

VPN, Remote LAN, advanced multiprotocol routing and voice support in one manageable package



IBM 2212 Access Utility

- **Open standards-based software offers virtual private networks**
- **Secure IP Security connections over the Internet keep your operating costs low**
- **Carries SNA through the IP network and Internet**
- **Hardware encryption option and high performance provide central-site solution for VPN**
- **Remote LAN access and advanced router functions in a single integrated solution**
- **Cost-effective modem bank solution for remote LAN users**
- **Previewed voice solutions provide voice compression and combine voice and data networks**
- **IP load balancing and native APPN/HPR routing provide cost-effective and flexible central site solution**
- **Previewed High-Performance System Card and Encryption/Compression CPCI Adapter offer performance that meets VPN requirements**
- **Modular design makes hardware upgrades simple**
- **Remote management functions allow centralized software tailoring**



The IBM 2212 Access Utility is a branch office in a box. The IBM 2212 Access Utility makes it easy to connect local area networks (LANs) to the mobile workforce, and remote LANs or branch offices using advanced multiprotocol virtual private networks (VPNs), for access to the Internet and company backbone. The IBM 2212 Access Utility provides both cost-effective computing across a broad range of remote locations, as well as the flexibility to grow in meeting tomorrow's networking needs.

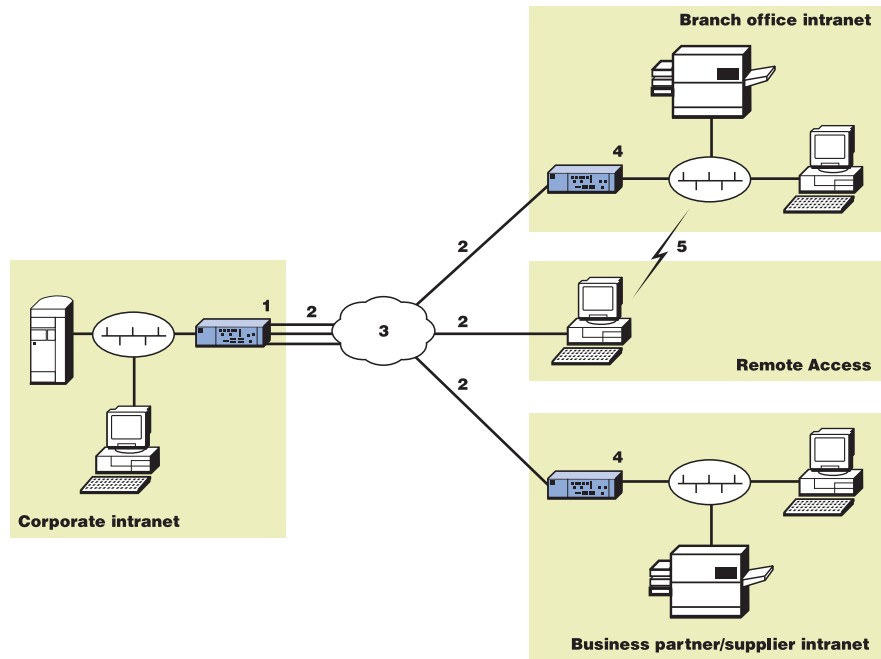
Positioning and Benefits

Problem: Need for reducing line costs and enabling the mobile workforce.

Environment: A growing company needs to have secure access to its intranet for customers, business partners and members of its remote workforce.

Solution: Secure virtual private network (VPN) and RLAN. The IBM 2212 Access Utility supports virtual private networks (VPNs) for extending intranets to customers and business partners and allowing employees secure dial-in network access. Designed to protect confidential transactions over the public Internet backbone, VPNs can also provide significant cost savings when used as an alternative to leased-line or intranet growth.

1. IBM 2212 Access Utility
2. Virtual private network (VPN)
3. Internet
4. IBM 2210 or IBM 2212 Access Utility
5. RLAN



Use the IBM 2212 Access Utility to build virtual private networks (VPNs)

Benefits

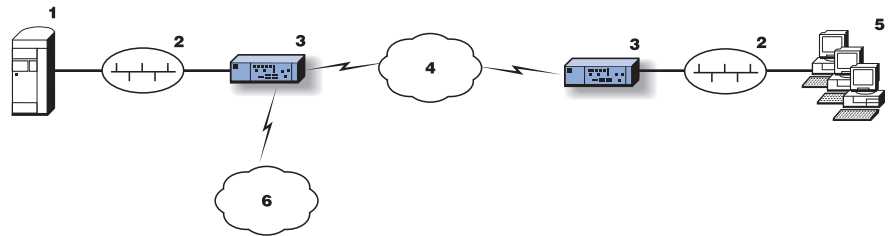
- Secure dial-in access for remote employees
- A cost-efficient alternative to leased lines
- Secure integration of the public Internet backbone into your enterprise data communications network

Problem: Need to allow multiprotocol traffic and enable e-business.

Environment: A growing company with an AS/400® server attached to a campus backbone needs to support a growing number of IP and desktop users.

Solution: General multiprotocol routing. Ideal as a general multiprotocol router for midsize networks, the IBM 2212 Access Utility offers four WAN ports integrated into every model plus four customizable slots for LAN (including 10/100-Mbps Ethernet), WAN, ISDN and future adapter options. The IBM 2212 Access Utility provides more connectivity than an entry-level router such as the IBM 2210 Nways® Multiprotocol Router and throughput approaching that of the IBM Nways 2216 Multiaccess Connector at a lower price. The IBM 2212 Access Utility conveniently accesses the host through the corporate data center LAN and connects the company to the Internet for e-business as illustrated in the following figure.

1. AS/400 Server
2. Campus backbone
3. IBM 2212 Access Utility
4. WAN backbone
5. IP clients
6. Internet



The IBM 2212 Access Utility is also designed for concentrating the WAN traffic of multiple branch offices or for use as a high-end departmental server. It capitalizes on the common code base, user interface, configuration, and management foundations of the IBM 22xx Nways family of products to provide synergistic cross-platform continuity.

Benefits

- More connectivity and higher throughput at a lower cost
- Host access with minimal channel disruption
- Uses the common code base, user interface and configuration of other IBM 22XX Nways products

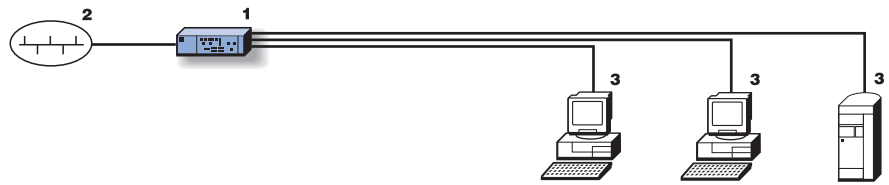
Problem: Need to create scalable web server.

Environment: A growing company needs to support multiple IP servers.

Solution: Allow horizontal growth by distributing the load. IBM's new Network Dispatcher, provided in the IBM 2212 Access Utility, balances traffic load among multiple IP servers. It also provides backup protection for routing around failed servers.

Network Dispatcher balances traffic load and enhances availability across any manufacturer's set of IP servers. When Network Dispatcher is used to distribute TN3270E traffic load among several 2212s or IBM Network Utility TN3270E servers, an IBM-exclusive Network Advisor for TN3270E queries the servers and analyzes the results to determine the best distribution of incoming traffic.

1. IBM 2212 Access Utility
2. Campus backbone
3. IP Servers

**Benefits**

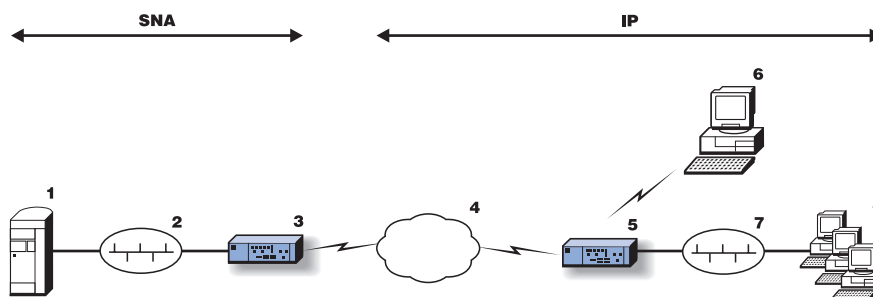
- Balanced traffic load and enhanced availability across any manufacturer's set of IP servers
- Backup protection and rerouting around failed servers

Problem: Need to enable IP based workstation to access SNA host.

Environment: A company needs to provide SNA host access to its IP desktop users, as well as to remote users dialing into the network

Solution: Implement TN3270E gateway. TN3270E technology allows IP desktop traffic to access SNA host applications. The IBM 2212 Access Utility provides a TN3270E logical gateway that integrates SNA and IP to enable IP desktop users to connect to SNA hosts via the Internet, intranets, and extranets. The IBM 2212 Access Utility supports up to 1000 TN3270E sessions. The Network Dispatcher feature provides traffic load-balancing across multiple IP and TN3270E servers. TN3270E server function can be distributed to branch offices for maximum performance and availability.

1. AS/400 or S/390® Server
2. Campus LAN
3. IBM 2212 Access Utility for TN3270E integration
4. WAN backbone
5. IBM 2212 Access Utility for remote concentration
6. Remote user
7. Branch office LAN
8. IP desktop users



Benefits

- Advanced data transport features for SNA environments
- Connection for IP users through the Internet, intranets and extranets

Problem: Need for reducing cost of ownership of workstations.

Environment: A company with a primary server that distributes applications to network stations that are connected through a WAN.

Solution: Implement network supporting network stations.

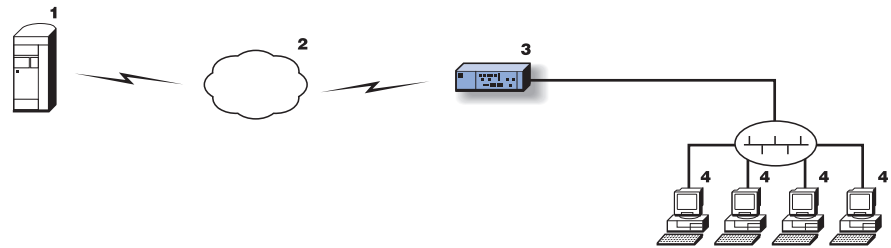
In traditional network computing scenarios, a master server distributes applications to low-end, low-cost “thin clients” or “network stations.” But when hundreds or thousands of users access the master server during a short window of time, or when network stations are separated from the master server by a wide area network (WAN), performance can suffer. Now, with the Thin Server function integrated into the IBM 2212 Access Utility, network computing moves beyond the host and end user to deliver high-performance, distributed-load boot and runtime caching where and when it’s needed.

The IBM 2212 Access Utility’s Thin Server function acts as a proxy for a master server to deliver bring-up code and applications to network stations. Each network station accesses the nearest Thin Server rather than the master server.

The Thin Server maintains file concurrency with the master server. For security, cryptographic algorithms encrypt each user’s password before transmission to the master server.

The Thin Server is designed to reduce the WAN costs and host cycles traditionally associated with network computing. The IBM 2212 Access Utility Thin Server enhances performance and central application management.

1. Primary server
2. Internet/intranet
3. IBM 2212 Access Utility
4. Network station

**Benefits**

- Improves boot-up time for local or remote network stations
- Reduces the network load of the main site
- Reduces WAN traffic
- Removes the need for a remote server
- Requires only one server to be at the latest network station support level

Product Overview

The IBM 2212 Access Utility offers four adapter slots. The unit can operate using flash memory or the hard drive, and the system card will be available as either a standard or high-performance option. All models of the IBM 2212 Access Utility have 64 MB of DRAM and, in flash-based models, 48 MB of flash memory, allowing even the most advanced applications to operate effectively. Four CPCI adapter slots enable future adapter additions, encompassing long-term networking needs and applications like RLAN, voice integration and VPN encryption.

Models with a hard drive are ideal for applications utilizing permanent data media, such as Network Station Thin Server function and Permanent Topology Database of APPN/HPR protocol. The hard drive option is recommended when the IBM 2212 Access Utility acts as a SNA/APPN node. The hard drive offers a considerable problem management advantage by allowing traces to be stored without using an external trace file server.

The PowerPC-based system card is available as a Standard System Card and a High-Performance Card is previewed. Both system cards have four WAN ports and are equipped with a standard slot for Ethernet or Token-Ring PMC card. Encryption in the VPN concentration points requires high performance from the IBM 2212 Access Utility because all of the secured IP tunnels demand simultaneous encryption/decryption. Encryption and compression can be improved even further in very demanding environments by using the Encryption/Compression Assist CPCI Adapter.

VPN security in robust networking software

IBM Access Integration Services (AIS) software maximizes the power of your existing network and opens up connectivity possibilities to keep pace with upcoming network expansions. AIS is preloaded on the IBM 2212 Access Utility at the time of manufacture and includes a Configuration Program to assist in deploying the IBM 2212 Access Utility.

AIS provides security, scalability, and availability. AIS 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 IP-based networks, such as the Internet, as dedicated transmission lines, offering encryption 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%.

Encryption Performance

Virtual private networks are based on encrypted, secure IP tunnels. Encryption combines both performance- and memory-intensive functions. The previewed High Performance System Card and Encryption/Compression CPCI Adapter offer the performance that is needed in the concentration points in virtual private networks.

Hardware and software for dependable routing solutions

When equipped with one of the many available ISDN adapters, the IBM 2212 Access Utility and AIS are dependable ISDN solutions. The BRI adapters offer increased bandwidth and provide backup capability without requiring more expensive Primary Rate ISDN (PRI) service. With the Point-to-Point Protocol multilink tool—supplied with the IBM 2212 Access Utility—bandwidth can be increased dynamically by grouping the B-channels and other media. 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 Network Dispatcher function allows system administrators to build and manage scalable Web servers. It 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.

Branch Extender for APPN/SNA growth

IBM Branch Extender technology, a component of AIS, enables a single Advanced Peer-to-Peer Networking® (APPN®) SNA network to scale up to thousands of branch locations. With Branch Extender, the IBM 2212 Access Utility can service many branch locations and eliminate the need for more network nodes. This reduces overall topology and routing traffic and improves bandwidth use.

Permanent APPN/HPR Topology Database support

The native APPN/HPR function offers high traffic performance without protocol conversion. For network startup, the IBM 2212 Access Utility supports APPN/HPR Permanent Topology Database on the hard file. The IBM 2212 Access Utility hard file option offers the required permanent data media. Permanent Topology Database is important when the IBM 2212 Access Utility is used as the concentration APPN/HPR router in front of AS/400 and other APPN servers. The IBM 2212 Access Utility does not have to learn the network topology from the network, and this significantly expedites the network startup.

DIALs for LAN connection

For even greater flexibility in network access, the IBM Dial-In Access to LANs 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 IBM 2212 Access Utility broaden its compatibility with the IBM 8235 featuring DIALs support.

TCP/IP network-ready

The IBM 2212 Access Utility 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 IBM 2212 Access Utility's innovative features are increased X.25 scalability, X.25 Closed User Group facilities, and X.25 local support over TCP/IP. The IBM 2212 Access Utility 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, RSVP, 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 file. APPN/HPR and other SNA functions can be used with flash.
- TN3720E server support enables IP access to SNA host applications. Distributed TN3270E 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 2212 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 IBM 2212 Access Utility 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 IBM 2212 Access Utility 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 end nodes.
 - APPN ISR to provide the forwarding of session data to the next node along the path.

Thin Server Support

In the new world of network computing, a Network Station (NS) must get its boot image from the network. A typical storage place for this boot image to reside would be on the host (such as an AS/400), acting as the server for the NS. One problem that can occur is if there are too many NSs attached to the same host and all of them are activated in the same short timeframe. This will cause an overload of traffic to and from the host serving the boot images to the NSs. Another potential problem can arise when the NSs are located at a remote branch office and must get the load images over slow-speed WAN lines. The solution is the placement of the Thin Server function in the branch office router, which reduces network load and increases availability. Benefits include:

- NSs at remote sites are not dependent on slow-speed WAN connections.
- NS startup is faster and availability is better.
- Power outage demands are not visible to the central site.
- It is easy to configure
- When the hard drive option is used, the Thin Server Function is not dependent on uplink connection availability after power on.

Standards-based interoperability

AIS 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 AIS provide a full set of features to ensure network reliability, security, and interoperability.

Invest today—grow tomorrow

All models of the IBM 2212 Access Utility are shipped preloaded with AIS licensed software. These software tools offer the flexibility to accommodate future networking requirements.

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 and asynchronous external modems.

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 personnel. The IBM 2212 Access Utility is designed to meet that challenge.

The EasyStart function means the remote 2212 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 2212 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.

IBM 2212 Access Utility Specifications

IBM 2212 Access Utility

Dimensions

Width:	440 mm (17.3 in.)
Depth:	305 mm (18.9 in.)
Height:	89 mm (3.5 in.)
Weight:	8 kg (18 lb)

Serial interfaces

EIA 232-D/V.24/V.28, V.35, V.36/EIA 449, and X.21
Note: Dial support provided using V.25bis and V.34.

LAN interfaces

Ethernet: IEEE 802.3 10/100 Mbps auto-sensing
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

Memory features

32-MB DRAM expansion
64-MB DRAM expansion

Adapter features

1-port Token Ring PMC Adapter
1-port 10/100 Ethernet PMC Adapter
2-port Token-Ring CPCI Adapter
2-port 10/100 CPCI Ethernet Adapter
4-port WAN CPCI Adapter
2-port ISDN BRI - S/T CPCI Adapter
2-port ISDN BRI-U CPCI Adapter
1-port ISDN PRI T1/J1 CPCI Adapter
1-port ISDN PRI E1 CPCI Adapter
2-port ISDN PRI J1/T1 CPCI Adapter
2-port ISDN PRI E1 CPCI Adapter

Electrical requirements

Automatically senses line voltage within an input range of 110 to 240V ac at 50 to 60 Hz (U.S. power cord included with every 2212 model.)

Operating environment

Temperature	10° to 40.6°C (50° to 105°F)
Relative humidity	8 to 80%
Maximum wet-bulb temperature	27° C (80°F)

2212 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

Warranty

One year

Installation

All models can be placed on a flat surface, or mounted in a rack in a wiring closet.

ISO 9000

The IBM 2212 Access Utility was developed and is manufactured by IBM under a registered ISO 9000 quality management system.

IBM 2212 Access Utility cont.**IBM Access Integration Services***Routing protocols*

TCP/IP
 IPX
 AppleTalk 2
 Banyan VINES
 DECnet IV
 DECnet V/OSI

SNA

APPN NN
 PPN ISR
 HPR
 DLUR
 Branch Extender
 DLSw (RFC 1795 and 2166) including NetBIOS support
 SDLC primary and secondary
 SDLC Multiple SNA PU support

BAN and Boundary Network Node (BNN)

LAN Network Manager (LNM)
 Extended Border Node

Bridging

Source-route bridging (SRB)
 Transparent bridging (TB)
 Source-route transparent bridging
 SRB-TB translational bridging
 IP bridging tunnel

Software*Switched networks*

V.25bis (PPP)
 ISDN BRI and PRI (PPP or Frame Relay)
 WAN restoral (PPP)
 WAN reroute from Frame Relay, PPP, or X.25 link failures
 Dial on demand
 V.34 for remote LAN access

WAN data link controls

Frame Relay (RFC 1490) including BAN support, SVC and PVC
 PPP
 Multilink PPP over mixed media
 X.25 including QLLC and X.25 DTE Transport (XTP) for X.25 over a TCP/IP network
 SDLC

Virtual Private Networking

IP Security
 AAA security
 Layer 2 Tunneling Protocol (L2TP)
 Bandwidth Reservation System
 Interactive Network Dispatcher
 Enterprise Extender
 TN3270E Server
 Dial-In/Dial-Out Access for LANs (DIALs) remote LAN access
 Secure ID
 Network Address Translation (NAT)
 IP Address Pooling
 Virtual Connections IP/IPX

IBM 2212 Access Utility models at a glance

Model ¹	Adapters CCPI+PMC	System Card	Memory Media	SW preload ²
40F	4 + 1	Standard	Flash	Standard
40H	4 + 1	Standard	Hardfile	All

Notes:

¹ Model Naming Convention

First character: Number of adapter slots outside systemcard

Second character: System card type, 0=Standard, 5=High Performance

Third character: Memory media type, F=Flash, H=Hardfile

² Standard = all except APPN/HPR and TN3270E. Other codeloads available on code server in Internet without additional charge.**Adapters and Features**

- 1-port Token Ring PCC Adapter
- 2-port ISDN PRI T1/J1 CPCI Adapter
- 1-port 10/100 Ethernet PMC Adapter
- 2-port ISDN PRI E1 CPCI Adapter
- 2-port Token Ring CPCI Adapter
- 2-port 10/100 Ethernet CPCI Adapter
- 4-port ISDN BRI U CPCI Adapter
- 2-port ISDN BRI-S/T CPCI Adapter
- 2-port ISDN BRI-U CPCI Adapter
- 1-port ISDN PRI T1/J1 CPCI Adapter
- 1-port ISDN PRI E1 CPCI Adapter

Supplementary Information

The following sales tools are available for the IBM 2212 Access Utility:

- Specification sheet:
IBM 2212 Access Utility, G224-4576-00
- Information on the IBM 2212 Access Utility is available at:
www.networking.ibm.com/netprod.html