, RFC 783, RFC 1157, RFC 951</li> <li>• MIBs: RFC 1213, RFC 1493, RFC 1516, RFC 1573, RFC 1271</li> </ul>

Cabling	Options
	<ul style="list-style-type: none"> <li>• UTP category 3, 4 or 5 with RJ-45 connectors for 10BASE-T</li> <li>• UTP or STP category 5 with RJ-45 connectors for 100BASE-TX</li> <li>• Optical fiber with SC connector for 100BASE-FX</li> <li>• MMF with SC connector for ATM</li> <li>• Modem cable with 9-pin, female D-shell connector for EIA 232 port</li> </ul>

Configuration and management	Options
	<ul style="list-style-type: none"> <li>• Direct (VT-100-compatible terminal) or remote (modem) management via a rear-panel EIA-232 port (9-pin, male D-shell).</li> <li>• Console function is also available via Telnet SNMP management for network management platforms capable of accessing an SNMP (MIB-II-compliant) management agent.</li> <li>• Management tools include SNMP, address filters, virtual switch support, BootP and TFTP.</li> </ul>

**Low-latency design**

- High-speed switch efficiency achieved by forwarding immediately upon detection of a valid address, without waiting for the end of the frame, to reduce delay without increasing the likelihood of forwarding a bad packet.
- Fragment-free mode blocks small, invalid packet fragments.

**Physical specifications**

Width: 440 mm (17.3 in.) All models  
 Depth: 300 mm (12 in.) All models  
 Height: 70 mm (2.8 in.) All models  
 Weight: 4.4 kg (9.7 lb) All except Model 712  
 Weight: 4.1 kg (9 lb) Model 712

**Operating environment**

Temperature: 0° to 40°C (32° to 104°F)  
 Relative humidity: 10% to 95%

**Installation**

On a desktop or in a standard 19-inch rack

**Publications**

*IBM 8271 Model 612/624 User Guide*, PN 55H7211  
*IBM 8271 Model 712 User Guide*, PN 02L1318

**Power Supplies**

Input voltage: 100 to 120 or 200 to 240 V ac  
 Input frequency: 50 to 60 Hz  
 30 W: used with Models 612 and 624  
 45 W: used with Model 712

**Accessories****FC****PN**

9 ft/125-V ac Power Cord	6851	6952300
6 ft/125-V ac Power Cord	6852	6952301
9 ft/2220-V ac Power Cord	6853	1838574

Cables for the ports on the 8271 are required but are not included with the switch. The power cord is not included with the switch and must be ordered separately.

**Optional Uplink Modules**

All modules meet these standards: Safety: EN 60950, UL 1950, CSA 22.2 No. 950; Electromagnetic Compliance: FCC Class A, EN55022 Class B/VCCI-B with shielded cables, EN55022 Class A, VCCI-A with unshielded cables; Environmental: IEC68

Uplink module	Description	Feature code/Part Number
1-port 100BASE-TX Fast Ethernet	<ul style="list-style-type: none"> <li>• MDI or MDI-X port</li> <li>• Cabling: UTP/STP category 5 via RJ-45 connector</li> <li>• Data rate: 100-Mbps HDX or FDX</li> <li>• Standards: IEEE 802.3, RFC 826, RFC 894</li> <li>• Publication: <i>Fast Ethernet TX Uplink Module User Guide</i></li> </ul>	1340/02L1340  02L1339
1-port 100BASE-FX Fast Ethernet	<ul style="list-style-type: none"> <li>• Cabling: Optical fiber via SC connector</li> <li>• Data rate: 100-Mbps HDX or FDX</li> <li>• Standards: IEEE 100BASE-FX</li> <li>• Publication: <i>Fast Ethernet FX Uplink Module User Guide</i></li> </ul>	1345/02L1345  02L1342
1-port 100BASE-FX ATM OC3	<ul style="list-style-type: none"> <li>• Cabling: MMF via SC connector</li> <li>• Data rate: 155-Mbps FDX</li> <li>• Data buffer: 40 000 cells (2 MB)</li> <li>• MAC addresses: 1024 remote</li> <li>• Maximum number of emulated LANs (ELANs): 16</li> <li>• Maximum number of switched virtual circuits (SVCs): 512</li> <li>• Maximum number of RMON groups: 4 per ELAN (Statistics, History, Alarms, Events)</li> <li>• Standards: ATM Forum LANE 1.0, RFC 1595, RFC 1695, SONET STS-3c and SDH STM-1</li> <li>• Publication: <i>ATM Uplink Module User Guide</i></li> </ul>	1330/02L1330  02L1332

## Key Customer Benefits

- Provides the technology necessary to achieve the right level of performance on the network, by enabling power-users to access CAD/CAM, imaging, real-time and multimedia applications and providing mainstream users with bandwidth-proofed LANs.
- Preserves an existing Ethernet desktop investment and environment, providing a simple but effective solution for bandwidth challenges, as the end stations maintain connections within the familiar Ethernet environment. It provides an immediate boost to bandwidth without changing desktops, PCs, network interface cards, cabling, drivers and PC configurations.
- Offers affordability for wide-scale deployment of Ethernet LAN switches.

## Supplementary Information

The following sales tools are available for the IBM 8271:

- Specification sheet:  
*IBM 8271 Nways Ethernet LAN Switch Models 612, 624 & 712, G224-4462*
- Information on the IBM 8271 is available at:  
[www.networking.ibm.com/netprod.html](http://www.networking.ibm.com/netprod.html)  
[www.networking.ibm.com/821/821prod.html](http://www.networking.ibm.com/821/821prod.html)  
[www.networking.ibm.com/support/8271](http://www.networking.ibm.com/support/8271)