



[Ether-Raptor Series ER-1010] 1Gb/10Gb Distributed Stacking Multilayer Ethernet Switch

The ER-1010, with its break-through technology, is a high performance, highly reliable, scalable, and affordable switch.

Key Features:

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|--|---|
| • Affordable | • Future Proof with Modular Construction |
| • Layer 2/3/4 Switch | • Data Classification Layer 2- |
| • 24 1GbE Ports; Fiber and Copper Modules | • Six 10Gb Ports |
| • Distributed up to 40km | • Up to 384 Gigabit Ethernet ports |
| • 40Gb Trunks | • Jumbo Frames |

Key Applications

- | | |
|---|--|
| • Redundant 10Gb Backbone Switch | • Data Center |
| • Campus/Large Enterprise | • Metro Networks |
| • Server Farms | • Small-to-Medium Enterprise Solution |

Product Description

The ER-1010 is designed as a team player, scaling from 2 to 16 interconnected members, creating its own "fabric." This "fabric," 2 to 16 1U boxes, provides unparalleled performance and reliability throughout its environment. The distributed "fabric" can connect racks to racks in Datacenters, floors to floors in Enterprises, and buildings to buildings in a Campus/Metro environment. All the capabilities and features of the ER-1010 are maintained up to a distance of 10km and some of the capabilities stretch to 40km. The box-to-box communication is achieved through a RAST (Raptor Adaptive Switch Technology) connection.

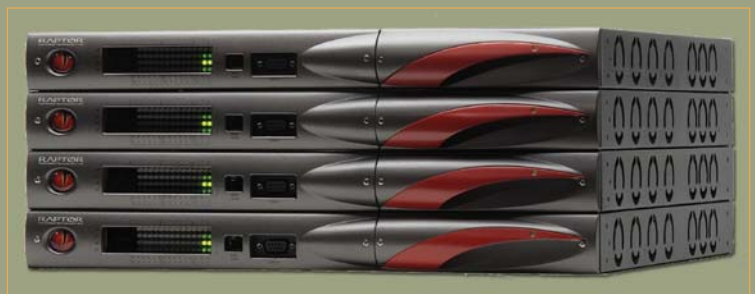
Physically, a RAST port is the high performance interconnect link between boxes. It uses standards based on off-the-shelf components for affordable connections. Conceptually, RAST is the high-performance "backplane" of the ER-1010 "fabric". As it connects each new box, one contiguous "fabric" is formed. This "fabric" to the outside world is a single switch. All switching and routing functions traverse the RAST "backplane" at wire speed.

Performance

The ER-1010 is a high-performance 1GbE and 10GbE layer 2/3/4 switch with layer 2-7 data classification capabilities. The 1GbE and 10GbE ports are wire speed with a fully loaded box supporting 119 million packets per second throughput. The ER-1010's QoS (Quality of Service) packet processing combined with its low-latency hardware ensures an excellent solution for today's converged networks. QoS is deeply embedded with 8 egress queues on each port to ensure priority to time sensitive packets. Latency for a 64-byte packet going in and out of a single box is a remarkable 4.8 microseconds.

Configurations

An ER-1010 fully loaded has 24 1Gb Ethernet ports and six 10Gb ports. Its modular design provides flexibility with options for copper and fiber ports. There are 2 slots, 12 ports each, for the 1Gb Ethernet ports (copper or fiber). There are also 2 slots, 3 ports each, for the 10Gb ports (copper, fiber, or RAST). Using 16U of rack space a Raptor solution is a 384-port GbE switch (of course the 16 ER1010 boxes could be 10km or 40km apart). Using 16U of rack space, Ether-Raptor Switches can also be configured with 32 10GbE ports and 352 GbE ports with unsurpassed port density.



[ER-1010]



RaptorWare™ Specifications

Switching:

- IEEE 802.3ac – VLAN Tagging
- IEEE 802.3ad – Link Aggregation
- IEEE 802.1d – Spanning Tree
- IEEE 802.1w – Rapid Spanning Tree
- IEEE 802.1s – Multiple Spanning Tree GARP \ GMRP \ VGRP
- IEEE 802.1q – Virtual VLANs Port and Protocol based VLANs
- IEEE 802.1p – Priority
- IEEE 802.1x – Port Authentication
- IEEE 802.3x – Flow Control
- RFC 2865 – RADIUS Client
- RFC 2866 – RADIUS Accounting
- RFC 2868 – RADIUS Tunnel Support
- RFC 2869 – RADIUS Extensions
- rfc2869bis - RADIUS support for EAP
- IGMP Snooping
- Port Mirroring
- Broadcast Storm Recovery
- RFC 768 – UDP
- RFC 783 – TFTP
- RFC 791 – IP
- RFC 792 – ICMP
- RFC 793 – TCP
- RFC 826 – ARP
- RFC 951 – BOOTP
- RFC 2131 – DHCP Client

Routing

- RFC 826 – Ethernet ARP
- RFC 894 – Transmission of IP over Ethernet
- RFC 896 – Congestion Control in IP/TCP Networks
- RFC 1058 – RIP v1
- RFC 1256 – ICMP Router Discovery Messages
- RFC 1321 – Message Digest Algorithm (MD5)
- RFC 1519 – CIDR

- RFC 1583 – OSPF v2
- RFC 1723 – RIP v2
- RFC 1812 – Requirements for IPv4 Routers
- RFC 2328 – OSPF v2 w/ Equal Cost Multi-path support
- RFC 2338 – VRRP – Virtual Router Redundancy Protocol
- RFC 2453 – RIP v2
- RFC 3046 – DHCP/BootP Relay

Multicast

- RFC 1112 – Host Ext for IP Multicasting IGMPv1
- RFC 2236 – IGMPv2
- RFC 2362 – PIM-SM
- IP Multicast Traceroute
- RFC 2365 – Administratively Scoped Multicast
- Draft-ietf-pim-v2-dm-03 – PIM-DM
- Draft-ietf-idmr-dvmrp-v3-10 – DVMRP

QoS

- Bandwidth Policing (Min and Max; per port/per VLAN)
- Committed Information Rate (CIR)
- Maximum Burst Rate (MBR)
- Per Port (Interface)
- Per VLAN
- Filtering (L3/L4 Access Lists)
- IP Classification – 6 Tuple Classification
- RFC 2474 – DiffServ Definition
- RFC 2475 – DiffServ Architecture
- RFC 2597 – Assured Forwarding PHB
- RFC 3246 – An Expedited Forwarding PHB
- RFC 3260 – New Terminology and Clarifications for DiffServ

Management

- RFC 854 – Telnet
- RFC 855 – Telnet Option
- RFC 1155 – SMI v1
- RFC 1157 – SNMP v1
- RFC 1212 – Concise MIB Definitions
- RFC 1901 – Community based SNMP v2

- RFC 1905 – Protocol Operations for SNMP v2
- RFC 1906 – Transport Mappings for SNMP v2
- RFC 1907 – MIB for SNMP v2
- RFC 1908 – Coexistence between SNMPv1 & SNMP v2
- RFC 2576 – Coexistence between SNMP v1,v2, & v3
- RFC 1867 – HTML/2.0 Forms w/file upload extensions
- RFC 2068 – HTTP/1.1 protocol as updated by draft-ietf-http-v11-spec-rev-03
- RFC 2295 – Transparent Content Negotiation
- RFC 2296 – Remote Variant Selection
- RFC 3289 – Differentiated Services MIB
- RSVA/1.0 State Management “cookies”
- HTML 4.0 Specification - December 1997 Java & Script 1.3

Switching Package MIBs

- RFC 1213 – MIB-II
- RFC 1493 – Bridge MIB
- RFC 1643 – Ethernet-like MIB
- RFC 2618 – RADIUS Authentication Client MIB
- RFC 2620 – RADIUS Accounting MIB
- RFC 2674 – VLAN MIB
- RFC 2819 – RMON Groups 1, 2, 3 & 9
- IEEE 802.1x MIB (IEEE8021-PAE-MIB)
- Ether-Raptor Enterprise MIB

Routing Package MIBs

- RFC 1724 – RIP v2 MIB Extension
- RFC 1850 – OSPF MIB
- RFC 2233 – The Interfaces Group MIB Using SMI v2
- RFC 2787 – VRRP MIB

Multicast Package MIBs

- Draft-ietf-idmr-dvmrp-mib-11.txt - DVMRP
- RFC 2933 – IGMP
- RFC 2934 – PIM MIB for IPv4

Product Specifications

Certifications

- IEC 60950-1
- EN 60950-1
- ANSI/UL 60950-1
- CAN/CSA-C22.2 & 60950-1
- EN 55024 Class A

- EN 55022 Class A
- EN 61000-3-2
- EN 61000-3-3
- FCC Subpart B, Class A
- ILES-003, Class A

Physical Dimensions

- (H) 1.75 in x (W) 17.50 in x (D) 15 in
- (H) 4.45 cm x (W) 44.50 cm x (D) 38.1cm

Reliability

- Minimum 200,000 hrs MTBF, calculated

Environmental

- Storage Temperature: -40° to 70° C
- Operating Humidity: 10% to 95% relative humidity, non-condensing

Ordering Information

Part Number	Description				
ER-1010	Base Unit: Multilayer switch with 2 open 12 Port Gigabit Fiber/Cooper bays and 2 open 3 Port 10 G-base bays, 1				
ER-RJ45-12	12 Port Gigabit Module (RJ-45) copper				
ER-SFP-12	12 Port Module with SFP Fiber “GBIC” pluggable module support.				
ER-10GE-XFP-3	3 Port 10-Gigabit Ethernet with XFP receptacles				
ER-RAST-C	3 Port 10-Gigabit Copper RAST Module				
ER-RAST-XFP-1	3 Port 10-Gigabit Fiber RAST with XFP receptacles				
SFP Pluggables					
XFP Pluggables					
Copper RAST Cables					
ER-SFP-SX	GBIC with 1000 Base SX (850)	ER-XFP-300	300m XFP 10Gb for MMF	ER-RAST-C-3	RAST copper cable 3m
ER-SFP-LX	GBIC with 1000 Base LX (1310)	ER-XFP-10K	10km XFP 10Gb for SMF	ER-RAST-C-10	RAST copper cable 10m
ER-SFP-LH	GBIC with 1000 Base LH (80km)	ER-XFP-40K	40km XFP 10Gb for SMF	ER-RAST-C-15	RAST copper cable 15m



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