

MATRIX™ EI OPTICAL ACCESS SWITCH WITH 10 GIGABIT UPLINK

Data Sheet



- **Powerful, high-performance optical access switch**
 - Support for twelve Gigabit Ethernet ports and a modular 10 Gigabit uplink
 - 22 Gbps switch capacity
 - Throughput of more than 32 million packets per second
 - Transport up to 20 Gbps of data across a single fiber optic cable to cost-effectively combat fiber depletion
- **High-availability features**
 - Link Aggregation (IEEE 802.3ad), and Rapid Reconfiguration Spanning Tree (IEEE 802.1w)
- **Standards-based switching support**
 - Supports IEEE 802.1D switching, IEEE 802.1Q VLANs, and IGMP version 1 and version 2
- **Industry-leading management for rapid deployment and troubleshooting**
 - Extensive remote management capabilities with NetSight™ Element Manager, NetSight Policy Manager
 - Supports RFC 2674 VLAN MIB
 - Supports Telnet and WebView
- **Integrated Secure Harbour™ architecture**
 - Provides management authorization and authentication via RADIUS and 802.1X User Authentication

High-Performance Gigabit Switching in a Standalone Solution

The Matrix EI Optical Access Switch provides cost-effective Gigabit and 10 Gigabit connectivity in a convenient, compact device.

Seamlessly Scale to Meet Emerging Bandwidth Requirements

As new applications—video conferencing, distance learning and enterprise resource planning, for example—drive the need for increased bandwidth, Ethernet has cost-effectively scaled from 10 Mbps to 1000 Mbps and will now provide the same level of cost-effective connectivity at 10 Gigabit speeds.

A 10 Gigabit solution designed to meet growing bandwidth demands, the compact, standalone Matrix EI Optical Access Switch (OAS) provides twelve 1000 Mbps wire-speed ports and one uplink slot for a 10 Gbps module.

The Matrix EI OAS is ideally deployed as a high-speed aggregation device when multiple 1-Gigabit Ethernet segments are aggregated to a central location such as a data center or server farm. With two Matrix EI OAS devices, two groups of up to twelve Gigabit Ethernet devices can be connected with a single fiber optic cable pair. As a result, the Matrix EI OAS provides a cost-effective alternative to trunking multiple Gigabit Ethernet segments between two points, either within a building or campus, since only a single fiber optic pair is needed to make the connection. Prior to the innovative Matrix EI OAS, customers needed to use port trunking to aggregate multiple Gigabit segments, a solution that consumed a fiber segment for each port.

Enterasys will offer a number of 10 Gigabit interfaces to address short, medium and long-haul fiber deployments.



Wire-speed performance and industry-leading features allow the Matrix EI OAS to seamlessly integrate into enterprise and service provider networks. Plug-and-play installation, advanced network management and standards-based switching features make the Matrix EI OAS an industry leader in its class.

Why the Matrix EI OAS is a Better Switching Solution

- Line rate 10 Gbps performance
- 22 Gbps switch capacity
- Modular 10 Gbps uplink
- Cost-effectively transports 20 Gbps over a single fiber pair
- Combats fiber depletion

Connectivity Options

The Matrix EI OAS supports twelve Gigabit Ethernet interfaces. Eight of the Gigabit Ethernet ports are fixed 1000Base-SX MT-RJ connectors. The remaining four Gigabit Ethernet ports support small form factor hot-swappable GBICs. These new mini GBICs are approximately half the size of the current full-size GBICs and are available for 1000Base-SX and 1000Base-LX. A future version will support long-haul (>70Km) fiber installations.

The Matrix EI OAS is also equipped with a 10 Gigabit option slot. The first uplink is a single-port, 850nm, Course Wave Division Multiplex (CWDM) interface with an SC connector. This interface will permit drive distances of 300 meters on standard multimode fiber, and up to 500 meters on high grade multimode.

IEEE 802.1Q VLAN Support

The Enterasys Matrix EI OAS provides full support for the 802.1Q VLAN standard, which includes GARP/GVRP VLAN protocol. GVRP is a VLAN messaging protocol that significantly reduces manual VLAN configuration. This translates into lower cost of ownership.

Quality of Service (QoS)

Essential to the successful support and delivery of business-critical applications, the Matrix OAS allows network administrators to deploy Quality of Service by:

- Assigning 802.1p traffic classes to received frames
- Mapping traffic classes to prioritized queues

IP Multicast Support

With full support for IGMP version 1 and 2, administrators can be assured that multicast applications such as streaming video can be deployed without hindering network performance. This awareness guarantees that multicast traffic is delivered to only the required recipients, conserving precious bandwidth.

Challenge	Solution
Ensuring availability of new high-bandwidth applications, including video conferencing, distance learning and ERP	<ul style="list-style-type: none"> • Twelve wire-speed Gigabit Ethernet ports and a 10 Gigabit uplink provide high-performance switching • Throughput is more than 32 million packets per second • Support for IGMP means that multicast applications such as streaming video can be deployed without hindering network performance
Deploying a high-speed aggregation device to use with multiple 1-Gigabit Ethernet segments	<ul style="list-style-type: none"> • A cost-effective alternative to trunking • Only a single fiber optic pair is needed to make the connection
Guarantee availability of critical applications such as ERP and Voice-over-IP	<ul style="list-style-type: none"> • Comprehensive QoS enables 802.1p traffic classes and mapping traffic classes to priority queues
Effectively deploy, measure and troubleshoot network infrastructure	<ul style="list-style-type: none"> • Intuitive, GUI-based NetSight management applications • Supports industry-standard management including RMON and RFC 2674 VLAN MIB

High-Availability Topology Services

In addition to full 802.1D switching support, the Matrix EI OAS provides support for emerging high-availability Spanning Tree functionality such as:

- IEEE 802.1w Rapid Reconfiguration Spanning Tree
- IEEE 802.3ad Link Aggregation

Secure Harbour Architecture

The Matrix OAS integrates the features of Enterasys' Secure Harbour—an architectural approach to network security that enables an organization to monitor, control or block access to the network resources. By doing so, the integrity of the network, and ultimately the business, is protected.

The framework consists of features, functions, products, services management and partnerships that can be combined to provide comprehensive security solutions.

The Matrix OAS can be secured using IP Access Control Lists, Radius Authentication and SNMP Management VLANs. These comprehensive security features ensure that the switch is protected from intruder attacks.

User-based security and authentication is also a key part of the feature set. The Matrix OAS delivers this via functionality such as port-based MAC address locking and support for the 802.1X authentication standard.

Standards-Based Trunking

The Matrix OAS supports the IEEE 802.3ad standard for link aggregation, ensuring that the Matrix OAS is fully interoperable with any other standards-compliant device.

Advanced Network Analysis Capabilities

A crucial requirement for enterprise customers is the ability to access traffic trending and analysis capabilities. The Matrix OAS delivers this functionality with embedded RMON. Another key requirement for comprehensive traffic analysis is the ability to mirror traffic to a probe or protocol analyzer. The Matrix OAS's port mirroring feature allows all traffic to be forwarded from a specific port to a user-specified port for detailed analysis.

Integrated Management

To help ensure the network remains operating at peak performance, the Matrix EI OAS provides integrated network management options including the ability to monitor and provision the switch from any SNMP-based management station.

Management access is available via the local serial port for local console management and remote in-band on any switch port—for the console application (Telnet), WebView, and the switch local SNMP agent.

In addition, the Matrix EI OAS is fully compatible with Enterasys Networks' NetSight Management solutions—highly graphical, easy-to-use network management applications that provide comprehensive configuration and remote management support for intelligent network management devices, as well as any SNMP MIB I or MIB II manageable device.

A Cost-Effective Alternative to Trunking

The Matrix EI OAS offers high-speed, point-to-point aggregation allowing multiple segments to be aggregated to a central location such as a data center or server farm. While a trunking solution uses a fiber segment for each port, the Matrix EI OAS uses a single fiber optic pair.

TECHNICAL SPECIFICATIONS

System Capacity

Switch Bandwidth: 22 Gbps
MAC Address Capacity: 32K
VLAN Capacity: 4096
Flash Memory: 8 MB
DRAM: 64 MB expandable to 256 MB

Power System

AC Input Power (auto-sensing)
85 VAC to 264 VAC
Heat Dissipation: 50.4 BTU/hour maximum
ACVA Rating: 163 ACVA maximum

System LED Indicators

Power Supply LED:

Green—Power supply outputs are within regulation; power redundancy is available.

Yellow—Power supply outputs are within regulation, but power redundancy is available.

Red—One or more of the power supply outputs are out of regulation.

CPU LED:

Solid Green—System operational

Alternating Green/Amber—Unit is booting up

Solid Amber—Diagnostics are running

Solid Red—CPU Failure

Port LED 1

Off—No link, no activity, port enabled

Solid Green—Link present, port enabled, no traffic being received

Flashing Green—Link present, port disabled

Amber—Link present, port enabled, traffic being received on the interface

Port LED 2

Off—No traffic being transmitted on the interface

Green (solid or flashing)—Port is transmitting traffic (frequency of flash is an approximation of the traffic rate)

System MTBF

Predicted >41,658 hours

Standards Support

IEEE 802.3, IEEE 802.1D, IEEE 802.1Q, IEEE 802.3ad, IEEE 802.1w, IEEE 802.1X

Media Type Supported

1 Gigabit Ethernet Port: fixed ports, 1000Base-SX, MT-RJ connectors; modular ports, SFP mini GBIC

10 Gigabit Ethernet Ports: SC connector

Management Access

SNMP, WebView, Telnet
Serial RS-232 COM port

PHYSICAL SPECIFICATIONS

Dimensions

6.6 cm (2.62") H x 43.8 cm (17.25") W x 38.73 cm (15.25") D

Rack Unit Height

1.5 RU

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature

5° C to +40° C (41° F to 104° F)

Non-Operating Temperature

0° C to +70° C (32° F to 158° F)

Operating Humidity

5% to 90% RH, non-condensing

ORDERING INFORMATION

IG694-13

12-port standalone Optical Access Switch with one option slot for a 10 Gigabit Ethernet uplink module

ZP1M1-01

10 Gigabit Ethernet uplink module for the IG694-13

MGBIC-MT01

1-port 1000Base-SX mini GBIC with MTRJ connector

MGBIC-LC01

1-port 1000Base-SX transceiver with LC connector

MGBIC-LC-09

1-port 1000Base-LX transceiver with LC connector

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