



BROCADE FASTIRON SX SERIES SWITCHES FREQUENTLY ASKED QUESTIONS

Introduction

The Brocade® FastIron® SX Series of switches provides an industry-leading price/performance value for campus aggregation and core switching, delivering a scalable, secure, low-latency, and fault-tolerant infrastructure for 1 Gigabit Ethernet (GbE) and 10 GbE enterprise deployments. The FastIron SX series provides a high-performance, non-blocking architecture and a high-availability design with redundant and hot-pluggable management modules, fans, load-sharing switch fabrics, and power supplies.

- For product information, visit www.brocade.com/products/all/switches/product-details/fastiron-sx-series/index.page.

General Questions and Answers

Q What environment is the Brocade FastIron SX Series primarily designed for?

A The FastIron SX Series is primarily designed for the aggregation layer and the campus core of typical enterprise Ethernet network architectures. The campus aggregation switches (FastIron SX 800 or FastIron SX 1600) provide Ethernet connectivity to uplink connections from the access switches, such as the Brocade FCX Series or the Brocade ICX™ 6610, deployed in wiring closets. The campus aggregation switches are uplinked to the campus core where the FastIron SX 1600 switches are deployed, creating the campus network.

The FastIron SX Series switches are built for high performance and maximum system availability, and feature redundant management modules with hitless failover, redundant fans and power supplies, redundant load-sharing switch fabrics, and hot-swappable line modules.

Some organizations prefer chassis-based solutions for wiring closets to support their Voice over IP (VoIP) environments. The FastIron SX switches support Power over Ethernet/Power over Ethernet Plus (PoE/PoE+) modules with redundant, load-sharing PoE power supplies, making them also an ideal choice as a wiring closet solution. In this way, the FastIron SX Series provides a single, cost-effective platform for use as access, aggregation, and core chassis, simplifying spares and support.

Q What are the key highlights of the FastIron SX Series?

- A The FastIron SX Series is an industry-leading price/performance value for campus aggregation and core switching, providing a scalable, secure, low-latency, and fault-tolerant infrastructure for cost-effective deployment of VoIP, wireless, and high-capacity data services throughout the enterprise. Additional product highlights include:
- High-performance non-blocking architecture with 8- and 16-slot chassis providing up to 132 10 GbE or 384 wire-speed 1 GbE ports in a single chassis supporting IPv4/IPv6-capable Layer2/3 switching and routing
 - High-availability design with redundant and hot-pluggable management modules (with hitless failover), switch fabrics, power supplies, fans, stateful OSPF redundancy, graceful BGP and OSFP restarts, and hitless (in-service) software upgrades
 - Embedded sFlow per port to support scalable hardware-based traffic monitoring across all switch ports without compromising performance

Q What are the different modular slots on the FastIron SX 800 and FastIron SX 1600 switches?

- A The FastIron SX 1600 chassis has 16 interface slots, two management slots, two fabric slots, and eight power supply slots. The FastIron SX 800 chassis has eight interface slots for Ethernet interface modules, two management slots, two fabric slots, and four power supply slots. All modular components, except for fan assemblies, are common between the two chassis.

Q How many 1 GbE and 10 GbE ports can be supported?

- A Each FastIron SX 1600 chassis can support 384 1 GbE PoE ports, 324 PoE+ ports, 384 100/1000 Mbps Small Form-Factor Pluggable (SFP) ports, or 132 10 GbE ports. Each FastIron SX 800 chassis can support up to 192 1 GbE PoE ports, 162 PoE+ ports, 192 100/1000 Mbps SFP ports, or 68 10 GbE ports.

Q What are the slot bandwidth and switching capacity of the FastIron SX Series?

- A For the FastIron SX 800 chassis, per-slot bandwidth is 60 Gbps; backplane switching capacity is 600 Gbps; data switching capacity is 464 Gbps; and packet-forwarding capacity is 348 MPPS. For the FastIron SX 1600 chassis, per-slot bandwidth is 60 Gbps; backplane switching capacity is 1080 Gbps; data switching capacity is 848 Gbps; and packet-forwarding capacity is 636 MPPS.

Q Does the FastIron SX Series have the option for a redundant system power supply?

- A Yes. The FastIron SX Series enables an optional redundant system power supply to be installed internally. These power supplies provide power to the management module, all non-PoE interface modules, and all ports on PoE modules that do not require PoE power or to which no power-consuming devices are attached. The FastIron SX 800 requires one system power supply, and a second power supply provides (1+1) redundancy. The FastIron SX 1600 requires two system power supplies and can be installed with up to four system power supplies for (N+1) redundancy.

Q What are the functions of the PoE power supplies?

- A The PoE power supplies provide power to the PoE circuitry on the I/O cards and ultimately to the PoE/PoE+ GbE ports. FastIron SX 800 supports up to two PoE power

supplies for 1+1 redundancy. FastIron SX 1600 supports up to four PoE power supplies for N+1 redundancy. The number of PoE/PoE+ power-consuming devices that one PoE power supply can support depends on the power consumption (class) of the connected devices. If there are no PoE power supplies installed, the PoE/PoE+ capable interface modules will operate as standard 10/100/100 Mbps Ethernet modules.

Q Does the FastIron SX Series offer AC and DC power?

A Yes. AC and DC power supply models are available for system power and PoE/PoE+. They are auto-sensing and auto-switching. The 2500 W PoE power supply is available only as an AC power supply.

Q Are the power supplies hot-swappable?

A Yes. The system and PoE power supplies are hot-swappable and can be removed and replaced without powering down the system.

Q Is there load sharing between the system and the PoE power supplies?

A No. Power consumption between PoE and system power supplies is not shared, meaning loss of a system power supply does not impact a PoE power supply, and vice versa. The system power supplies will load share between the other installed system power supplies, and the PoE power supplies will load share between the other installed PoE power supplies.

Management, Fabric, and Interface Modules

Q Can you share the modules between the FastIron SX 800 and FastIron SX 1600?

A Yes. Interface modules, management modules, and fabric modules are common and can be shared between FastIron SX 800 and FastIron SX 1600 chassis.

Q What does “third-generation interface modules” mean?

A FastIron SX third-generation interface modules were introduced in November 2011. Unlike earlier modules, they have the unique capability to run with either IPv4 or IPv6 management modules and operate with either IPv4 or IPv6 interface modules in the same chassis. These modules also have the hardware capability to support MACsec Layer 2 security and Energy Efficient Ethernet (EEE) standards (RJ-45 module only). These modules consist of the SX FI-8XG (eight 10 GbE SFP+ ports), SX FI-2XG (two 10 GbE SFP+ ports), SX FI-24HF (24 1 GbE SFP ports), and SX FI-24GPP (24 1 GbE RJ-45 PoE+ ports). The SX-FI48GPP is also a third-generation module, but does not support MACsec or EEE.

Q Can the IPv4 and IPv6-capable modules of the FastIron SX Series be mixed in a chassis?

A No. IPv4-only first-generation and IPv6-capable second-generation modules or management modules cannot coexist in the same chassis. IPv4-only interface modules can be used only in a chassis with IPv4-only management modules. Likewise, IPv6-capable interface modules can be used only in a chassis with IPv6-capable management modules. The 48-port 10/100/1000 Mbps interface module introduced in mid 2010 and the third-generation interface modules introduced in November 2011 operate with either IPv4-only or IPv6-capable modules.

Q What are the functions of the management module?

A Each FastIron SX chassis requires at least one management module to control the FastIron SX hardware components and the separate switch fabric modules, and to run Brocade IronWare software and the networking protocols. There are two types of management modules for the FastIron SX Series:

- With no ports
- With two 10 GbE XFP ports—either an IPv4-only or IPv6-capable version

Q Do the management modules have switching fabric designed on board?

A No. There is no fabric on board the management modules for the FastIron SX Series. A separate fabric module is required in each FastIron SX chassis.

Q Can you deploy a second management module for redundancy?

A Yes. The FastIron SX chassis has two management module slots to accommodate up to two management modules that can be operated in active/standby redundancy mode. Both modules need to be of the same port configuration type. IPv6 and IPv4-only modules cannot be mixed in the same FastIron SX chassis. IronWare release 7.2 and later also provide hitless failover capability, which automatically switches to the standby management module in the event of a management module failure, without any interruption to packet forwarding.

Q Do I need a fabric module in the FastIron SX chassis? What does this module do?

A Yes, a fabric module is required in the FastIron SX chassis. It is needed to switch data packets between interface modules installed in the FastIron SX chassis. The fabric modules consist of multi-lane cross-bar switch fabrics to provide non-head-of-line-blocking switching.

Q Two slots are available for fabric modules. What's the advantage of using two fabric modules?

A The fabric module can be operated in a standalone or redundant fashion. Using two fabric modules provides fabric redundancy and full non-blocking switching performance in the FastIron SX 1600. If one of the fabric modules fails, there is still connectivity between the interface modules and the management modules, and between the management modules themselves. The FastIron SX 800 provides non-blocking performance with one switch fabric; the second fabric is used for resiliency.

Q How does the FastIron SX Series support non-stop networking?

A First, the Brocade FastIron SX features Multi-Chassis Trunking (MCT), which enables two FastIron SX chassis to appear as a single logical switch at Layer 2 in active/active mode and delivers uninterrupted traffic flow in the event of node failover. Second, the FastIron SX Series can support two separate management modules per chassis. These modules operate in a redundant fashion (both must be the same type). The hitless failover capability in IronWare 7.2 and later enables the redundant management module to take over the operation when the primary module fails, without a system reboot. Third, two separate fabric modules can operate in a redundant fashion. Furthermore, up to two system (AC/DC) and two PoE/PoE+ (AC/DC) power supplies can be used to support the power requirements of the system. Additionally, the FastIron SX supports protocol

resiliency with VSRP for Layer 2, VRRP, and VRRP-E for Layer 3 operating in an active/standby mode.

Q What interface modules are available for the FastIron SX Series?

A The following Ethernet interface modules are available for the FastIron SX chassis for connecting endpoint devices:

- 8-port 10 GbE SFP+ interface module
- 2-port 10 GbE SFP+ interface module
- 24-port 100/1000 Mbps fiber SFP interface module
- 24-port 10/100/1000 Mbps PoE+ interface module
- 48-port 10/100/1000 Mbps PoE+ interface module
- 24-port 10/100/1000 Mbps non-PoE interface module
- 24-port 10/100/1000 Mbps PoE interface module
- 2-port 10 GbE XFP interface module

Q Do the 10 GbE modules also support 1 GbE?

A No. The 10 GbE modules are not dual speed and do not support 1 GbE optics.

Q What is the switching capacity between interface modules?

A The maximum switching capacity between any two interface modules is 60 Gbps (the switching capacity and design are identical for FastIron SX 800 and FastIron SX 1600 chassis). The 60 Gbps capacity between interface modules ensures non-blocking, line-rate performance for a fully loaded interface module independent of traffic distribution through the switch.

Q What is the maximum port density of the FastIron SX 800 and FastIron SX 1600 switches?

A The table below provides the port capacity of the FastIron SX Series switches:

	Port Type	SX 800		SX 1600	
		Per Switch	Per Rack	Per Switch	Per Rack
No PoE	100 Base FX (SFP)	192	1344	384	1152
	1000 Base X (SFP)	192	1344	384	1152
	10/100/1000 RJ-45	192	1344	384	1152
	10 GbE BaseX (SFP+)	64	448	128	384
	10 GbE BaseX (XFP)	20	140	36	108
PoE	IEEE 802.3af Class-3 10/100/1000 Mbps	192	1344	384	1152
	IEEE 802.3af Class-3 10/100/1000 Mbps With N+1 Power Supply Redundancy	166	1162	384	1152
PoE+	IEEE 802.3at 10/100/1000 Mbps	162	1134	324	972
	IEEE 802.3at 10/100/1000 Mbps With N+1 Power Supply Redundancy	81	567	244	732

Q What are the key highlights of the new 48-port GbE switch module?

A The FastIron SX Series 48-port GbE switch module with RJ-45 interfaces provides industry-leading price/performance for an enterprise-class chassis switch. Key functionality of this module includes a full suite of security features, PoE/PoE+ with superior power efficiency, and compatibility with the IPv4 and IPv6 FastIron SX chassis.

Q Is PoE+ standards-based on the 48-port GbE module?

A Yes. Power over Ethernet Plus, or PoE+, is being driven by the IEEE 802.11at standard, which is currently at draft 4. The FastIron SX module is draft 4-compliant and will be upgradable to support the final 802.11at specification. PoE+ can deliver up to 30 watts of power per port.

Q Is PoE+ backward-compatible with PoE?

A Yes. 802.11at PoE+ is fully backward-compatible with 802.11af PoE. Leveraging LLDP-MED, the module auto-negotiates 802.11af Class 1, Class 2, and Class 3 power.

Q Are the interface, management, and fabric modules hot-swappable?

A Yes. The IPv6-capable management module, switch fabric, and interface modules are hot-swappable, which means a module can be removed and replaced while the chassis is powered on and running.

Q Is the fan module hot-swappable?

A Yes. The fan unit can also be hot-swapped while the FastIron SX unit is running. It is recommended that the fan be replaced soon after it is removed.

Q How is the FastIron SX Series managed?

A The FastIron SX Series supports a wide range of network management standards, has an industry-standard Command Line Interface (CLI), and can be managed—along with the rest of the Brocade Ethernet network—by Brocade Network Advisor.

Q What is new in the IronWare 7.3 software release for the FastIron SX Series?

A IronWare 7.3 provides the following key functionalities to support non-stop networking and protocol enhancements:

- New third-generation interface modules
- New OSPFv3 IPsec Authentication
- 802.1X Guest VLAN per port
- SNTP MD5 authentication
- SSHv2 client support and SSHv2 broadcast support
- VRRP/VRRP-E IPv6

Q What are the different FastIron SX software upgrade options?

A The base management modules support full Layer 2 switching and basic Layer 3 routing with static routes and RIP advertisement. The PREM software for the IPv4-only systems and 6-PREM software for IPv6-capable systems enable full IPv4 unicast and multicast routing functionality. The 6-PREM6 software for the IPv6-capable systems includes all of the IPv4 routing features of the 6-PREM software with the addition of full IPv6 routing functionality. Additionally, the 6-PREM and 6-PREM6 include GRE tunneling functionality.

Services and Support

Q What technical support services come standard with the purchase of the product?

A To further improve service levels and operational efficiency, Brocade includes one year of free technical support on the FastIron SX 800 and FastIron SX 1600, providing access to software fixes and direct access to the Brocade Technical Assistance Center and resources on a 24×7 basis. The one-year free support term begins when the chassis ships from the factory. While product registration is not required, it is recommended to ensure that customers receive timely product support, product update information, and other benefits.

Q What is the product warranty coverage for the FastIron SX Series?

A FastIron SX Series switches are covered by the Brocade Assurance® Limited Lifetime Warranty. For details, visit www.brocade.com/warranty.

Learn More

Q How do I find out more about the Brocade FastIron SX Series?

A Go to www.brocade.com and navigate to the Brocade FastIron SX Series product page for the latest data sheets, white papers, and solutions briefs, or contact your Brocade sales representative or Brocade OEM Partner for more details.

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