Powerful, flexible, low-cost Ethernet workgroup solutions

IBM 8277 Nways Ethernet RouteSwitch and 8277 RouteSwitch Software Programs

- **24-port 10/100 auto-sensing full duplex**

- **Internal IP and IPX routing**

- **Layer 3 switching**

- **HRE and GeB-capable**

- **"Drop-in" replacement for 8273 RouteSwitch**

- **Full range of options for high-speed connections**

- **High-function, flexible RouteSwitch software**

- **Control program and high-function optional software programs**

- **Simplified configuration**

- **8277 RouteSwitch software supports LAN Emulation, Multiprotocol Encapsulation over ATM and Classical IP over ATM**

The IBM 8277 Nways® Ethernet RouteSwitch Model 524 is an intelligent 10/100 Ethernet workgroup switching solution. It is a low-cost, high-function Ethernet switch, equipped with twenty-four 10/100BASE-T switch ports and an uplink slot for optional high-speed Fast Ethernet or ATM 155-Mbps sub-modules. Layer 3 switching capability and extensive VLAN support help make the 8277 a leading-edge solution for today's workgroup or high-end switching systems.

When combined with the 8277 RouteSwitch Software V3.2, the IBM 8277 RouteSwitch offers a drop-in, low-cost solution for many of your Ethernet workgroup switching requirements.

Positioning and Benefits

The IBM 8277 Nways Ethernet LAN RouteSwitch is intended for customers who need extensive virtual LAN (VLAN) support and integrated routing in a compact, fixed-port configuration. It provides an intelligent 10/100 auto-sensing Ethernet switching system for small-to-large networks. It features a modular slot for an optional Ethernet or ATM uplink to backbones and servers.

## Problem: Deteriorating network response in an Ethernet LAN

Environment: This shared Ethernet workgroup LAN is experiencing network congestion problems.

1. *End users*

2. *Hub*

3. *Router*
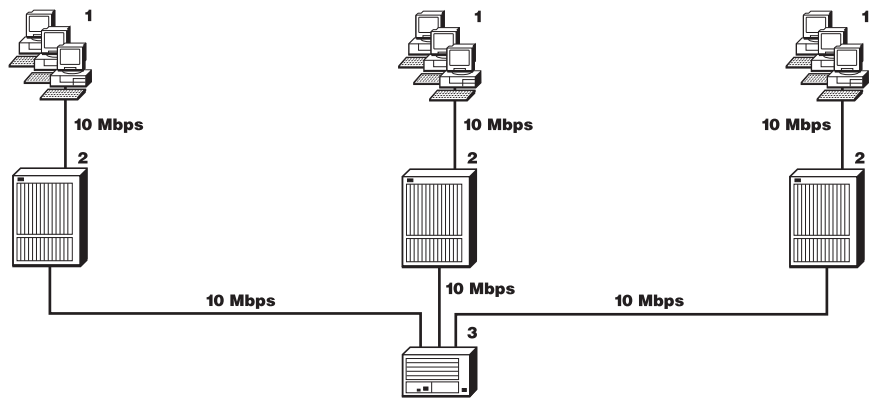
Solution: Provide a dedicated, switched 10/100 Ethernet connection to each workstation and server via 8277s.

1. *End users*

2. *8277 Nways Ethernet RouteSwitch*

3. *Dedicated switched LAN connection 10/100Mb*

4. *8274 Nways LAN RouteSwitch*
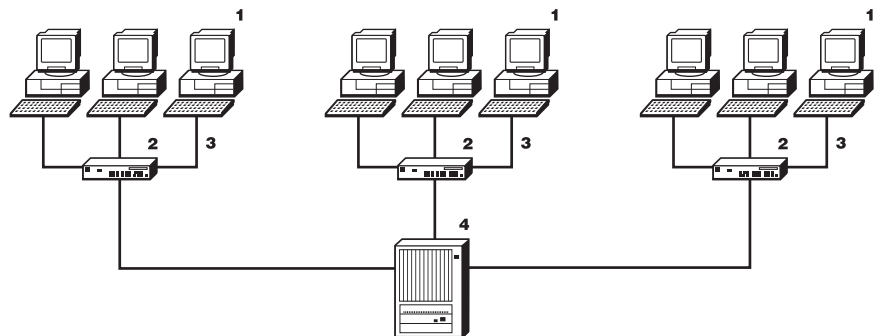
Benefits:

- Utilizes existing infrastructure
- Improves workstation and server response
- Preserves investment in adapters
- Eliminates changes to software
- Prepares the network for VLANs and ATM

Product Overview

The 8277 Nways RouteSwitch Model 524

*Higher performance,
smooth migration*
The 8277 RouteSwitch and companion software can provide drop-in solutions for many requirements in today's environment. The 8277 is equipped with twenty-four 10/100 BASE-T switch ports and can consolidate a cluster of 24 workstations into a larger network, providing each workstation with its own dedicated port. And if higher perfor- mance is needed, the 8277 offers smooth migration from 10 Mbps to 100 Mbps—without changing the 8277 switch. The capabilities of the IBM 8277 make it a leader for today's workgroup or high-end switching systems.

High throughput, low latency
Ideal for small-to-mid-size workgroups, the IBM 8277 Nways Ethernet RouteSwitch uses advanced hardware architecture to provide high-speed switching between a fixed number of Ethernet ports, and an uplink for high- speed server and backbone access. It supports a very large number of hubs and segments throughout your network by connecting multiple 8277s together over 100BASE-TX, 100BASE-FX or ATM backbone links. It's easy to set up. As soon as it's connected to your network, the 8277 automatically learns the locations of over 1000 devices and starts passing traffic to your network. You can increase your capacity by 10 times, add a small hub or reconfigure a multisegment hub and connect each new segment to its own 8277 port. Throughput is high and latency is low.

More horsepower for your LAN
Bottlenecks are common in networks that use high-speed technologies. Often the problem is server access. The 8277 improves overall network performance by providing high-speed server access ports. These include ATM (OC3c), 100BASE-TX and 100BASE-FX. The switch automatically translates from Ethernet to any of these server access ports. The process is

simple: attach Ethernet hubs, segments or devices to 8277 ports, install a 100BASE-TX or ATM card in your servers and attach each server to its own high-speed port on the 8277.

You can connect directly to ATM in several ways: connect your 8277 to ATM using RFC 1483 (Multiprotocol Encapsulation of ATM) to provide point- to-point bridging across ATM. Or with the 8277's support for ATM LAN Emulation (LANE) Version 1.0, invest in ATM switches and attach your servers to an ATM switch.

Powerful, flexible features
The IBM 8277 Nways Ethernet RouteSwitch possesses powerful features that not only enhance your network's capabilities and flexibility, but also help protect your investment. 10/100 capability ensures a simple migration from 10-Mbps Ethernet to 100- Mbps Ethernet within the same switch and eliminates further investment as network bandwidth demands increase. The IBM 8277 has one slot for 4-port 100TX, 2-port multimode fiber 100FX, 1- port 155-Mbps ATM, or 1-port (plus a redundant port) 155-Mbps ATM high- speed uplink modules.

- Automated moves, adds and changes reduce network administrative costs.
- Integrated routing code turns each switch port into a powerful high-speed router unmatched by many backbone routers of today.
- RMON provides detailed information on all ports, helping you monitor and troubleshoot the entire network from a central location.
- Powerful traffic management limits data loss even during heavy traffic loads.
- State-of-the-art network management helps to monitor and troubleshoot the network for maximum network usage and efficiency.
- An optional backup power supply helps ensure that the system stays operational if a primary power supply fails.

The 8277 Nways RouteSwitch Software Programs

The perfect solution
The IBM 8277 Nways RouteSwitch Software Programs V3.2 together with the new IBM 8277 Nways Ethernet LAN RouteSwitch Model 524 provide a complete, intelligent 10/100 Ethernet workgroup switching solution for small- to-mid-size networks. You get incredibly powerful features, like layer 3 switching, RMON, and IP/IPX routing at the same price—or less—than other simple Ethernet workgroup switches.

The new 8277 RouteSwitch and companion 8277 Software Programs offer drop-in, low-cost solutions for many of your Ethernet workgroup switching requirements. For example, you can maximize throughput and performance by consolidating a cluster of workstations into a larger network.

The 8277 combination provides a full range of options for high-speed connections to backbones and servers—and optional uplink modules for Fast Ethernet, growing to ATM 155- Mbps multimode fiber connections. The 8277 is also Hardware Routing Engine (HRE) and gigabit Ethernet capable.

The choice is yours
The IBM Nways 8277 RouteSwitch Software Program (NRSP) V3.2 is the controlling software program that is preloaded on the 8277 Ethernet RouteSwitch. The 8277 RouteSwitch provides multiple networking protocols between like-to-like entities. The base software, NRSP, offers a wide variety of advanced functions, including layer 3 switching, IP/ IPX routing, Remote Network Monitoring (RMON), policy- based virtual local area networks (VLANs) and LANE client.

The Nways RouteSwitch Advanced Routing Software Program (NRAR) V3.2 , Nways RouteSwitch LANE Software Module V3.2 (NRLS), and Nways RouteSwitch Next Hop Resolution

Protocol Software Program (NHRP) V3.2 are optional and offer additional functions. The base software (NRSP) must be in place prior to installing any of the following optional programs:

- NRAR, which offers advanced routing protocols, such as OSPF, RIP II, ICMP Discovery and IP Multicast.
- NRLS, which provides integrated LES/ LEC/BUS services in 8277 RouteSwitch ATM networks.
- NHRP Software Program gives you Next Hop Resolution Protocol for the 8277 RouteSwitches.

Higher function, higher capacity

The new 8277 Nways Ethernet RouteSwitch Model 524 and 8277 RouteSwitch Software Programs are compatible and complementary. They add synergy to existing IBM 8274 and 8273 RouteSwitch networks. The 8277, 8274, and 8273 are all managed by the same network management applications. The 8277 can therefore serve as a higher function, higher capacity, drop-in replacement for the 8273 Ethernet RouteSwitch.

The 8277 supports the rich function set available on the 8274, including: VLANs, Emulated LANs (ELANs), user authentication, and firewall security.

Advanced software solutions

The 8277 NRSP base software and three optional programs deliver advanced routing functions for the 8277 Nways Ethernet LAN RouteSwitch that:

- Increase productivity and application access with Group Mobility
- Optimize available bandwidth with RouteChannel
- Reduce downtime with built-in RMON
- Simplify configuration with ICMP Router Discovery

These programs also support layer 3 switching, IP/IPX routing, and policy-based VLANs.

Network management

IBM Nways RouteVision Workgroup Manager (NRWM) includes previously known applications: Nways RouteSwitch Network Manager, Nways RouteTracker Manager, Nways RouteMonitor and Nways RouteDirector. This integrated suite of NMS applications can be used to manage the IBM 8277 Ethernet RouteSwitch and the IBM 8273 Ethernet RouteSwitch lines.

Integration: slick and simple

In switched virtual LANs (VLANs), frames are switched within a VLAN and routed between VLANs. As an administrator, you can arrange users into logical groups regardless of their physical location in a network. The 8277 provides the flexibility of policy-based VLANs.

Year 2000 ready

The IBM 8277 is Year 2000 ready when used in accordance with its associated documentation and is capable of correctly processing, providing, 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 exchanges data with it.

8277 Nways Ethernet RouteSwitch Specifications

Physical specifications	Width: 434 mm (17.1 in.) Depth: 371 mm (14.6 in.) Height: 89 mm (3.5 in.) Weight 3.6 kg (8 lb) fully loaded
Operating environment	Operating temperature: 0° to 40°C (32° to 104°F)
Power requirements	The 8277 contains an internal auto-ranging power supply that accepts the following inputs: 100 to 120 V 3.0A or 200 to 240 V 1.5 A, 50/60 Hz.
Compatibility	The 8277 is compatible with the IBM 8274 Nways RouteSwitch. The 8277 supports the same rich function set available on the 8274, including: VLANs, Emulated LANs (ELANs), user authentication and firewall security.

Installation information

Hardware requirements	• Minimum machine configuration consists of an 8277 Nways Ethernet LAN RouteSwitch with a connection for configuring the unit. • NRSP V 3.2 (which is preloaded) requires that the 8277 have a minimum of 16 MB DRAM and 4 MB flash memory (included with machine). • 8277's processor board provides an ASCII user interface for an ASCII terminal connection, or a computer with terminal capability, and a working connection to the switch (direct or through a modem, or over a network to an I/O port via Telnet or Rlogin). • For Telnet or Rlogin access, you must first establish an IP network address for your switch. • If multiple IBM 8277 Model 524s are to be backed up by an 8277 Backup Power Supply (BPS), one Backup Power Supply Expansion Power Supply Cable (BPS-EXP-CBL) is necessary for each additional machine. • The customer must provide country-appropriate power cords, which are ordered separately from IBM for each 8277 chassis ordered. • Cords are 250 V 10 A unshielded power cords and are 2.7-m (9-ft) long. • Recommended computer terminal connection is PS/2 or fully compatible, or Intel® 386 or higher. • 10 MB of free hard-file disk space. • VGA display or VGA color monitor. • Microsoft®-compatible mouse. • Diskette drive that can read/write 1.44-MB formatted diskettes. • 8 MB of memory.
Software/Operating Systems	• IBM 8277 Nways RouteSwitch Software Programs (NRSP) V 3.2 (which is preloaded) *The following require that NRSP be previously loaded on the 8277's processor board:* • IBM 8277 Nways RouteSwitch Advanced Routing Software Program • IBM 8277 Nways RouteSwitch LANE Software Module • IBM 8277 Nways RouteSwitch NHRP Software Program
Limitation	IBM 8277 Nways Ethernet RouteSwitch and RouteSwitch Software network configurations require careful design and planning for efficient utilization of available system resources.
Publications	The *RouteSwitch User's Guide* on CD-ROM is shipped with each 8277 Ethernet LAN RouteSwitch. RouteSwitch manuals are not offered as source-file publications. The RouteSwitch Software Program V 3.2 Release Notes are shipped with each software product. *IBM Nways RouteSwitch User's Release Notes V 3.2* are available on the Internet at *www.networking.ibm.com/support*.

Key Customer Benefits

- Built-in Layer 3 switching and routing enables you to switch data within a VLAN and to route data between different VLANs.
- The ability to connect to high-speed Fast Ethernet and ATM backbones and servers provides you with a choice of backbone and server connections.
- Simple migration from 10 to 100 Mbps gives you a smooth path to higher performance.
- High-speed switching capabilities for both Ethernet and Fast Ethernet provide low internal switch latency.
- NRSP base control software supports internal routing, RMON and policy-based VLAN support.
- Three optional RouteSwitch software programs offer advanced routing functions, providing IP and IPX routing, Integrated LES/LEC/ BUS Services and Next Hop Resolution Protocol.

Supplementary Information

The following sales tools are available for the 8277:

- Specification sheet:
  IBM 8277 Nways Ethernet RouteSwitch and 8277 RouteSwitch Software Programs, G224-4542

- *Tools for Success II* (sales toolkit for campus networking solutions) CD-ROM

- Information on the IBM 8277 is available at:
  www.networking.ibm.com/netprod.html

Workgroup Switches

Ethernet