

# The 5840 Multiport Router

**When port density counts.**

## Main Benefits:

- Uses software feature keys to scale WAN port configuration without the need for expensive hardware upgrades
- Improves network reliability and performance through load sharing and load balancing in a multihoming environment
- Offers flexible interfaces that can be deployed as independent links or bundled into one or more MLPPP or MLFR bundles
- Supports broad range of routing protocols such as static routing, RIP1, RIP2, OSPF, optional BGP-4, IGMPv3, and GRE
- Reduces access cost by integrating NAT services for Internet access
- Better performance than many traditional branch office routers due to integrated hardware and software architecture
- Lowers cost of ownership through integrated routing, CSU/DSU, optional Quality of Service, and network monitoring capabilities

Quick Eagle's 5840 Multiport Router™ is ideal for medium-sized businesses and enterprise branch offices that need routers that can scale as the network requirements grow without having to add more hardware.

With its high port density, the 5840 Multiport Router delivers all the functions you need in a branch office router: 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 enterprise networks with advanced IP routing services, such as multipaths and path redundancy.

Static NAT, dynamic NAT, and overloading (NAPT) lets you access the Internet using your private IP addresses. A stateful inspection firewall permits or denies access based on source and destination IP addresses. The embedded network performance monitoring features enable protocols and applications monitoring (RMON-1, RMON-2) and Frame Relay Service Level Verification.

In addition to its wealth of standard features, the 5840's unique architecture provides the flexibility to meet the most demanding and evolving business requirements: Enabling your network to grow with your business, the 5840 Multiport Router can be upgraded for added bandwidth (up to 12 Mbps with 8 T1 or 16 Mbps with 8 E1 WAN ports) through software. No waiting for hardware, no engineering time to perform the upgrade, and no lengthy system downtime is required.

Multilink PPP (RFC1990) and Multilink Frame Relay (FRF.16.1) protocols provide the 5840 Multiport Router with the capability to bond multiple T1/E1s into a single high-speed virtual link or enable load balancing applications. The 5840 Multiport Router can also be deployed as a MAC Learning Bridge (IEEE 802.1d) over Frame Relay or PPP.

With its optional standard-based DiffServ QoS (Differentiated Services/Quality Of Service) capability the 5840 Multiport Router allows you 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 its excellent performance, scalability in routing protocols, breadth of features, and competitive pricing<sup>1</sup>, there is now an alternative to those traditional, high cost, proprietary branch office routers.

<sup>1</sup> Please refer to Quick Eagle's 5842 and 5844 Multiport Routers if you require a lower port density router with an even lower cost.



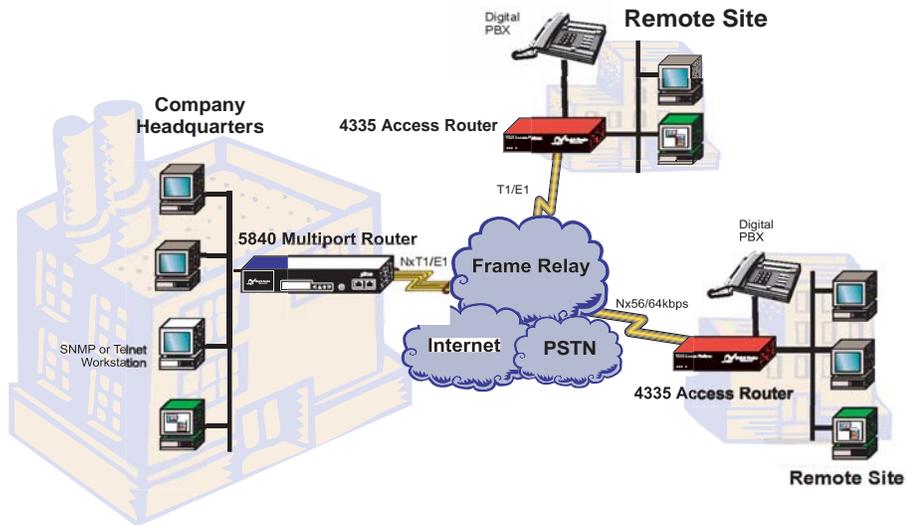
# A sophisticated product architecture.

The 5840 Multiport Router provides the following features:

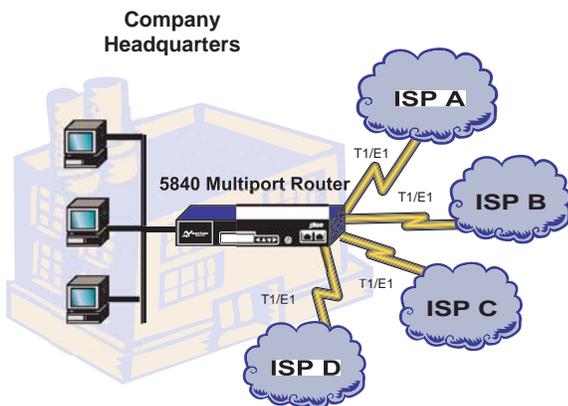
- Support for a wide variety of WAN protocols such as PPP, Frame Relay, Multilink PPP, Multilink Frame Relay FRF.16.1, and MAC Learning Bridging for point-to-point and point-to-multipoint applications to the Internet, private or public Frame Relay networks
- Advanced IP / Frame Relay Router capabilities with:
  - Standard-based IP-over-Frame Relay encapsulation, RFC-2427 compliant
  - Link Management Interface (LMI): ANSI AnnexD, ITU Annex A, and FRF Rev 1.0
  - Static and dynamic configuration of up to 1024 DLCIs
  - Static and dynamic mapping of DLCI to IP Subnets using InverseARP
- Dynamic routing protocols RIP1, RIP2, OSPF or optional BGP-4 (I-BGP and E-BGP)
- Dynamic load balancing, using OSPF or optional BGP-4 (I-BGP and E-BGP)
- 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
- Network Address Translation (NAT) and port translation (NAPT)
- Remote configuration and management through Telnet (Terminal User Interface menus), Command Line Interface (CLI), and SNMPv3
- MAC Bridging features: VLAN MPLS tag transparency
- Basic device configuration and T1/E1 loopback diagnostics through front panel
- Full range of network performance monitoring and troubleshooting features that enable you to accurately measure end-to-end performance of the network, including RMON-1 statistics, RMON-2 applications and protocol monitoring, and Frame Relay SLA FRF.13.
- Multilink Frame Relay (FRF.16.1) and MLPPP (RFC1990) support
- 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

The following diagrams show some of the applications supported by the 5840 Multiport Router:

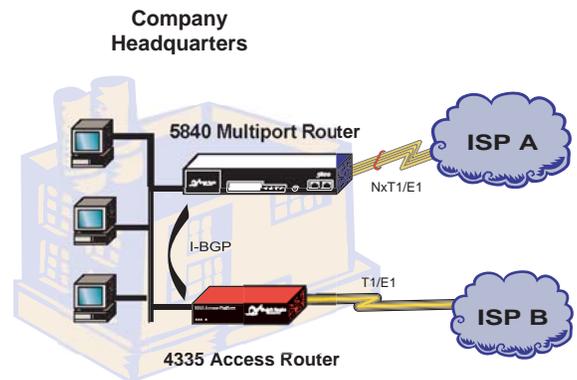
Application 1: Bundled voice, corporate Frame Relay and Internet access services



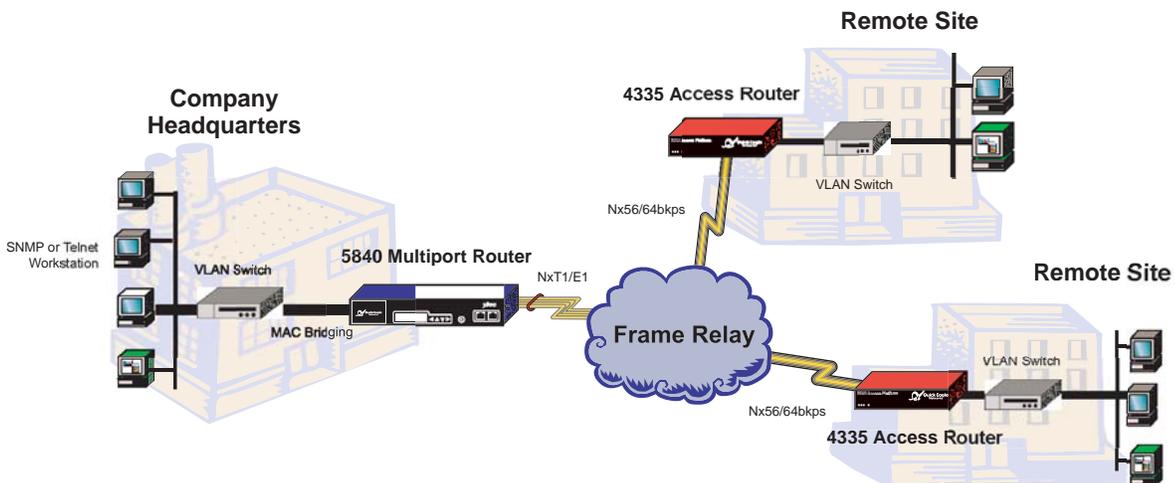
Application 2: Multihoming with independent ISP links between four ISPs using load balancing



Application 3: Multihoming with primary high bandwidth access



Application 4: Enterprise LAN extension services: Extending LANs and VLANs through the WAN networks



## Common Features:

### WAN Protocols

Independent Frame Relay or PPP links  
 Multilink Frame Relay FRF.16.1  
 MLPPP (RFC1990)  
 MAC Learning Bridge (IEEE 802.1d) over  
 Frame Relay (RFC2427) or PPP  
 MPLS VLAN tag transparency and  
 bridging  
 VLAN 802.1q  
 Multiple multilink bundles and support of  
 MLPPP / MLFR bundle classes A, B & C

### 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)

### Frame Relay

UNI-U and UNI-N interfaces  
 1024 DLCIs  
 LMI: ANSI (Annex D), ITU (Annex A), and  
 FRF Rev 1.0

### Routing Protocols

Static routing  
 RIP1, RIP2, OSPF, optional BGP-4 (I-BGP  
 and E-BGP)  
 IP Fast Forwarding  
 DHCP server, DHCP relay  
 IGMPv3, IGMP proxy, IGMP-PIM  
 VRRP, GRE

### Security and Management

Classless IP addressing  
 NAT (1:1), NATP (overloading, port  
 translation)  
 Stateful Packet Inspection designed for  
 ICASA compliance  
 Radius Authentication, Secure Shell (SSH)  
 Router Command Line Interface (CLI)  
 RFC-868 Time Sync and Local Time  
 Zone capability  
 Syslog

### Performance Monitoring

RMON-1: PPP and Frame Relay adapted  
 RMON-2: Protocol directory, network layer  
 host, protocol distribution, application layer  
 host, network layer matrix, application layer  
 matrix

### Ethernet Interface

10/100 Base T  
 Connector: RJ-45 socket

### Local Management

RS232C COMM Port (VT 100 emulation)  
 Connector: RJ-48C socket

### Remote Management

Telnet (in-band and out-of-band via SLIP)  
 SNMPv3

### Service Level Agreement Verification

Frame Relay SLA FRF.13 compliant:  
 Frame Delivery Ratio (FDR),  
 Data Delivery Ratio (DDR),  
 Frame Transfer Delay,  
 Service Availability

### Physical

Dimensions: 1 RU, rack mountable  
 43.69 cm (17.2 in ) W, x 40.64 cm (16 in )  
 D, x 4.45 cm (1.75 in) H  
 Weight: 5.45 kg (12 lbs.)

### Power Requirements

Voltage: 100 VAC to 240 VAC, 50-60 Hz  
 or -40 VDC to -72 VDC (both on the same  
 platform)  
 Consumption: 30W maximum



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## Model Specific Features:

Model	5840T	5840E
<b>Network Interface</b>		
Ports	Max. 8xT1 ANSI T1.403 ports	Max. 8xE1 G.703 ports
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
Line Code	B8ZS	HDB3
Framing	ESF	ITU-T G.704/CTR 12
Output Level	0 db, -7.5 db, or -15 db LBO or DSX-1	ITU-T G.703/CTR 12
Input Level	DSX -1 to -26 db	0 to 20 dB
System Timing	T1 Network, internal, external T1 source	E1 Network, internal, external E1 source
<b>Regulatory</b>	FCC Part 15, FCC Part 68, UL 1950 Third Edition, Industry Canada CS-03 VCCI Class 1 CAN/CSA C22.2 No. 950-95	European harmonized standards 73/23 EEC, 91.31/EEC, 89/336/EEC, 93/68/EEC, and 91/263/EEC; UL 1950 3rd Ed.; CAN/CSA C22.2 No. 950-95; Comision Federal de Telecomunica- ciones; CISPR 22 Level B (EN 55022)
<b>Diagnostics</b>		
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, CRC6, BPV, OOF	Loss of signal, loss of frame, remote alarm indication, alarm indication signal, CRC4, CV, FE
Front-panel Status VFD and tri-color LED	Power/test, network line status, network loopback, loopback acknowledge, IP address, SW version level	Power/test, network line status, network loopback, loopback acknow- ledge, IP address, SW version level
Bantom test jacks	Non-intrusive monitor send/receive selectable per T1 line	Not applicable
<b>Environmental</b>		
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)	3.05 Km (10,000 ft)

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