The 4335 Access Router

A value-priced alternative for network redundancy and traffic prioritization.

Main Benefits:

- DiffServ-compliant QoS prioritizes and optimizes IP traffic flows for your critical applications

- Dual T1/E1 for access redundancy, preventing a single cable cut from disrupting service

- Ethernet WAN port for network access redundancy via DSL and Cable modem connections

- Double bandwidth through standard-based dual T1/E1 Multilink Frame Relay (FRF.16.1) or MLPPP (RFC 1990)

- Scalable networking with VLAN, static routing, RIP1, RIP2, OSPF, and BGP-4 protocols

- Network Address Translation (NAT) for Internet access

- Better throughput performance than many traditional routers due to integrated hardware and software architecture

Quick Eagle Networks' 4335 Access Router™ provides an all-in-one networking solutions to small businesses and remote offices. With the 4335 Access Router, you not only get the functions of an intelligent WAN access router, but also a Quality of Service (QoS) appliance, stateful inspection firewall, and CSU/DSU - all in a single, affordable device.

Especially the increasing deployment of business applications using IP is placing growing emphasis on efficient WAN bandwidth management at branch and remote office locations. Indeed, voice and data-over-IP services mandate capabilities far beyond traditional "best effort" routing. Therefore, today's router must be able to manage congestion control and prioritize critical traffic over the "last mile" connection. Squeezing every last drop of performance from your router and therefore your broadband connection is vital in keeping your network costs under control.

With the 4335 Access Router's optional standard-based DiffServ QoS (Differentiated Services/Quality Of Service) capability you are able to control and manage the bandwidth on your WAN connection, eliminating bottlenecks for your business-critical applications such as ERP and CRM. In addition, DiffServ QoS enables delay-sensitive voice and video-over-IP services, while dedicating enough bandwidth for lower priority traffic.

With PPP, PPPoE, PPPoFR, Frame Relay, Multilink Frame Relay, Multilink PPP, and MAC Bridging, Quick Eagle's 4335 Access Router offers many cost-effective ways to connect branch-offices over leased lines, the Internet, IP-VPN, or corporate Frame Relay networks.

Business competitiveness depends more than ever before on the ability of the corporate network to provide continuous service. With the "last mile" being the most vulnerable point on the network, access redundancy is increasingly important. Whether you want to duplicate your T1/E1 access lines to eliminate the risk of a single cable cut disrupting your service, or take advantage of DSL and cable modem broadband services to backup your Frame Relay services with IP-VPN tunnels, network access redundancy is no longer a luxury. The 4335 Access Router directly addresses these concerns.

The ability to configure static routes, and one or more dynamic routing protocols like RIP1, RIP2, OSPF, and optional BGP-4, enables the router to link small and large enterprise networks. Static NAT, dynamic NAT, and overloading (NAPT) allows you to access the Internet using your own private IP address scheme.
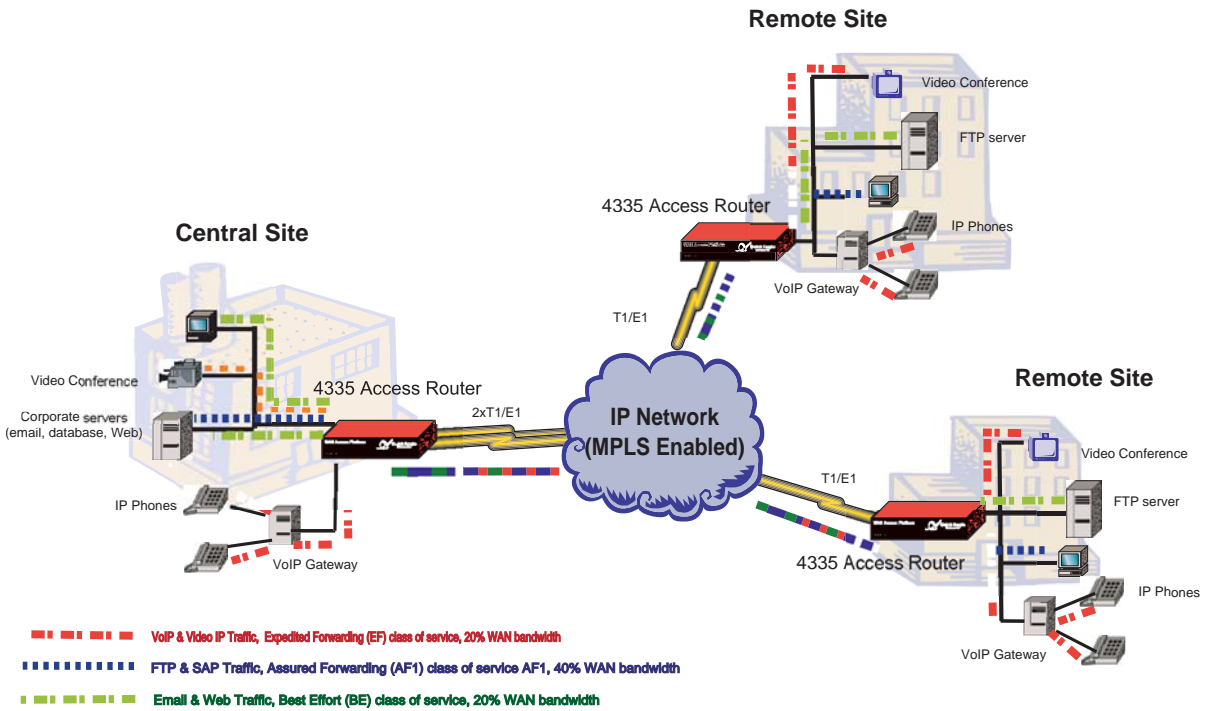
A sophisticated product architecture.

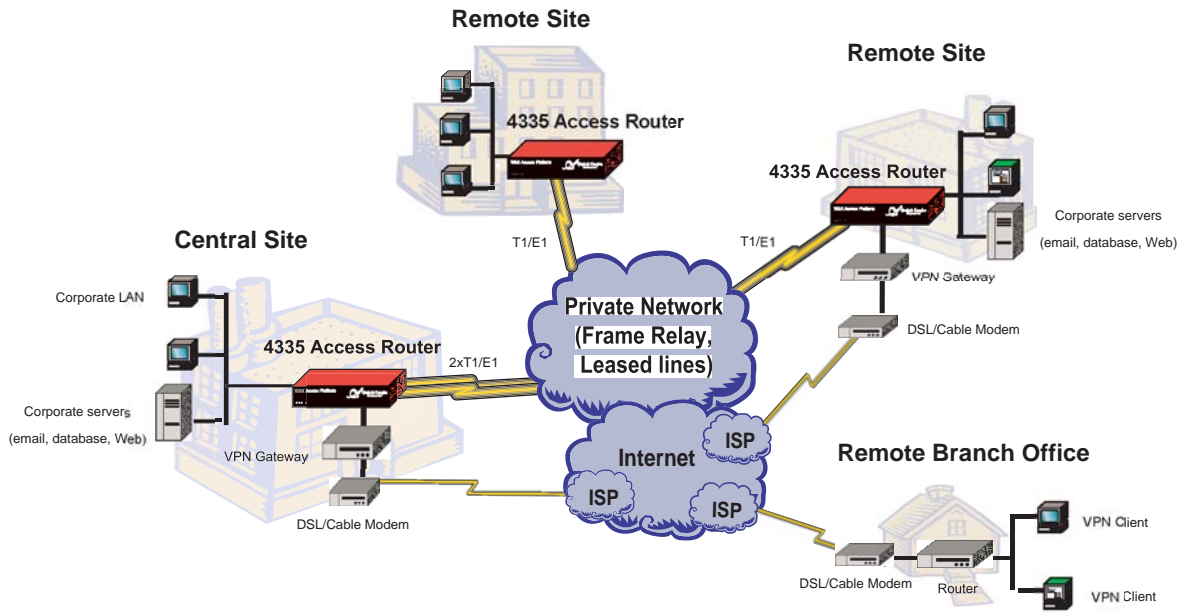The 4335 Access Router provides the following features:

- Support for a wide variety of WAN protocols: PPP, PPPoE, Frame Relay, Multilink PPP, Multilink Frame Relay FRF.16, and Bridging for point-to-point and point-to-multipoint applications to the Internet, private or public Frame Relay network

- Two Ethernet ports configurable as either a LAN or WAN port:

    - LAN interface for connectivity to VoiceIP Gateway, or DMZ applications

    - Supports PPPoE (Point-to-Point over Ethernet) for connectivity to external DSL

- Optional DiffServ-compliant QoS capabilities:

    - Ability to assign maximum bandwidth to each traffic class

    - Traffic metering, shapes or drops "out-of-profile" traffic

    - Prevents lower classes of traffic from being bandwidth starved

    - Enables QoS per routing interface in incoming and outgoing direction

    - Novice user configuration with presets; advanced user to optimize resources and throughput; statistics reports on QoS

- Dynamic routing protocols RIP1, RIP2, OSPF, and optional BGP-4 (I-BGP and E-BGP)

- Network Address Translation (NAT) and port translation (NAPT)

- Remote configuration and management through Telnet (Terminal User Interface menus), Command Line Interface (CLI), and SNMPv3

- A full range of network performance monitoring and troubleshooting features that enable you to accurately measure end-to-end performance of the network:

    - In-band management

    - RMON-1 PPP and Frame Relay adapted statistics

    - RMON-2 Applications and Protocols monitoring

    - End-to-end Service Level Verification (Frame Relay SLA FRF.13)

- Stateful Inspection Firewall with TCP, UDP, ICMP, DNS, SMTP, FTP, and HTTP protocol handling capabilities

- Menu access for layer-3 and above statistics

- Multiple multilink bundles and support of MLPPP / MLFR bundle classes A, B & C

- Support of DHCP server and DHCP relay agent

- Optional support of E1 Channelization function

The following diagrams show some of the applications with the 4335 Access Router:

Application 1: Application traffic prioritization and WAN bandwidth allocation using DiffServ-compliant QoS

Remote Site

Video Conference

FTP server

4335 Access Router

IP Phones

VoIP Gateway

Central Site

T1/E1

Video Conference

4335 Access Router

Remote Site

Corporate servers
(email, database, Web)

2xT1/E1

**IP Network
(MPLS Enabled)**

T1/E1

Video Conference

FTP server

IP Phones

VoIP Gateway

4335 Access Router

IP Phones

VoIP Gateway

- VoIP & Video IP Traffic, Expedited Forwarding (EF) class of service, 20% WAN bandwidth
- FTP & SAP Traffic, Assured Forwarding (AF1) class of service AF1, 40% WAN bandwidth
- Email & Web Traffic, Best Effort (BE) class of service, 20% WAN bandwidth

Application 2: Network access redundancy: Frame Relay service augmented with IP-VPN tunnels

Remote Site

4335 Access Router

Remote Site

4335 Access Router

Central Site

T1/E1

T1/E1

Corporate servers
(email, database, Web)

VPN Gateway

Corporate LAN

4335 Access Router

2xT1/E1

**Private Network
(Frame Relay,
Leased lines)**

DSL/Cable Modem

Corporate servers
(email, database, Web)

VPN Gateway

Internet

ISP

Remote Branch Office

DSL/Cable Modem

ISP

ISP

VPN Client

DSL/Cable Modem   Router

VPN Client

Common Features

WAN Protocols

Frame Relay (RFC-2427 compliant), PPP, PPPoE, PPPoFR, Multilink Frame Relay FRF.16, MLPPP, Bridging, VLAN Bridging, and VLAN 802.1q

Routing Protocols

Static routing

RIP1, RIP2, OSPF, optional BGP-4

DHCP server, DHCP relay

IGMPv3, IGMP proxy, IGMP-PIM

VRRP, GRE, STP / RSTP (future)

IP Based DiffServ QoS (Optional)

Standard-based DiffServ compliant (RFCs: 2475, 2597, 2598)

Priority queues (WRR, CBQ),

Congestion control (WRED)

Six forwarding classes (EF, AF1, AF2, AF3, AF4, BE)

Traffic metering

Multifield classifier (Src/Dest IP address, protocols, and applications ports)

Security and Management

Classless IP addressing

NAT (1:1)

NAPT (overloading, port translation)

Stateful Packet Inspection designed for ICSA compliance

Radius authentication, Secure Shell (SSH)

Router Command Line Interface (CLI)

SNMPv3

Syslog

RFC-868 time clock and time zone capability

Frame Relay

UNI-U and UNI-N interfaces

96 DLCIs

LMI: ANSI (Annex D), ITU (Annex A), and FRF Rev 1.0

Performance Monitoring

RMON-1: PPP and Frame Relay adapted

RMON-2 Groups: Protocol directory, network layer host, protocol distribution, application layer host, network layer matrix, application layer matrix

End-to-End Frame Relay SLA FRF.13

Ethernet Interface

First: 10/100 Fast Ethernet port

Connector: RJ-45 socket

Second: 10BaseT

Connector: RJ-45 socket

Console port (Management)

COMM Port

Connector: RJ-45 socket

Physical

Dimensions: 1 RU, rack mountable

22.3 cm (8.75 in) W, x 33 cm (13 in) D, x 4.13 cm (1.63 in) H

Weight: 2.27 kg (5 lbs.)

Power Requirements

Voltage: 100 VAC to 240 VAC, 50-60 Hz or -40 VDC to -72 VDC (both on the same platform)

Consumption: 9 W maximum

Model	4335 T1 models	4335 E1 models
Network Interfaces		
Ports	2 T1 ANSI 403 port (one enabled; second as software feature key option)	2 E1 G703/G704 port (one enabled; second as software feature key option)
Line Rate	T1 (1.544 Mbps ± 50 bps)	E1 (2.048 Mbps ± 50 bps)
Connector Type	100 ohm RJ-48C socket	120 ohm RJ-48C socket or 75 ohm BNC (Net1 only)
Line Code	B8ZS	HDB3
Framing	D4 or ESF	ITU-T G.704/CTR 12
Output Level	0 db, -7.5 db, or -15 db LBO	ITU-T G.703/CTR 12
Input Level	DSX -1 to -26 db	0 to 20 dB
System Timing	Network, internal	Network, internal
Drop-and-Insert Port (Optional)	Second WAN port can be (mutually exclusive) be enabled as drop-and-insert port	Second WAN port can be (mutually exclusive) be enabled as drop-and-insert port
Regulatory	FCC Part 15, FCC Part 68, UL 60950-1, Industry Canada CS-03, VCCI Class 1	European directives 73/23 EEC, 91.31/EED, 89/336/EED, 93/68/EEC, and 91/263/EEC; UL 60950-1; CAN/CSA C22.2 No. 950-95; Commission Federal de Telecommunicaciones; CISPR 22 Level B (EN 55022); Immunity EN 55082-1
Diagnostics		
Loopback Tests	T1 network, T1 payload, fractional T1 payload, loop-up/loop-down commands	E1 network, E1 payload, fractional E1 payload, loop-up/loop-down commands
Loopback Control	T1 set/reset codes, ESF FDL per AT&T 54016 and ANSI T1.403 Annex B	E1 set/reset codes
Test Patterns	1:1, 1:2, 1:4, 1:7, 3:24, QRW, all 0s, all 1s, two user-programmable 24-bit patterns bit error injection	1:1, 1:2, 1:4, 1:7, 3:24, QRW, all 0s, all 1s, two user-programmable 24-bit patterns bit error injection
Network Alarms	Loss of signal, loss of frame, remote alarm indication, alarm indication signal, CRC4, CV, FE	Loss of signal, loss of frame, remote alarm indication, alarm indication signal, CRC4, CV, FE
Front-panel LEDs	Power/test, in-band, network status, network loopback, loopback acknowledge	Power/test, in-band, network status, network loopback, loopback acknowledge
Environmental		
Operating Temperature	0° - 50° C	0° - 50° C
Storage Temperature	-20° - 60° C	-20° - 60° C
Relative Humidity	0 - 95% non-condensing	0 - 95% non-condensing
Maximum Altitude	4.6 Km (15,000 ft)	3048 m (10,000 ft)

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