IBM 8274 Nways LAN RouteSwitch Model GRS

Highlights

Gigabit Switch supporting Gigabit Ethernet, Fast Ethernet, Token Ring and ATM

Increases network throughput with switch modules that interface directly with the 8274 22-Gbps distributed switching fabric

Includes Gigabit switching modules for Gigabit Ethernet, Fast Ethernet, OC3 ATM and Token Ring

Provides higher port density for Fast Ethernet and Token Ring

Uses Layer 3, hardware-based, routing-capable design

Incorporates optional redundant 650-watt power supply

Provides high-speed server access

Supports flexible configurations

The latest addition to the 8274 family: Model GRS (Gigabit RouteSwitch)

IBM's first Layer 3 Gigabit Ethernet switch, the IBM 8274 Nways® LAN RouteSwitch Model GRS, offers a new level of backbone switching performance, thanks to its Gigabit architecture. Model GRS greatly extends the performance for Gigabit Ethernet, Fast Ethernet and Token-Ring based LANs. The MPX and associated switching modules all connect through the 22-Gbps switching fabric in the IBM 8274 Module GRS chassis, providing bandwidth for the most demanding applications. The 8274 Model GRS provides a 9-slot chassis and sufficient power to handle the largest possible configuration of Gigabit switching modules.

Gigabit architecture brings you new power

The new IBM 8274 Gigabit architecture brings power and flexibility to your network. The new Management Processor Module (MPX), along with the Gigabit switching modules, allows the 8274 to take full advantage of the 22-Gbps switching fabric. This great bandwidth extension makes the IBM 8274 a powerful backbone switch for Frame-based LANs.

For end-user and server applications that require the level of service available with the 8274 Model GRS, the 8274 also makes sense at the "edge" of the network.

As a campus backbone, the 8274 GRS couples high throughput with extreme versatility. It has the raw switching power to move data between high-speed desktops, high-speed servers and a wider ATM network. Build a backbone network with the 8274 GRS and you've got the room to grow for a long time. For example, you can upgrade interfaces from Ethernet to Fast Ethernet to Gigabit Ethernet–all with one switch.



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Power for the most demanding configurations

The 8274 GRS provides the distributed switching fabric that moves network traffic from one 8274 GRS port to another at an aggregate of 22 Gbps. This switching fabric is neither a shared-bus nor crossbar architecture. This ensures that each module has a dedicated data path to every other module, so it does not have to deal with the bus contention of a shared bus, or the possible blocking found in a crossbar fabric architecture.

Redundant power

With its 9-slot, 22-Gbps switch chassis including a 650-watt power supply, the 8274 GRS provides all of the electrical power needed for the most demanding of configurations.

The 8274-PS-650 is a redundant/backup power supply for use in the 8274 Model GRS. Power supplies in the 8274 models operate in a load-sharing mode, which means that both power supplies are active and operating simultaneously. Thus, if one should malfunction, the other is already active, eliminating recovery or switch-over time.

High-performance Management Processor Module

The Management Processor Module (MPX) supports the same functions as its predecessor MPMs, but it now also supports the Gigabit switching modules and interfaces directly to the 22-Gbps switching fabric. The MPX has 32 MB of DRAM and 8 MB of flash memory. The CAM size is 4 KB.

Gigabit Ethernet (GbE) switching modules

IBM offers three Gigabit Ethernet switching modules:

- GSX-FM-2W, 1000BASE-SX, multimode fiber, 2-port SC connector
- GSX-FS-2W, 1000BASE-LX, single-mode fiber, 2-port SC connector
- GSX-FM-4W, 1000BASE-SX, multimode fiber, 4-port SC connector

The two port models have two data-stream processing chips which provide sufficient power to allow both ports to operate at wire speed in either send or receive mode, or one of the ports to operate at wire speed in full-duplex mode. This capability makes the 8274 GRS ideally suited for connection to high-capacity servers or to another high-speed backbone switch.

The four port model has one data-stream processing chip. This module is better suited for connection to less demanding devices/connections than those requiring the 2-port version (such as edge devices and servers), or when more than two ports are needed for the application.

These GSX switching modules use IEEE 802.1x Flow Control to provide a backoff message to sending devices that prevents an overflow of input during heavy traffic situations, thereby limiting the loss of critical data. These modules also provide accelerated performance and immediate relief for backbone and server congestion. With 10- and 10/100-Mbps switching to the desktop, higher speed switching in the backbone becomes a necessity.

High-performance Fast Ethernet switching modules

IBM's Gigabit family of Fast Ethernet backbone modules (ESX) provides the switching capacity and powerful software features required for today's high-capacity backbone applications. It provides Fast Ethernet switching at wire speed along with a full breadth of software features, including, advanced policy-based management, integrated security, IEEE 802.1Q, IP multicast routing and switching and port aggregation. All of these Fast Ethernet switching modules support up to 4096 MAC addresses.

Port aggregation allows two to eight Fast Ethernet ports to operate as a single backbone data pipe. Backbone connections can thus be scaled from 100 to 800 Mbps, giving you the flexibility to expand bandwidth as traffic demands, without having to replace existing hardware.

- ESX-100FM-12W-4C (FC 7013, PN 30L7013) is a 12-port 100BASE-FX multimode fiber switching module. It is well suited for use as a backbone data pipe where the speed of a Gigabit Ethernet is not required.
- ESX-100C-12W-4C (FC 7012, PN 30L7012) is a 12-port 10/100-Mbps Ethernet switching module for copper connections. It gives you support for up to twelve "edge" switches over copper cable or for desktop applications either requiring 100 Mbps or anticipating that need.
- ESX-100C-32W-4C (FC 7019, PN 30L7019) is the same as ESX-100C-12W-4C except that it is a 32-port 10/100 switching module. This is an excellent choice for connecting workstations directly to the 8274 GRS.

High-performance ATM switching module

IBM's Gigabit ATM switching module (ASX) provides uplinks from traditional LAN networks to high-speed ATM backbones at OC3 speed (155 Mbps). This ASX switching module allows gigabit users to extend virtual LANs across ATM backbones to ATM users or other legacy LAN devices. Complete adherence to ATM Forum standards ensures inter-operability with existing premise or public ATM switches.

Using the 8274's any-to-any translation, the ASX switch provides transparent internetworking between Ethernet, Fast Ethernet, Token-Ring and native ATM. Token-Ring and Ethernet LANE Services, Classical IP and RFC 1483 are also supported.

Features	*Benefits*
Powerful, flexible platform	It connects to network segments, file servers or individual workstations. It supports any combination of Gigabit Ethernet, Fast Ethernet, Ethernet, Token Ring and ATM at wire speed with automatic any-to-any translation.
High capacity	The 9-slot 8274 supports up to 8 modules of: • 2/4 Gigabit ports • 32 10/100 ports • 32 Token-Ring ports
High reliability	Redundancy keeps you humming! Dual, redundant, hot-swappable power supplies, redundant management processors, redundant cooling fans and a temperature alarm make the 8274 a trustworthy powerhouse. Software and configuration are stored in non-volatile flash memory.
Policy-based VLANs	• With policy-based VLANs, you can set up VLANs by port, by protocol or by MAC address. • This makes setup simpler, throughput higher and latency lower than with complicated route configurations.
Slick management	Policy-based VLANs, VLAN intelligence, SNMP-manageable, RMON and the suite of IBM Nways RouteSwitch Network Manager for UNIX®, IBM Nways RouteTracker Network Manager for UNIX and IBM Nways RouteVision Campus Manager(NT) all make managing your network an enjoyable experience.

High-performance Token-Ring switching modules

IBM offers two powerful low-cost, high-density Token-Ring modules (TSX) that support 16 or 32 separate Token Rings or Token-Ring devices. You can install up to 256 ports in a 9-slot 8274 Model GRS.

Each port supports full-duplex dedicated Token-Ring switching with traffic speeds up to 32 Mbps.

The TSX modules take advantage of the 22-Gbps distributed switching fabric of IBM's Gigabit architecture by providing switching at wire speeds for each of the potential 256 Token-Ring ports of a 9-port 8274.

- TSX-CD-16W-4C gives you support for up to 16 switches, hubs or workstations.
- TSX-CD-32W-4C provides 32 ports for connecting workstations.

Gigabit RouteSwitch can be easily integrated into your Token-Ring environment. The TSX switching modules autodetect both the speed (4 or 16 Mbps) and the cable type (UTP or STP). And, with its any-to-any switching, you can easily integrate your Token-Ring network with other network protocols that you presently use or plan to use in the future.

The IBM 8274 supports transparent bridging, source route transparent bridging, and source route bridging. It also supports IEEE 802.1d and IBM Spanning Tree which gives you complete interoperability with your existing IBM Token-Ring products.

Year 2000 ready

These products are Year 2000 ready. When used in accordance with their associated documentation, they are capable of correctly processing, providing, and/or receiving date data within and between the 20th and 21st centuries, provided that all products (for example, hardware, software and firmware) used with the products properly exchange accurate date data with them.

IBM 8274 Nways LAN RouteSwitch Model GRS at a glance	
Total slots	9
Maximum slots available for switching modules	8
Serial ports	Two ports, EIA 232-C, 9-pin D connectors, configured per IBM AT® serial port. One configured as DTE for connection to a modem, one as DCE for connection to a PC or terminal.
Serial port data rates	1.2, 2.4, 9.6, 14.4, 19.2, 28.8 and 38.4 Kbps Management processors MPX 3.4 Preloaded
Processor module LEDs	Physical status; operation status; power supply A status; power supply B status; primary redundant status; secondary redundant status; temperature
Program and configuration	Flash memory storage
Physical dimensions	Width: 432 mm (17 in.) Depth: 337 mm (13.3 in.) Height: 616 mm (24.3 in.) Weight (fully loaded): 43.6 kg (96 lb)
Operating Environment	Temperature: 10° to 40° C (50° to 104° F) Relative Humidity: 8 to 80% Wet Bulb: 27° C (80.6° F)
Power supply	8274-PS-650

Gigabit Ethernet (GbE) switching module specifications	
GSX-FM-2W	
Standards	IEEE 802.3, 802.3z, 802.3x, 1000BASE-SX
Data rate	1000-Mbps (1-Gbps)
Maximum frame size	1518 bytes
Current Draw	10.0 A at 5 V dc
MAC addresses per module	4096
Port type	SC
Port count	2
Cable type	multimode fiber (62.5- or 50-micron)
Layer 2 Switching	15.3-Mpps maximum aggregate throughput
Backplane speed gigabit	22-Gbps distributed switching fabric
GSX-FS-2W	
Standards	IEEE 802.3, 802.3z, 802.3x, 1000BASE-SX
Data rate	1000-Mbps (1-Gbps)
Maximum frame size	1518 bytes
Current Draw	10.0 A at 5 V dc
MAC addresses per module	4096
Port type	SC
Port count	2
Cable type	single-mode fiber (1330 nm)
Layer 2 Switching	15.3-Mpps maximum aggregate throughput
Backplane speed gigabit	22-Gbps distributed switching fabric

Gigabit Ethernet (GbE) switching module specifications continued

GSX-FM-4W

Standards	IEEE 802.3, 802.3z, 802.3x, 1000BASE-SX
Data rate	1000-Mbps (1-Gbps)
Maximum frame size	1518 bytes
Current Draw	10.0 A at 5 V dc
MAC addresses per module	4096
Port type	SC
Port count	4
Cable type	multimode, 1000BASE-SX (850 nm)
Layer 2 Switching	15.3-Mpps maximum aggregate throughput
Backplane speed gigabit	22-Gbps distributed switching fabric

High-performance Fast Ethernet switching module specifications

ESX-100FM-12W-4C

Standards	IEEE 802.3, IAB RFCs 826, 894
Data rate	100 Mbps
Maximum frame size	1518 bytes
Current Draw	6.0 A at 5 V dc
MAC addresses per module	4096
Port type	MT-RJ
Port count	12
Cable type	multimode fiber (62.5- or 50-micron)
Layer-2 Switching	15.3-Mpps maximum aggregate throughput
Backplane speed gigabit	22-Gbps distributed switching fabric

ESX-100-12/32W-4C

Standards	IEEE 802.3, IAB RFCs 826, 894
Data rate	10- and 100-Mbps
Maximum frame size	1518 bytes
Current Draw	5.75 A at 5 V dc (ESX-100-12W-4C) 11.2 A at 5 V dc (ESX-100-32W-4C)
MAC addresses per module	4096
Port Type	RJ-45
Port count	12 (ESX-100-12W-4C) 32 (ESX-100-32W-4C)
Cable type	UTP (100-ohm) 10BASE-TX UTP (Cat 5) 100BASE-TX
Layer 2 Switching	15.3-Mpps maximum aggregate throughput
Backplane speed gigabit	22-Gbps distributed switching fabric

High-performance ATM switching module specifications

ASX-155FM-1W-4C

Standards	ATM Forum User-Network Interface 3.0/3.1; ISO Q.2931; LANE 1.0 RFC 1483; RFC 1577, 1755
Data rate	155-Mbps
Number of virtual circuits	1023
Current Draw	5.25 A at 5 V dc
MAC addresses per module	4096
Port type	SC
Port count	1
Cable type	multimode fiber
Optical budget	11 dB
Module LEDs	Hardware status, software status
Port LEDs	Link, activity, red, yellow, far end status alarms, cell error

High-performance Token-Ring switching module specifications

TSX-CD-16/32W-4C

Standards	IEEE 802.5, 802.5j
Data rate	4-, 16-Mbps
Maximum frame size	8 KB
Current Draw	9.25 A at 5 V dc (TSX-CD-16W-4C) 7.0 A at 5 V dc (TSX-CD-32W-4C)
MAC addresses per module	4096
Port Type	RJ-45
Port count	16 TSX-CD-16W-4C 32 TSX-CD-32W-4C
Cable type	STP/UTP (Cat 5)
Layer 2 Switching	15.3-Mpps maximum aggregate throughput
Backplane speed gigabit	22-Gbps distributed switching fabric

For more information

To find out more about the IBM 8274 Nways LAN RouteSwitch Model GRS and other high-performance IBM communications and networking products, contact your IBM representative or call IBM Direct at 1 800 IBM-CALL (1 800 426-2255). You can also obtain information from the IBM Networking Home Page at: *www.networking.ibm.com*

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