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

# IBM 2212 Access Utility

## Highlights

***Excellent scalability to meet a wide range of network access requirements***

***IP load balancing using Network Dispatcher***

***Native APPN/HPR routing for cost-effective host office solutions***

***Manage VPN security and Quality of service with Nways VPN manager***

***Cost-saving multi-services platform***

- *Best-of-breed multiprotocol capability for SNA/IP integration*
- *SNA over IP functionality*
- *Thin Server functionality provides application boot for network stations*
- *Remote access support using integrated analog or digital modem adapters*
- *Web caching feature to improve performance of Web transactions*
- *Integrated voice for cost-effective networking (Voice/fax over Frame Relay and Voice over IP)*

***Security features***

- *Virtual private networking*
  - *Open standards using IPSec and LT2P*
  - *Secure connections over the Internet to reduce cost of transport*
  - *High-performance hardware encryption option*
- *Integrated firewall features*

***Optional performance features***

- *High-performance system card for scalable growth*
- *Hardware compression for efficient economical transport*

**High-performance models**

The IBM 2212 Access Utility is expanding its already impressive family with the addition of four new models and adapters. Models 15F, 15H, 45F and 45H have the fastest throughput and largest memory capacity of any mid-sized multiservice platform on the market today. Increased throughput and memory capacity are critical elements in supporting specific applications such as Web server cache or large-scale VPN networks. These Access Utility models feature the High-Performance System Card, which is available to upgrade the already existing models. They also offer enhanced VPN, remote access and integrated voice capabilities. The 2212 Access Utility also delivers peak performance in demanding and complex multiservice environments.



*IBM 2212 Access Utility Model 40F*

Models 15F and 45F are preloaded with the high-performance software package, which contains all functions with the exception of TN3270E, APPN and Thin Server features. Models 15H and 45H are also preloaded with the high-performance enterprise software package and contains all of the functions including TN3270E, APPN and Thin Server features. The Web cache software feature is available as an optional code load for all models.

**Extended network connectivity**

The 2212 Access Utility has added a new Digital Modem CPCI Adapter. This adapter is a single T1/E1 port that supports up to 24 or 30 connections, which are a combination of ISDN or digital 56-Kbps modem calls. In addition to standard ISDN PRI functionality, this adapter offers scalable remote access concentration function for telecommuters or mobile users. These new double-wide CPCI adapters are available for only the 40x and 45x Access Utility models. They support the following configurations/ interfaces:

- T1/E1/J1 PRI ISDN interfaces
- Channelized T1/E1/J1

A new 4-port Analog 56K Modem Adapter provides a complementary smaller remote access server implementation that allows up to four analog phone line connections. This modem supports the V.34 standard for speeds up to 33.6 Kbps as well as K56Flex technology. It also supports the new V.90 ITU standard for speeds up to 56 Kbps. The transmission rates are limited to a maximum of 33.6 Kbps.

For voice and data integration, the IBM 2212 Access Utility offers several 2-port Analog Voice CPCI Adapters with a maximum of four adapters per Access Utility, where each port can connect up to eight specified remote voice ports or PBXs. The adapters support both Voice over Frame Relay and Voice over IP.

The Compression/Encryption adapter provides hardware acceleration of the compression and encryption functions currently available in the IBM Access Integration Services V3.3 software.

**Voice integration features**

The IBM 2212 Access Utility's new voice features integrate seamlessly with data traffic on a frame-relay network, reducing networking expenses without compromising quality. This is accomplished by multiplexing voice/fax and data on a single frame-relay DLCI, switching voice/fax between frame-relay interfaces and ensuring voice quality on low-speed lines by implementing FRF.11 and FRF.12 standards from the Frame Relay Forum.

The three new adapters are based on state-of-the-art DSP architecture that cover the entire range of analog connectivity options:

- FXS Card - handset, fax to Access Utility
- FXO Card - Access Utility to line side of analog PBX
- E&M Card - PBX-to-PBX connection over Voice over Frame Relay (VoFR)

*New 2212 adapters include:*



*E1 30-Channel Digital Modem Adapter*



*High-Performance System Card*

**IBM's powerful, scalable and modular branch office solution**

The IBM 2212 Access Utility is a branch office in a box. The 2212 Access Utility makes it easy to connect your local mobile workforce or a branch office to a local area network (LAN) via dial-in remote access, or through the Internet to a company backbone, using advanced multiprotocol VPNs. The 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.

The 2212 Access Utility 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 come standard with 64 MB of DRAM and, in flash-based models, 48 MB of flash memory, allowing even the most advanced applications to operate effectively. Models 10x and 15x all have one CPCI adapter slot. Models 40x and 45x have four CPCI adapter slots that enable future adapter additions, encompassing long-term networking needs and applications like RLAN, voice integration and VPN encryption. Models 10F, 15F, 40F and 45F all come standard with flash memory. Models 10H, 15H, 40H and 45H come standard with a hard file that increases the overall serviceability of the systems and enables you to take full advantage of the SNA/APPN applications and Thin Server function.

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. Choose the hard drive option when the IBM 2212 Access Utility acts as an 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.

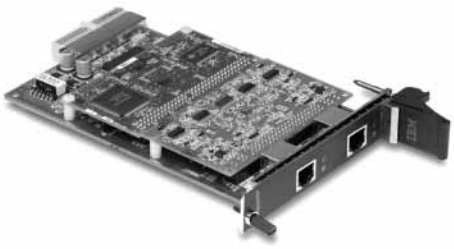
The PowerPC-based system card is available with a Standard System Card or a High-Performance System Card. Both system cards come equipped with a standard slot for an Ethernet or Token-Ring PMC card. Encryption in the VPN concentration points may require the high-performance model of IBM 2212 Access Utility, 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 CPCI Adapter.

**VPN security in robust networking software**

IBM Access Integration Services (AIS) Version 3.3 enriches the VPN capabilities, enhances performance, expands routing functionality and advances the key features of the IBM 2212 Access Utility. It also offers new and enhanced software functions including integrated multiprotocol routing, remote access and voice/fax software. The 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 2212 Access Utility.

AIS provides security, scalability and availability. AIS software is also engineered to enable the use of virtual private networks for cost-effective, high-performance networking on public IP backbones.

VPNs are a cost-effective, structured and secure method of supporting remote employees and establishing extranets with customers and suppliers. New hardware features increase connectivity and improve performance to deliver a winning VPN solution. Fully configured with two digital modem adapters, the 2212 Access Utility can provide remote access concentration for up to 48 (60 for E1) simultaneous connections. The 4-port analog 56K modem adapters enable a single Access Utility to terminate up to 16 V.90 dial connections using integrated modems. The hardware encryption/compression adapter helps to sustain performance in high-density VPNs by offloading these processor-intensive tasks from the main processor.



*2-Port Analog Voice Adapter with options for FXS, FXO or E&M*



*4-Port Analog 56K Modem Adapter*



*Compression/Encryption Adapter*

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, VPNs 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. 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 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 network 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.

The Network Dispatcher allows the network administrator to load balance news and mail servers more effectively by supporting protocol advisors for Network News Transfer Protocol (NNTP), Post Office Protocol (POP3), Simple Mail Transfer Protocol (SMTP) and Telnet. The protocol advisors query the servers and analyze the results to determine the best distribution of incoming requests. The Network Dispatcher is useful for many applications such as e-mail servers, Web server, distributed parallel database queries and other TCP/IP applications.

### 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 drive. The IBM 2212 Access Utility hard drive option offers the required permanent data media. Permanent Topology Database is important when the 2212 Access Utility is used as the concentration APPN/HPR router in front of AS/400® servers and other APPN servers. The 2212 Access Utility does not have to learn the network topology from the network, which significantly expedites the network startup.

### DIALs for LAN connection

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 2212 broaden its compatibility with IBM 8235 DIALs Servers featuring the same 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, BSC, 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, In ARP, IP Access Controls, RSVP and IP Version 6 support.

- Advanced SNA support with APPN Network Node (NN), APPN Intermediate Session Routing (ISR), High Performance Routing (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. APPN/HPR can be used with flash.

- TN3720E server support enables IP access to SNA host applications. The server connections are supported over all APPN DLUS/DLUR interfaces and the subarea connections are supported on the LANs and frame relay. The server capacity is based on memory and response time requirements. Distributed TN3270E servers across an IP, subarea or APPN network provide:

  – Better availability by eliminating a single point of failure with a central gateway

  – Scalability with incremental capacity per IBM 2212 Access Utility 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 enables 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 host), 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 time frame. 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 low-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.

### Web Server caching

A new optional code feature allows the 2212 Access Utility to function as a cache in support of a Web server. The cache provides high-speed access to Web pages while reducing the communications overhead on the server. With 512 MB of memory, the Access Utility can provide approximately 400 MB of memory for Web projects. The cache supports:

- Caching of static/dynamic Web pages and images
- Hypertext Transfer Protocol (HTTP) 1.0 and 1.1 servers/clients
- Flexible caching protocol for cache objects
- Up to 16 independent cache partitions
- Load balancing of servers via Network Dispatcher
- Up to 16 Web server cache boxes

### 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

The IBM 2212 Access Utility and AIS V3.3 offer integrated networking solutions for distributed branch offices and medium-sized businesses. With the latest enhancements, the 2212 Access Utility provides the most extensive set of multiservice functions in a single easily-managed platform.

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 for distant locations that lack skilled personnel.

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

### Manage VPN security and Quality of Service with the new Nways VPN Manager

Monitor the security and Quality of Service of your virtual private network using the previewed IBM Nways VPN Manager. The VPN Manager monitors security over IPSec tunnels and Layer 2 sessions. The VPN Manager also monitors Quality of Service for ReSerVation Protocol (RSVP) and the Differentiated Services (Diffserv) TOS byte. Patent-pending, IBM-exclusive VPN Manager tests simulate the effect of traffic against router policies and measure response time for Layer 2 sessions. The VPN Manager supports the 2210, 2212, 2216 and Network Utility and is supported on Windows NT, AIX, and HP-UX beginning in the previewed Nways Manager Version 2.

***IBM 2212 Access Utility at a glance***

| **Dimensions** | **Width** | **Depth** | **Height** | **Weight** |
|---|---|---|---|---|
| *Model 10F* | 440 mm (17.3 in.) without rack-mounting frame | 305 mm (12 in.) | 44.4 mm (1.75 in.) | 4.54 kg (10 lb) |
| *Model 10H* | 440 mm (17.3 in.) without rack-mounting frame | 305 mm (12 in.) | 44.4 mm (1.75 in.) | 4.54 kg (10 lb) |
| *Model 15F* | 440 mm (17.3 in.) without rack-mounting frame<br>480 mm (18.9 in.) with rack-mounting frame | 305 mm (12 in.) | 44.4 mm (1.75 in.) | 4.54 kg (10 lb) when fully populated |
| *Model 15H* | 440 mm (17.3 in.) without rack-mounting frame<br>480 mm (18.9 in.) with rack-mounting frame | 305 mm (12 in.) | 44.4 mm (1.75 in.) | 4.54 kg (10 lb) when fully populated |
| *Model 40F* | 440 mm (17.3 in.) without rack-mounting frame<br>480 mm (18.9 in.) with rack-mounting frame | 305 mm (12 in.) | 89 mm (3.5 in.) | 6.61 kg (15.8 lb) |
| *Model 40H* | 440 mm (17.3 in.) without rack-mounting frame<br>480 mm (18.9 in.) with rack-mounting frame | 305 mm (12 in.) | 89 mm (3.5 in.) | 7.71 kg (17 lb) |
| *Model 45F* | 440 mm (17.3 in.) without rack-mounting frame<br>480 mm (18.9 in.) with rack-mounting frame | 305 mm (12 in.) | 89 mm (3.5 in.) | 8 kg (18 lb) |
| *Model 45H* | 440 mm (17.3 in.) without rack-mounting frame<br>480 mm (18.9 in.) with rack-mounting frame | 305 mm (12 in.) | 89 mm (3.5 in.) | 8 kg (18 lb) |

***IBM 2212 Access Utility at a glance continued***

**Electrical requirements**

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

- 0.125 kVA (Models 1xx)
- 0.3 kVA (Models 4xx)

Capacity of exhaust:

- 0.24 $m^3$/min. (Models 1xx)
- 0.50 $m^3$/min. (Models 4xx)

**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 telecommunications closet.

**ISO 9000**

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

**Year 2000 ready**

The IBM 2212 Access Utility 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 all other hardware, software, and/or firmware used with the product properly exchange accurate data with it.

**Memory features**

| | **Feature code** | **Part number** |
|---|---|---|
| • 32-MB DRAM expansion | 3132 | 85H4408 |
| • 64-MB DRAM expansion | 3133 | 85H4409 |
| • 64-MB EDO DIMM base with expansion to 512 MB (Models 15x and 45x only) | 3233 | 44L2536 |
| • 128-MB EDO DIMM base with expansion to 512 MB (Models 15x and 45x only) | 3234 | 44L2538 |
| • 256-MB EDO DIMM base with expansion to 512 MB (Models 15x and 45x only) | 3235 | 44L2540 |

***IBM 2212 Access Utility at a glance continued***

| **Adapter features** | | **Feature code** | **Part number** |
|---|---|---|---|
| | • 1-port Token-Ring PMC Adapter | 3101 | 85H4721 |
| | • 1-port 10/100 Ethernet PMC Adapter | 3102 | 85H4722 |
| | • 2-port Token-Ring CPCI Adapter | 3110 | 85H4717 |
| | • 2-port 10/100 Ethernet CPCI Adapter | 3111 | 85H4735 |
| | • 4-port WAN CPCI Adapter | 3103 | 85H8836 |
| | • 2-port ISDN BRI-S/T CPCI Adapter | 3105 | 85H4726 |
| | • 2-port ISDN BRI-U CPCI Adapter | 3104 | 85H4725 |
| | • 1-port ISDN PRI T1/J1 CPCI Adapter | 3106 | 85H4727 |
| | • 1-port ISDN PRI E1 CPCI Adapter | 3107 | 85H4728 |
| | • 2-port ISDN PRI T1/J1 CPCI Adapter | 3108 | 85H4680 |
| | • 2-port ISDN PRI E1 CPCI Adapter | 3109 | 85H4682 |
| | • 4-port Analog 56K Modem Adapter | 3213 | 85H8830 |
| | • 2-port Analog FXS Voice Adapter | 3210 | 85H8828 |
| | • 2-port Analog FXO Voice Adapter | 3211 | 02L2398 |
| | • 2-port Analog E&M Voice Adapter | 3212 | 02L2400 |
| | • Compression/Encryption Adapter | 3215 | 85H4732 |
| | • T1/J1 12-Channel Digital Modem Adapter with optional feature for 24 channels (Models 40x and 45x only) | 3202 | 35L2262 |
| | • T1/J1 24-Channel Digital Modem Adapter (Models 40x and 45x only) | 3201 | 85H8812 |
| | • E1 12-Channel Digital Modem Adapter with optional feature for 30 channels (Models 40x and 45x only) | 3205 | 35H2263 |
| | • E1 30-Channel Digital Modem Adapter (Models 40x and 45x only) | 3204 | 25L5606 |

| **Model**[1] | **Adapters CPCI+PMC** | **System card** | **Memory media** | **SW preload** | **Part numbers** |
|---|---|---|---|---|---|
| 10F | 1 + 1 | Standard | Flash | Standard[2] | 85H4663 |
| 10H | 1 + 1 | Standard | Hardfile | Enterprise | 85H4661 |
| 15F | 1 + 1 | High Performance | Flash | High Performance | 30L6015 |
| 15H | 1 + 1 | High Performance | Hardfile | High Performance Enterprise | 30L6052 |
| 40F | 4 + 1 | Standard | Flash | Standard[2] | 85H4664 |
| 40H | 4 + 1 | Standard | Hardfile | Enterprise | 85H4662 |
| 45F | 4 + 1 | High Performance | Flash | High Performance | 30L6053 |
| 45H | 4 + 1 | High Performance | Hardfile | High Performance Enterprise | 30L6054 |

*Notes:*

[1] *Model Naming Convention*
*First character: Number of adapter slots outside system card*
*Second character: System card type, 0=Standard, 5=High Performance*
*Third character: Memory media type, F=Flash, H=Hardfile*

[2] *Standard, High Performance = all except Thin server, APPN/HPR and TN3270E. Other codeloads available on code server in Internet without additional charge.*

**High-Performance System Card**

- 200-MHz PowerPC 740 processor
- Four integrated WAN ports
- One PMC adapter slot for LAN connection
- Two EIA-232 service ports
- Up to 512 MB EDO DIMM

***IBM 2212 Access Utility at a glance continued***

**IBM Access Integration Services**

*Routing protocols*

*TCP/IP*

*IPX*

*AppleTalk 2*

*Banyan VINES*

*DECnet IV*

*DECnet V/OSI*

*SNA*

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

*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

*Network management*

- SNMP V1 protocol
- Transportation of SNMP messages
- MIB information access
- SNMP MIBs
  - WAN interfaces including ISDN
  - LAN interfaces
  - Bridging and routing
  - Data link switching (DLSw)
  - APPN

*LAN Network Manager (LNM)*

- Configuration Report Server (CRS)
- Ring Error Monitor (REM)
- Ring Parameter Server (RPS)
- LAN Bridge Server (LBS)

**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
- V3.4 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
- BSC
- WAN reroute
- WAN restoral
- BRS
- Data compression

*Virtual private networking*

- Voice over Frame Relay (VoFR)
- Internet Key Exchange (IKE)
- Lightweight Directory Access Protocol (LDAP)
- Differentiated Services (DS)
- Point-to-Point Tunneling Protocol (PPTP)
- Dynamic Host Configuration Protocol (DHCP) Server
- Web Server cache
- Voice over IP (VoIP)
- IP Security
- AAA security
- Layer 2 Tunneling Protocol (L2TP)
- Layer 2 Forwarding (L2F) Protocol
- 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
- IPX Bridging

**For more information**

To find out more about the IBM 2212 Access Utility 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 access the IBM Networking Home Page at:
*www.networking.ibm.com*

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