- **High-performance, scalable LAN/WAN enterprise routing solution**
  - Provides the 100% availability demanded by business-critical applications
  - 128 Gbps non-blocking switching fabric; 70 Mpps routing throughput
  - Up to 120 Gigabit Ethernet ports; up to 480 10/100 ports
  - Up to 4,000,000 Layer 4 application flows; 250,000 Layer 3 routes; 1,600,000 MAC addresses; 20,000 security/access filters; 4,096 VLANs

- **Full application support from the desktop to the WAN**
  - Deploy application, policy and routing services with no performance degradation
  - Wire-speed Layer 4 application flow switching

- **Pinpoint control to prioritize applications, improve operation**
  - Wire-speed, application-level QoS for end-to-end reliability
  - Application load balancing and content verification ensure that resources are delivered with no delays or latency
  - Allocate bandwidth to users on a per-port basis; apply user-specific priorities or use incoming pre-prioritization levels

- **Multilayer security features**
  - Can be deployed with VPNs, firewalls, intrusion detection systems
  - Enable Access Control Lists for filtering traffic without compromising performance

- **Superior fault tolerance to ensure 24x7 network availability**
  - Provides redundant power, control modules, switch fabrics, ports, line cards
  - Supports Spanning Tree, per-VLAN Spanning Tree, rapid reconvergence of Spanning Tree, load sharing, link aggregation, policy-based routing and multi-path routing, as well as VRRP

High-Density Switch Router for the Enterprise Backbone

With up to 120 Gigabit Ethernet ports or up to 480 10/100 ports, the X-Pedition ER16 offers the capacity, features, performance, control and security required at the backbone of today's network infrastructures.

A Superior Combination of Features and High-Density, Wire-Speed Switch Routing

Enterasys' X-Pedition ER16 16-slot chassis-based routing platform represents a new generation of enterprise-wide LAN/WAN backbone solutions, providing the scalability, performance and application control to meet the growing needs of enterprises in the age of e-business. The X-Pedition ER16 provides a rich set of application services including transparent web caching and redirection, traffic prioritization and traffic shaping, multilayer security, application load balancing, application content verification and high availability. These services ensure full application delivery—for e-commerce, enterprise resource planning, voice-over-IP, customer relationship management, and more—from the desktop to the WAN.

With up to 128 Gbps of non-blocking switch fabric and over 4 million Layer 4 application traffic flows, the X-Pedition ER16 provides the density needed to meet the requirements of the enterprise environment.

The X-Pedition ER16's modular chassis design allows for a mix of LAN backbone and WAN access technologies—whatever is required to fit your particular networking environment—ensuring the protection of existing investments. You choose the connectivity, whether to legacy devices or to high-bandwidth 10/100/1000 Ethernet technologies. Additionally, the X-Pedition ER16 is designed to scale and handle newer, high-capacity technologies such as 10 Gigabit Ethernet. The X-Pedition ER16 maintains and delivers wire-speed performance no matter how many services are turned on.

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Why the X-Pedition ER16 Is a Better Switch Router

- Wire-speed performance—even with all features enabled

- High availability and full fault tolerance, including load balancing and VRRP

- Technology independence providing both LAN and WAN in a single chassis

- Application-level QoS and prioritization for end-to-end reliability

- Comprehensive functionality including extended content and application verification

- Multilayer security features which won't sacrifice performance

- Appropriate and secure access to applications for reduced cost of ownership and complexity

DEPLOY THE X-PEDITION ER16 IN ANY OF THESE NETWORK ENVIRONMENTS:

Enterprise LAN Backbone / Data Center

Position the X-Pedition ER16 in the enterprise LAN backbone to build a wire-speed router mesh with application-level traffic control. In addition, an ER16 backbone allows network managers to control application traffic via QoS and access lists without compromising performance. Enterprise servers can connect directly to the routed backbone, most commonly over 100 Mbps or Gigabit Ethernet links, to provide wire-speed server access across the corporate intranet to client end stations. Clients can then connect to the enterprise backbone via Enterasys Matrix switching platforms, and/or smaller X-Pedition product family members.

Enterprise WAN or Campus Backbone

Thanks to its support for a variety of long-haul Gigabit Ethernet and WAN interfaces, the ER16 can also be positioned as a campus and/or WAN backbone switch router. Use the ER16's QoS capabilities to control application traffic over the WAN—while maintaining performance. Enterprise servers can connect directly to one of these routers in the enterprise headquarters, either over 100 Mbps or Gigabit Ethernet links, to provide wire-speed server access across the corporate WAN intranet to client end stations.

Intranet / Extranet Data Center Solution

The ER16 is also an ideal solution to meet content hosting needs for the intranet (intranet hosting, e-mail and applications servers to serve internal users) as well as for the extranet (partner communications, e-commerce servers, etc. to serve external users). And, thanks to the ER16's security features—which you can deploy in conjunction with VPNs, firewalls, intrusion detection systems, and other such devices—you're protected from internal and external network attacks.

Application-Level Quality of Service

Based on Layer 2, Layer 3 and Layer 4 information, the X-Pedition ER16 allows network managers to deliver application-based QoS and traffic-shaping controls without any loss of performance. Application awareness is an inherent feature—not a software add-on. This is true for all X-Pedition services including QoS and routing services.

The X-Pedition can guarantee bandwidth on an application-by-application basis, thereby accommodating high-priority traffic even during peak periods of usage. QoS policies can be broad enough to encompass all the applications in the network, or relate specifically to a single host-to-host application flow.

By mapping business priorities into network policies, you can assure that in any conflict over limited network resources, business-critical applications will be handled with precedence. For example, by defining a QoS rule that makes SAP/R3 more important than HTTP traffic destined for the Internet firewall, a congested network will forward SAP/R3 traffic while buffering HTTP traffic.

Industry-Leading Capacity

Large networks require large table capacities for storing routes, application flows, QoS rules, VLAN information and security filters. The X-Pedition ER16 provides table capacities that are an order of magnitude greater than most other solutions available today, supporting 250,000 routes, 4,000,000 application flows and 1,600,000 Layer 2 MAC addresses. More than 4,096 VLANs, 20,000 security filters and large per-port buffers provide the capacity to handle peak traffic across even the largest enterprise backbones.

Secure Access

Enterasys solutions leverage extensive traffic filtering and multilayer access control lists, as well as firewall integration, for secure access serving internal and external users. This not only protects the network from unauthorized access, but also reduces the costs associated with external network attacks or internal misuse of server and network resources. Importantly, it allows IT managers to identify devices, protocols, or even applications that should be limited or contolled.

Unlike conventional routers, the X-Pedition's performance does not degrade when security filters are implemented. Wire-speed security, obtained through 20,000 filters, enables network managers to benefit from both performance and security. Filters can be set based on Layer 2, Layer 3 or Layer 4 information, enabling network managers to control access based not only on IP addresses, but also on host-to-host application flows.

Traffic Analysis and Capacity Planning

The X-Pedition paves the way for proactive planning of bandwidth growth and efficient network troubleshooting with capacity planning tools. Real-time intelligence can be gathered using RMON/RMON2 applications and packet and frame statistics, all combining for a robust source of network traffic data analysis.

Superior Fault Tolerance for 24 x 7 Availability

Built to ensure around-the-clock accessibility, the X-Pedition ER16 offers redundant power, switch fabric and control modules, designed to enhance performance through redundant links and protect the network from failures. Network links may be trunked together for physical link fail-over. Routing protocols provide support for multiple-path fail-over, and VRRP provides network availability in case a single device fails.

How the X-Pedition Controls Network Traffic

- *Enterprise data usage monitoring*—Gain insight into application usage and user demand to eliminate the costly service interruptions associated with over-subscribed network links or over-used servers.

- *Application QoS and prioritization*—Assure that business-critical applications have preference by mapping business priorities into network policies. Give e-commerce or SAP priority over e-mail, which in turn has priority over HTTP traffic.

- *Application-level access control*—Implement access control lists to restrict traffic by application, user community, intranet/extranet/Internet membership, time of day, service requested, and many other relevant criteria.

Challenge	Solution
Guarantee the availability demanded by many new business-critical applications	• *Wire-speed Layer 4 application flow switching* • *Deploy application, policy and routing services with no degradation to performance* • *Application content verification*
Prioritize applications based on business needs	• *Application load balancing, rate limiting, prioritization and redirection* • *Wire-speed, application-level QoS*
Ensuring a secure, high-speed IP backbone	• *Wire-speed access control provides firewall-like protection* • *Access control lists (ACLs), network address translation (NAT) and policy-based routing control or redirect undesired or questionable traffic across a broad range of networking media types—Fast Ethernet, Gigabit Ethernet, 10 Gig Ethernet, ATM, WAN serial and HSSI, FDDI (future)*
Robust throughput to handle the heaviest traffic demands	• *128 Gbps non-blocking switching fabric* • *70 Mpps routing throughput*
Ensure interoperability to meet the demands of converged data types (voice, video, and data) and protect investments	• *Support for standards-based routing protocols (RIP, OSPF, BGP) and multicast support (IGMP, DVMRP) with proven reliability*

PHYSICAL SPECIFICATIONS

Dimensions
48.26 cm (19") x 48.26 cm (19") x 88.9 cm (35")

Weight
56.25 kg (125 lbs.)

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature
+5° to +40° C (41° to 104° F)

Non-Operating Temperature
-30° to +73° C (-22° to 164° F)

Operating Humidity
15% to 90% (non-condensing)

Power Consumption
100 to 125 VAC Max or 200 to 250 VAC Max, 2400 W -48 VDC, 2400 W 50 to 60 Hz

AGENCY STANDARDS AND SPECIFICATIONS

Safety
Meets the requirements of UL1950, CSA C22.2 No. 950, EN60950 and IEC950

Electromagnetic Compatibility (EMC)
Compliant with the requirements of FCC Part 15, CSA C108.8, EN555022, VCCI V-3/93.01, EN50082-1 and 89/336/EEC

IP Routing
RIPv1/v2, OSPF, BGP-4

IPX Routing
RIP, SAP

Multicast
IGMP, DVMRP, PIM-DM PIM-SM

QoS
Application level, 802.1p

RFCs/MIBs:
IEEE 802.1p
IEEE 802.1Q
IEEE 802.1d Spanning Tree
IEEE 802.3
IEEE 802.3u
IEEE 802.3x
IEEE 802.3z
RFC 1213 - MIB-2
RFC 1493 - Bridge MIB
RFC 2223 - Interfaces MIB
RFC 1643 - Ethernet like Interface MIB
RFC 1163 - A Border Gateway Protocol (BGP)
RFC 1267 - BGP-3
RFC 1771 - BGP-4
RFC 1657 - BGP-4 MIB
RFC 1058 - RIP v1
RFC 1723 - RIP v2
RFC 1724 - RIP v2 MIB
RFC 1583 - OSPF v2
RFC 1850 - OSPF v2 MIB
RFC 1812 - Router Requirements
RFC 2096 - IP Forwarding MIB
RFC 1349 - Type of Service in the IP Suite
RFC 1519 - CIDR
RFC 2338 - VRRP
RFC 1634 - IPXWAN
RFC 1483 - LSNAT

RFC 2618 - Radius-Auth-Client-MIB
RFC 1157- SNMP
RFC 1757 - RMON 1
RFC 2021 - RMON 2
RFC 1332 - PPP IP Control Protocol (IPCP)
RFC 1548 - The Point-to-Point Protocol (PPP)
RFC 1552 - PPP IPX Control Protocol (IPXCP)
RFC 1570 -PPP LCP Extensions
RFC 1717 - PPP Multilink Protocol
RFC 1662 - PPP in HDLC-like Framing
RFC 1661 - PPP (Point-to-Point Protocol)
RFC 1638 - PPP Bridging Control Protocol
RFC 1293 Inverse ARP
RFC 1315 MIB for Frame Relay DTEs
RFC 1490 Multiprotocol Interconnect over FR
Frame Relay Forum and ITU Standards: FRF.1.1, FRF.3.1, Q.922/ANSI T1.618, Q.933, I.122/ANSI T1S1 Annex D/ANSI T1.617

ORDERING INFORMATION

ER16-CS
X-Pedition switch routing platform base chassis with one switch fabric module, fan tray and a clock card

ER16-AC
ERP AC power supply (minimum 2 required, 3 or 4 required for redundancy)

ER16-FN
X-Pedition switch routing platform fan tray assembly (spare)

ER16-CK
X-Pedition switch routing platform clock card assembly (spare)

ER16-SF
X-Pedition switch routing platform switching fabric module (spare or redundancy)

ER16-CM3-128
X-Pedition switch routing platform control module with 128 MB

ER16-04
X-Pedition switch routing platform 4-port 1000Base 4 GBIC (GPIM) module

ER16-SX-08
X-Pedition switch routing platform 8-port 1000Base-SX module

ER16-08
X-Pedition switch routing platform 8-port 1000Base GBIC (GPIM) module

ER16-TX-24
X-Pedition switch routing platform 24-port RJ45 10/100Base-TX module

ER16-TX-32
X-Pedition switch routing platform 32-port RJ21 10/100Base-TX module
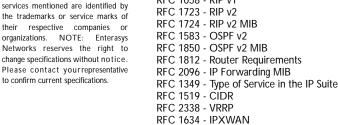
GPIM-01
SX GBIC

GPIM-08
LH GBIC

GPIM-09
LX GBIC

SSR-RS-ENT
X-Pedition switch routing services

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