

# Brocade ICX 6430 and 6450 Switches Frequently Asked Questions

## Introduction

Brocade® ICX® 6430 and 6450 Switches provide enterprise-class stackable LAN switching at an entry-level price, allowing organizations to buy what they need now and easily scale as demand grows and new technologies emerge. Designed for small- to medium-size enterprises, branch offices, and distributed campuses, these intelligent, scalable edge switches deliver enterprise-class functionality at an affordable price—without compromising performance and reliability.

The Brocade ICX 6430 and 6450 are available in 12-, 24-, and 48-port 10/100/1000 Mbps models and four 1 Gigabit Ethernet (GbE) or 10 GbE dual-purpose uplink/stacking ports—with or without IEEE 802.3af and 802.3at Power over Ethernet/Power over Ethernet Plus (PoE/PoE+)—to support enterprise edge networking, wireless mobility, and IP communications.

The Brocade ICX 6430-C and 6450-C Compact Switches provide enterprise-class Layer 2 LAN switching and Layer 3 routing to meet the growing demands of campus networks. Designed in a small form factor with fanless operation for classroom, retail, factory, small office, and workgroup environments, the Brocade ICX 6430-C and 6450-C switches deliver enterprise-class functionality at an affordable price. They are available in 12-port 10/100/1000 Mbps models with IEEE 802.3af PoE and 802.3at PoE+ on four ports and four additional 1 GbE ports for uplinks.

For more information, visit: [www.brocade.com/icx6400](http://www.brocade.com/icx6400).

## General Questions and Answers

### Q. How many models are available in the Brocade ICX 6430 and 6450 family?

A. Ten different Brocade ICX 6430 and 6450 models are available:

Part Number	Description
ICX6430-C12	12-port 1 GbE compact switch (4 PoE+ capable), 2x100/1 GbE SFP and 2x100/1 GbE copper uplinks, fanless
ICX6430-24	24-port 1 GbE switch, 4x1 GbE SFP uplink/stacking ports, fanless
ICX6430-24P	24-port 1 GbE switch PoE+ 390 W, 4x1 GbE SFP uplink/stacking ports
ICX6430-48	48-port 1 GbE switch, 4x1 GbE SFP uplink/stacking ports
ICX6430-48P	48-port 1 GbE switch PoE+ 390 W, 4x1 GbE SFP uplink/stacking ports
ICX6450-C12-PD	12-port 1 GbE compact switch (4 PoE+ capable), 2x100/1 GbE SFP and 2x100/1 GbE copper uplinks, fanless, PD, Layer 3 static
ICX6450-24	24-port 1 GbE switch, 2x1 GbE SFP+ and 2x10 GbE SFP+ uplink/stacking ports (1 GbE SFP+ upgradable to 10 GbE)
ICX6450-24P	24-port 1 GbE switch PoE+ 390 W, 2x1 GbE SFP+ and 2x10 GbE SFP+ uplink/stacking ports (1 GbE SFP+ upgradable to 10 GbE)
ICX6450-48	48-port 1 GbE switch, 2x1 GbE SFP+ and 2x10 GbE SFP+ uplink/stacking ports (1 GbE SFP+ upgradable to 10 GbE)
ICX6450-48P	48-port 1 GbE switch PoE+ 780 W, 2x1 GbE SFP+ and 2x10 GbE SFP+ uplink/stacking ports (1 GbE SFP+ upgradable to 10 GbE)

Brocade ICX 6430 and 6450 Switches have a unique design that enables integrated uplink ports to be used as stacking ports, easily expanding the number of 1 GbE user ports (except the Brocade ICX 6430-C and 6450-C, which do not support stacking).

Brocade ICX 6450 models have four dual-mode 1 GbE/10 GbE SFP+ ports for stacking and uplinking. The default configuration provides two 10 GbE and two 1 GbE ports. A license is available to upgrade the 1 GbE ports to 10 GbE speed. A maximum of eight Brocade ICX 6450 switches for 384 ports can be configured in a single stack.

Brocade ICX 6430 models have four 1 GbE SFP ports for stacking and uplinking. A maximum of four Brocade ICX 6430 switches for 192 ports can be configured in a single stack.

### Q. What environment are Brocade ICX 6430 and 6450 Switches primarily designed for?

A. Brocade ICX 6430 and 6450 Switches are primarily designed to be deployed at the access layer of enterprise campus Ethernet networks. As an entry-level campus access solution with enterprise-class capabilities, Brocade ICX 6430 and 6450 Switches can be deployed in wiring closets, providing Ethernet connectivity to workstations, IP phones, wireless APs, security cameras, and other network devices within close proximity.

### Q. What environment are the Brocade ICX 6430-C and 6450-C Compact Switches primarily designed for?

A. The Brocade ICX 6430-C and 6450-C are primarily designed to be deployed at the access layer and outside wiring closets of enterprise campus Ethernet networks. As fanless compact switches, the Brocade ICX 6430-C and 6450-C can be deployed in classrooms, retail, factory, small office, and workgroup environments. In addition, the Brocade ICX 6450-C can be powered either from its internal power supply or with PoE/PoE+, through its two RJ-45 uplink ports, enabling the switch to be deployed in environments where no AC power outlet is present.

**Q. Do Brocade ICX 6430 and 6450 Switches have Layer 3 capabilities?**

**A.** Brocade ICX 6450 and 6450-C models support Layer 3 capabilities:

- **Base Layer 3 routing:** Available in base models with no license required and includes IPv4 and IPv6 static routing between directly connected subnets.
- **Premium Layer 3 routing:** Adds RIPv1/v2, OSPFv2, GRE, VRRP, and VRRP-E capabilities through an optional upgrade license (ICX6450-PREM-LIC).

**Q. Can Brocade ICX 6430 and 6450 Switches be upgraded to support Layer 3 features in the field?**

**A.** Brocade ICX 6450 and 6450-C Switches can be upgraded to support Layer 3 features with key-based software upgrade activation. Customers can purchase a software upgrade license to upgrade any Brocade ICX 6450 Switch to premium Layer 3 capabilities. Brocade ICX 6430 and 6430-C switches are not upgradable to Layer 3 features.

**Q. Can the Brocade ICX 6450 support Software-Defined Networking (SDN)?**

**A.** Yes. The Brocade ICX 6450 supports OpenFlow 1.0 and 1.3 protocol in a mixed-stack configuration with the Brocade ICX 6610. The OpenFlow controller controls the whole mixed stack as a single logical switch by interacting with the stack controller. In this configuration, the Brocade ICX 6450 supports OpenFlow in true hybrid port mode. This unique capability enables organizations to simultaneously deploy traditional Layer 2/3 forwarding with OpenFlow on the same port.

**Q. What type of SDN controllers are supported by a Brocade ICX 6610/6450 mixed stack?**

**A.** The Brocade ICX 6610/6450 mixed stack operates seamlessly under the Brocade SDN Controller. This controller is a quality-assured edition of the OpenDaylight controller code supported by an established networking provider and its leaders within the OpenDaylight community. The mixed stack also interoperates with SDN controllers that support the OpenFlow 1.0 and 1.3 protocols.

**Q. What feature advantages do Brocade ICX 6430 and 6450 Switches offer compared to Brocade FastIron WS Series switches?**

**A.** Brocade ICX 6430 and 6450 Switches offer many capabilities not found in the Brocade FastIron® WS Series, including:

- **Ethernet stacking:** With four integrated 1 GbE or 1/10 GbE stacking ports, IT managers can easily scale user ports as more users are added to the network.
- **10 GbE ports for aggregation/core connectivity:** With four integrated 1/10 GbE ports compared to the Brocade FastIron WS Series, the Brocade ICX 6450 delivers 10 times higher uplink bandwidth.
- **PoE on all ports:** With a PoE power budget of 390 W (24-port) and 780 W (48-port), the Brocade ICX 6450 can deliver up to 15.4 W to all connected devices.
- **PoE+ ports:** IEEE 802.3at standard PoE+ on Brocade ICX 6430 and 6450 Switches can deliver up to 30 W to connected devices.
- **Greater investment protection:** Brocade ICX 6430 and 6450 Switches provide hardware support for Energy Efficient Ethernet (IEEE 802.3az EEE) and for IEEE 802.1AE MACsec encryption (Brocade ICX 6450 models only). A future software update is required.
- **Redundant system power and PoE/PoE+ power extension:** Brocade ICX 6430 and 6450 Switches support an external power supply for higher system availability and can add to the PoE/PoE+ power budget of the switch.

**Q. What are the key feature advantages of the Brocade ICX 6430-C and 6450-C Compact Switches?**

**A.** Key highlights of the Brocade ICX 6430-C and 6450-C Switches include:

- Compact, 12-port 10/100/1000 Mbps design that fits in space-constrained environments
- Power over Ethernet Plus (PoE+) support on four ports for wireless mobility, IP telephony, and IP surveillance infrastructures

- Flexible uplinks with two dedicated 1 Gbps SFP fiber ports and two additional 1 Gbps RJ-45 ports for connectivity
- Simple, attractive design with fanless operation for deployments outside wiring closets
- Low power consumption with hardware-based Energy Efficient Ethernet (EEE)-ready access ports
- A Powered Device (PD) design, which enables the Brocade ICX 6450-C to be powered either from its internal power supply or with PoE/PoE+, through its two R-J45 uplink ports

**Q. Do Brocade ICX 6430 and 6450 Switches come standard with 10 GbE ports?**

**A.** Brocade ICX 6450 models (except the Brocade ICX 6450-C) have four dual-mode 1/10 GbE SFP+ ports for stacking and uplinking. The default configuration provides two 10 GbE and two 1 GbE ports. A license (ICX6450-2X10G-LIC-POD) to upgrade the 1 GbE ports to 10 GbE speed is available and provides four 10 GbE ports per Brocade ICX 6450 Switch. Brocade ICX 6430 models have four 1 GbE SFP ports for stacking and uplinking. The Brocade ICX 6430-C and 6450-C models have two 100 Mbps/1 GbE SFP ports and two 100 Mbps/1 GbE copper ports for uplinks. These uplink ports are individual ports. The Brocade ICX 6430-C and 6450-C Switches do not support Ethernet stacking.

**Q. Are the 1/10 GbE uplink ports combo ports?**

**A.** No. The four stacking/uplink ports on each Brocade ICX 6430 and 6450 Switch are in addition to the 24 or 48 1 GbE switch ports. Likewise, the four uplink ports on the Brocade ICX 6430-C and 6450-C are individual ports, not combination ports.

**Q. How do Brocade ICX 6430 and 6450 Switches expand when more than 24 or 48 ports are needed?**

**A.** All Brocade ICX switches support stacking to facilitate port expansion while minimizing management overhead. Up to eight switches can be included in a stack for the Brocade ICX 6450 (except the Brocade ICX 6450-C), scaling the logical switch up to 384 1 GbE ports and 32 10 GbE ports. Up to four switches can be included in a stack for the Brocade ICX 6430 (except the Brocade ICX 6430-C), scaling the logical switch up to 192 1 GbE user ports and 16 1 GbE uplink/stacking ports. The Brocade ICX 6430-C and 6450-C Switches do not support Ethernet stacking.

**Q. Do the switches need to be physically stacked in order to grow the logical switch?**

**A.** No. The switches can be either situated in a vertical or horizontal stack in a "daisy-chained ring" configuration, or stacked horizontally in a "braided ring" configuration in which alternating switches are connected to each other. The latter configuration allows switches in the ring to be situated farther apart from each other.

## Q. What cabling options are available for stacking switches?

A. Standard direct-attached SFP/SFP+ active copper cables and SFP/SFP+ optics can be used for stacking. Optional 1-meter and 5-meter cables are available. A stacking cable is not included with the switch.

Part Number	Description
10G-SFPP-TWX-0101	Direct-attached SFP+ copper cable, 1 m, one-pack, stacking cable
10G-SFPP-TWX-0301	Direct-attached SFP+ copper cable, 3 m, one-pack, stacking cable
10G-SFPP-TWX-0501	Direct-attached SFP+ copper cable, 5 m, one-pack, stacking cable
1G-SFP-TWX-0101	Direct-attached 1 Gbps SFP copper cable, 1 m, stacking cable
1G-SFP-TWX-0501	Direct-attached 1 Gbps SFP copper cable, 5 m, stacking cable

Visit [www.brocade.com/optics](http://www.brocade.com/optics) and [www.brocade.com/fastironstacking](http://www.brocade.com/fastironstacking) for more information about stacking options and stacking distances.

## Q. What does “hitless stacking failover” mean?

A. Hitless stacking failover is a critical high-availability feature provided by Brocade stacking technology. Hitless failover enables the standby stack controller to instantaneously take over in the event of a failure of the master stack controller, without any interruption of traffic forwarding.

In addition, if a stack controller (one of the switches in the stack) fails, it can be replaced while the stack is operating—without interrupting traffic forwarding—through hot insertion and removal of stacked units.

## Q. Can Brocade ICX 6430 and 6450 Switches be mixed in a stack?

A. No. Brocade ICX 6430 Switches are stacked with 1 GbE ports, and Brocade ICX 6450 switches are stacked using 10 GbE ports.

## Q. Can PoE and non-PoE Brocade ICX switches be mixed in a stack?

A. Yes. Brocade stacking technology provides the capability to mix and match PoE and non-PoE switches in a single stack from the same Brocade ICX 6430 or 6450 Switch family. Brocade ICX 6430 and 6450 models cannot be mixed in a stack.

## Q. Can Brocade ICX 6450 Switches be stacked with Brocade ICX 6610 Switches?

A. Brocade ICX 6450 Switches (except the Brocade ICX 6450-C) can be stacked together with Brocade ICX 6610 Switches using 10 GbE ports. Up to eight units can be connected together in that fashion.

Brocade ICX 6450 and Brocade ICX 6610 Switches both support the innovative Brocade HyperEdge® Architecture, enabling the propagation of advanced features and services from the Brocade ICX 6610 to the Brocade ICX 6450 when stacked together.

The HyperEdge Architecture is supported on Brocade ICX 6610 and Brocade ICX 6450 Switches running Brocade FastIron® software 8.0 or later, which is currently available via MyBrocade®.

## Q. What is the Brocade HyperEdge Architecture?

A. The Brocade HyperEdge Architecture brings campus networks into the modern era to better support mobility, security, and application agility. This evolutionary architecture integrates innovative wired and wireless technologies to streamline application deployment, simplify network management, and reduce operating costs.

The HyperEdge Architecture enables organizations to build networks that are:

- **Agile:** By eliminating Spanning Tree Protocol (STP) between HyperEdge Domain switches through a flatter Layer 2 design, the HyperEdge Architecture increases link utilization and reduces application deployment complexity. The Distributed AP Forwarding functionality of Brocade wireless Access Points (APs) efficiently secures and directs mobile traffic at the network edge without tunneling data back to a central controller at the network core.
- **Automated:** By grouping premium and entry-level switches with intelligent wireless APs into a consolidated management domain, HyperEdge Domains eliminate the need to provision and manage devices individually—simplifying network deployment and management.
- **Cost-effective:** The HyperEdge Architecture enables the propagation of advanced features and services from premium switches to entry-level switches, allowing IT organizations to purchase only what they need today and add intelligent services as the business evolves. Further cost savings is achieved with Brocade wireless solutions using controller-less or controller-shared license deployment options.

## Q. What standard optics are supported?

A. The following SFP/SFP+ optics are supported:

Part Number	Description
EIMG-100FX-OM	100BASE-FX SFP optic MMF, LC connector, optical monitoring-capable (for Brocade ICX 6430-C and 6450-C only)
EIMG-TX	1000BASE-TX SFP copper, RJ-45 connector
EIMG-SX-OM	1000BASE-SX SFP optic, MMF, LC connector, optical monitoring-capable
EIMG-LX-OM	1000BASE-LX SFP optic, SMF, LC connector, optical monitoring-capable
EIMG-LHA-OM	1000BASE-LHA SFP optic, SMF, LC connector, optical monitoring-capable, 80 km
EIMG-LHB	1000BASE-LHB SFP optic, SMF, LC connector, 110 km maximum reach
10G-SFPP-USR	10GE USR SFP+ optic (LC), target range 100 m over MMF, one-pack
10G-SFPP-SR	10GBASE-SR, SFP+ optic (LC), target range 300 m over MMF
10G-SFPP-LR	10GBASE-LR, SFP+ optic (LC), for up to 10 km over SMF
10G-SFPP-ER	10GBASE-ER SFP+ optic (LC), for up to 40 km over SMF
10G-SFPP-LRM	10GBASE-LRM, 1310 nm SFP+ optic (LC), TAR

Go to [www.brocade.com/optics](http://www.brocade.com/optics) for the latest information on optics support.

**Q. Do Brocade ICX 6430 and 6450 Switches have the option for a redundant power supply?**

**A.** Yes. Brocade ICX 6430 and 6450 models (except the Brocade ICX 6430-24, 6430-C, and 6450-C) allow for an optional second redundant power supply to be installed externally. The ICX6400-EPS1500 is an external hot-swappable power supply unit that can provide 1,500 W of power and can connect up to three Brocade ICX 6430 and 6450 Switches. In addition to providing redundant system power, the ICX6400-EPS1500 power supply can provide additional PoE power to add to the PoE budget of the switch. The ICX6400-EPS1500 includes three, 36-inch DC cables.

**Q. Do Brocade ICX 6430-C and 6450-C Compact Switches support redundant power failover?**

**A.** The innovative design of the Brocade ICX 6450-C as a Powered Device (PD) enables it to be powered either from its internal AC power supply or with PoE/PoE+ power, coming from one or both of its two RJ-45 uplink ports. When both the AC power source is used and PoE/PoE+ power is provided from the uplink ports in a redundant power mode, the system power will failover to PoE power in the event of an AC power failure. This capability is not available on the Brocade ICX 6430-C model.

**Q. Is PoE+ standards-based?**

**A.** Yes. PoE+ is being driven by the IEEE 802.3at standard. Brocade ICX 6430 and 6450 Switches support the 802.3at specification.

**Q. Is PoE+ backward-compatible with PoE?**

**A.** Yes. 801.3at PoE+ is fully backward-compatible with 802.3af PoE. Leveraging LLDP-MED, Brocade ICX switches auto-negotiate 802.3af Class 1, Class 2, and Class 3 power.

**Q. Does the Brocade ICX 6430-C and 6450-C Compact Switches support PoE/PoE+?**

**A.** Yes. The Brocade ICX 6430-C and 6450-C models support standards-based PoE and PoE+ on four out of the twelve 1 GbE ports. The internal power supply can deliver up to 68 W of PoE power to ports one through four. The remaining eight 1 GbE ports do not support PoE.

**Q. How many PoE and PoE+ ports can Brocade ICX 6430 and 6450 Switches deliver?**

**A.** The following chart shows how many ports can be driven with PoE/PoE+ power, based on the internal power supply that is installed:

Brocade ICX Model	PoE Class 3 Ports	PoE+ Ports (30 W)	PoE Power Budget
6430-C12, 6450-C12-PD	4	2	68 W
6430-24P	24	12	390 W
6430-48P	24	12	390 W
6450-24P	24	12	390 W
6450-48P	48	24	780 W

A combination of PoE and PoE+ ports can be mixed, providing more available Class 2 or Class 3 PoE ports.

## Q. Can PoE power budget be increased to support additional PoE/PoE+ ports?

Yes. Brocade ICX 6430 and 6450 Switches (except the Brocade ICX 6430-C and 6450-C) support an external power supply (ICX6400-EPS1500) that can provide redundant system power and also can add to the PoE power budget. When Brocade ICX 6430 and 6450 Switches are connected to an ICX6400-EPS1500 external power supply, it allows the external power supply to provide additional power to the switches to increase the PoE/PoE+ power budget. Each Brocade ICX6400-EPS1500 external power supply can connect up to three Brocade ICX 6430 and 6450 Switches.

The following chart shows how many ports can be driven with PoE/PoE+ power with the addition of the ICX6400-EPS1500 external power supply installed:

Brocade ICX Model	PoE Class 3 Ports	PoE+ Ports (30 W)	PoE Power Budget
6430-24P	24	24	780 W
6430-48P	48	24	780 W
6450-24P	24	24	780 W
6450-48P	48	48	1560 W

## Q. Can Brocade ICX 6430 and 6450 Switches be field-upgraded to support PoE?

A. No. Non-PoE models cannot be upgraded to support PoE. The PoE port design of the Brocade ICX switches requires different circuitry and power supplies.

## Q. Can Brocade ICX 6430 and 6450 Switches configure PoE power via a Cisco CDP packet?

A. Yes. Brocade ICX 6430 and 6450 Switches have the capability to configure the individual port power based on the content of a CDP packet sent from a Cisco IP phone. This feature enables the flexibility to control power on a more granular basis than the class definitions allow.

## Q. Do Brocade ICX 6430 and 6450 Switches offer AC and DC power?

A. At this time, the Brocade ICX 6430 and 6450 Switches have only AC-capable power supplies.

## Q. Is sFlow network monitoring supported on the Brocade ICX Switches?

A. Yes. Only Brocade ICX 6450 and 6450-C Switches are designed with sFlow, a standards-based network export protocol (RFC 3176) that delivers an “always-on” network monitoring technology at wire-speed performance.

## Q. Do Brocade ICX 6430 and 6450 Switches support IPv6 functionality?

A. Brocade ICX 6430 and 6450 Switches support IPv6 architecture and management functionality that allow the switches to be deployed at the access layer of the IPv6 network. In addition, the Brocade ICX 6450 and 6450-C support IPv6 static routing.

## Q. Do Brocade ICX 6430 and 6450 Switches use the same Command Line Interface (CLI) as other Brocade FastIron switches?

A. Yes. Brocade ICX 6430 and 6450 Switches run the same switch firmware as other Brocade FastIron switches, using the same CLI that many customers are familiar with.

## Q. How are Brocade ICX 6430 and 6450 Switches managed?

A. Brocade ICX 6430 and 6450 Switches support a wide range of management standards and have an industry-standard CLI and a Web-based interface. Additionally, they can be managed—along with the rest of the Brocade Ethernet network—by Brocade Network Advisor management software. Brocade ICX 6430 and 6450 Switches offer a dedicated out-of-band 10/100/1000 Mbps management port so edge ports are not consumed by management traffic.

## Q. What are the acoustic or noise levels for the Brocade ICX 6430 and 6450 Switches?

A. The Brocade ICX 6430 and 6450 Switches are designed to maintain low acoustic or noise levels for wiring closet deployment. For models that do not support PoE/PoE+ ports, the acoustic levels are below 38 dBA. For models that support PoE/PoE+ ports, the acoustic levels are below 40 dBA. For the Brocade ICX 6450-48P model that supports PoE on all 48 ports (880 W power supply), the acoustic level is at 55.5 dBA.

The Brocade ICX 6430 and 6450 product lines also have 12-port (Brocade ICX 6430-C12 and 6450-C12-PD) and 24-port (Brocade ICX 6430-24) models that do not require a fan for airflow (fanless operation), making them ideal for classroom, open office, or lab environments.

The acoustic measurements are based on tests performed at 25°C. Additional acoustic information is available in the Brocade ICX 6430 and 6450 Switches data sheet.

## Q. How is the cooling airflow in Brocade ICX 6430 and 6450 Switches directed?

A. Airflow in all Brocade ICX 6430 and 6450 Switches flows from the sides of the switch to the back of the switch. The 12-port and 24-port Brocade ICX 6430 models without PoE do not require a fan for airflow, making them ideal for classroom, open office, or lab environments.

## Q. Is a lifetime warranty offered for Brocade ICX 6430 and 6450 Switches?

A. Yes. Brocade ICX 6430 and 6450 Switches are covered by the Brocade Assurance® Limited Lifetime Warranty. For details, visit [www.brocade.com/warranty](http://www.brocade.com/warranty).

## Q. Is technical support offered for Brocade ICX 6430 and 6450 Switches?

A. Yes. Brocade ICX 6430 and 6450 Switches, including the Brocade ICX 6430-C and 6450-C, are supported by next-business-day advance replacement as well as software defect repairs and maintenance updates. To further improve service levels and operational efficiency, Brocade includes three years of technical support on Brocade ICX 6430 and 6450 Switches, providing direct access to the Brocade Technical Assistance Center and resources during normal 8x5 business hours.

## Learn More

### Q. How do I find out more about Brocade ICX 6430 and 6450 Switches?

A. Visit the Brocade ICX 6430 and 6450 product page on [www.brocade.com](http://www.brocade.com) for the latest data sheets, white papers, and solutions briefs. Or contact your Brocade sales representative or Brocade OEM Partner for more details.

#### Corporate Headquarters

San Jose, CA USA  
T: +1-408-333-8000  
[info@brocade.com](mailto:info@brocade.com)

#### European Headquarters

Geneva, Switzerland  
T: +41-22-799-56-40  
[emea-info@brocade.com](mailto:emea-info@brocade.com)

#### Asia Pacific Headquarters

Singapore  
T: +65-6538-4700  
[apac-info@brocade.com](mailto:apac-info@brocade.com)



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