FastIron 4802
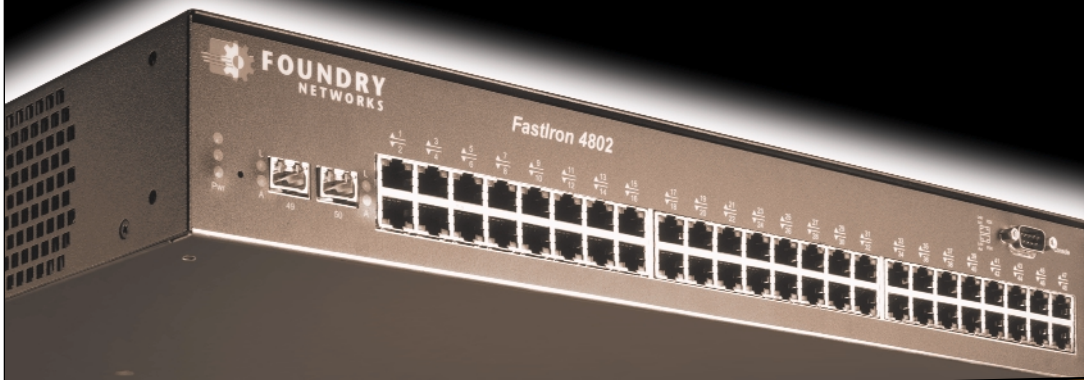
FastIron 4802 is the first in a new class of products that delivers industry leading port density, performance and features in a highly-compact 1.5U form factor, making it an ideal choice as a Layer 2/3 10/100 aggregation and access switch in Enterprise and Service Provider networks.

Based on Foundry's 3rd generation JetCore ASIC chipsets, the FastIron 4802 provides 48 10/100 ports and two optional Gigabit Ethernet uplink ports, as well as a comprehensive Layer 2/3 feature set including embedded support for Bandwidth Provisioning, rich QoS and IP Billing and Accounting. Hot-swappable redundant AC and DC power supply options add superior high availability and serviceability. Foundry is the first to bring this level of serviceability, availability, and comprehensive features to a compact high-density stackable switch.

Highlights

▸ *Based on Foundry's 3rd generation JetCore ASIC chipset - Advanced features at wire speed*

▸ *48 10/100 ports and 2 Gigabit Ethernet ports (mini-GBIC) consuming just 1.5 rack units - Industry's smallest footprint*

▸ *Integrated ASIC based wire-speed bandwidth management, network monitoring and traffic accounting*

▸ *Hot swappable, internal, redundant load sharing AC or DC power supplies - Industry's first in a stackable form factor*

▸ *Ships with full Layer 2 and base Layer 3 - Upgradeable to full Layer 3 including IP, IPX, AppleTalk, OSPF and BGP4*

Key Features and Benefits

HIGH PERFORMANCE 10/100 AGGREGATION

FastIron 4802 delivers the highest available switching performance in the industry's smallest 48-port 10/100 footprint, providing the richest feature set available in a fixed configuration switch product. Full ASIC based implementation of Layer 2/3 functions, Access Control Lists (ACLs) and Rate Limiting features makes the FastIron 4802 a perfect fit for deployment to the net-

work edge for Enterprise and Service Provider facilities. Consistent with all Foundry products, FastIron 4802 continues Foundry's price/performance leadership with a wire-speed, non-blocking architecture that provides a total of 34 Gbps of switching capacity and 10.1 million packets per second switching performance.

Superior Availability and Serviceability

FastIron 4802 is the first 1.5U high stackable switch to support modular redundancy and high availability features including dual, load sharing, internal AC and DC hot swappable power supplies, hot swappable mini-GBIC interfaces and a full complement of Layer 2/3 redundancy features.

The ability to provide chassis-class availability and serviceability in a stackable form makes the FastIron 4802 a perfect fit for Enterprise networks deploying mission-critical applications such as Voice over IP (VoIP), and Service Provider networks that require superior network availability to their customers. The FastIron 4802's optional SX or LX Gigabit interfaces, which can range up to 5 km, enable Enterprise campus and Service Provider networks to easily connect customers over a wide range of distances.

Comprehensive Layer 2 and Layer 3 Switching Features

FastIron 4802 provides an array of advanced Layer 2 features including extensive support for dynamic VLANs, and rich QoS features. Redundant, load-sharing, hot-swappable power supplies ensure continuous functioning for mission critical Enterprise networks in case of a power supply failure.

Network administrators can use dynamic VLANs to simplify network address administration and increase available bandwidth by logically assigning users to virtual communities of interest based on a port, protocol, subnet, or 802.1q priority. Support for IP, IPX, AppleTalk and multicast protocols including PIM-DM, PIM-SM and IGMP make the FastIron 4802 an ideal choice for Enterprise wiring closet deployments supporting legacy, current and future applications including VoIP and multimedia content.

Superior ASIC Based QoS

Preparing for the next generation of applications, including VoIP, requires a combination of available bandwidth to allow minimal latency, jitter and packet loss, while supporting traffic prioritization. By utilizing Foundry's JetCore ASIC, the FastIron 4802 can enforce existing traffic priority settings based on 802.1p, Type of Service (ToS) or DiffServ settings, as well as set traffic priority based on port or traffic type using ACLs.

Superior Scalability

Shipping with full Layer 2 and base Layer 3 switching capabilities, FastIron 4802 is software upgradeable to support full Layer 3 functionality. Foundry is raising the bar for scalability in high-density stackable switches with support for a BGP implementation that can store and process the full Internet routing table. Integrated granular bandwidth provisioning empowers Service Providers to deploy the FastIron 4802 as an access device for on-demand bandwidth provisioning, turning bandwidth into a profitable revenue stream.

Wire-Speed Granular Bandwidth Management

Using the FastIron 4802's integrated ASIC-based granular Rate Limiting and traffic accounting feature set, Service Providers can guarantee Service Level Agreements (SLAs) to their customers and turn bandwidth into a profitable revenue stream. The FastIron 4802 delivers the industry's first wire speed, ASIC based Rate Limiting functionality in a stackable form factor, which is achieved through the use of Foundry's next generation JetCore ASIC. Administrators can allocate up to 128 predefined bandwidth profiles on specific ports or applications. Foundry's IronClad Rate Limiting enables administrators to control the amount of bandwidth, from 1 Mbps to 1 Gbps in 256 Kbps increments. Service Providers can use the FastIron 4802 to provide 10/100 Ethernet access to their customers while metering and measuring the bandwidth to enforce SLAs.

Extensive Network Monitoring, Accounting, and Billing

In a technology partnership with Hewlett Packard, Foundry's has integrated HP's patented Extended RMON Sampling Technology within the JetCore ASIC. Incorporating this technology within the JetCore ASIC allows the FastIron 4802 to deliver rich traffic statistics at network speeds up to line rate, without impacting the performance of the switch. These statistics include:

- *Port-based byte accounting*
- *MAC-based accounting and traffic matrix based on MAC addresses*
- *Inter-VLAN accounting*
- *IP subnets, IP addresses, and IP traffic matrix*
- *ICMP-based, TCP-based and/or UDP-based level accounting*
- *AS-based accounting and AS path analysis*

IronShield Security

Foundry Networks products offer hardware-based wire-speed Access Control Lists (ACLs), which enable network administrators to add granular bandwidth control and security by applying permit or deny filters on traffic based on source and destination IP address, IP protocol information, or TCP or UDP protocol information. You can configure the following types of ACLs:

- *Standard - Permits or denies packets based on source IP address.*

- *Extended - Permits or denies packets based on source and desti-nation IP address and based on IP protocol information. These extensions include:*
  - *Source/destination host names*
  - *IP subnet and range*
  - *Source/destination TCP or UDP port/socket*
  - *Well-known port numbers (0 -1023)*

For easy migration, it is possible to cut/copy/paste from Cisco ACLs into Foundry FastIron 4802 ACLs. In addition to ACLs, the FastIron 4802 adds security features that protect the network against Denial of Service (DoS) conditions such as TCP SYN or Smurf attacks. These features help by eliminating unnecessary network downtime caused by malicious hacker attacks.

Easy-To-Use, Simple Network Management

The FastIron 4802 delivers ease of use and lowers the total cost of ownership by supporting Foundry's familiar Command Line Interface (CLI), which is common across the entire Foundry product lines, to minimize the amount of training required. The Web-based management interface is standard on all Foundry products and allows easy point-and-click configuration.

Using Foundry's optional IronView network management system, network administrators can keep track of Foundry inventory connected to their network, manage configuration changes, and provide automated backups, as well as and configure VLANs, ACLs, and Image updates - all remotely. FastIron 4802 also supports management using third-party SNMP-based Network Management Systems.

FastIron 4802 Deployment Applications

FastIron 4802 for Enterprise Wiring Closets

FastIron 4802 is an ideal choice for Enterprise wiring closets because of its port density, price, superior serviceability, high availability, security and advanced Layer 2/3 feature sets. FastIron 4802 provides an array of advanced Layer 2 features including extensive support for dynamic VLANs, and rich QoS features based on 802.1p, Type of Service (ToS), and DiffServ. Redundant, load-sharing, hot-swappable power supplies ensure continuous functioning for mission critical Enterprise networks in case of a power supply failure.

Superior ASIC Based QoS: Preparing for the next generation of applications, including VoIP, requires a combination of available bandwidth to allow minimal latency, jitter and packet loss, while supporting traffic prioritization. By utilizing Foundry's JetCore ASIC, the FastIron 4802 can enforce existing traffic priority set-tings based on 802.1p, Type of Service (ToS) or DiffServ settings, as well as set traffic priority based on port or traffic type using ACLs.
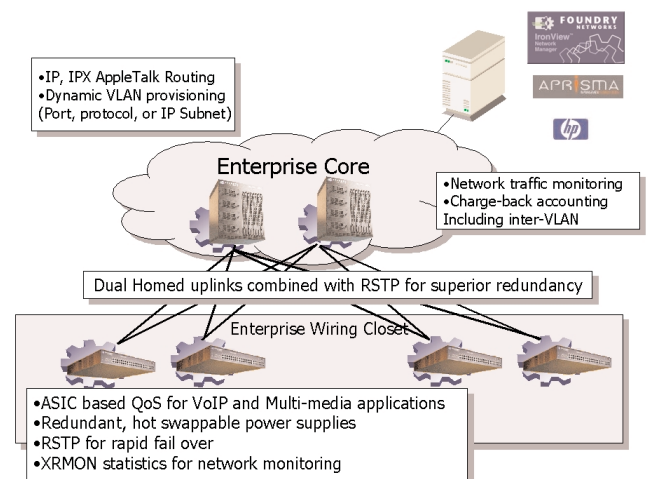
Superior Investment Protection: While the base configuration for FastIron 4802 provides full Layer 2 with base Layer 3 features, Enterprise customers can protect their investment with a simple software upgrade to get full Layer 3 functionality including support for OSPF and a comprehensive multicast feature set. This provides Enterprise customers with a compact stackable Layer 2/3 switch that can run next-generation applications such as VoIP and streaming media.

Rapid Spanning Tree Protocol: Based on the industry standard 802.1w for fast spanning tree convergence, Foundry's Rapid Spanning Tree Protocol (RSTP) capability delivers sub-second convergence, dramatically reducing downtime and packet loss in high-availability networks. Foundry's RSTP provides seamless Layer 2 failover by instantly switching over to a secondary link if the primary link fails.

IronShield Security: The FastIron product family provides extensive security features including Secure Shell and Secure Copy to guard the administration and management interface. Foundry's ACL implementation enforces access policies while providing high performance switching and routing. Foundry's ACL syntax compatibility with other major vendors enables Enterprises and Service Providers to maintain a common set of security policies that can be applied across vendor platforms.

Comprehensive Network Management: All FastIron products come with comprehensive network management options that include a Command Line Interface, Simple Network Management Protocol (SNMP) based device management, and a Web-based Graphical User Interface. Using Foundry's IronView Network Manager software, all Foundry products can be configured and managed from a central location.

Figure 1 - Enterprise Solution

- IP, IPX AppleTalk Routing
- Dynamic VLAN provisioning (Port, protocol, or IP Subnet)

Enterprise Core

- Network traffic monitoring
- Charge-back accounting Including inter-VLAN

Dual Homed uplinks combined with RSTP for superior redundancy

Enterprise Wiring Closet

- ASIC based QoS for VoIP and Multi-media applications
- Redundant, hot swappable power supplies
- RSTP for rapid fail over
- XRMON statistics for network monitoring

Figure 2 contents:
- Traffic accounting including MAC based
- Redundant, hot swappable power supplies
- Hot swappable mini-GBIC support

Metro Core

Service Provider's PoP

FastIron 4802

Service Provider's PoP

ACL Based Rate limiting (differentiated service for application provisioning)

Single 100 Mbps link with QoS and Rate Limiting

Customer 1 (1 Mbps)

Customer 2 (40 Mbps)

Customer 3
10 Mbps (VoIP)
50 Mbps (HTTP)
40 Mbps (Other)

Port Based Rate limiting

Port plus Priority Based Rate Limiting

FIGURE 2 - METRO SOLUTION

Figure 3 contents:
- Existing Backbone
- Internet Router
- BGP Routes
- Maximize revenue per Rack
- Robust routing support (IP, OSPF, BGP4)
- Extensive accounting including AS based Accounting
- Redundant, hot swappable power supplies
- Existing Backbone
- Internet Router

Customer Cage / Customer Cage / Customer Cage / Customer Cage
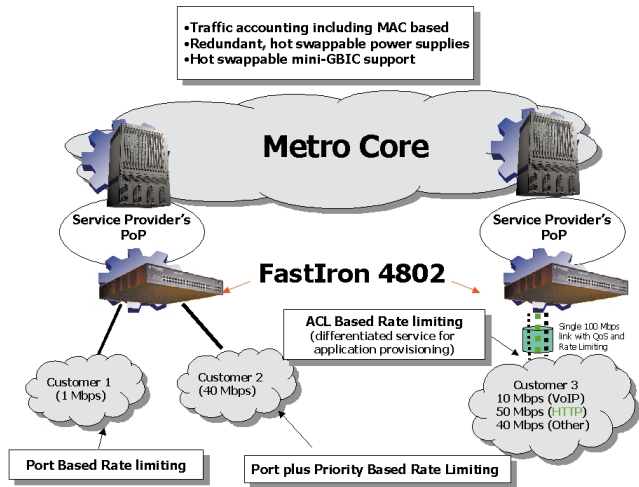
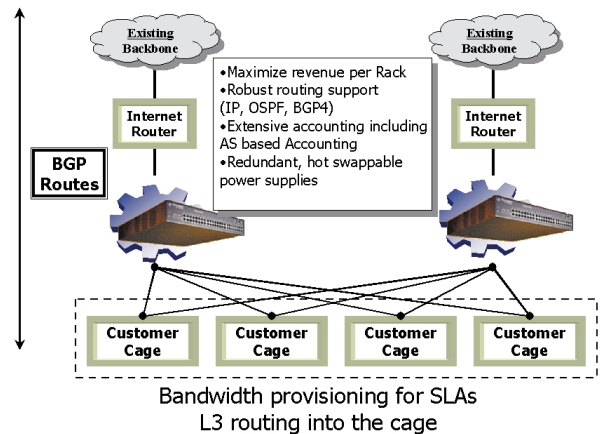Bandwidth provisioning for SLAs
L3 routing into the cage

FIGURE 3 - COLLOCATION SOLUTION

Support for Multiple Protocols: Foundry's FastIron product family integrates ASIC based support for multiple protocols, including IP, IPX, OSPF and AppleTalk, ensuring smooth interoperability among diverse clients.

METROPOLITAN AREA NETWORK ACCESS DEVICE

With its granular bandwidth provisioning, port density, availability, scalability and serviceability, FastIron 4802 provides Metro Service Providers with a quick return on investment. FastIron 4802 is the first in its class to deliver granular bandwidth provisioning features, including adaptive Rate Limiting, that allow Metro Service Providers to provision bandwidth on-demand from 1 Mbps to 1 Gbps, in increments as little as 256 Kbps. Foundry's adaptive Rate Limiting allows Service Providers to set normal and burst limits for bandwidth and apply the bandwidth policies to a physical port, a group of ports, or to Layer 3/4 traffic flows or sessions identified by ACLs. This provides the flexibility and control needed by Metro Service Providers to identify customer traffic and apply the associated bandwidth policies. With mini-GBIC based interfaces, Metro Service Providers get the flexibility to use Gigabit SX or LX interfaces to connect Metro Points of Presence (PoP) to customer premises.

CO-LOCATION NETWORK ACCESS DEVICE

FastIron 4802 is an ideal choice for Co-Location Service Providers to provide 10/100 Mbps access to the customer racks and provide SLAs to apply bandwidth policies. Its compact form factor, consuming just 1.5 rack units for 48 10/100 and 2 Gigabit ports, enables Co-Location Service Providers to maximize the revenue per rack unit in data centers where space is at a premium.

Rich Feature Set

LAYER 2 FEATURES

▸ *802.3ad Trunk Groups*

▸ *802.1d Spanning Tree Support*

  – *Enhanced IronSpan support including Fast Port Span, Fast Uplink Span, Single-instance Span*

▸ *Rapid Spanning Tree support*

  – *Allows for sub-second convergence*

▸ *802.1p queue mapping for QoS*

  – *Weighted Fair Queuing (WFQ)*
  – *Strict Priority (SP)*

▸ *VLAN Support*

  – *802.1q with Tagging*
  – *Subnet-based VLANs*
  – *Dynamic VLANs based on Port, Protocol or Subnet*

▸ *MAC Filtering and Address-lock Filters to enhance network security*

▸ *Dynamic Host Configuration Protocol (DHCP) Assist*

LAYER 3 SWITCHING FEATURES

▸ *Protocol-based VLANs*

  – *AppleTalk, IP, IPX, DECnet, NetBIOS, or other protocol types.*

▸ *IP / IPX Router Acceleration*

LAYER 3 ROUTING FEATURES

▸ *IP / IPX Multi-netting*

  – *Support for multiple IP or IPX addresses per interface*

▸ *IP Routing Support*

  – *RIP, RIP2, OSPF and BGP4*

- ▶ *Policy Based Routing (PBR)*
    - – *Use ACLs and route maps to selectively modify and route IP packets based on their source IP address.*
- ▶ *IP Access and QoS Filters*
- ▶ *UDP Helper*
- ▶ *Full multiprotocol routing support*
    - – *IP, IPX, AppleTalk*
- ▶ *Multicast support*
    - – *PIM-SM, PIM-DM, DVMRP, PIM Snooping*
- ▶ *Policy-based Traffic Classification on:*
    - – *ToS (Type of Service)*
    - – *IP precedence mappings*
    - – *Layer 2/3/4 defined traffic flows*
- ▶ *VRRP and VRRPE support*
- ▶ *FSRP*

GENERAL FEATURES

- ▶ *IronClad Rate Limiting, based on next- generation JetCore ASIC*
    - – *Provision bandwidth on-demand from 1 Mbps to 1 Gbps in increments as little as 256 Kbps*
- ▶ *Hot-swappable, Load-sharing AC / DC Power Supply Options*
    - – *Support for AC & DC power supplied simultaneously, allowing power source redundancy*
- ▶ *Extensive Management Options:*
    - – *Industry Standard Command Line Interface (CLI)*
    - – *IronView Network Management (Stand alone and HP OpenView GUI)*
    - – *Telnet*
    - – *Web Browser-based GUI*
- ▶ *Robust security and wire-speed Access Control Lists (ACLs) and Extended ACLs for:*
    - – *Denial of Service (DoS) protection from*
- ▶ *SYN Attacks*
- ▶ *Smurf Attacks*
    - – *RADIUS, TACACS/TACACS+ Authentication*
    - – *Multiple SysLogD Server Logging*
- ▶ *Wire speed Rate Limiting*
    - – *Fixed Rate Limiting*

Technical Specifications

PERFORMANCE:
Up to 10,100,000 packets per second

SWITCHING CAPACITY:
Up to 34 Gbps

STANDARDS COMPLIANCE:
802.3, 10BaseT
802.3u 100BaseTX
802.3z 1000BaseSX
802.3z 1000BaseLX
802.3x Flow Control
802.1p/q VLAN Tagging
802.1d Bridging
802.3 Ethernet Like MIB
Repeater MIB
Ethernet interface MIB
SNMPV1,V2c
SNMP MIB II

PROTOCOL SUPPORT:
BGP4 (RFC 1771, RFC 1745, and RFC 1997)
IP (RFC 1812)
RIP (RFC 1058)
RIP V2 (RFC 1723)
OSPF (Interoperability with RFC 1583 and RFC 2328 V2)
OSPF Traps (RFC1850)
IPX/RIP/SAP
AppleTalk
IGMP (RFC 1112)
DVMRP V3
VRRP (RFC 2338)
Foundry Standby Router Protocol (FSRP)
DNS Client
PIM Dense and Sparse Mode (RFC 2362)
ICMP Router Discovery Protocol (RFC 1256)
BGP4 (RFC 1771)
BGP4/IDRP for IP - OSPF Interactions (RFC 1754)
BGP3 MIB (RFC 1269)
IP forwarding table MIB (RFC 1354)
TFTP (RFC 783)
BootP (RFC 1542)
BootP (RFC 951)
Telnet (RFC 854)
RMON Groups 1,2,3,9 (RFC 1757)
HTTP (RFC 2068)
BootP/DHCP Relay (RFC 2131)

NETWORK MANAGEMENT:
Integrated Command Line Interface
Telnet

SNMP

RMON

HP OpenView for Sun Solaris, HP-UX, IBM's AIX, and
Windows NT

Standalone Windows NT

Embedded HTTP (supports Netscape or Internet Explorer
browsers)

ELEMENT SECURITY OPTIONS:

AAA

Radius

Secure Shell (SSH v1)

TACACS/TACACS+

Username/Password (Challenge and Response)

Bi-level Access Mode (Standard and EXEC Level)

Repellant for TCP SYN or Denial of Service or Smurf Attacks

PHYSICAL DIMENSIONS:

2.75"h x 17.5"w x 18.64"d (7.0 x 44.5 x 47.3 cm)

Weight: 23.5 lbs fully loaded (10.55 kgs)

POWER REQUIREMENTS:

100VAC @ 3.5A, 240 VAC @ 1.5A, 50-60Hz per auto-sensing,
auto-switching power supply

Specifications subject to change without notice

ENVIRONMENTAL:

Operating Temperature:	32-104 deg-F (0-40 deg-C)
Relative Humidity:	5-90%, non-condensing
Maximum BTUs:	340* BTU/Hr (100 W)
Storage Temperature:	-25 - 70deg-C (-13 to 158deg-F)
Storage Humidity:	95% maximum, non-condensing
Storage Altitude:	10,000 ft(3,000 m) maximum

SAFETY AGENCY APPROVALS:

EN 60950/IEC 950

UL 1950

CSA 950

ELECTROMAGNETIC EMISSION CERTIFICATION

FCC Class A

EN 55022/CISPR-22 Class A; VCCI Class A

IMMUNITY:

Generic: EN 50082-1

WARRANTY:

1-year hardware

90-day software

Mounting Options