Frame Relay
Access Device

FRAD 630

Provides Cost-Effective Connectivity to Remote SNA Sites

Minimizes Networking Costs

Simplifies Management

Protects Existing SNA Investments

Designed specifically for linking small remote SNA sites to the enterprise network, the Bay Networks Frame Relay Access Device 630 (FRAD 630) provides low-cost, high-speed remote access to small offices with existing SNA devices, SDLC equipment (SDLC attached or Ethernet attached), or Ethernet workgroups. Frame Relay offers a more economical alternative to wide area networking than private leased lines, delivering high availability and predictable response times. The FRAD 630 delivers a smooth migration path for integrating remote SNA sites into a multiprotocol enterprise network. By consolidating low-speed SDLC links, the FRAD 630 minimizes wide area networking costs, reduces network complexity, and simplifies management.

The FRAD 630 adheres to industry standards, including BNN (RFC 1490) and BAN. The unit supports Local Packet Prioritization, and Link Level Conversion between SDLC, Ethernet, and Frame Relay. SNA Type 1, 2.0, 2.1, and 4.0 devices are also supported.

The FRAD 630 is interoperable with central site routers, including the Bay Networks BayStack Access Node (AN®) and Access Node Hub (ANH™), Access Stack Node (ASN™), Backbone Link Node (BLN®), and Backbone Concentrator Node (BCN®). The FRAD 630 also complements the full line of Bay Networks hubs and switches.

Designed for deployment in environments where small SNA offices need to communicate with a central location, the FRAD 630 combines basic routing functions (IP and IPX) with advanced features for SNA users. The FRAD 630 is equipped with one Ethernet interface, one SDLC interface, and one Frame Relay interface, with support for eight permanent virtual circuits (PVCs), 16 SNA downstream physical units (DSPUs), 100 IP routes, 100 IPX routes, and 500 Bridge entries. Connectivity is achieved over public phone or private leased lines.

Bay Networks

Benefits

Provides Cost-Effective Connectivity to Remote SNA Sites

The Bay Networks FRAD 630 provides both an Ethernet interface and an SDLC interface, allowing the unit to support both SDLC devices and Ethernet workgroups. The flexible configuration options provided by the unit make it the ideal solution for small remote SNA-oriented offices requiring a simple, cost-effective Frame Relay link to the enterprise network (see Figure 1).

Minimizes Networking Costs

By integrating SNA and multiprotocol traffic over Frame Relay links, the FRAD 630 eliminates the need to maintain multiple WAN links between a small office and a central site. Using the more cost-effective Frame Relay solution reduces the need for dedicated lines, substantially lowering the cost of data transfer between remote sites and the enterprise.

Simplifies Management

Management can be conducted via an ANSI terminal, a PC using Telnet, or any SNMP-based management system, such as Bay Networks Optivity Workgroup,™ Optivity Campus,™ or Optivity Enterprise.™

Protects Existing SNA Investments

The FRAD 630 extends the viability of existing investments in SNA networking technologies by allowing them to be seamlessly integrated into the enterprise network. The FRAD 630 communicates directly to central site SNA processors, including IBM 3745, 3172, and AS/400, and to central site routers, including Bay Networks Access Node and Backbone Node (BN®) routers. The FRAD 630 is shown communicating across the Frame Relay network to enterprise AS/400 systems in Figure 2.

Features

SNA Connectivity

The FRAD 630 communicates to a central site router or directly to an SNA processor using either BNN (RFC 1490) or BAN protocols. Local acknowledgment is provided to ensure SNA session integrity, and LLC2 ensures reliable delivery of information to the destination. Up to 16 locally connected SNA (LAN or SDLC) devices are supported.

Downstream SNA devices can be Type 1.0 (e.g., IBM 5394, 5294), Type 2.0 (e.g., IBM 3274, and many PC emulators), Type 2.1 (e.g., IBM 5494), or Type 4.0 (e.g., IBM 3745).

Support of Advanced SNA Features

FRAD 630 supports advanced SNA features, including local acknowledgment, superior prioritization, and link level conversion between the SDLC, Ethernet, and Frame Relay protocols. Using local acknowledgment reduces network overhead and often improves response time for SNA users.

SDLC Support

SDLC-to-LLC2 conversion is provided for Type 2.0, 2.1, and 4.0 remote SNA devices. SDLC devices can communicate to remote SNA hosts and to local Ethernet-attached hosts. In addition, Type 1 devices are supported for SDLC-to-SDLC connections. (SNA processors do not support PU1 devices via LANs.) The SDLC connection supports operation as the primary or secondary device on an SDLC link, point-to-point or multipoint connection, full-duplex or half-duplex communications, and group polling.

Figure 1 **The FRAD 630 delivers connectivity between remote SNA sites and the enterprise network.**

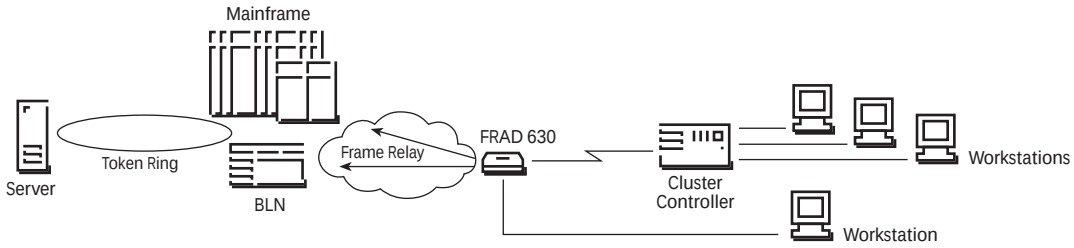
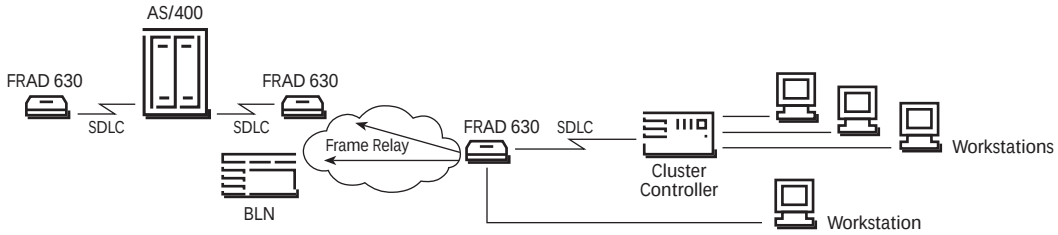


Figure 2 **The FRAD 630 enables remote PU1 devices (5394, 5294) to communicate across the Frame Relay network to enterprise AS/400 systems.**



IP Routing

The FRAD 630 supports IP routing, including ARP, ICMP, TCP (for Telnet/FTP), UDP (for TFTP and SNMP), and PING. IP routing occurs through the dynamic RIP routing or static routes. WAN connections are made through RFC 1490 802.3 over Frame Relay. Fragmentation of IP packets is provided where required, and up to 100 IP routes are supported.

IPX Routing

IPX is supported via Routing Information Protocol (RIP) routing, with capacity of up to 100 IPX routes and 100 Service Advertising Protocols (SAPs). The FRAD 630 supports SAP and RIP filtering. The upstream connection uses 802.3 over Frame Relay, per RFC 1490. All common IPX formats (LSAP/LLC2, SNAP, Ethernet V2, and Novell Proprietary) are supported.

Bridging Protocols

The FRAD 630 supports NetBIOS and other LAN protocols via Bridged 802.3 over Frame Relay.

Frame Relay

Connection to other locations is conducted via Frame Relay. For SNA traffic, both RFC 1490 "Routed SNA over Frame Relay" and "Bridged SNA over Frame Relay" (compatible with IBM's BAN protocol) are supported. In addition to routing SNA over Frame Relay, the FRAD 630 supports basic IP/IPX routing and bridges other protocols, including NetBIOS over Frame Relay, per RFC 1490. Up to eight PVCs are supported. The FRAD 630 supports ANSI T1 617D (Annex D), Rev. 1 LMI, and CCITT Annex A management protocols. For environments where advanced multiprotocol routing, such as AppleTalk or OSPF, is required, a Bay Networks AN, ANH, ASN, BLN, or BCN router should be deployed.

The FRAD 630 can communicate directly to a Bay Networks router (AN/ANH, ASN, BN) using Frame Relay protocols over private lines. The central site must provide the management protocol.

Protocol Prioritization

Up to eight prioritization queues (classes) are supported for each PVC. Each queue is assigned a weight, ranging from 1 to 4, and then traffic is assigned to queues. Based on the assigned weights, a bandwidth allocation mechanism ensures that important traffic receives preferred treatment. Up to 32 filter rules can be applied sequentially, with the first matching rule determining the queue to which the packet is forwarded. Criteria for assigning traffic to queues include protocols (AppleTalk, IPX, NetBIOS, SNA), IP specific (FTP, Telnet, SNMP, destination TCP/UDP port, destination IP address), and destination MAC address.

Management and Configuration

The FRAD 630 is configured via a line mode interface. Wherever possible, defaults are provided to minimize the time required to configure the unit. Support is provided for two configuration profiles.

Configuration and management is provided via MIB II and private MIB extensions, which are supported by any standard MIB browser.

The Data Capture trace facility, supported via the console port or Telnet, simplifies problem determination. The unit provides an 8 KB buffer for trace information.

The FRAD 630 system software can be upgraded via FTP. The kernel is updated via the Data Link Control Management Interface (DLCI) that initiated the boot request. Password security is provided for configuration updates and software downloads.

Technical Specifications

Technical specifications for the FRAD 630 appear in Table 1.

Table 1 **FRAD 630 Technical Specifications**

Processors	MC68360
Memory	0.5 MB RAM, 1 MB Flash
Interfaces	
LAN	1 Ethernet 10BASE-T
WAN	1 Frame Relay, 1 Synchronous
Serial	V.35 Frame Relay, V.35 SDLC, RS-232 SDLC, X.21 Frame Relay, X.21 SDLC
Protocol Support	
Protocols Routed	SNA, IP, IPX
Routing Protocol	RIP (IP, IPX)
	BAN, BNN (SNA)
WAN Protocol	Frame Relay
Connectivity	SDLC-to-SDLC, LAN-to-LAN, or SDLC-to-LAN

Table 1 | **FRAD 630 Technical Specifications (continued)**

Standards Compliance	
IEEE 802.3 Ethernet	
Configuration and Management	Via ANSI terminal, PC using Telnet, or any SNMP-based management system
Prioritization	Based on protocol, IP-specific criteria, or destination MAC address
Environmental	
Operating Temperature	5° to 40° C
Physical Dimensions	(H) 1.5 in. x (W) 5.4 in. x (D) 5.1 in. [(H) 39 mm x (W) 138 mm x (D) 131 mm]
Weight	0.7 lb (300 g)

Ordering Information

Ordering information for the FRAD 630 appears in Table 2.

Table 2 | **FRAD 630 Ordering Information**

Order Number	Description
CT3501E01	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 V.35 SDLC interface; North America
CT3501E02	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 RS-232 SDLC interface; North America
CT3501E03	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 RS-232 SDLC interface; North America
CT3501E04	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 V.35 SDLC interface; North America
CT3501E05	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 X.21 SDLC interface; North America
CT3501E06	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 X.21 SDLC interface; North America
CT3501B01	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 V.35 SDLC interface; Europe
CT3501B02	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 RS-232 SDLC interface; Europe
CT3501B03	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 RS-232 SDLC interface; Europe
CT3501B04	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 V.35 SDLC interface; Europe
CT3501B05	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 X.21 SDLC interface; Europe
CT3501B06	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 X.21 SDLC interface; Europe
CT3501C01	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 V.35 SDLC interface; United Kingdom
CT3501C02	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 RS-232 SDLC interface; United Kingdom
CT3501C03	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 RS-232 SDLC interface; United Kingdom
CT3501C04	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 V.35 SDLC interface; United Kingdom
CT3501C05	FRAD 630 with 1 Ethernet, 1 X.21 Frame Relay, and 1 X.21 SDLC interface; United Kingdom

Table 2 | **FRAD 630 Ordering Information (continued)**

Order Number	Description
CT3501C06	FRAD 630 with 1 Ethernet, 1 V.35 Frame Relay, and 1 X.21 SDLC interface; United Kingdom
CT2118001	V.35 DTE cable for FRAD 630
CT2118002	V.35 DCE cable for FRAD 630
CT2118003	X.21 DTE cable for FRAD 630
CT2118004	X.21 DCE cable for FRAD 630
CT2118005	RS-232 DTE cable for FRAD 630
CT2118006	RS-232 DCE cable for FRAD 630

Note: Each FRAD 630 includes BayRS™ software, cables, and documentation.

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