EDGEIRON LAYER 2 10-GBE SWITCHES

The EdgeIron™ 10-Gigabit Ethernet (10-GbE) switches, featuring the EdgeIron 24GS, 48GS, and 8X10G, delivers interface flexibility, wire-speed performance, superior port density, and a complete standard Layer 2 feature set to address low-cost and high performance switching requirements of enterprise and service providers. Only 1 rack unit (1RU) high, the EdgeIron family is an excellent choice to deliver Gigabit Over Copper (GoC) with 10-GbE uplink within the wiring closet and server farm, and 10-GbE within the backbone. The EdgeIron is easy to configure and maintain. It offers a cost-effective and high–performance Layer 2 solution for enterprise network deployments.

The EdgeIron family of 10-GbE switches includes the following:

▶ *EdgeIron 24GS*—*24-port 10/100/1000 ports, 2-port stacking, and an optional slot for a 10-GbE module that supports removeable and hot-swappable SR, LR, and ER XENPAK optics*

▶ *EdgeIron 48GS*—*8-port 10/100/1000 ports, 2-port stacking, and an optional slot for a 10-GbE module that supports removeable and hot-swappable SR, LR, and ER XENPAK optics*

▶ *EdgeIron 8X10G*—*8-port 10-GbE ports that supports removeable and hot-swappable SR, LR, and ER XFP optics. A 10/100 port (RJ-45) is available for use as a management interface, enabling full usage of all 10-GbE ports.*

FEATURES OF THE EDGEIRON LAYER 2 10-GBE SWITCHES

▶ *Cost-effective solution for high-performance LAN environments in a 1-RU form factor*

▶ *Support for stacking of up to 8 EdgeIron 24GS and/or 48GS to deliver high-density GoC wiring closet solution*

▶ *Combo Gigabit Ethernet ports to deliver integrated RJ-45 (Copper) or mini-GBIC (fiber) for uplink installation, providing greater flexibility and cost savings for GoC wiring closet installations*

▶ *Support for jumbo frames of up to 9,000 bytes, ideal for high-end server connectivity and network attached file servers*

▶ *Complete, standard Layer 2 features that includes the following:*

— *IEEE 802.1q and 802.1p (Class of Service) with 4 hardware queues per port to enable prioritization of mission-critical applications*

— *Per-VLAN Spanning Tree (PVST) for broadcast isolation*

— *802.3ad for automatic link aggregation and 802.1x for port security*

— *802.1w Rapid Spanning Tree Protocol for superior network reliability*

— *Support for Generic VLAN Registration Protocol (GVRP)*

— *Internet Group Management Protocol (IGMP) Snooping*

— *Robust Quality-of-Service features, including Class of Service (802.1p) mapping to Type of Service or DiffServ and support for priority queuing algorithm such as Weighted Round Robin, and Strict*

— *Low latency—as low as 10µs, ideal for advanced applications like VoIP and video conferencing over IP*

— *Extensive management and monitoring features, including an industry-standard CLI, secure web-based GUI, integrated SNMP agent with mini-RMON and Secure Shell for secured and encrypted management access*

— *Backed by Foundry's Global Customer Service and Worldwide Sales Organization*

FOUNDRY® NETWORKS

The EdgeIron family features an auto-sensing 100–240V AC power supply, making it simple to deploy in a variety of environments. The AC power supply on the EdgeIron is optimized for low power consumption, rated at a maximum of just 55 watts, resulting in reduced need for additional power and lower electricity costs. For enhanced safety, the EdgeIron uses built-in temperature sensors to monitor temperature and alert network operators when the current temperature exceeds user- specified levels.

The EdgeIron 10-GbE Switches

The EdgeIron 10-GbE switches establish the next benchmark in delivering the most low cost and high performance 10-GbE stackable in the market today. The EdgeIron 10-GbE switches combine GoC and 10-Gigabit Ethernet upgradeability in a 1RU form factor. The EdgeIron 10-GbE switches establish the industry's leading price-performance value for fixed Ethernet solutions with the addition of removable and replaceable 10-Gigabit Ethernet modules with the EdgeIron 24GS and 48GS. Likewise, the EdgeIron 8X10G sets a new leading price-performance value for fixed Ethernet solutions with removable and hot-swappable 10-GbE XFP optics.

The EdgeIron 24GS features 24-port GoC, 4-port Combo GbE, 2-port stacking, and 1-slot for an optional 10-GbE module that supports removeable and hot swappable SR, LR, and ER XENPAK optics. The EdgeIron 24GS comes with a switching capacity of 160-Gbps and a forwarding performance of 80-Mpps.

The EdgeIron 48GS features 48-port GoC, 4-port Combo GbE, 2-port stacking, and 1-slot for an optional 10-GbE module that supports removeable and hot swappable SR, LR, and ER XENPAK optics. The EdgeIron 48GS comes with a switching capacity of 160-Gbps and a forwarding performance of 116-Mpps.

The EdgeIron 8X10G is an 8-port 10-GbE that supports removeable and hot swappable SR, LR, and ER XFP optics. The EdgeIron 8X10G comes with a switching performance of 160-Gbps and a forwarding rate of 120-Mpps. Included in the EdgeIron 8X10G is a 10/100 management port that can be used for out-of-band network management.

EdgeIron 24GS

EdgeIron 48GS

EdgeIron 8X10G

EdgeIron 10-GbE Switches Features and Benefits

High-Availability

Enterprise networks require cost-effective high-availability. The EdgeIron 10-GbE switches offer a unique, high-availability solution called IntelStack™ technology. As shown in Figure 1, the EdgeIron 24GS and 48GS include stacking ports that ensures high-availability from any link failures. Each stacking port comes with a 20-Gbps switching performance and a combined 40-Gbps full-duplex switching performance to deliver high performance network throughput for each stack.

Foundry's Intelligent Stack technology enables the creation of a close loop connection, which is the ability to connect the last unit back to the first unit, to deliver high-availability from any broken link. Foundry's Intelligent Stack technology also delivers the network intelligence to ensure that network traffic takes the shortest path between each unit. Similar to a chassis behavior, Foundry's Intelligent Stack technology derives a forwarding path table that is used by each unit to determine closest path to their destination. IntelStack combines QoS, which can be Class of Service (802.1p) or Type of Service/ DiffServ Control Points (ToS/DSCP), in the computation for the forwarding path table.

The EdgeIron 24GS and 48GS supports an optional 10-GbE module, which can be coupled with crossdevice 802.3ad to deliver high-availability from any fiber link failure.

Scalability

Foundry's Intelligent Stack technology enables customers to connect up to 8 EdgeIron GS units together. Using an EdgeIron 48GS, network managers can easily connect 8 EdgeIron 48GS to deliver 384 GoC and 8 10-GbE connections in a single stack of approximately 8 rack units (RU). (8RU is possible if units are stacked one upon another. Airflow is not impeded when units are stacked closely to each other.)

With Foundry's Intelligent Stack technology, network managers can easily build high-density and high performance wiring closet solution that supports 384 GoC and 8 10-GbE connections. Network redundancy can also be achieved by creating uplinks of 2 to 8 ports 10-GbE connection back to an EdgeIron 8X10G, which can be used as a low-cost and high performance 10-GbE backbone switch.
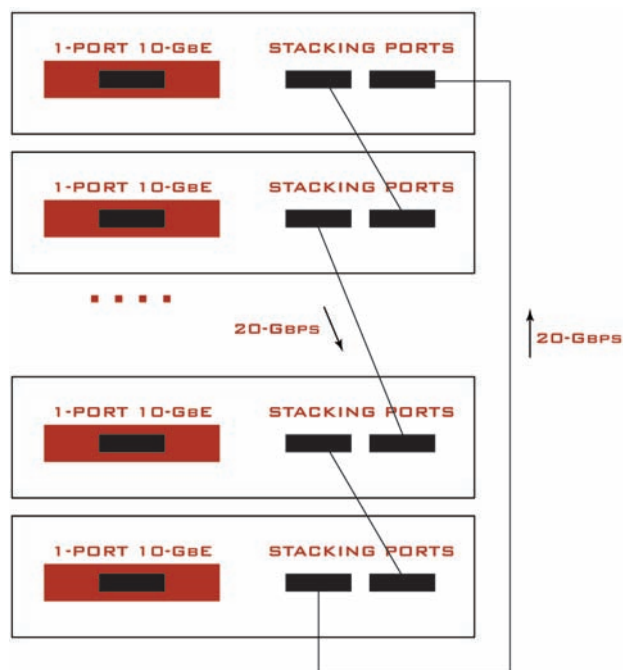
▶ *Figure 1: IntelStack Technology*

Performance

Foundry Networks is known in the industry for delivering networking products with high performance ASIC. As shown in Figure 2, the EdgeIron 10-GbE switches use a high performance cross-bar (XBAR) ASIC that delivers a non-blocking full-duplex switching performance of 160-Gbps. Each spoke connects to a packet processor, which offers local full-duplex switching performance of up to 24-Gbps, using a 20-Gbps full-duplex connection back to the XBAR.

Network managers that require high performance switching in their data center can easily build networks using the EdgeIron 10-GbE switches. For example, network managers of Grid and Cluster computing can stack eight (8) EdgeIron 48GS together to create a chassis-like solution that comes with a 40-Gbps backplane, supports 384 GoC connections, and 8 10-GbE uplink connections.

Complete Standard Layer 2 Feature Set

Each EdgeIron ships with a complete standard Layer 2 feature set including 802.1Q VLANs, 802.1p-based QoS, 802.1d single Spanning Tree Protocol, Per VLAN Spanning Tree (PVST), 802.1w Rapid Spanning Tree Protocol, 802.3x-based flow control, BootP, TFTP, Generic VLAN Registration Protocol (GVRP), Generic Multicast

Registration Protocol (GMRP), Internet Group Management Protocol (IGMP) Snooping, and port mirroring. With support for two queues per port based on 802.1p, the EdgeIron provides critical Quality of Service (QoS) features for next-generation applications such as Voice over IP and streaming audio or video.

Ease of Management

With an easy-to-use, industry-standard Command Line Interface (CLI), Telnet based interface, Web-based GUI, and RADIUS-based authentication, the EdgeIron is easy and secure to configure, deploy and maintain. Foundry's IronView Network Manager empowers network operators to seamlessly control software and configuration updates from a central station. IronView Network Manager dramatically simplifies network provisioning, diagnostics and resolution, thus reducing the total cost of ownership of installing and maintaining a world-class network infrastructure.

The EdgeIron 10-GbE switches are well-suited to enterprise wiring closet, data center, and backbone deployments. Enterprise customers wanting to future-proof their network with GoC and 10-GbE can deploy the EdgeIron 10-GbE switches in their network.
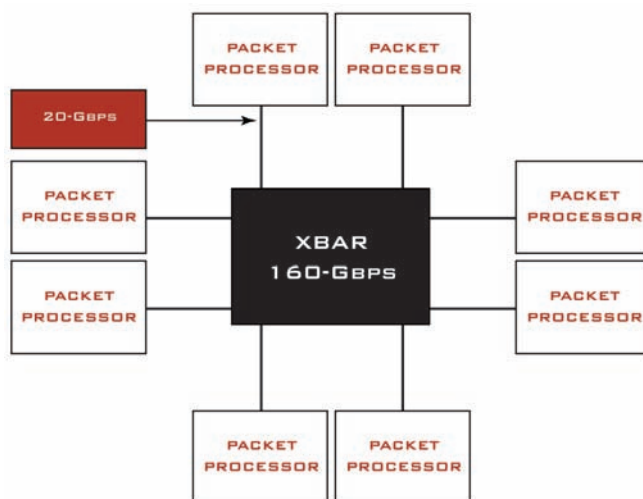
▶ *Figure 2: High Performance ASIC*

# Deploying the EdgeIron 10-GbE Switches

Enterprise Wiring Closet and Backbone

The EdgeIron 24GS and 48GS are ideal for high density GoC wiring closet, ensuring a future-proof wiring closet. Allowing network managers to stack 8 units of either an EdgeIron 24GS or an EdgeIron 48GS delivers high density GoC wiring closet. A stack of 8 EdgeIron 24GS delivers 192 GoC connections and a stack of 8 EdgeIron 48GS delivers 384 GoC connections, which delivers a high density and low cost GoC wiring closet solution.

With an optional 10-GbE module, each wiring closet that employs an EdgeIron 24GS or an EdgeIron 48GS can have a redundant connection back to a backbone that uses an EdgeIron 8X10G. The 10-GbE module of an EdgeIron 24GS or an EdgeIron 48GS supports a removable and hot-swappable XENPAK 10-GbE optics, which supports 10-GbE-SR, 10-GbE-LR, and 10-GbE-ER for 10-Gigabit Ethernet links up to 300m over Multimode Fiber (MMF), 10Km over Single Mode Fiber (SMF), and 40Km over Single Mode Fiber (SMF), respectively.

With a 10-GbE backbone, network managers can easily deploy high-speed application such as video training or high-bandwidth applications such as remote storage without impacting network performance or application throughput.
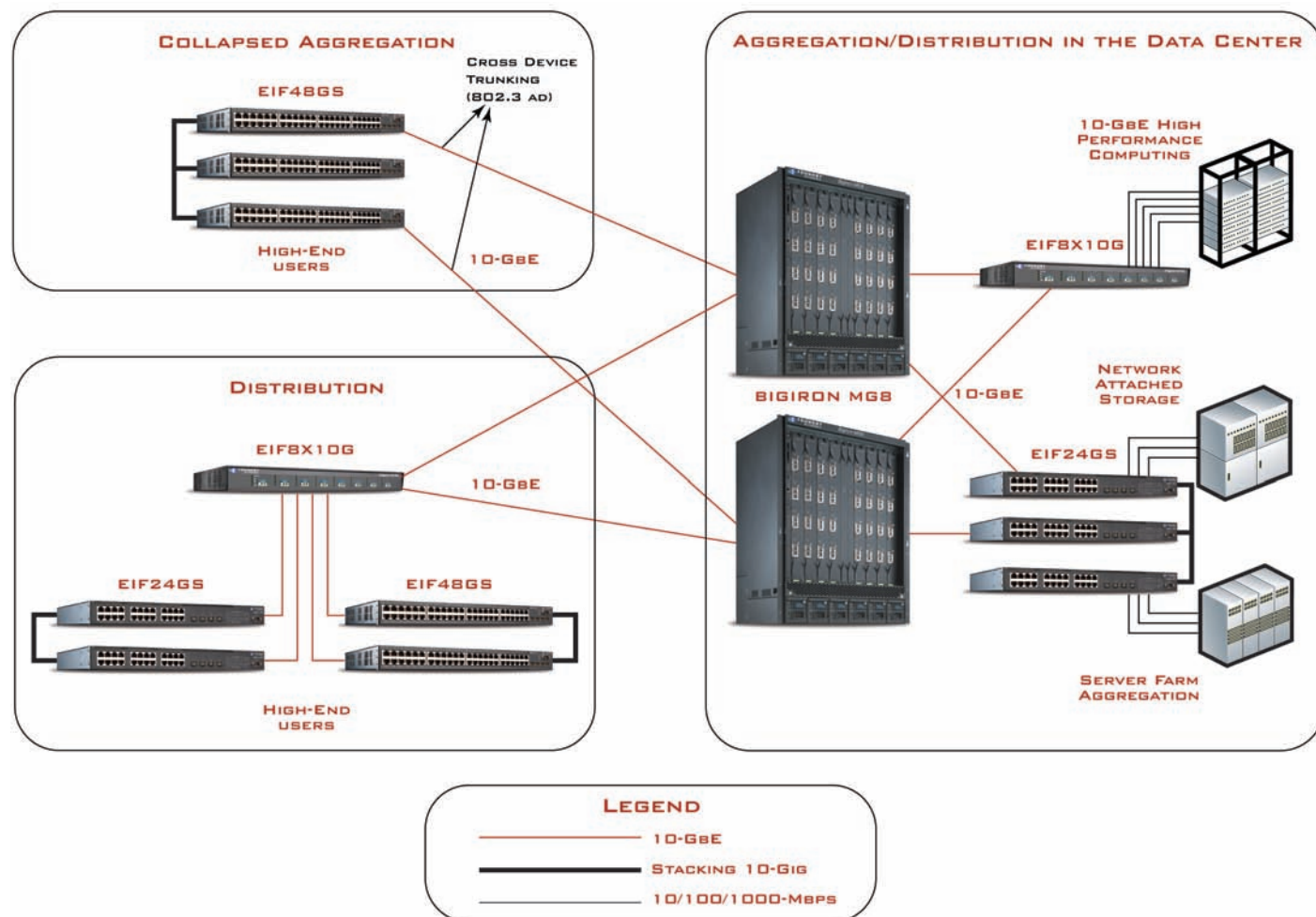
▶ *Figure 3: Enterprise Wiring Closet and Backbone Deployment*

Technical Specification (Common)

Unicast and Multicast Latency Performance

– Under 10μs for Unicast port to port Latency

– 650–700μs Multicast Join

– 6.5–7s Multicast Leave

Standards Compliance

– 802.1d Spanning Tree

– 802.1p Traffic Prioritization

– 802.1q VLAN Tagging

– 802.1w Rapid Spanning Tree (RSTP)★

– 802.3x Flow Control

– IEEE 802.3ad

– 802.3 10BaseT

– 802.3u 100BaseT

– 802.3ab 1000BaseT

– 802.3z 1000BaseSX/LX

– 802.3ae 10-GbE

– IEEE 802.1p CoS prioritization

– IEEE 802.1QVLAN

– IEEE 802.1x for Port Security

★ Software release 2.2.4.21 or later

Protocol Support

– UDP RFC 768

– TFTP RFC 783

– IP RFC 791

– ICMP RFC 792

– TCP RFC 793

– ARP RFC 826

– Telnet RFC 854

– BootP RFC 951

– Host Requirements RFC 1122

– Bootstrap Extensions RFC 1542

– HTTP RFC 2068

Switch Features

– Spanning Tree Protocol and 802.1w

– Flow Control (802.3x)

– Full and Half Duplex; Auto MDI/MDIX

– VLAN Support, Up to 256 VLANs

– GVRP for automatic VLAN learning

– Quality of Service (802.1p)

– Supports four levels of priority and weighted fair queuing

– Broadcast storm control

– Link Aggregation (802.3ad)

– Port Mirroring

– Foundry PVST

Management Features

– In–Band Management

– Telnet, Web-based HTTPS, or SNMP (v1 and v2c)

– Out–of–Band Management

– RS–232 DB–9 console port

– Software Loading

– Secure Shell v 2

RMON Support (RFC 1757)

– Groups 1,2,3, 9 (Statistics, History, Alarm, Event)

MIB Support

– MIB II (RFC 1213)

– Bridging MIB (RFC 1493)

– Ethernet–like MIB (RFC 1643)

– SNMP (RFC 1157)

– ARP (RFC826)

– SNMP (RFC1157)

– IGMP (RFC1112)

– Bridge MIB (RFC 1493)

– RADIUS (RFC2618)

Power Requirements

– AC Power: 100 – 240VAC, 50 – 60 Hz, 150 W max.

Environmental

– Temperature: IEC 68-2-14

  - 0 to 50 degrees C (Standard Operating)

  - –40 to 70 degree C (Non-operation)

– Humidity: 5% to 95% (Noncondensing)

– Vibration: IEC 68-2-36, IEC 68-2-6

– Shock: IEC 68-2-29

– Drop: IEC 68-2-32

MTBF

– 6 years

Electromagnetic and Safety

– CSA/NRTL (UL1950, CSA 22.2.950)

– TUV/GS (EN60950)

– EN55022 (1997) Class A.

– EN55024 (1998)

– EN61000-4-2/3/4/5/6/11

– EN61000-2-2 Class A.

– EN61000-2-3

– FCC Class A

– VCCI Class A

– CISPR Class A

Warranty

– 5-year Limited Lifetime Hardware Warranty

– 90-day software

Technical Specification

Properties	EdgeIron 24GS	EdgeIron 48GS	EdgeIron 8X10G
10/100/1000 Base-T Ports	24	48	0
1000 Base-X Ports	4	4	0
Mini-GBIC Slots	4	4	0
10-GbE Ports	1 (requires Optional 10-GbE Module)	1 (requires Optional 10-GbE Module)	8
Switching Performance (Gbps)	160	160	160
Forwarding Rate (Mpps)	80	116	120
Maximum Number of MAC Addresses	16,000	16,000	16,000
Physical Dimensions (HxWxD)	1.7" x 17.37" x 16.3" (4.3 x 44.1 x 41.4 cm)	1.7" x 17.37" x 16.3" (4.3 x 44.1 x 41.4 cm)	1.69 x 17.32 x 16.14" (4.3 x 44.0 x 41.0 cm)
Weight	9.5 lbs (4.36 Kg)	9.5 lbs (4.36 Kg)	9.5 lbs (4.36 Kg)
Power Consumption (Watt)	150W Max	150W Max	150W Max

Ordering Information

Part Number	Description
EIF24GS	24-port 10/100/1000 Base-T, 2-port stacking, and an optional slot for a 10-GbE module that supports XENPAK optics
EIF48GS	48-port 10/100/1000 Base-T, 2-port stacking, and an optional slot for a 10-GbE module that supports XENPAK optics
EIF8X10G	8-port 10-GbE that supports XFP optics

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