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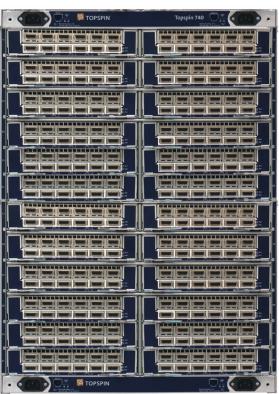
Cisco SFS 7012 and 7024 Infiniband Server Switches

The migration toward utility computing in enterprise data centers has furthered the need to consolidate and better manage I/O resources while making the best use of server scale out. With the explosion of smaller, lower cost, one-rack-unit (1-RU) servers and blade servers, enterprises are looking for new ways to consolidate their infrastructure. Many data center managers are also considering how to use clustering to make even better use of these compute resources. This requires a high-density switching platform optimized for the server fabric.

PRODUCT OVERVIEW

The Cisco® SFS 7012 and 7024 InfiniBand server switches (Figure 1) are designed for very large and dense high-performance computing environments. The Cisco SFS 7012 provides full, bisectional bandwidth across 144 10-Gbps InfiniBand ports in a 7-RU chassis. The Cisco SFS 7024 provides full bisectional bandwidth across 10-Gbps or up to 96 30-Gbps ports in a 14-RU chassis. Both of these systems are optimized for dense cluster computing environments of 256 nodes and more. They provide nonblocking, low-latency switching for compute environments in a cost-effective manner. When used in conjunction with the Cisco SFS 3000 Series multifabric server switches, the entire Cisco SFS 7000 Series can consolidate I/O and link to the local-area and storage-area networks.

Figure 1. Cisco SFS 7012 and 7024 InfiniBand Server Switches

BENEFITS

The Cisco SFS 7012 and 7024 offer the following benefits:

- Comprehensive performance and fabric diagnostics tools in a fully managed switch
- High-performance, industry standards-based InfiniBand interconnect technology
- Ideal interconnect for high-performance computing, science, and enterprise applications
- Integration with Cisco SFS 7000 Series InfiniBand server switches and Cisco SFS 3000 Series multifabric server switches for a wide range of storage, WAN, and LAN connectivity options
- Scales clusters up to 4600 nodes with the server-based Cisco Subnet Manager

FEATURES

The following features are included with the Cisco SFS 7012 and 7024:

- Up to 288 ports of non-blocking 10-Gbps (4X) InfiniBand server connectivity with full bisectional bandwidth
- The Cisco SFS 7024 offers up to four non-blocking 30-Gbps (12X) ports per slot
- Hot-swappable components, including hot plug, redundant fans, and power supplies
- Intelligent switch with embedded fabric management, capable of running clusters of thousands of nodes
- Uses the external, server-based Cisco Subnet Manager for maximum scalability

HIGH RELIABILITY AND AVAILABLITY

The Cisco SFS 7012 and 7024 are optimized for reliability and availability. Each switch includes hot-swappable components to eliminate downtime and maximize availability of the cluster or compute environment. This includes hot-pluggable, redundant fan trays and power supplies, which can be field-upgraded without requiring the switch to power down. This increases overall availability of the compute cluster.

FABRIC DENSITY

The Cisco SFS 7012 and 7024 are among the highest-density InfiniBand switches in the industry today. With twelve 10-Gbps or four 30-Gbps per slot, they offer the greatest flexibility for mix-and-match speed options and server granularity. When combined with the Cisco SFS 7000 Series fixed-configuration and modular InfiniBand switches, the Cisco SFS 7012 and 7024 deliver industry-leading flexibility in an architecture that can support up to thousands of nodes.

UPGRADE TO 30-GBPS INFINIBAND

The removable line interface modules in the Cisco SFS 7012 and 7024 help enable a smooth upgrade path to 30 Gbps (12X) InfiniBand capability Each module slot supports up to four non-blocking 12X InfiniBand ports at 30 Gbps. Up to 48 12X ports may be configured per Cisco SFS 7012 and up to 96 12X ports per Cisco SFS 7024 chassis. 12X support helps enable high-bandwidth connectivity to next-generation servers. The technology is also applicable for uplinking multiple switches when deploying multiple-tier switch fabrics for medium-to-large clusters. The flexible Cisco switch architecture accommodates next-generation technology and provides an upgrade path for InfiniBand users without requiring the purchase of all new equipment.

PRODUCT SPECIFICATIONS

Table 1 describes the systems architecture for the Cisco SFS 7012 and 7024. Tables 2 and 3 list the mechanical and environmental specifications, and Table 4 lists the management features.

Table 1. Systems Architecture

	Cisco SFS 7012	Cisco SFS 7024
Cards, Ports, Slots	• Up to 144 ports nonblocking 10-Gbps (4X) InfiniBand or up to 48 ports nonblocking 30-Gbps (12X) InfiniBand • 12 slots, each taking a 12-port 4X or 4-port 12X InfiniBand line card • Copper or optical interfaces • One RS-11 serial port, one Ethernet management port	• Up to 288 ports nonblocking 10-Gbps (4X) InfiniBand or up to 96 ports nonblocking 30-Gbps (12X) InfiniBand • 24 slots, each taking a 12-port 4X or 4-port 12X InfiniBand line card • Copper or optical interfaces • Two RS-11 serial ports, two Ethernet management ports
Performance	All ports nonblocking and wire-speed, 2.8-Tbps aggregate bandwidth (144 ports x 10 Gbps x bidirectional)	All ports nonblocking and wire-speed, 5.76-Tbps aggregate bandwidth (288 ports x 10 Gbps x bidirectional)
Chassis	• 7-RU, 19-inch rack-mountable chassis • Passive mid-plane design with cable connections on opposite side of active components • All modules hot-swappable	• 14-RU, 19-inch rack-mountable chassis • Passive mid-plane design with cable connections on opposite side of active components • All modules hot-swappable
Switch Fabric and Management Module (Spine) Module)	• Up to 3 per system • Hot-swappable field-replaceable unit (FRU) • Operation status, active fabric controller, and alert LEDs	• Up to 6 per system • Hot-swappable FRU • Operation status, active fabric controller, and alert LEDs
Line Interface Module ("Leaf Module")	• Up to 12 per system • 12 ports 4X InfiniBand or 4 ports 12X InfiniBand • Supports hot-pluggable optical media converter on a port-by-port basis • Physical connection and traffic LEDs for each port • Hot-swappable FRU • Port status, operation status, and alert LEDs	• Up to 24 per system • 12 ports 4X InfiniBand or 4 ports 12X InfiniBand • Supports hot-pluggable optical media converter on a port-by-port basis • Physical connection and traffic LEDs for each port • Hot-swappable FRU • Port status, operation status, and alert LEDs
Power Supply	• Up to 6 per system • Redundant, hot-swappable FRU • 350W per power supply • Operation status and alert LEDs	• Up to 12 per system • Redundant, hot-swappable FRU • 350W per power supply • Operation status and alert LEDs
Fan Module	• Up to 4 fan trays (2 fans per tray) per system • Cooling: front to back • Redundant, hot-swappable FRU • Operation status and alert LEDs	• Up to 8 fan trays (2 fans per tray) per system • Cooling: front to back • Redundant, hot-swappable FRU • Operation status and alert LEDs

Table 2.   Mechanical Specifications

	Cisco SFS 7012	Cisco SFS 7024
Mounting	Mountable in a standard 19-inch Electronic Industries Alliance (EIA) rack	Mountable in a standard 19-inch EIA rack
Size	• Standard 19-inch rack-mountable • 7-RU height (12.25 inches) • 25.75-inch depth	• Standard 19-inch rack-mountable • 14-RU height (24.5 inches) • 25.75-inch depth
Air Flow	Front to back	Front to back
Weight	65–110 lbs, based on configuration	100–200 lbs, based on configuration

Table 3.   Environmental Specifications

	Cisco SFS 7012	Cisco SFS 7024
Temperature	Operating: 50 to 113°F (10 to 45°C) Storage: –40 to 167°F (–40 to 75°C)	Operating: 50 to 113°F (10 to 45°C) Storage: –40 to 167°F (–40 to 75°C)
Altitude	Operating: 10,000 ft Storage: 40,000 ft	Operating: 10,000 ft Storage: 40,000 ft
Humidity	Operating: 20 to 80% non-condensing Storage 5 to 90% non-condensing	Operating: 20 to 80% non-condensing Storage 5 to 90% non-condensing
Shock	Operating: 5G maximum, 11 ms half-sine wave 10G maximum, 5 ms half-sine wave Storage: 10G maximum, 11 ms half-sine wave	Operating: 5G maximum, 11 ms half-sine wave 10G maximum, 5 ms half-sine wave Storage: 10G max, 11 ms half-sine wave
Vibration	Operating: 0.50G maximum, 3–200 Hz, 15 min (Sinusoidal); 1.02Grms, 3-axis, bottom/top, left/right, front/back (random) Storage: 0.50G maximum, 3–200 Hz, 15 min (Sinusoidal); 2.09Grms, 3-axis, bottom/top, left/right, front/back (random)	Operating: 0.50G maximum, 3–200 Hz, 15 min (Sinusoidal); 1.02Grms, 3-axis, bottom/top, left/right, front/back (random) Storage: 0.50G maximum, 3–200 Hz, 15 min (Sinusoidal); 2.09Grms, 3-axis, bottom/top, left/right, front/back (random)
Power	90–264 V AC automatic-ranging, 47–63 Hz 350W maximum per power supply	90–264 V AC automatic-ranging, 47–63 Hz 350W maximum per power supply

Table 4.   Management Features

	Cisco SFS 7012	Cisco SFS 7024
Subnet Management	External subnet manager for scalable deployments	External subnet manager for scalable deployments
Network Management	• Easy configuration, monitoring, and maintenance in-band and out-of-band • Web-based systems management GUI • Command-line interface (CLI) through Telnet, Secure Shell Version 2 (SSH v2) Protocol, and Serial	• Easy configuration, monitoring, and maintenance in band and out-of-band • Web-based systems management GUI • CLI through Telnet, SSHv2 Protocol, and Serial
Management Framework	Supports Simple Network Management Protocol Version 2 (SNMPv2)	Supports SNMPv2

SERIES OF PRODUCTS

The Cisco SFS 7012 and 7024 are part of a complete family of server switches including the Cisco SFS 3000 Series multifabric switches and Cisco SFS 7000 and 7008 InfiniBand server switches.

ORDERING INFORMATION

To place an order, visit the Cisco Ordering Home Page. Table 5 lists the ordering information for the Cisco SFS 7012 and 7024.

Table 5. Ordering Information

Part Number	Description
SFS-7012	Cisco SFS 7012 InfiniBand Server Switch, 144-port chassis
SFS-7024	Cisco SFS 7024 InfiniBand Server Switch, 288-port chassis
SFSX7012/24-4X12	Cisco SFS 7012/7024 InfiniBand 4X 12-Port Line Card
SFS-7012/24-FM	Cisco SFS 7012/7024 Switch Fabric Module—no management
SFS-7012/24-MM-K9	Cisco SFS 7012/7024 Switch Fabric Module—with management
PWR-SFS7012/24	Cisco SFS 7012/7024 Power Supply

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FOR MORE INFORMATION

For more information about the Cisco SFS 7012 and 7024 visit http://www.cisco.com or contact your local account representative.

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