Award-winning Frame-Relay connectivity

IBM 2218 Nways Frame Relay Access Device

Highlights

- ***Winner of the "Data Communications" Tester's Choice Award, February 1997***
- ***New upgradable models for a cost-effective Frame-Relay solution for the remote branch office***
- ***Full network management with NetView® and SNMP***
- ***Optional, integrated DSU/CSU and ISDN BRI adapters***
- ***Immediate line-cost savings and the advantages of Frame-Relay transport for networks with SNA, bisynchronous, polled asynchronous and client/server protocols***
- ***Interoperability ensured by RFC 1490 compliance***
- ***SNA session resiliency—bandwidth priority allocation, extensive Frame-Relay controls and alternate routing***

Frame Relay branches out

Now there's an excellent Frame-Relay solution for the remote branch office. The IBM 2218 Nways™ Frame Relay Access Device (FRAD) offers modular models—so you can buy what you need, when you need it, for even greater cost savings. All of the new models provide:

- Two EIA 232 ports
- Either a Token-Ring or Ethernet LAN interface, or no LAN interface
- Two network management ports
- An optional synchronous adapter with two universal serial ports
- An optional, integrated 1-port 56- or 64-Kbps DSU/CSU adapter
- Optional, 1-port ISDN BRI adapter
- 4 MB of optional pluggable memory

These models are designed for Plug and Play installation and operation in remote branch locations—especially helpful when there are no trained support personnel on-site. They can provide connectivity for up to 30 controllers at speeds up to 64 Kbps—with session integrity comparable to that of leased lines.

Network management made simpler

When it comes to network management the 2218 maintains the predictable response times, session integrity and network manageability of proven leased-line support. You can use NetView on a System/390® platform—the same tool you use to manage your mission-critical SNA networks—to manage 2218 networks and their attached devices. Protect your investment in training and applications by using SNA services to manage devices supported by the 2218—services such as NetView Performance Monitor (NPM) for link performance monitoring, NetView command emulation and LL2 test commands for SDLC problem determination. And the 2218 allows NetView users to see past the FRAD to downstream devices, unlike other FRADs—or even some router solutions.



And that's not all. The 2218 can be fully managed on either an SNMP or a NetView/390 platform. So you can reduce the costs of operator training, streamline network management and move easily to other SNMP-based management platforms. It's also possible to monitor or control a 2218 from a PC or workstation, using one of several optional applications:

- FRAD/Talk is a DOS program for connecting to a 2218 management port over a local or remote asynchronous connection. FRAD/Talk can log on from one 2218 to another over a Frame-Relay WAN.

- FRAD/Manager is a Windows®-based application recommended for configuring the 2218. It also works with NetView and SNMP to manage and monitor the 2218.

- FRAD/Manager for UNIX is a UNIX®-(AIX®-) based graphical and menu-driven interface recommended for configuring the 2218. It also monitors the 2218s in an SNMP management environment.

- FRAD NetView Command Facility uses a set of CLIST commands to allow NetView operators to control 2218s.

2218 Models

Functional characteristics	Universal links	LAN type
0xx modular models • 16 or 30 link- or LAN-attached controllers • FR node or conversion node • Optional packages for remote bridging, IP and IPX routing and X.25	2*	X, E or T
1xx entry models	2	X, E or T
• 16 link- and LAN-attached controllers	4	X, E or T
• FR node or conversion node	8	X, E or T
3xx extended models	2	E or T
• 60 link-attached controllers**	4	E or T
• 60 LAN-attached controlelrs	8	E or T
• FR node or conversion node • Remote bridging • IP and IPX routing		

Key: *X: none*
E: Ethernet
T: Token Ring

**2 EIA 232 ports standard; optional 1-port ISDN BRI, 1-port DSU/CSU or 2-port universal serial port adapters available*

***If there are no link-attached PUs on a Model 3xx, the number of LAN-attached PUs can be 120.*

Take the 2218 straight to the future

Say goodbye to dead-end solutions with no migration path to future enhancements. The 2218 FRAD is based on the RFC 1490 Frame-Relay definitions—your assurance of product interoperability with other RFC-compliant products, such as the 3746 Controller and 2210 Router from IBM. With the 2218 you can build new, multiprotocol networks that make the most of your existing investments in SNA equipment and skills. You'll get the advantages of immediate SNA, legacy and client/server protocol support, as well as the assurance of open-architecture interoperability. And the 2218 is well-positioned as a Frame-Relay feeder node into an ATM backbone.

Choose the FRAD that's right for you

The 2218 has a single, stackable platform for space-saving convenience. The new 0xx models offer upgradable features you can purchase when you need them, whereas the 1xx and 3xx models offer predetermined, factory-installed hardware configuration and functional capabilities. Choose from models that provide two, four or eight general-purpose serial ports with single Ethernet, Token-Ring, or no LAN options (see table above), with either conversion node or Frame-Relay node applications.

- Conversion node: Serial protocols are converted to LLC2 for transport over a Token-Ring or Ethernet LAN. Optionally the traffic can be transported to another 2218 FRAD, for conversion back to native protocol.

- Frame-Relay node: Serial protocols are converted to RFC 1490 Frame Relay and optionally transported to another 2218, using the Frame-Relay network. And SNA sessions can be locally terminated to provide increased session resiliency.

Features	*Benefits*
Upgradable models for remote branch office	Cost savings, ease of configuration
Full network management with NetView, SNMP	Simplified network management, cost savings
Convergence of SNA, legacy, client/server protocols	Immediate line-cost savings, investment protection
RFC 1490 compliance	Interoperability with other IBM and RFC-compliant products
Wide range of protocols and functions supported	Improved management, reduced costs

IBM 2218 Nways Frame Relay Access Device at a glance	
Part numbers	See 2218 Models table
Ports	• *Two EIA 232 ports standard on Models 0xx* • *Universal serial ports (standard on Models 1xx and 3xx, optional on 0xx models) can be personalized by the attaching cable. These ports can act either as a DTE or DCE.* EIA 232 V.35 X.21 or V.11 • *Token Ring: STP or UTP, 4 or 16 Mbps* • *Ethernet AUI and 10BASE-T on Models 1xx and 3xx, 10BASE-T on 0xx models only*
Physical specifications	Height: 43.5 mm (1.71 in.); 47.5 mm (1.87 in.) with mounting feet Width: 440 mm (17.32 in.) Depth: 287.3 mm (11.31 in.) Weight: 3.64 kg (8 lb)
Operating environment	Temperature: 0° to 40°C (32° to 104°F) Relative humidity: 10% to 90% noncondensing Electrical power: 120 kVA Capacity of exhaust: 0.207 m^3/min (7.3 ft^3/min) Noise level: 55 dB (A) measured 1 meter away from unit Leakage and starting current: 26 PK/Ampere
Software included	Conversion Node and Frame Relay Node microcode is included with 1xx and 3xx models. Microcode options for 0xx models are separately priced.
Agency approvals	UL (1950); IEC 950, 60950; CSA 22.6; FCC Part 15, Subpart J, Class A; IEC EN55022, method per CISPR 22: 1985 Class B; VCCI; CE Mark
Publications	The following publication is shipped with the product *IBM 2218 Model 02T, 02E and 02X Hardware Installation Guide*, GA27-4196, or *IBM 2218 Model 1xx and 3xx Hardware Installation Guide*, GA27-4183 The following publications are shipped with FRAD/Manager features or can be ordered separately by form number *IBM 2218 Frame Relay Node User's Guide*, SC30-3897 *IBM 2218 Frame Relay Node NMS Command Reference*, SC30-3898 *IBM 2218 Conversion Node User's Guide*, SC30-3899 *IBM 2218 Protocol Options Supplement*, SC30-3900 *IBM 2218 Frame Relay Node Advanced Topics Configuration Guide*, SC30-3902 *IBM 2218 NMS Command Set Quick Reference Card*, SC30-3903 *IBM 2218 FRAD/Manager User's Guide*, SC30-3904 *IBM 2218 FRAD/Talk User's Guide*, SC30-3905 *IBM 2218 FRAD/Manager for UNIX User's Guide*, SC30-3906
Warranty	The IBM 2218 Nways Frame Relay Access Device is backed by a 1-year warranty. The warranty and subsequent IBM Maintenance Agreements include IBM Onsite Repair. Media are covered by a 3-month warranty. Central Service from the IBM Support Center is also available.
Country of origin	USA

Installation information table

Software and operating systems	*2218 Microcode R 2.1* *For FRAD/Talk, MS-DOS V 3.3 or higher* *For FRAD/Manager, MS-DOS V 3.3 or higher, or Windows 3.1 or OS/2 V 2.1 or higher* *For FRAD/Manager for UNIX, one of the following:* AIX V 3.2.5 with NetView for AIX V 3.1 HP-UX 9.07 with HP OpenView 3.3x SUN OS 4.1.4 with SynNet Manager 2.2.2
Hardware requirements	*For FRAD/Talk, PC/AT® or PS/2® (386 or better)* *For FRAD/Manager, PC/AT or PS/2 (386 or better)* *For FRAD/Manager for UNIX, one of the following:* IBM RS/6000® HP series 700 Sun Sparc
Cables and connectors	*The following, universal serial-connector cables are available* EIA 232 DTE (with modem) female DB-25 (Feature Code 2401) EIA 232 DCE (without modem) female DB-25 (F/C 2402) V.35 DTE (with modem) female Winchester (F/C 2403) V.35 DTE (with modem) male Winchester (F/C 2404) V.35 DCE (without modem) female Winchester (F/C 2405) V.21/V.11 DTE (with modem) female DB-15 (F/C 2406) V.21/V.11 DCE (without modem) female DB-15 (F/C 2407)
Management and configuration kits	Communication Port Adapter FRAD/Manager FRAD/Talk FRAD/NetView Command Facility FRAD/Manager for UNIX Platforms Rack Access

2218 microcode levels

Models 0xx

Conversion Node

- Support for SDLC or bisynchronous (BSC) hosts
- Support for SDLC, BSC or asynchronous terminal units
- SDLC- or BSC-to-LLC2 conversion
- BSC-to-SNA conversion
- SNA and SDLC boundary network node (BNN)
- NetView/390 Service Point
- SNMP Agent
- BootP

Frame-Relay Node: Basic Functions

- Single LAN protocol
- SDLC point-to-point or multidrop with primary and secondary emulation
- BSC 3270 point-to-point or multidrop with primary and secondary emulation
- Transparent multipoint polled asynchronous
- SNA-to-LLC2 conversion with local termination
- LLC2-to-Frame Relay
- SNA and SDLC BNN
- Annex D and LMI
- RFC 1490 BNN and BAN
- PDQ and PDT priority control
- Committed Information Rate (CIR) conformance
- Plug and Play installation
- Auto User Network Interface (UNI)
- NetView/390 Service Point
- SNMP Agent
- BootP
- Annex A

Frame-Relay Node: Internetworking Functions

- All of the above basic functions, plus:
- Multiple LAN protocols
- IP routing (RIP) over Frame-Relay or LAN interfaces
- IPX routing (RIP) over Frame-Relay or LAN interfaces
- Source-route or transparent bridging across Frame Relay
- IPX BR + RIP/SAP pacing
- IP Virtual Route Switching
- SNA Network Interconnect (SNI) support
- Dedicated Dial Backup

Frame-Relay Node: Enterprise Functions

- All of the above internetworking functions plus:
- X.25 Passthrough
- X.25 QLLC
- X.25 WAN
- BSC Remote Job Entry (RJE)
- Auto LLC

Models 1xx and 3xx

All functions above are supported on these models with the following exceptions:

- Models 3xx only:
- Auto LLC
- X.25 Passthrough*
- X.25 QLLC*
- X.25 WAN*
- Annex A*

**Requires 4-MB DRAM Memory Expansion Feature*



For more information

To find out more about the *IBM 2218 Nways Frame Relay Access Device* 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 http://www.networking.ibm.com

Copies of this and other related product specification sheets can be obtained from the IBM FAX Information Service by dialing 1 800 IBM-4-FAX (1 800 426 4329) in the U.S. or Canada or by dialing (415) 855-4329 outside the U.S. and Canada and requesting the following document number: 5340

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