



Release Notes for Cisco iSCSI Driver Version 3.1.1 for HP-UX 11.0

March 03, 2003



Note

You can find the most current documentation on Cisco.com. This set of electronic documents may contain updates and modifications made after the hard-copy documents were printed.

These release notes support Cisco iSCSI Driver version 3.1.1 for HP-UX 11.0.

For a list of software caveats that apply to version 3.1.1, see the “[Caveats](#)” section. The caveats are updated for every maintenance version and are located on Cisco.com and the Documentation CD-ROM.

Contents

These release notes describe the following topics:

- [Introduction, page 2](#)
- [System Requirements, page 2](#)
- [New and Changed Information, page 4](#)
- [Installation Notes, page 5](#)
- [Caveats, page 7](#)
- [Related Documentation, page 7](#)
- [Service and Support, page 8](#)
- [Obtaining Documentation, page 9](#)
- [Obtaining Technical Assistance, page 10](#)
- [Obtaining Additional Publications and Information, page 11](#)



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Introduction

The iSCSI Driver for HP-UX 11.0 provides an IP host with the ability to access storage through an IP network. The iSCSI driver uses iSCSI protocol to transport SCSI requests and responses over an IP network between the IP host and a Cisco SN 5400 Series system.

Architecturally, the iSCSI driver combines with the IP host TCP/IP stack, network drivers, and network interface cards (NICs) to provide the same functions as a SCSI or a Fibre Channel adapter driver with a host bus adapter (HBA).

The iSCSI driver provides a transport for SCSI requests and responses for storage devices; however, instead of providing a transport for directly attached devices, the driver transports the SCSI requests and responses between the IP host and a Cisco SN 5400 Series system via an IP network. The SN 5400 Series system, in turn, transports SCSI requests and responses between it and the storage devices attached to it.

Once the iSCSI driver is installed, a discovery process for iSCSI storage devices will proceed as follows:

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- Step 1** The iSCSI driver requests available iSCSI targets from the SCSI routing instances in the SN 5400 Series systems listed in the configuration file `/etc/iscsi.conf`.
 - Step 2** The SN 5400 Series system sends available iSCSI target names to the iSCSI driver.
 - Step 3** The IP host logs into the iSCSI targets.
 - Step 4** The SN 5400 Series system accepts the IP host login.
 - Step 5** The iSCSI driver queries targets for device information.
 - Step 6** Targets respond with device information.
 - Step 7** The iSCSI driver creates an internal table of devices.
-

The iSCSI Driver for HP-UX 11.0 provides IP access to a maximum of 15 remote SCSI targets, with each target capable of supporting eight LUNs.


Note

The iSCSI protocol is an IETF-defined protocol for IP storage (ips). For more information about the iSCSI protocol, refer to the IETF standards for IP storage at <http://www.ietf.org>.

System Requirements

This section describes the system requirements for version 3.1.1 and includes the following information:

- [Operating System Requirements, page 2](#)
- [SN 5400 Series System Software Requirements, page 4](#)

Operating System Requirements

- The Cisco iSCSI Driver version 3.1.1 requires an HP computer running HP-UX 11.0. Cisco recommends installing the latest General Release patches, Hardware Enablement patches, and PHNE_26771 (cumulative ARPA Transport patch) in the HP system.
- The driver supports single-processor and multiprocessor machines.

- The receive and transmit flow control feature of the Gigabit Ethernet driver should be enabled on all IP hosts connecting to the SN 5400 Series system.
- If you are using a 3Com Gigabit Ethernet Server network interface card, the minimum supported revision level is “B” (3C985B-SX). Using a card with a lower revision level will significantly decrease performance.
- The HP-UX System Administration Manager (SAM) does not display iSCSI devices. If you set up logical groups and volumes based on iSCSI disks, SAM will recognize the logical groups and volumes, but will notify you that it cannot obtain information about the iSCSI disks contained in the logical groups or volumes.
- The HP-UX 11.0 Logical Volume Manager (LVM) attempts to activate all the volumes listed in `/etc/lvmtab` at boot time, before Networking services are enabled. Because the iSCSI driver is not running at this stage, the iSCSI disks will not be accessible to LVM, and LVM will log error messages. However, if the `/etc/fstab.iscsi` file contains entries for filesystems on logical volumes created on iSCSI disks, the iSCSI driver start up script will attempt to activate the logical volume groups and mount the filesystems. See the readme file for additional information.
- Any device with a target ID greater than 14 and a LUN ID greater than 7 will be ignored by the iSCSI driver and will not be configured in the system.
- In HP-UX 11.0, the minor number for a SCSI device (for example, `/dev/dsk/c0t0d0`) is represented by an 8-bit instance number, a 4-bit target and a 3-bit LUN. This allows the HP-UX system to have up to 256 controller cards or instance numbers, where each card or instance can have 16 targets and each target can have 8 LUNs. The iSCSI driver version 3.1.1 takes one instance number. An instance number must be available or the iSCSI driver cannot be installed.

The iSCSI driver version 3.1.1 provides a utility (`getscsitbleinfo`) that can be used to provide information on the number of instances currently used by the system and the number of free instance numbers. See the readme file for additional details.

Mounting Filesystems

Filesystems must be created on iSCSI devices before doing a mount operation. Use the “`iscsigetdevs`” or “`lsiscsi`” command to identify iSCSI devices on the system.

Once filesystems have been created on the iSCSI devices, they can be configured to be mounted automatically during system reboot or when the iSCSI services are manually started. The iSCSI start script (`/sbin/rc2.d/S890iscsi`) looks for entries in the `/etc/fstab.iscsi` file and attempts to mount those entries after the iSCSI daemon starts. This allows the iSCSI devices to be automatically mounted as early as possible in the boot process.

By default, the start script tries to mount the devices for 10 times, with an interval of 1 second between retries, giving the driver the time to configure the devices in the system. The number of retries can be changed in `/etc/rc.config.d/iscsi` if the devices are not getting configured in the system within this time period. You can review boot time messages from the iSCSI driver in `/etc/rc.log`.

If the iSCSI services are manually started (using `/sbin/init.d/iscsi start`), the iSCSI start script attempts to automatically mount the filesystems specified in the `/etc/fstab.iscsi` file.



Note

Due to network delays, targets may not always become available in the same order. This means that the order in which iSCSI devices are mounted may vary, and may not match the order of the devices listed in `/etc/fstab.iscsi`. You should not assume that mounts of iSCSI devices will occur in any particular order.

Unmounting Filesystems

All filesystems on iSCSI devices must be unmounted before the iSCSI driver is stopped. If the iSCSI driver stops while iSCSI devices are mounted, buffered writes may not be committed to disk and filesystem corruption may occur.

HP-UX will not unmount filesystems that are being used by a running process. Before the filesystems can be unmounted, all processes using the iSCSI devices must be stopped.

During system shutdown, the iSCSI stop script (`/sbin/rc1.d/K310iscsi`) is called from the system shutdown procedure. The iSCSI stop script looks for entries in `/etc/fstab.iscsi` and unmounts the filesystems.

Rebooting HP-UX

All accesses to iSCSI devices should be stopped and all iSCSI devices should be unmounted prior to a system shutdown.

The HP-UX `/usr/sbin/reboot` command should not be used to reboot the system while iSCSI devices are mounted. This reboot command will not execute the iSCSI shutdown script in `/sbin/rc1.d`, and file system corruption can occur.

To safely reboot the HP-UX system, use the following shutdown command:

```
/usr/sbin/shutdown -r -y
```

The shutdown command can also be used with the “now” argument. For example, use the following shutdown command:

```
/usr/sbin/shutdown -r now
```

SN 5400 Series System Software Requirements

The iSCSI Driver version 3.1.1 for HP-UX 11.0 is compatible with a Cisco SN 5400 Series system running software release 3.2.1 or later; this driver cannot connect to a Cisco SN 5400 Series system running software release 2.5.x or earlier.

New and Changed Information

- The iSCSI driver version 3.1.1 iSCSI specification compliance has been upgraded to RFC.
- The iSCSI driver version 3.1.1 includes data and header digest support, configurable on either a per-target or global basis.

See the readme file for additional information about all new features.

Installation Notes

This section describes how to obtain iSCSI driver software and upgrade an existing iSCSI driver installation, and includes the following information:

- [Obtaining the iSCSI Driver and Updated SN 5400 Series System Software, page 5](#)
- [Installing iSCSI Driver Software, page 5](#)
- [Upgrading to a New Version, page 6](#)
- [Uninstalling iSCSI Driver Software, page 6](#)

Obtaining the iSCSI Driver and Updated SN 5400 Series System Software

Registered Cisco.com users can download the most current SN 5400 Series system software, Cisco iSCSI drivers, readme files, release notes and example configuration files from Cisco.com. In addition, information about driver compatibility and other relevant driver information is available on Cisco.com. You can access software and related information by following these instructions:

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- Step 1** At <http://www.cisco.com>, log in to Cisco.com. Click **Technical Support** and **Software Center**.
 - Step 2** At the Software Center web page, under Software Products & Downloads, click **Storage Networking Software**.
 - Step 3** At the Storage Networking Software web page, click the appropriate link for your software.
 - Step 4** At the Software Download web page, click the file that you want to download. Another software download web page will be displayed with detailed information about the download file and Cisco's Software License Agreement. Follow the instructions on that and any subsequent web pages to download the software.
 - Step 5** To install and configure storage router software, see the appropriate storage router software configuration guide and release notes. To install and configure an iSCSI driver, see the readme file that accompanies the iSCSI driver (in the downloaded driver archive file) and the appropriate release notes.
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Configuration guides and release notes are available online. You can access online documentation by following these instructions:

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- Step 1** At <http://www.cisco.com>, click **Products & Services** and **Storage Networking Products**.
 - Step 2** At the Cisco Storage Networking Products web page, click **Cisco SN 5400 Series Storage Routers**.
 - Step 3** At the Cisco SN 5400 Series Storage Routers web page, click **Instructions and Guides**. On the Instructions and Guides web page, choose the appropriate link for documentation, release notes, or other related information.
-

Installing iSCSI Driver Software

Refer to the readme file that accompanies the iSCSI driver (in the downloaded driver archive file) for complete installation and configuration procedures.

Upgrading to a New Version



Note

Before installing and starting the iSCSI driver, use the SN 5400 Series system CLI command **show scsirouter all** to verify that the reserve proxy feature is disabled for all SCSI routing instances to which the driver will connect. The reserve proxy feature is disabled by default. If necessary, use the **scsirouter reserveproxy** command to disable the reserve proxy feature. See the appropriate SN 5400 Series system *Storage Router Software Configuration Guide* for complete command syntax and details.

To upgrade to iSCSI driver version 3.1.1, follow these instructions. You must have super-user (root) authority to upgrade the iSCSI driver.

-
- Step 1** Stop all applications using iSCSI devices, unmount all iSCSI filesystems and manually stop the iSCSI driver. For example:
- ```
/sbin/init.d/iscsi stop
```
- Step 2** Use SAM to remove the iSCSI driver, or remove the driver manually. The removal procedure compiles a new kernel that will not include the iSCSI driver. Existing `/etc/iscsi.conf` and `/etc/fstab.iscsi` files are not deleted. For example:
- ```
swremove ISCSI
```
- Step 3** Reboot the HP-UX system.
- Step 4** Follow the instructions in the readme file to install the new iSCSI driver software package.
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See the readme file for additional information about installing and configuring the iSCSI driver software.

Uninstalling iSCSI Driver Software

To uninstall the iSCSI driver software, follow these instructions. You must have super-user (root) authority to remove the iSCSI driver.

-
- Step 1** Stop all applications using iSCSI devices, unmount all iSCSI filesystems and manually stop the iSCSI driver. For example:
- ```
/sbin/init.d/iscsi stop
```
- Step 2** Use SAM to remove the iSCSI driver, or remove the driver manually. The removal procedure compiles a new kernel that will not include the iSCSI driver. For example:
- ```
swremove ISCSI
```
- Step 3** Reboot the HP-UX system.
-

Caveats

Caveats describe unexpected behavior or defects in iSCSI software versions. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. There are no open or resolved severity 1 or 2 caveats for the iSCSI driver version 3.1.1.

**Note**

If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any version. You can reach Bug Navigator II on Cisco.com at Service & Support: http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Related Documentation

The following sections describe the related documentation available for the iSCSI Driver version 3.1.1 for HP-UX 11 and the Cisco SN 5400 Series system. These documents consist of the iSCSI driver release notes, readme and example configuration files, and the SN 5400 Series system hardware installation and software configuration guides.

The SN 5400 Series system hardware installation and software configuration documentation sets are available as printed manuals or electronic documents. The iSCSI driver readme file and example configuration file are available in electronic format, as part of the software download package. See the “[Obtaining the iSCSI Driver and Updated SN 5400 Series System Software](#)” section on page 5 for details.

Release-Specific Documents

This Release Notes document is the only document specific to iSCSI Driver version 3.1.1 for HP-UX 11. It is located on Cisco.com and the Documentation CD-ROM.

Each release of SN 5400 Series system software includes an associated Release Notes document, which is also available as an electronic document on Cisco.com and the Documentation CD-ROM.

Hardware Documents

Refer to the appropriate SN 5400 Series system hardware installation guide for hardware installation procedures. The *Cisco SN 5428 Storage Router Hardware Installation Guide* provides hardware installation procedures for SN 5428 Storage Routers. The *Cisco SN 5428-2 Storage Router Hardware Installation Guide* provides hardware installation procedures for SN 5428-2 Storage Routers. These documents are available as printed manuals. They are also available as electronic documents on Cisco.com and the Documentation CD-ROM

Software Documents

Refer to the appropriate SN 5400 Series system software configuration guide for software configuration information. The *Cisco SN 5428 Storage Router Software Configuration Guide Release 3.2* provides configuration information for SN 5428 Storage Routers. The *Cisco SN 5428-2 Storage Router Software Configuration Guide Release 3.2* provides configuration information for SN 5428-2 Storage Routers. These documents are available as printed manuals. They are also available as electronic documents on Cisco.com and the Documentation CD-ROM.

For documentation on the SN 5400 Series system web-based GUI, refer to the SN 5400 Series system web-based GUI online Help system.

Service and Support

For service and support for a product purchased from a reseller, contact the reseller, who offers a wide variety of Cisco service and support programs described in “Service and Support” of Cisco Information Packet shipped with your product.



Note

If you purchased your product from a reseller, you can access Cisco.com as a guest. Cisco.com is Cisco Systems' primary real-time support channel. Your reseller offers programs that include direct access to Cisco.com services.

For service and support for a product purchased directly from Cisco, use Cisco.com.

Software Configuration Tips on the Cisco TAC Home Page

A variety of Cisco SN 5400 Series system software and iSCSI driver installation, configuration and usage tips are available on the Cisco Technical Assistance Center (TAC) Web Site.

You can access “tech tips” by following these instructions:

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- Step 1** At <http://www.cisco.com>, log in to Cisco.com. Click **Technical Support**, and select **Hardware Support** from the menu.
 - Step 2** At the Hardware Support web page, click **Storage Networking Devices** from the Hardware Support menu on the left side of the page.
 - Step 3** At the Storage Networking Devices web page, click the appropriate link for your system. For example, click the **SN 5428 Storage Routers** link.
 - Step 4** Click the **Troubleshooting** link, and then click the appropriate links for information about installing, configuring, and troubleshooting SN 5400 Series system software and iSCSI drivers.
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Obtaining Documentation

These sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com>

Translated documentation is available at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

Ordering Documentation

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit comments electronically on Cisco.com. In the Cisco Documentation home page, click the **Fax** or **Email** option in the “Leave Feedback” section at the bottom of the page.

You can e-mail your comments to bug-doc@cisco.com.

You can submit your comments by mail by using the response card behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you with these tasks:

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

If you want to obtain customized information and service, you can self-register on Cisco.com. To access Cisco.com, go to this URL:

<http://www.cisco.com>

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Cisco TAC inquiries are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

The Cisco TAC resource that you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

You can use the Cisco TAC Web Site to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to this URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

<http://www.cisco.com/register/>

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC Web Site, you can open a case online by using the TAC Case Open tool at this URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:
http://www.cisco.com/en/US/products/products_catalog_links_launch.html
- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary*, *Internetworking Technology Handbook*, *Internetworking Troubleshooting Guide*, and the *Internetworking Design Guide*. For current Cisco Press titles and other information, go to Cisco Press online at this URL:
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco monthly periodical that provides industry professionals with the latest information about the field of networking. You can access *Packet* magazine at this URL:

<http://www.cisco.com/go/packet>

- *iQ Magazine* is the Cisco monthly periodical that provides business leaders and decision makers with the latest information about the networking industry. You can access *iQ Magazine* at this URL:

<http://www.cisco.com/go/iqmagazine>

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in the design, development, and operation of public and private internets and intranets. You can access the *Internet Protocol Journal* at this URL:

http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html

- Training—Cisco offers world-class networking training, with current offerings in network training listed at this URL:

http://www.cisco.com/en/US/learning/le31/learning_recommended_training_list.html

This document is to be used in conjunction with the documents listed in the “Related Documentation” section.



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