

# X-PEDITION™ 8000 ENTERPRISE BACKBONE SWITCH ROUTER

Data Sheet



- **Multilayer switch router for corporate backbone or wiring closet**
  - Full-function IP/IPX routing for unicast and multicast traffic
  - Legacy protocol routing support via advanced routing engine
  - 16 Gbps non-blocking switching fabric; 15 Mpps routing throughput
  - Up to 28 Gigabit Ethernet ports; up to 112 10/100 ports
- **Full application support from the desktop to the WAN**
  - Wire-speed Layer 4 application flow switching
  - Maintains wire-speed performance with all other features enabled
  - Supports HSSI, FDDI, ATM and serial WAN interfaces
  - Ready now for multicast voice and video applications
- **Pinpoint control to prioritize applications, improve e-business operation**
  - Wire-speed, application-level QoS for end-to-end reliability
  - Application load balancing and content verification
  - Supports Weighted Fair Queuing and Rate Limiting (CAR)
- **Superior fault tolerance to ensure 24x7 network availability**
  - Redundant power supplies and CPUs to protect from failures
  - Load sharing to enhance performance through redundant links
- **Advanced security features for greater peace of mind**
  - Secure Harbour™ architecture protects against internal and external abuse
  - Wire-speed Layer 2/3/4 security filters
- **Standards-based, intuitive management for fast, easy troubleshooting**
  - Full support for RMON and RMON 2
  - Comprehensive Java-based management software via NetSight™

## Ideal in Small, Medium and Large Enterprise Installations

The X-Pedition 8000 offers the wire-speed throughput, feature-rich functionality and flexible size to fit everywhere from the backbone to the wiring closet.



Along with several industry awards to its credit, the X-Pedition has been the #1 selling\* modular Layer 3 switch for nearly three years.

\*Source: Dell'Oro Group

## Industry-Leading Performance, Control and Flexibility

Enterasys Networks award-winning X-Pedition family represents a new generation of switch routing solutions engineered to support today's rapidly expanding enterprises. Designed to fit in a small corporate backbone or the wiring closet as part of a larger enterprise, the 8-slot X-Pedition 8000 combines wire-speed performance at gigabit rates, pinpoint control of application flows, and superior routing capacity to ensure high availability of internal and external networks.

Like the larger X-Pedition 8600, the X-Pedition 8000 delivers full-function, wire-speed IP/IPX routing—both unicast (IP:RIP, OSPF, BGP, IPX:RIP) and multicast (IGMP, DVMRP, PIM-SM). Powered by a non-blocking 16 Gigabit per second switching fabric, the X-Pedition 8000's throughput exceeds 15 million packets per second and can be configured with up to 112 10/100 ports or 28 Gigabit Ethernet ports with new double-density Gigabit Ethernet modules.

The X-Pedition switch router was also the industry's first Gigabit switching router with WAN capabilities. The WAN interfaces extend the benefits of the X-Pedition router to remote locations, providing network administrators application-level control from the desktop to the WAN edge, all at wire speed.

The unique X-Pedition architecture enables you to route or switch packets based on the information in Layer 4 or on the traditional source-destination information in Layer 3. This application-level control allows the X-Pedition to guarantee security and end-to-end Quality of Service (QoS) while maintaining wire-speed throughput. QoS policies may encompass all the applications in the network, groups of users, or relate specifically to a single host-to-host application flow.

The X-Pedition 8000 is easily configured and managed through comprehensive, Java-based network management software, which includes intuitive wizards and drag-and-drop operation.



## How the X-Pedition Supports Quality of Service

- **Non-Blocking Backplane**—Prevents overloaded output wires from clogging the switching hardware and isolates points of network congestion so that other traffic flows are unaffected
- **Large Buffering Capacity**—Avoids packet loss during transient bursts that exceed output wire capacity
- **Traffic Classification and Prioritization**—Enables policy-based QoS which guarantees throughput and minimizes latency for important traffic during times of congestion
- **Layer 4 Flow Switching**—Provides application-level manageability, enabling the implementation of true end-to-end QoS (e.g., RSVP)
- **Intuitive QoS Management Interface**—Allows powerful QoS policies to be implemented and maintained quickly and easily
- **Detailed Network Instrumentation**—Facilitates network baselining and troubleshooting, delivering insight into the behavior of network traffic

## Unmatched Performance with Wire-Speed Routing and Switching

The X-Pedition 8000 minimizes network congestion by routing more than 15 million packets per second (pps). The 16 Gbps switching fabric in the X-Pedition delivers full-function unicast and multicast wire-speed IP/IPX routing at gigabit speeds on all ports.

The X-Pedition 8000's custom ASICs switch or route traffic at wire speed based on Layer 2, Layer 3 and Layer 4 information. These ASICs also store QoS policies and security filters, providing wire-speed performance even when QoS and security filters are enabled. As a result, network managers no longer need to make compromises when it comes to performance and functionality; the X-Pedition delivers both.

## Application-Level QoS and Access Control—at Wire Speed

Based on Layer 2, Layer 3 and Layer 4 information, the X-Pedition allows network managers to identify traffic and set QoS policies, without compromising wire-speed performance.

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.

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.

## Wire-Speed Multicast to Support Convergence Applications

The X-Pedition's switching fabric is capable of replicating packets in hardware, eliminating performance bottlenecks caused by conventional software-based routers. By providing the necessary infrastructure, the X-Pedition turns the network into an efficient multicast medium, supporting Protocol Independent Multicasting-Sparse Mode (PIM-SM), DVMRP and per-port IGMP.

## Industry-Leading Capacity

Large networks require large table capacities for storing routes, application flows, QoS rules, VLAN information and security filters. The X-Pedition 8000 provides table capacities that are an order of magnitude greater than most other solutions available today, supporting up to 100,000 routes, 2,000,000 application flows and 400,000 Layer 2 MAC addresses.

Full-function wire-speed IP/IPX routing enables the X-Pedition to scale seamlessly as the network evolves. The chassis-based X-Pedition can be configured with up to 112 10/100 ports or up to 28 Gigabit Ethernet ports. More than 4,000 VLANs, 20,000 security filters and large per-port buffers provide the capacity to handle peak traffic across even the largest enterprise backbones.

## Comprehensive Management for Easy Deployment, Changes and Troubleshooting

**VLAN Management**—The X-Pedition can be configured to support VLANs based on ports and protocols. Network managers can use Layer 2 VLANs with 802.1p prioritization and 802.1Q tagging, and can configure VLANs via NetSight.

**Extensive Performance Monitoring**—The X-Pedition paves the way for proactive planning of bandwidth growth and efficient network troubleshooting by providing complete RMON/RMON 2 capabilities and industry-accepted flow accounting solutions.

**Easy-to-Use, Java-Based Management** —The X-Pedition's rich functionality is made easy to use through NetSight management applications, which provide extensive configuration and monitoring tools. NetSight is Java-based, allowing network managers to use most any client station to remotely manage the X-Pedition 8000. NetSight can run on Solaris, Windows NT and Windows 95/98/2000 environments.

## Why the X-Pedition is a Better Switch Router

- Best-Selling Modular Layer 3 Switch Router
- Wire-Speed Performance with All Features Enabled
- First to Support WAN Interfaces
- Part of an Integrated End-to-End Solution
- Pinpoint Application Control from the Desktop to the WAN
- Multilayer Security Filters Don't Sacrifice Performance
- Award-Winning, Time-Tested Solution
- Highly Manageable, Easily Configurable

Challenge	Solution
<i>Guarantee availability of critical applications such as Enterprise Resource Planning, e-commerce and multicast video</i>	<ul style="list-style-type: none"><li>• Wire-speed Layer 4 application flow switching</li><li>• Application content verification</li></ul>
<i>Prioritize applications based on business needs (e-commerce traffic supercedes e-mail, which supercedes web surfing, etc.)</i>	<ul style="list-style-type: none"><li>• Application load balancing, rate limiting, prioritization and redirection</li><li>• Wire-speed application level QoS</li></ul>
<i>Robust throughput to handle heaviest traffic demands</i>	<ul style="list-style-type: none"><li>• 16 Gbps non-blocking switching fabric</li><li>• 15 Mpps routing throughput</li></ul>
<i>Scalable to support new users and applications</i>	<ul style="list-style-type: none"><li>• Up to 28 Gigabit Ethernet ports</li><li>• Up to 112 10/100 ports</li></ul>
<i>Maintain critical network security, internally and externally</i>	<ul style="list-style-type: none"><li>• Secure Harbour architecture includes wire-speed Layer 2/3/4 security filters</li></ul>
<i>Extend network availability and application control across the entire enterprise</i>	<ul style="list-style-type: none"><li>• Support for WAN interfaces; including serial and HSSI</li><li>• Additional support for FDDI and ATM</li></ul>
<i>Ensure interoperability and protect investments</i>	<ul style="list-style-type: none"><li>• Complete portfolio of standards-based routing protocols supported (RIP, OSPF BGP) and multicast support (IGMP, DVMRP, PIM-SM)</li></ul>
<i>Ensure around-the-clock availability, reliability</i>	<ul style="list-style-type: none"><li>• Redundant power supplies and CPUs to protect from failures</li><li>• Load sharing to enhance performance through redundant links</li><li>• Standards-based virtual router redundancy protocol (VRRP) and self-healing route paths (OSPF multipath, MLPPP and Smart Trunking)</li></ul>
<i>Quickly pinpoint and troubleshoot problem areas</i>	<ul style="list-style-type: none"><li>• Full support for RMON and RMON 2</li><li>• Comprehensive management via NetSight Element Manager</li></ul>

## TECHNICAL SPECIFICATIONS

### Performance

Wire-speed IP/IPX unicast and multicast routing  
16 Gbps non-blocking switching fabric  
15 Million packets per second routing and Layer 4 switching throughput

### Capacity

112 Ethernet/Fast Ethernet ports (10/100Base-TX)  
56 ports Fast Ethernet Fiber  
28 Gigabit Ethernet ports (1000Base-LX or 1000Base-FX)  
Up to 2,000,000 Layer 4 application flows  
Up to 400,000 Layer 2 MAC addresses  
Up to 100,000 Layer 3 routes  
Up to 20,000 security/access control filters  
3 MB buffering per Gigabit port  
1 MB buffering per 10/100 port  
4,096 VLANs

### Power System

100V-125V: 6A max.  
200V-240V: 3A max.  
50/60 Hz.  
Redundant CPU and power supply  
Hot-swappable media modules

## PHYSICAL SPECIFICATIONS

### Dimensions

22.3 cm (8.75") x 43.82 cm (17.25") x 31.12cm (12.25")

### Weight

18.2 kg (40 lbs)

## ENVIRONMENTAL SPECIFICATIONS

### Operating Temperature

0° C to 40° C (32° F to 104° F)

### Relative Humidity

5% to 95% noncondensing

## PROTOCOLS AND STANDARDS

### IP Routing

RIPv1/v2, OSPF, BGP-4

### IPX Routing

RIP, SAP

### Multicast Support

IGMP, DVMRP, PIM-SM

### QoS

Application level, RSVP

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 1573 - 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 Carrying Additional Information  
RFC 1724 - RIP v2 MIB  
RFC 1757 - RMON  
RFC 1583 - OSPF Version 2  
RFC 1253 - OSPF v2 MIB  
RFC 2096 - IP Forwarding MIB  
RFC 1812 - Router Requirements  
RFC 1519 - CIDR  
RFC 1157 - SNMP  
RFC 2021 - RMON2  
RFC 2068 - HTTP  
RFC 1717 - The PPP Multilink Protocol  
RFC 1661 - PPP (Point-to-Point Protocol)  
RFC 1634 - IPXWAN  
RFC 1662 - PPP in HDLC Framing  
RFC 1490 - Multiprotocol Interconnect over Frame Relay

## ORDERING INFORMATION

### SSR-8

X-Pedition 8000 switch router 8-slot base system including chassis, backplane, modular fan, and a single switch fabric module (SSR-SF-16). Requires CM2 Control Module

### SSR-PS-8

Power Supply for the X-Pedition switch router

### SSR-PS-8-DC

DC Power Supply Module for the X-Pedition 8000

### SSR-MEM-128

New CM2 memory upgrade kit (for CM2 series only)

### SSR-PCMCIA

SSR-16 and SSR-8 8MB PCMCIA card (ships with ER-RS-ENT, second required for redundant CM configuration)

### SSR-CM2-64

X-Pedition switch router Control Module with 64 MB memory

### SSR-CM3-128

X-Pedition switch router Control Module with 128 MB memory

### SSR-CM4-256

X-Pedition switch router Control Module with 256 MB memory

### SSR-RS-ENT

X-Pedition Router Services for L2, L3, L4 Switching and IP (RIPv2, OSPF) IPX (RIP/SAP) Routing. One required with every chassis, shipped on PC card.

### XP-SYS-FW-16

X-Pedition Router Services for L2, L3, L4 Routing. Shipped on PCMCIA Card.

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