hp SCSI-Fibre
Channel Router

hp e3000 servers

The HP e3000 SCSI-Fibre Channel Router can be ordered in two different models. The first model is that of a fabric router, (ordered as P/N A5814A, option #003) and here referred to as A5814A-003. This router allows for SCSI-2 (HVD) HP e3000 to connect to a number of fibre channel storage devices such as the XP512, XP48 and VA7100 either directly or through an HP Hub or Brocade 2400 or 2800 Silkworm Fibre Channel Switches to those storage devices. The second model of the router is that of a SCSI extender, (P/N A5814A). This requires two routers configured back to back for a SCSI-2 (HVD) host to communicate with a SCSI-2 (HVD) peripheral device over fibre distances.

features

The SCSI-FC Router provides:
• Ease-of-use
• Fibre Channel distances
• Fast protocol conversion between SCSI and Fibre channel
• Reliable host to peripheral connection

hardware features

SCSI Connectivity
• Protocol: SCSI-2 Ultra-Wide High Voltage Differential (HVD) (40 MB/sec); supports either initiator (host) or target (device) protocol.
• Data Transfer Rate: 40 MB/sec (per SCSI-FC Router per SCSI Channel) burst
• SCSI-2 HVD: 68-pin High Density
• Device Support: HP28696A F/W SCSI I/O HPPB card (NIO based machines)
                      HP4800A F/W SCSI I/O card (PCI based machines)
                      HP5159A F/W SCSI I/O card (PCI based machines)
• Supports: Command Processing, Tagged Queuing, Disconnect/Reconnect, Synchronous and Asynchronous data transfer

Fibre Connectivity
• Protocol: ANSI Fibre Channel (FC-PH) and ANSI Fibre Channel Arbitrated Loop (FC-AL)
• Classes of Service: Class 3
• Topology: FC-AL (private or public), Point-to-Point
• Data Transfer Rate: 100 MB/sec (per SCSI-FC Router per fibre channel)
• Port Speed: 100 MB/sec
• Short Wavelength Optical Cable
  – Data Rate: 100 MB/sec burst
  – Cable: 50 or 62.5 micron fibre optic
  – Distance: 500 meters (1640 feet) or 172 meter (564 feet)
  – Connector: Dual SC
• Long Wavelength Optical Cable (unsupported on the hp e3000)
  – Data Rate: 100 MB/sec burst
  – Cable: 9 micron fibre optic
  – Distance: 10 km (6.2 miles)
  – Connector: Dual SC

applications	Provides connectivity between SCSI High Voltage Differential (HVD) and Fibre Channel equipment and vice versa.
fabric system requirements	• Fibre optic cable: 62- or 50-micron fibre optic cable with dual SC connector, HSSDC Gigabit Interface Converters (GBIC) • SCSI-FC Router (host) microcode revision 8.01.0A or later • SCSI-2 HVD compliant host adapter • SCSI-2 compliant host • SCSI-2 compliant cabling • Proper electrical power source (UPS required for High Availability environments) • Fabric solution requires one A5814A-003 router. *(A5814A is not upgradeable to A5814A-003)*
extender system requirements	• Fibre optic cable: 62- or 50-micron fibre optic cable with dual SC connector, HSSDC Gigabit Interface Converters (GBIC) • SCSI-FC Router (host) microcode revision 7.60 or later • SCSI-FC Router (device) microcode revision 2.50 or later • SCSI-2 HVD compliant host adapter • SCSI-2 compliant host • SCSI-2 compliant cabling • Proper electrical power source (UPS required for High Availability environments) • Extender solution requires two A5814A routers. *(A5814A is not upgradeable to A5814A-003)*
supported operating systems	• MPE/iX 6.0 Express 1, MPE/iX 6.5 and MPE/iX 7.0 Express 1 • HP-UX Operating System 11.0 (Patch Level: SP48) • Windows NT 4.0 Server (Service Pack 6)
supported hardware	• HP SureStore E Disk Array XP48 (FC connectivity only, uses one A5814A-003 router) • HP SureStore E Disk Array XP512 (FC connectivity only, uses one A5814A-003 router) • HP SureStore E Disk Array VA7100 (FC connectivity only, uses one A5814A-003 router) • HP SureStore E Disk Array XP256 (SCSI connectivity only, uses two A5814A routers) • HP SureStore E Disk Array 12H (SCSI connectivity only, uses two A5814A routers) • HP SureStore E Disk System HVD 10 (SCSI connectivity only, uses two A5814A routers) • DLT 4000, 7000 and 8000 SCSI-2 HVD Tape Libraries(SCSI only, uses two A5814A routers)
maintenance	• External serial port: RJ-11 connector (57K-baud rate)
environment	• Operating Temperature: 0C (32F) to 40C (104F) • Storage Temperature: -40C (-40F) to 75C (167F) • Relative Humidity: 10% to 95% non-condensing
dimensions	• Height: 7.62 cm (3 in.) • Width: 10.795 cm (4.25 in.) • Depth: 31.115 cm (12.25 in.) • Weight: 1.8 kg (3.97 lbs.) Note: The SCSI-FC Router can also be installed into a rackmountable hub enclosure (A5842A).
power	• 100-240 VAC; 50-60 Hz; 0.75-0.50 A
user interface	• LED indicators

SCSI Fibre Channel Fabric Router

When a customer needs to connect the HP e3000 to a native Fibre Channel mass storage disk array, the SCSI-FC Fabric Router (A5814A-003) is used. Only one SCSI-FC Router is required between the host server and the mass storage device. The SCSI-FC Router converts from SCSI-2 at the host to Fibre Channel Arbitrated-loop for connection to Fibre Channel mass storage devices.

The fabric routers can be connected to a hub or FC switch, such as the Brocade 2400 or 2800 Silkworm switch, when consolidating port connections as shown in diagram 1.

Performance (SCSI-FC Bridges)

The HP e3000 does not support a native fibre channel solution today. HVD SCSI-2 Ultra has a maximum throughput of about 40 megabytes per second while HVD SCSI-2 Fast is about 20 megabytes per second. It is highly recommended that no more than 8 LUNS be configured on a single HBA. The HP e3000 is a high performance OLTP platform and one HBA and SCSI-FC Router will not handle the total throughput of a large disk array, like an XP512 using FC as it's connection medium. To support more than 8 LUNS on a FC disk array, multiple SCSI-FC Routers can be connected in parallel. However, the Host end of each SCSI-FC Router must be connected to a separate SCSI HBA in the HP e3000, as shown in diagram 1. SCSI-FC Routers connected in parallel allows the I/O to be spread over multiple HBAs in the host server.

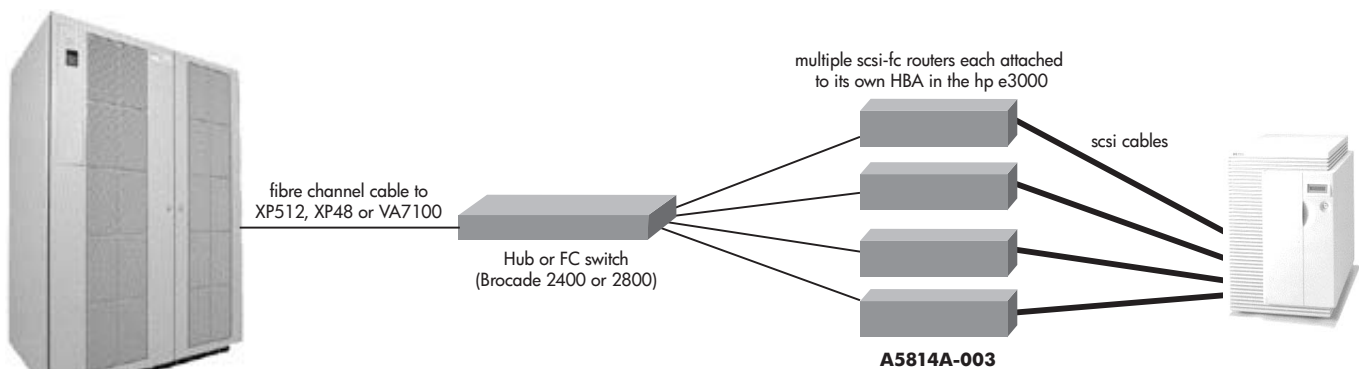## SCSI-Fibre Channel Router/ Extender Defined

To the host, the SCSI-FC Router is transparent and the device on the Fibre Channel loop appears as a SCSI device. Since the SCSI-FC Router appears to the host as a parallel SCSI device, its usage and installation are very simple. The SCSI-FC Router attaches directly to the SCSI host adapter. The SCSI-FC Router is supplied in a self-contained 3" (height) x 4.25" (width) x 1 1" (depth) enclosure that can either be installed on a desktop or four-abreast in the 19" rackmountable Hub Enclosure.

There are two SCSI-FC Routers in a single Fibre Channel loop. To prevent confusion, diagram 2 defines the various SCSI-FC Routers by their positions within the loop. The SCSI-FC Router directly attached to the host or the server is the "host router" and the SCSI-FC Router directly connected to the SCSI devices (disk or tape drives) is the "device router".
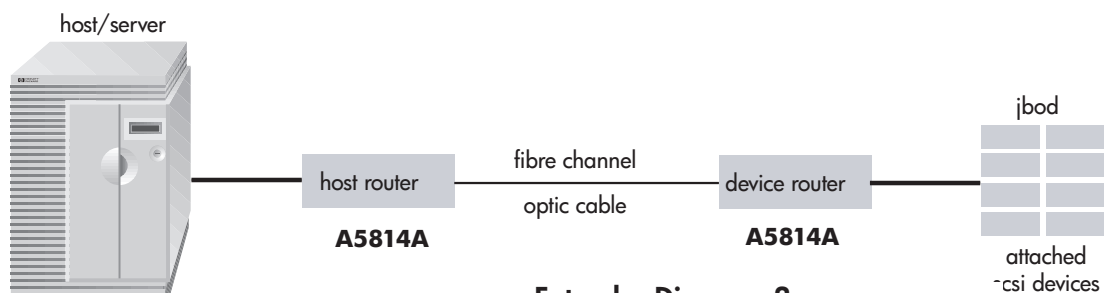
The SCSI-Fibre Channel Router (SCSI-FC Router) is a simple to maintain stand-alone SCSI extender. By converting SCSI to Fibre Channel, it can provide lengths of 30m (98 ft) to 500m (1500 ft) depending on the fiber optic cable used.

Note: 5814A SCSI-Fibre Channel extender uses microcode revision 7.60 or later. A5814A-003 SCSI-Fibre Channel Fabric Router configuration uses microcode revision 8.01.0A or later.

The A5814A SCSI-Fibre Channel Extender is not field upgradeable to the A5814A-003 SCSI-Fibre Channel Fabric Router.

fibre channel cable to XP512, XP48 or VA7100

Hub or FC switch (Brocade 2400 or 2800)

multiple scsi-fc routers each attached to its own HBA in the hp e3000

scsi cables

A5814A-003

Fabric Diagram 1

host/server

host router

A5814A

fibre channel optic cable

device router

A5814A

jbod

attached scsi devices

Extender Diagram 2

**for more information on
HP e3000 business servers,
contact any of our
worldwide sales offices
or HP Channel Partners
(in the U.S. 1-800-637-7740)
or visit our
HP e3000 business servers website at
www.hp.com/go/e3000**