Cost-effective, yet powerful router solution

IBM 2210 Nways Multiprotocol Router

- ***VPN-ready software, including IPSecurity provides secure connections over the Internet at lower operating costs***
- ***Enterprise Extender provides SNA users with higher session availability over a TCP/IP network: Superior to DLSw***
- ***Management software includes the industry's first Layer 2 Tunneling Protocol (L2TP) support for enhanced multiprotocol network security***
- ***Connectivity options now include two new V.34 modem adapters with 4 or 8 integrated modems per adapter for analog data transmission speeds up to 33.6 Kbps***
- ***Integrated DIALs remote LAN access functions and standard router functions offer a single integrated solution***
- ***Branch Extender function enlarges your APPN® network to thousands of nodes***
- ***Load balancing and high availability provided by the proven technology of eNetwork™ Network Dispatcher***
- ***Native bridging and native APPN/HPR to exploit ATM***
- ***NHRP-configurable QoS for LAN emulation and new redundancy mechanisms to improve your ATM network***
- ***Two Quad BRI adapters allow 4 ISDN BRI ports on a single 2210 to reduce the high-speed tariff rates***
- ***ISDN PRI, 25-Mbps ATM, 4- and 8-port WAN concentration adapters conslidate varied network architectures on a single router***
- ***Routing protocol support includes IP, IPX, AppleTalk, Banyan VINES, DECnet IV and DECnet V/OSI***

Model 1S4

Model 128

Model 12T

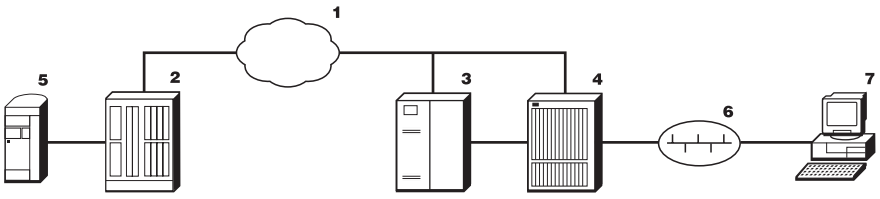
Model 24M

The IBM 2210 Nways® Multiprotocol Routers provide an extensive range of connectivity, protocols and price granularity to enable you to cost-effectively implement network computing across a broad range of remote locations, branch offices and regional sites.

Positioning and Benefits

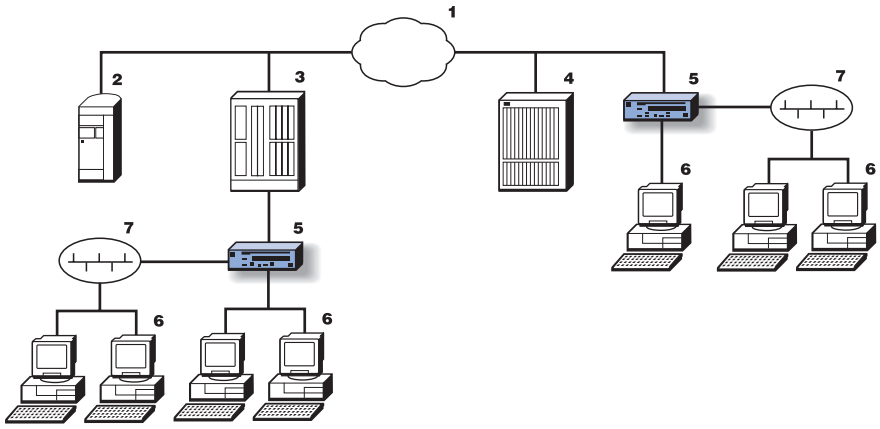
Problem: Need for a network that provides immediately accessible online data to all branch sites

Environment: A package delivery company with 1800 package centers and 140 distribution centers that uses an AS/400® network to support order entry and tracking across the network.



1. *WAN*
2. *IBM 2212/2216*
3. *Controller*
4. *Hub*
5. *IBM AS/400*
6. *Ethernet or Token Ring*
7. *Workstation*

Solution: The 2210 remote-access and routing functionality provides extensive network access to all locations over an any-to-any SNA intranet in addition to faster connectivity across the WAN.



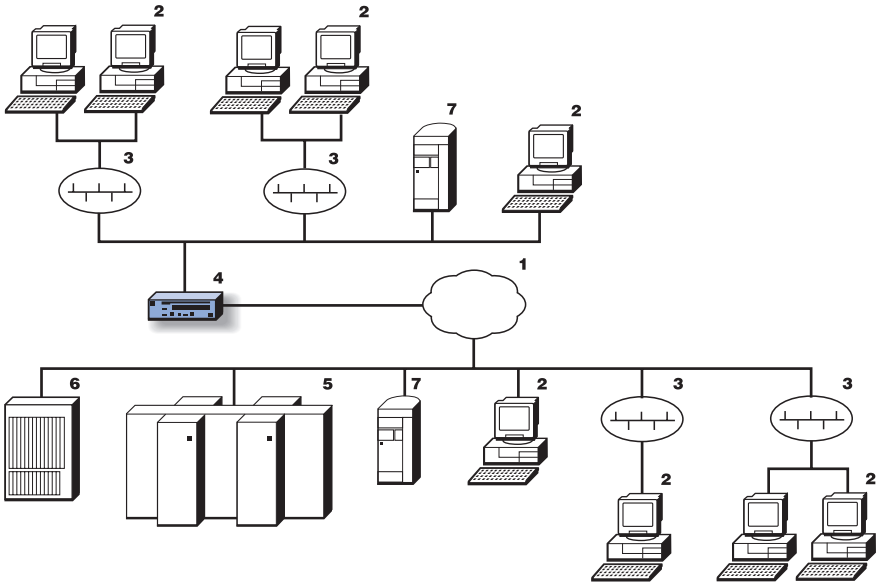
1. *WAN*
2. *IBM AS/400*
3. *IBM 2212/2216*
4. *Hub*
5. *IBM 2210*
6. *Workstation*
7. *Ethernet or Token Ring*

Benefits

- Extensive protocol support
- Efficient bandwidth usage on low-speed lines
- Improved network management
- Improved customer satisfaction due to faster and more complete tracking system

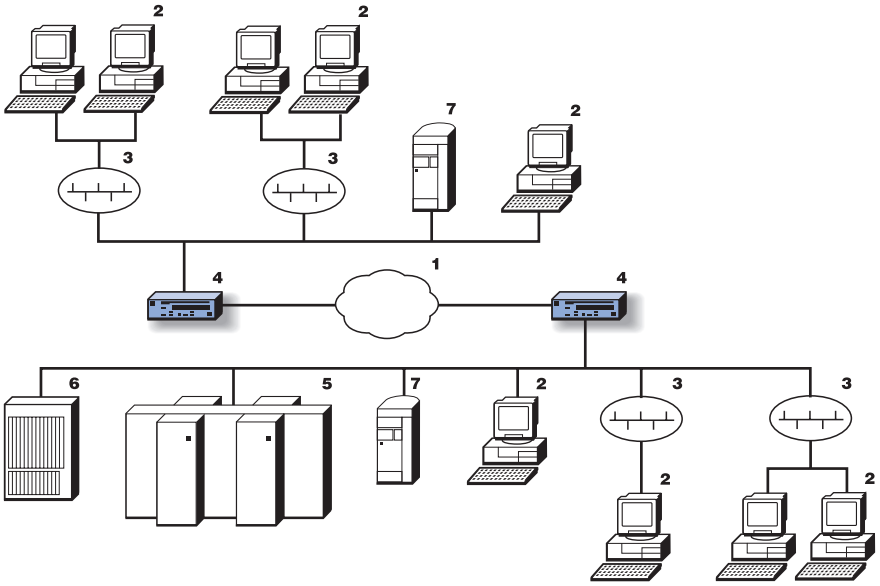
Problem: Need for a router-based multiprotocol network

Environment: A 150-branch-bank network is based on a Frame Relay backbone with routers installed in the smaller branch locations. To achieve growth objectives, the company has embarked on a strategy to deploy desktop and distributed computing, but the existing legacy SNA network cannot carry the protocols or bandwidth needed to satisfy the applications.



1. *WAN*
2. *Workstation*
3. *Ethernet or Token Ring*
4. *IBM 2210*
5. *IBM S/390®*
6. *ATM*
7. *IBM AS/400*

Solution: Two 2210 routers will be installed to offload the network processors and increase branch connectivity. A serial port on the 2210 is used to support SDLC-attached devices such as automatic teller machines (ATMs).



1. *WAN*
2. *Workstation*
3. *Ethernet or Token Ring*
4. *IBM 2210*
5. *IBM S/390*
6. *ATM*
7. *IBM AS/400*

Benefits

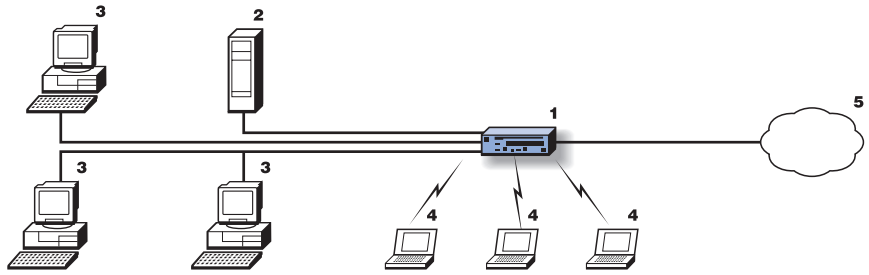
- Lower cost of ownership with lower, recurring network costs
- More extensive protocol support
- Increased bandwidth usage on low-speed lines
- Increased branch connectivity

Problem: Need for a router-based multiprotocol network with remote access

Environment: A growing company network with multiple LAN attachments with an increase in remote user access and branch connectivity.

Solution: Installing a 2210 router with remote access functionality interconnects multiple corporate resources across the WAN and enables remote dial-in users to utilize the company intranet.

1. *IBM 2210 Multiprotocol Router*
2. *AS/400 Server*
3. *Ethernet or Token-Ring LAN-attached workstation*
4. *Remote dial-in workstations*
5. *Corporate multiprotocol network*



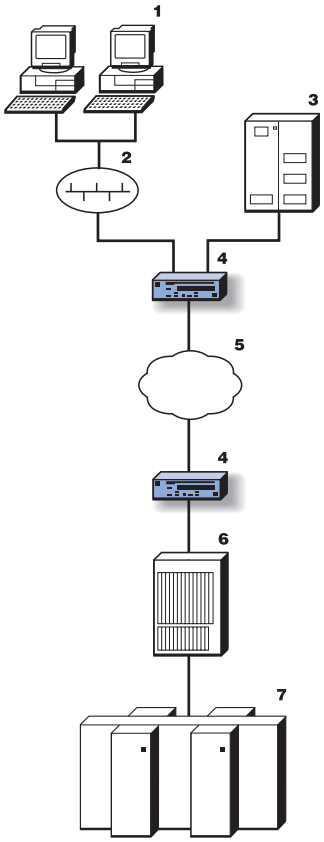
Remote access for multiple networks

Benefits

- Remote access and routing capability in one box
- Lower cost of ownership lowers recurring network costs
- More extensive protocol support
- Increased bandwidth in low-speed lines
- Increased branch connectivity

Product Overview

The IBM 2210 Nways Multiprotocol Router models support a wide range of office sizes ranging from the smallest offices in the enterprise up to regional offices. The IBM 2212/2216 Nways Multiaccess Connector provides similar software functions as the 2210 and serves regional offices and data centers where additional connectivity, capacity and performance requirements are typical. Thus the 2212/2216 is an excellent catcher for multiple 2210s and 2212s in a large networking environment. The common software code across the 2210, 2212 and 2216 significantly strengthens the overall IBM multiprotocol router solution.



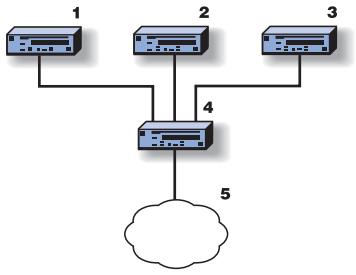
1. *Ethernet or Token-Ring LAN-attached workstation*
2. *3174*
3. *IBM 2210 Nways Multiprotocol Router*
4. *Corporate Multiprotocol Network*
5. *Server Access*
6. *Mainframe server*
7. *Remote dial-in workstations*

Utilizing the Interactive Network Dispatcher function, the 2210 broadens its Internet capability. With the APPN/High Performance Routing (HPR) Branch Extender function and remote WAN concentration, the 2210 offers a scalable APPN solution for large branch-office networks. With the IBM DIALs support, coupled with the 2210's routing, there is a more complete remote-access solution.

The entry-level models—the 1S4, 1S8, 1U4, and 1U8—are well-suited to the demands of small-business networking. They offer one Ethernet port for LAN architectures and either one serial WAN port or one ISDN BRI port (or allow concurrent serial WAN with a single ISDN B+D channel).

The intermediate models—the 12T, 12E, 127, and 128—offer one Ethernet or Token-Ring LAN port and two serial WAN ports to support medium-sized businesses and larger branch offices. Some midrange models also provide a single ISDN BRI port.

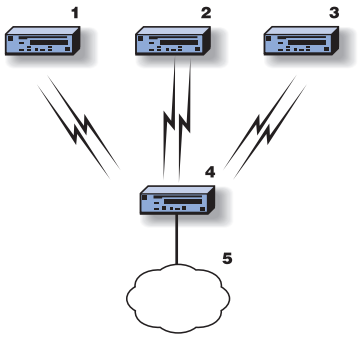
The higher-end models—the 14T, 24T, 24E, and 24M—double the connectivity and performance of other 2210 models. They can be ordered with standard configurations for up to two LAN ports and four serial WAN ports to provide connectivity for large branch offices and regional locations. These 2210 models also include one open adapter slot that supports the following adapters: 4- or 8-port Dial Access Adapter, ISDN BRI, ISDN Quad BRI (S/T or U interfaces), ISDN PRI, channelized T1/E1/J1, 25-Mbps ATM, or 4- or 8-port WAN concentration.



1. *IBM 2210 Nways Multiprotocol Router Model 1S4*
2. *IBM 2210 Nways Multiprotocol Router Model 1U4*
3. *IBM 2210 Nways Multiprotocol Router Model 12E or 12T*
4. *IBM 2210 Nways Multiprotocol Router 14T, 24x with WAN Concentration Adapter*
5. *Corporate Multiprotocol Network*

Many products, common function

All models of the 2210 use a common set of software functions called *IBM Nways Multiprotocol Routing Services (Nways MRS)*. Nways MRS is a member of IBM's family of multiprotocol services products that includes the 2212, Nways Multiprotocol Access Services (Nways MAS) for the 2216, Nways Multiaccess Connector and the Nways Multiprotocol Switched Services (Nways MSS) for the 8210, Nways MSS Server and the IBM 8260 Nways Multiprotocol Switching Hub MSS Module. Together, IBM's multiprotocol services products provide the benefits of switching, distributed routing, bridging and virtual LANs and enable the implementation of Switched Virtual Networking (SVN). It is IBM's comprehensive, high-performance framework to implement a complete network computing solution.



1. *IBM 2210 Nways Multiprotocol Router Model 1S4*
2. *IBM 2210 Nways Multiprotocol Router Model 1U4*
3. *IBM 2210 Nways Multiprotocol Router Model 127 or 128*
4. *IBM 2210 Nways Multiprotocol Router 14T, 24x with ISDN PRI Adapter*
5. *Corporate Multiprotocol Network*

IBM Nways Multiprotocol Routing Services—VPN security in robust networking software

IBM Nways Multiprotocol Routing Services (MRS) Version 3.2 software maximizes the power of your existing network and opens up connectivity possibilities to keep pace with upcoming network expansions. Nways MRS is preloaded on the 2210 at the time of manufacture and includes a Configuration Program to assist in deploying the 2210 router. The Configuration Program supports AIX® Version 3 Release 2.5, AIXwindows®, Microsoft® Windows® 3.1, and IBM OS/2®.

IBM Nways MRS provides security, scalability, and availability. Look to IBM Nways MRS to handle enterprise-wide switching, distributed routing, bridging, and LAN emulation. Nways MRS software is also engineered to enable the use of virtual private networks for cost-conscious, high-performance networking on public IP backbones.

Virtual private networks can be deployed as an extension of your corporate intranet across a public network to create a secure connection through an encrypted "tunnel." Once built, virtual private networks use TCP/IP-based networks, such as the Internet, as dedicated transmission lines, offering encryption, packet-switching, and firewall technologies that prevent unauthorized access.

IBM envisions three broad applications for virtual private network technology:

- For the remote user who needs access to the corporate intranet from remote locations using the Internet, or another TCP/IP network
- For branch office connection to a central corporate intranet without leasing or installing dedicated optical-fiber, copper or coaxial cable
- For business partners or suppliers who need access to internal corporate data without the benefit of a trusted, dedicated connection

In all three applications, virtual private networks use the Internet for secure connectivity and data transfer. Encryption is used for packet transmission, and hosts use firewall technologies to prevent unauthorized access. Most importantly, based upon research conducted by Infonetics Research, Inc., virtual private networks can reduce WAN networking costs by as much as 20 to 47% and remote access networking costs by as much as 60 to 80%.

Hardware and software for dependable routing solutions

When equipped with one of the many available ISDN adapters, the 2210 Nways Multiprotocol Router and Nways MRS are dependable ISDN solutions. The Quad BRI adapter offers increased bandwidth and provides backup capability without requiring more expensive Primary Rate ISDN (PRI) service. With the Point-to-Point Protocol multilink tool—supplied with the 2210—bandwidth can be increased dynamically by grouping the B-channels. And for even greater bandwidth administration, rely on IBM's award-winning Bandwidth Reservation System (BRS) to manage traffic priority over Frame Relay, PPP, and dial connections.

Network Dispatcher for scalable servers

The 2210 Nways Multiprotocol Router's Network Dispatcher features allow system administrators to build and manage scalable Web servers. Network Dispatcher provides load balancing and high availability to users in environments with multiple servers, high traffic volume, and many clients. Superior to Domain Name Servers' round-robin queuing, it enables large numbers of individual servers to be linked into large, virtual-server clusters for efficient management. Network Dispatcher is a separately charged program and requires a use-authorization license for each server to be supported.

Branch Extender for APPN/SNA growth

IBM Branch Extender technology, a component of Nways MRS, enables a single Advanced Peer-to-Peer Networking® (APPN) SNA network to scale up to thousands of branch locations. With Branch Extender, the 2210 can service many branch locations and eliminate the need for more network nodes. This reduces overall topology and routing traffic and improves bandwidth use.

DIALs for LAN emulation

For even greater flexibility in network access, the IBM Dial-In Access to LANs (DIALs) feature allows remote users to dial into a LAN and access resources, emulating a local attachment. DIALs also allows LAN-attached users to dial out to a WAN. The remote LAN access functions offered by the 2210 broaden its compatibility with other IBM networking hardware featuring DIALs support. Future DIALs Servers' clients will be fully supported.

Enhanced for ATM networking

The 2210 supports ATM- and TCP/IP-based networks seamlessly and can even bridge over ATM to IP and IPX protocols. Supporting 25-Mbps ATM data transmission rates, the 2210 can also provide a LAN Emulation Client to assist migration to ATM technology and to lower network management costs.

Additional ATM enhancements offered by the 2210 include high-speed ATM application integration, configurable Quality of Service (QoS) for ATM LAN emulation, and support for Next Hop Resolution Protocol (NHRP) to establish shortcut routes and new network redundancy.

The 2210 also supports Classical IP and reliability mechanisms for IP over ATM networks. Native SNA traffic routing with High Performance Routing (HPR) maps and HPR service class to ATM's guaranteed bandwidth services, real-time transport, and multicasting ability also serve to position the 2210 as a flexible ATM solution.

TCP/IP network-ready

The 2210 Nways Multiprotocol Router was designed to take advantage of the latest enhancements and standards offered by the Internet Engineering Task Force (IETF). Enhancements to each protocol and link type improve security, administration, reliability, and network efficiency. Among the 2210's innovative features are increased X.25 scalability, X.25 Closed User Group facilities, and X.25 local support over TCP/IP. The 2210 also provides the following benefits:

- Broadened remote concentration to encompass a full complement of link types (Frame Relay, SVC/PVC; PPP; SDLC; SDLC relay; v.25bis; X.25; and V.34) for the WAN ports on the system card and 4-port WAN CPCI adapters.
- IP routing includes ICMP, TCP, UDP, RIP, OSPF V2, BGP-4, static routes, Multicast Extensions to OSPF (MOSPF), ARP, InARP, IP Access Controls and IP Version 6 support.
- Advanced SNA support with APPN Network Node (NN), APPN Intermediate Session Routing (ISR), HPR, Dependent LU Requester (DLUR), Version 2-compliant Data Link Switching (DLSw) including NetBIOS support, Branch Extender, Boundary Access Node (BAN), and LAN Network Manager. Permanent APPN/HPR Topology Database is supported on the hard drive.
- TN3270E server support enables IP access to SNA host applications. Distributed TN3270 servers across an IP, subarea, or APPN network to provide:
  - Better availability by eliminating a single point of failure with a central gateway
  - Scalability with incremental capacity per 2210 site instead of a large, central-site, server gateway
- The Enterprise Extender function, with Class of Service (CoS) and SNA priority capabilities provides better service levels than DLSw to SNA users running over an IP backbone.
- IETF Layer 2 Tunneling Protocol (L2TP) standard support enables the tunneling of multiprotocol PPP traffic across intranets, extranets, or the Internet.
- BAN support to enable end stations attached to the 2210 to make a direct connection through Frame Relay to a front-end controller such as the IBM 3745 Communication Controller or the IBM 3746 Nways Multiprotocol Controller. A similar, direct connection can also be established between the 2210 and an IBM AS/400 system.
- HPR to provide high-speed, native SNA transport with nondisruptive routing around failed connections, and adaptive rate-based congestion control.
- DLUR to enable 3270 traffic to utilize HPR and APPN transports.
- APPN Network Node support to provide routing and directory services to Ethernet, Token-Ring, and SDLC-attached nodes.
- APPN ISR to provide the forwarding of session data to the next node along the path.

  Note: HPR, DLUR, APPN ISR, APPN Network Node, Enterprise Extender, TN3720E and Network Dispatcher are not available on Models 1Sx and 1Ux.

Standards-based interoperability

Nways MRS is based on open industry standards, vendor specifications, and protocol implementations that conform to current Internet Engineering Task Force (IETF) RFC levels. IBM participates in industry initiatives such as the IETF, ATM Forum, IEEE, APPN Implementers Workshop (AIW), and the Network Interoperability Alliance. The protocol implementations in Nways MRS provide a full set of features to ensure network reliability, security, and interoperability.

Invest today, grow tomorrow

All models of the IBM 2210 Nways Multiprotocol Router are shipped preloaded with IBM Nways MRS licensed software. These software tools offer the flexibility to accommodate future networking requirements and the hardware provides an open adapter slot for growing architectures (available in the high-end 2210 models).

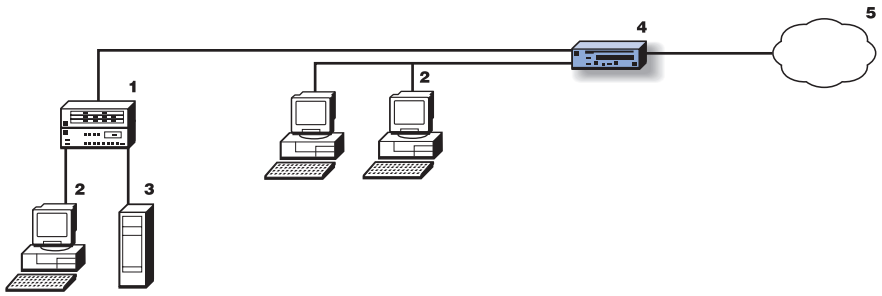
If you are considering the increased use of dial services for backup and for remote offices with only occasional network access, you can use the ISDN BRI and PRI adapters. The 4- and 8-port WAN concentration adapters provide potential cost savings if multiple physical links can be consolidated into a single, high-speed link.

Remote installation—quickly and easily

Extending the corporate network to small, remote offices typically means that skilled technical personnel at a central location must install routers at distant locations that lack skilled resources. The 2210 is designed to meet that challenge.

The EasyStart function means the remote 2210 can be plugged in at a remote location and it will find its configuration on a network server that is typically located at a central site.

All 2210 models also contain a service port supporting asynchronous communication for configuration and maintenance. All models support the industry's open network management standard, SNMP. Management of the system can be accomplished using SNMP managers. Management application support is provided by many of IBM's management programs, including the Nways Enterprise Manager and the Campus Manager LAN for AIX products. You can also use IBM Nways Workgroup Manager for Windows NT® for smaller networks.



1. *ATM Workgroup Switch*

2. *IBM 2210 Multiprotocol Router 14T, 24x with 25-Mbps ATM Adapter*

3. *Corporate Multiprotocol Network*

4. *Ethernet or Token-Ring LAN*

5. *Server*

2210 Nways Multiprotocol Router Specifications

Models

Model	LAN	No. of WANs[1]	ISDN BRI	Flash/ DRAM	Pre-loaded software	PN
1S4[2]	Ethernet	1	Yes	2/4 MB	IP+IPX+ISDN	85H7796
1S8[2]	Ethernet	1	Yes	4/8 MB	IP+IPX+DLSw+ISDN	85H7797
1U4[2,3]	Ethernet	1	Yes	2/4 MB	IP+IPX+ISDN	85H7794
1U8[2,3]	Ethernet	1	Yes	4/8 MB	IP+IPX+DLSw+ISDN	85H7795
12T	Token-Ring	2	No	4/8 MB	IP+IPX+DLSw	86H1758
12E	Ethernet	2	No	4/8 MB	IP+IPX+DLSw	86H1759
127	Token-Ring	2	Yes	4/8 MB	IP+IPX+DLSw+ISDN	86H1760
128	Ethernet	2	Yes	4/8 MB	IP+IPX+DLSw+ISDN	86H1761
14T*	Token-Ring	4	Optional	4/16 MB	IP+IPX+DLSw	86H1778
24T*	2 Token-Ring	4	Optional	4/16 MB	IP+IPX+DLSw	86H1779
24E*	2 Ethernet	4	Optional	4/16 MB	IP+IPX+DLSw	86H1780
24M*	1 Token-Ring & 1 Ethernet	4	Optional	4/16 MB	IP+IPX+DLSw	86H1781

* Adapters and enablement for:	PN
ISDN BRI S/T	41H7089 (FC 3101)
ISDN Quad BRI-U	72H5062 (FC 3104)
ISDN Quad BRI S/T	85H7782 (FC 3105)
T1/J1 ISDN PRI	41H7150 (FC 3107)
E1 ISDN PRI	55H7508 (FC 3108)
4-Port WAN Concentrator	41H9106 (FC 3120)
8-Port WAN Concentrator	55H7489 (FC 3121)
4-Port Dial Access Adapter	72H5033 (FC 3714)
8-Port Dial Access Adapter	72H5034 (FC 3718)
4-Port Dial Access Upgrade	72H5035 (FC 3704)
25-Mbps ATM	41H9100 (FC 3901)

Notes:

1. The standard WAN ports on the 2210 will support any of these physical interfaces:
   - EIA 232 D/V .24/V .28
   - V.35
   - V.36/EIA 449
   - X.21.

   Serial interface dial support includes V.25bis and V.34.
2. You can choose whether to configure the serial WAN port or the ISDN BRI port. With MRS V2.1, you now have the option to concurrently configure the serial WAN port with a single ISDN B+D channel.
3. Models 1U4 and 1U8 include a fully integrated NT1, incorporating the U interface.

Memory

Models 14T, 24T, 24E and 24M memory	FC	PN
16-MB SIMM DRAM (field upgrade)*	4016	41H7079
32-MB SIMM DRAM (field upgrade)	4032	41H7123
4-MB Flash SIMM (field upgrade)	4104	41H7077
8-MB Flash SIMM (field upgrade)	4108	55H9399

Note: Flash memory can be increased to 8 or 12 MB. DRAM is expanded by selecting a DRAM memory feature to replace the installed DRAM.

Models 12T, 12E, 127 and 128		
8-MB SIMM DRAM (field upgrade)*	4048	25H4974
16-MB SIMM DRAM (field upgrade)	4057	42H2671

DRAM is expanded by selecting a DRAM memory feature to replace the installed DRAM.

* Available for units ordered only prior to July 29, 1997.

Physical Specifications

Model	Width	Depth	Height	Weight
1Sx and 1Ux	279.4 mm (11 in.)	133 mm (5.24 in.)	41.4 mm (1.63 in.)	1.24 kg (2.73 lb)
12x	440 mm (17.3 in.)	254 mm (10 in.)	43.7 mm (1.72 in.)	3.2 kg (7 lb)
14T	440 mm (17.3 in.)	305 mm (12 in.)	87.4 mm (3.44 in.)	5.57 kg (12.3 lb)
24x	440 mm (17.3 in.)	305 mm (12 in.)	87.4 mm (3.44 in.)	5.57 kg (12.3 lb)

Serial interfaces	EIA 232 D/V.24/V.28, V.35, V.36/EIA 449 and X.21 Dial support provided via V.25bis and V.34
LAN interfaces	Ethernet: IEEE 802.3 at 10 Mbps Connections: AUI and 10BASE-T (RJ-45) Token-Ring: IEEE 802.5 at 4 or 16 Mbps Connections: 9-pin D-connector and RJ-45
Adapter features (Models 14T, 24T, 24E and 24M)	25-Mbps ATM interface ISDN BRI S/T ISDN Quad BRI - S/T ISDN Quad BRI - U E1 120-ohm ISDN PRI T1/J1 ISDN PRI 4-port WAN concentration 8-port WAN concentration 4-port Dial Access Adapter 8-port Dial Access Adapter *Note: The Adapter Enablement Feature is a prerequisite for installing any adapter. It is provided on new orders. It might be required if the unit was ordered prior to July 29, 1997.*
Electrical requirements	Automatically senses line voltage within an input range from 110 to 240 V at 50 to 60 Hz (U.S. power cord included with every 2210 model)
Operating environment	Temperature: 10° to 40°C (50° to 104°F) Relative humidity: 8% to 80% Maximum wet-bulb temperature: 27°C (80°F) Power supply: 19 watts (Models 1Sx and 1Ux); 35 watts (all other models)
Heat output	8.8 kcal/hr (35 BTU/hr) for Models 1Sx and 1Ux 28.5 kcal/hr (113 BTU/hr) without Adapter Enablement Feature (all other models) 34.5 kcal/hr (137 BTU/hr) with Adapter Enablement Feature (all other models)
2210 certifications	Safety certifications: EN 60950, UL 1950, CSA 950 Electromagnetic compliance certification: - FCC Class A (U.S.A.) - VCCI Class A (Japan) - ICES-003 Class A (Canada) - European Community Mark of Conformity (CE Mark), for Class B, CISPR 22 / European Standard EN 55022 *Note: The 2210 1Sx and 1Ux models comply with FCC Class B (USA) and ICES-003 Class B (Canada)*
Installation	All models can be placed on a flat surface, and all models except 1Sx and 1Ux can be mounted in a rack in a wiring closet.
ISO 9000	The IBM 2210 Nways Multiprotocol Router was developed and is manufactured by IBM under a registered ISO 9000 quality management system.

2210 Nways ISDN BRI Adapter		FC 3101	PN 41H7089
Characteristics	2 independent, 64-Kbps B-channels for data One 16-Kbps D-channel for signaling		
Electrical interface Connectors	S/T Box: RJ-45 Network: RJ-45 (ISO 8877)		
Number of ports	1		
Signaling specifications	Europe: Euro-ISDN (NET3, I-CTR3) France: VN3 Japan: INS-64 Australia: TS 013 North America: National ISDN-1 (NI1—U.S.) National ISDN-2 (NI2—U.S.) AT&T #5 ESS switch Nortel DMS-100 switch		

2210 Nways ISDN Quad BRI Adapter		FC 3105	PN 85H7782
Characteristics	4 independent, ISDN BRI connections		
Electrical interface	S/T		
Connectors	Box: RJ-45 Network: RJ-45 (ISO 8877)		
Number of ports	4		
Signaling specifications	Europe: Euro-ISDN (NET5, I-CTR4) Japan: INS-64; NTT I.430 Australia: TS 013		

2210 Nways ISDN Quad BRI Adapter		FC 3104	PN 72H5062
Characteristics	4 independent ISDN BRI connections		
Electrical interface	U		
Connectors	Box: RJ-45 Network: RJ-45 (ISO 8877)		
Number of ports	4		
Signaling specifications	North America: National ISDN-1 (NI1—U.S.) National ISDN-2 (NI2—U.S.) AT&T #4 and #5 ESS switch Nortel DMS-250 switch		

2210 Nways T1/J1 ISDN PRI Adapter		FC 3107	PN 41H7150
Characteristics	23 independent, 64-Kbps B-channels for data One 64-Kbps D-channel for signaling		
Electrical interface	Integrated DSU/CSU function		
Connectors	Box: 26-pin, 3-row D-shell Network: RJ-48		
Number of ports	1		
Signaling specifications	Japan: INS1500 Australia: TS 014 North America: National ISDN-2 (NI2—U.S.) AT&T #4 ESS switch AT&T #5 ESS switch Nortel DMS-250 switch		

2210 Nways E1 120-Ohm ISDN PRI Adapter	**FC 3108**	**PN 55H7508**
Characteristics	30 independent 64-Kbps B-channels for data One 64-Kbps D-channel for signaling	
Electrical interface	Integrated DSU/CSU function	
Connectors	Box: 26-pin, 3-row D-shell Network: Flying lead	
Number of ports	1	
Signaling specification	Europe: Euro-ISDN (NET5, I-CTR4)	

2210 Nways 25-Mbps ATM Adapter	**FC 3901**	**PN 41H9100**
Characteristics	ATM Forum UNI 3.1 ATM Forum ILMI PVC and SVC	
Electrical interface	25-Mbps ATM	
Connectors	Box: RJ-45 Network: RJ-45	
Number of ports	1	

2210 Nways 4-Port WAN Concentration Adapter	**FC 3120**	**PN 41H9106**
Characteristics	Supports synchronous PPP, X.25, Frame Relay, and SDLC traffic Dial support provided via V.25bis and V.34	
Electrical interfaces	Based on WAN cable selected: - EIA 232-D/V.24/V.28 - V.35 - V.36/EIA 449 - X.21	
Connectors	Box: 26-pin miniature connector Network: dependent on electrical interface selected	
Number of ports	4	

2210 Nways 8-Port WAN Concentration Adapter	**FC 3121**	**PN 55H7489**
Characteristics	Supports synchronous PPP, X.25, Frame Relay, and SDLC traffic Dial support provided via V.25bis and V.34	
Electrical interfaces	Based on WAN cable selected: - EIA 232-D/V.24/V.28 - V.35 - V.36/EIA 449 - X.21	
Connectors	Box: 26-pin miniature connector Network: dependent on electrical interface selected	
Number of ports	8	

2210 EIA-232 Service Port Kit Feature	**FC 2832**	**PN 41H7095**
Characteristics	Used for diagnostics and troubleshooting	

2210 US 14.4 Modem Kit Feature	**FC 2814**	**PN 41H7096**
Characteristics	Provides a remote connection for configuration, diagnostics and management via a second service port	

Nways Multiprotocol Routing Services ordering information

Program Name/Description	Order type number	FC	PN
MRS V2.1 (1U4/8, 1S4/8)—Base	5801-AAR	8596	14J1771
MRS V2.1 (12x)—Base	5801-AAR	8597	14J1780
MRS V2.1 (x4x)—Base	5801-AAR	8598	14J1781
MRS V2.1 Network Dispatcher	5801-AAR	8604	14J1784
Network Dispatcher for IBM Networking 1 Balanced Server Use Authorization	5807-AAR	0720	84H7351
MRNS, MRS V1R1 and MRS V2 to MRS V2.1 Upgrade	5803-AAR	4491	14J1773

Nways Multiprotocol Routing Services software requirements

Operation of the 2210 is supported by the Nways MRS V 3.1. The base software is pre-loaded in the 2210 at the time of manufacture. Initial configuration and post-installation configuration changes can be accomplished through use of the IBM Nways Multiprotocol Routing Services Configuration Program. This program is provided with the respective software license and is included in the 2210 package itself.

Data cables	FC	PN
CCITT X.21 DTE Cable	2212	10H5591
RJ-45 Category 5 Cable - 8 meters	2391	41H9082
Modem Attach Cable, EIA-232 DCE	2321	55H7756
Direct Attach Cable, EIA-232 DTE	2322	60G3901
Modem Attach Cable - V.35	2351	60G3902
Direct Attach Cable - V.35 (DTE)	2352	60G3903
Modem Cable, CCITT V.36	2361	60G3904
Modem Cable, CCITT X.21	2211	60G3906
STP Token-Ring Cable	2665	6339098
ISDN PRI RJ-48 T1 Cable	2314	85H3509
ISDN PRI RJ-48 J1 Cable	2315	57G8042
ISDN PRI E1 30M Cable	2316	80G3984

Key Customer Benefits

Price-competitive access router

- Higher performance models with 2 LAN ports, 4 serial ports and adapters that support ISDN BRI, ISDN PRI, 25-Mbps ATM, 4- and 8-port WAN concentration, and new ISDN Quad BRI (S/T and U)
- Future-proof packaging with open adapter slot
- Rich level of function
- New, economical entry models that provide more functions than most competitive offerings in this price range

Extensive protocol support

- The broadest possible range of award-winning SNA support including Enterprise Extender, TN3270E, HPR, DLUR, ISR, APPN, Branch Extender, BAN and DLSw (RFC 2166)
- IP, IPX, AppleTalk, DECnet IV & V, Banyan VINES, NetBIOS (DLSw)
- Bandwidth Reservation System to prioritize protocols over Frame Relay and PPP serial links
- Robust local and remote bridging support
- IETF L2TP standard support for multiprotocol tunneling across Internet, intranet or extranet.

Strong switched services support

- Excellent Frame Relay support including FECN, BECN, DE and CLLM
- Network availability enhanced by extensive dial support
- Dial on demand and dial backup via ISDN and V.25bis
- Remote access with DIALs and V.34 support

Superior installation and management capabilities

- Ease of installation
- Manufacturing pre-load
- EasyStart for Plug and Play installation
- Graphical configuration program
- Management applications for AIX, Windows and HP OpenView as well as LAN Network Manager support
- Integrated modem option for out-of-band management

Migration capabilities

- The 25-Mbps ATM Adapter for Models 14T, 24T, 24E and 24M, along with LANE and Classical IP, provides a means for customers to justify beginning the migration to ATM where required while continuing to derive benefits from their investment in 2210s and LAN hardware. The adapter provides a connection to an ATM Workgroup Switch, such as the IBM 8285, and provides WAN access and LAN-to-LAN communication.
- Flexible hardware design allows customers to pick the lowest-priced network service now (for example Frame Relay, ISDN or X.25) and migrate to another service later with only a software configuration change.

Enhanced protocol and management capabilities

- The MRS software is based on the open industry standards and protocols needed to build robust internetworks that can accommodate continuing network growth, expanding diversity and a high degree of multivendor interoperability.
- RFC and MIB currency ensures that the MRS protocol and management support are continually refreshed to include the latest industry standards.

Position within IBM networking

- Key role as access platform to IBM Switched Virtual Networking
- Compatibility with IBM networking product line
- IBM service and support

Ordering ease

- Easy-to-understand layout for placing an order
- Single package feature that allows customers to receive the hardware, software and documentation for a 2210 in a single box

Common software base

- Emphasis on an open industry standard that is complementary with other IBM solutions.

Supplementary Information

The following sales tools are available for the 2210:

- Specification sheet:
  IBM 2210 Nways Multiprotocol Router, G325-3435-04
- Information on the 2210 is available at:
  www.networking.ibm.com/netprod.html
  www.networking.ibm.com/220/220prod.html
- The *IBM 2210 Nways Multiprotocol Router Description and Configuration Scenarios Volume 1* (SG24-4446-02) and *IBM 2210 Nways Multiprotocol Router IBM 2216 Nways Multiaccess Connector Description and Configuration Scenarios Volume 2* (SG24-4956-00) can be accessed on the IBM Redbook Home Page at *www.redbooks.ibm.com*