



# CHAPTER 1

## Cisco Persistent Storage Device Module Installation and Configuration Guide

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### WS-SVC-PSD-1

This publication describes how to install and configure the Cisco Persistent Storage Device (PSD) on the Catalyst 6500 series switch. See the [“Related Documentation” section on page 1-51](#) for more information about software configuration for the switch.



#### Note

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For translations of the warnings in this publication, see the [“Safety Overview” section on page 1-8](#) and refer to the *Regulatory Compliance and Safety Information* for the Catalyst 6500 series switches.

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# Overview

This section describes the Catalyst 6500 and 7600 series PSD, how it operates, and how to manage it, and includes these sections:

- [Understanding How the PSD Works, page 1-2](#)
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## Understanding How the PSD Works

The Cisco Persistent Storage Device (PSD) provides persistent storage capabilities to Cisco clients, and allows the clients to store data on the PSD's internal hard drive. Release 1.x provides content data records (CDR) backup capabilities for Cisco's Content Services Gateway (CSG). Release 2.0 adds CDR backup capabilities for the Cisco Gateway GPRS Serving Node (GGSN).

A single PSD can support both CSGs and GGSNs. The number of CSGs and GGSNs that can be supported by a single PSD is limited by the traffic load generated by each, as well as the duration of storage that you desire.

### Storage and Retrieval on the PSD

Under normal conditions, a Cisco client will send content data records to Mediation Partners' servers. If those servers become unreachable—for any reason—records are then sent to the PSD for safekeeping until contact is re-established with the Charging Gateway (CG). Once contact is re-established, the client retrieves the records from the PSD, and forwards them to the CG.

#### Storage

Under normal conditions, the PSD provides backup capabilities when necessary—for example, during network outages. The PSD stores the payload from the packet in a queue, and is unaware of the content or format of that data, so that the data can be retrieved exactly as it was sent.

#### Retrieval

Once the client has determined that its regular data server is reachable, you issue a CLI command to request that the data files for a given data store be transferred using FTP to a specified URL. You can also restore the configuration to a previously saved version that includes all the IP and application related configuration files. And, you can issue another CLI command to delete transferred files.

**Note**

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The GGSN requires all client Charging Gateways (CG) to send a Node Alive request when they initially startup. The GGSN uses receipt of the Node Alive as an indicator that a CG is now available. Therefore, the GTP' interface on the PSD supports sending Node Alive requests in order to properly support the GGSN.

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## Datstores

Datstores are locations for a particular client that map to the PSD's hard drive. In this release, you can create up to twenty (20) separate datstores and name them. Twenty datstores support four MWAM cards in a single chassis with each running five client images, and allows each client to have its own data store. Additionally, datstores have access lists that you can configure to allow specific clients to read and write to specific datstores. Currently, the number of accessors is limited to two (2). The data store access list contains an optional port number in addition to the IP address for each accessor.

When the preferred destination for data becomes unavailable, or during any network outage, data is sent to the PSD and is stored on a "first come, first served" basis. The maximum record storage capability of the PSD is 37 gigabytes, and is allocated as needed.

### Format of Datastore Data Files

A data store is comprised of one or more data files. Each data file is composed of multiple records that are constructed of various management related fields, data, and an end-of-record (EOR) indicator. If you need to retrieve data files using FTP (files that are usually corrupt), you will need to understand the format of the data. The following is the format for each record written to a data file:

Flag	CRC	Data Length	Data	EOR
------	-----	-------------	------	-----

- The "Flag" is a 4-byte integer value that indicates the status of the record. This value is used as a 32 bit mask with individual bits having specific meanings. The following bits have assigned values with bit 1 being the least significant (right most bit):
  - Bit 1: Record written—a value of "1" indicates that the record has been completely written to file. A value of "0" indicates that it is an incomplete record, and is probably corrupt.
  - Bit 2: Record acknowledged—a value of "1" indicates that the client has acknowledged that it read the record. A value of "0" indicates that the client has not acknowledged that it read the record.
  - Bit 3: CRC Present—a value of "1" indicates that the Circular Redundancy Check (CRC) field contains a CRC value for the data in this record. A value of "0" indicates the CRC field can be ignored when validating the record.
- The "CRC" is a 4-byte integer value representing a CRC-32 value.
- The "Data Length" is a 4-byte integer value representing the length of the Data field.
- The "Data" is the data the client device has written to the data store.
- The "EOR" is a one-byte value of 0xFF that indicates the end-of-record.

An End-of-File (EOF) marker follows the last record in a file. This marker is a 4 byte field with a value of 0xFFFFFFFF.

Data files are named with a numeric prefix and a file extension of ".data" (for example, 00000001.data).

## Platform and Network Planning

In release 1.x and above, the PSD is implemented as a single linecard that sits in a Catalyst 6500 or 7600 chassis.

The PSD hardware supports the following features:

- Critical data backup from single failures
- Internal 40 GB hard disk, with a maximum storage capability of 37 GB.
- Single module in Catalyst 65xx or 76xx chassis

The typical configuration will be a chassis with up to twenty active co-resident clients and a single PSD serving those clients. The number of PSDs required is determined based on expected network traffic, and the corresponding records that Cisco clients would generate (for example, billing records from a CSG).

Cisco recommends that you consult your sales engineer for specific network planning. You can, however, get a general idea of how many PSDs your network requires by using the following criteria.

To determine the number of PSDs you need, take the maximum value of the following variables:

- Number of Clients ÷ the maximum number of Datastores per PSD, or
- Client transmit data rate ÷ the PSD's maximum receive data rate, or
- (Hours of storage × client transmit data rate) ÷ the max storage per PSD.

Additionally, the following values will be useful to you for network planning:

- Max datastores per PSD = 20
- Client transmit rate = 750MB per hour (actual rates will vary)
- PSD's max receive rate = 640MB per hour
- Max PSD storage capacity = 37GB

## Configuring and Managing the PSD

The PSD is configured and managed by sessioning to the PSD module from IOS on the Supervisor card, or with Telnet when Telnet is enabled. The PSD is then configured using a CLI much like IOS. In addition to a number of administrative and troubleshooting commands on the PSD, there are basic configuration commands that allow you to create and manage datastores on the PSD, and to assign clients that may access (read/write) those datastores. Typically, you would configure a datastore for each client, or pair of redundant clients.

Additionally, you must configure the clients to inform them of the location and presence of a PSD.

## New Features in Release 2.0

The following features are new for the PSD Release 2.0:

- The **configuration save** command is introduced to save and store PSD configuration files to a specified FTP URL.
- The **datatstore transfer** command is introduced to transfer PSD configuration files to a specified FTP URL, and to optionally delete them.
- The **configuration restore** command is introduced to restore a PSD using the saved configuration files from the specified FTP URL.

- The **datastore purge** command allows you to delete sets of files.
- The maximum number of data stores is increased to 20 (the equivalent to 4 MWAMs of GGSNs).
- The same PSD can be shared by a CSG and a GGSN.

## PSD Features in Release 1.1(1)

These are the features for the Cisco PSD software release 1.1(1)

- Support for full capacity of the existing 40GB Hard drive, providing up to 37GB of record storage.

## PSD Features in Release 1.0(1)

These are the features for the PSD in software release 1.0(1):

- The PSD supports up to 3 clients.
- Call Data Record Backup (CDRB) function to support the Cisco CSG.
- Data packets (CDRs) are retrievable in the order they were stored on the PSD.

## Supported Platforms

- Catalyst 6500 Switch running IOS
- Cisco 7600 Internet Router running IOS

### Finding Support Information for Platforms and Cisco IOS Software Images

Use Cisco Feature Navigator to find information about platform support and Cisco IOS software image support. Access Cisco Feature Navigator at <http://www.cisco.com/go/fn>. You must have an account on Cisco.com. If you do not have an account or have forgotten your username or password, click **Cancel** at the login dialog box and follow the instructions that appear.

## Supported MIBs, and RFCs

The following sections provide information about the MIBs and RFCs that are supported on the PSD:

### MIBs

- IF-MIB
- MIB-2
- HOST-RESOURCE-MIB

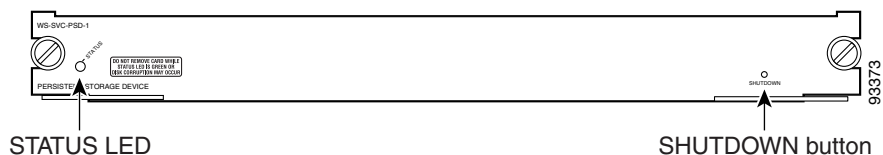
### RFCs

- RFC1229—Manage network interfaces
- RFC1213—Standard network device management
- RFC1514, RFC2790—Detailed system resources management that provides the ability to see all processes and their utilization. Disk partitions are visible and disk usage is available. You need net-snmp agent for this support.

## Front Panel Description

The PSD front panel (see [Figure 1-1](#)) includes a STATUS LED and SHUTDOWN button.

**Figure 1-1** Persistent Storage Device Module



## STATUS LED

The STATUS LED indicates the operating states of the PSD. [Table 1-1](#) describes the LED operation.

**Table 1-1** STATUS LED Description

Color	Description
Green	All diagnostic tests pass. The PSD is operational.
Red	A diagnostic other than an individual port test failed.
Orange	Indicates one of three conditions: <ul style="list-style-type: none"> <li>The PSD is running through its boot and self-test diagnostic sequence.</li> <li>The PSD is disabled.</li> <li>The PSD is in the shutdown state.</li> </ul>
Off	The PSD power is off.

## SHUTDOWN Button

Push the “shutdown” button on the faceplate of the PSD card, then wait for the faceplate LED to change from green to amber.



### Caution

Do not remove the PSD from the switch until the PSD has shut down completely and the STATUS LED is off. You can corrupt data files, or you can damage the PSD if you remove it from the switch before it completely shuts down.

To avoid corrupting the PSD hard disk, you must correctly shut down the PSD before you remove it from the chassis or disconnect the power. This shutdown procedure is normally initiated by commands entered at the Supervisor engine CLI prompt or the PSD CLI prompt.

If the PSD fails to respond to these commands properly, you can use the SHUTDOWN button on the front panel to initiate the shutdown procedure.

The shutdown procedure may require several minutes. The STATUS LED turns orange when the PSD shuts down.

### Conditions That Require Shutdown of a PSD Card

Before you perform any of the following operations, you should shut down the PSD:

- Physically remove the PSD cards from Cat6500/7600 slots.
- Manually switch the power off on the Cisco Catalyst 6500 or 7600 boxes.
- Any other conditions that causes a sudden power interruption of the chassis.

### Methods to Shutdown the PSD Card

Use one of the following methods to gracefully power down the PSD cards:

- In SUP configuration mode, issue the **no power enable module mod #** command.
- In SUP exec mode, issue the **hw-module module mod # shutdown** command.
- Push the “shutdown” button on the faceplate of the PSD card.
- A software reload of the Supervisor IOS using the **reload** command in the Supervisor CLI (the whole box reloads).



#### Note

If you use any other method to shutdown the PSD than the “shutdown” button, you must verify that the PSD is completely shutdown by looking at the state using the **show module n** command.

```
routert#sho mod 5
> Mod Ports Card Type                               Model                Serial No.
> -----
> 5      3 Persistent Storage Device                 WS-SVC-PSD-1        SAD10280323
>
> Mod MAC addresses                                Hw      Fw          Sw          Status
> -----
> 5  0018.197e.22c2 to 0018.197e.22c9  3.0    7.2(1)     1.1(3)     ShutDown
```



#### Note

Alternately, you can wait for the text “SP: PC shutdown completed for module 5” to appear on the console.

## Specifications

Table 1-2 describes the specifications for the PSD.

**Table 1-2 WS-SVC-PSD-1 Specifications**

Specification	Description
Dimensions (H x W x D)	1.2 x 14.4 x 16 in. (3.0 x 35.6 x 40.6 cm)

Table 1-2 WS-SVC-PSD-1 Specifications (continued)

Specification	Description
Weight	Minimum: 3 lb (1.36 kg) Maximum: 5 lb (2.27 kg)
Environmental conditions:	
Operating temperature	32 to 104° F (0 to 40° C)
Nonoperating temperature	–40 to 158° F (–40 to 70° C)
Humidity	10 to 90%, noncondensing
Humidity - Ambient (Noncondensing) Nonoperating and Storage	5 to 95%
Altitude	Sea level to 10,000 ft (3050 m)

## Safety Overview

Safety warnings appear throughout this document in procedures that may harm you if performed incorrectly.

For additional safety information, refer to documents listed in the [“Related Documentation”](#) section on page 1-51.



Warning

**This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**



Warning

**Waarschuwing Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijke letsels kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen. Voor vertalingen van de waarschuwingen die in deze publicatie verschijnen, kunt u het document *Regulatory Compliance and Safety Information* (Informatie over naleving van veiligheids- en andere voorschriften) raadplegen dat bij dit toestel is ingesloten.**



Warning

**Varoitus Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista. Tässä julkaisussa esiintyvien varoitusten käännökset löydät laitteen mukana olevasta *Regulatory Compliance and Safety Information* -kirjasesta (määräysten noudattaminen ja tietoa turvallisuudesta).**



**Warning**

**Attention**Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions d'avertissements figurant dans cette publication, consultez le document *Regulatory Compliance and Safety Information* (Conformité aux règlements et consignes de sécurité) qui accompagne cet appareil.

**Warning**

**Warnung**Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt. Übersetzungen der in dieser Veröffentlichung enthaltenen Warnhinweise finden Sie im Dokument *Regulatory Compliance and Safety Information* (Informationen zu behördlichen Vorschriften und Sicherheit), das zusammen mit diesem Gerät geliefert wurde.

**Warning**

**Avvertenza**Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti. La traduzione delle avvertenze riportate in questa pubblicazione si trova nel documento *Regulatory Compliance and Safety Information* (Conformità alle norme e informazioni sulla sicurezza) che accompagna questo dispositivo.

**Warning**

**Advarsel**Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du være oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker. Hvis du vil se oversettelser av deadvarslene som finnes i denne publikasjonen, kan du se i dokumentet *Regulatory Compliance and Safety Information* (Overholdelse av forskrifter og sikkerhetsinformasjon) som ble levert med denne enheten.

**Warning**

**Aviso**Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes. Para ver as traduções dos avisos que constam desta publicação, consulte o documento *Regulatory Compliance and Safety Information* (Informação de Segurança e Disposições Reguladoras) que acompanha este dispositivo.

**Warning**

**¡Advertencia!**Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes. Para ver una traducción

de las advertencias que aparecen en esta publicación, consultar el documento titulado *Regulatory Compliance and Safety Information* (Información sobre seguridad y conformidad con las disposiciones reglamentarias) que se acompaña con este dispositivo.



Warning

**Varning!** Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du varamedveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador. Se förklaringar av de varningar som förkommer i denna publikation i dokumentet *Regulatory Compliance and Safety Information* (Efterrättelse av föreskrifter och säkerhetsinformation), vilket medföljer denna anordning.



Warning

**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

## Software Requirements

Table 1-3 lists the PSD software versions supported by Cisco IOS software.

**Table 1-3 PSD Software Compatibility**

Application Image	Maintenance Image	Cisco IOS Software	Cisco Client Software
2.0	2.1(2)	12.2(17d)SXb or later	PSD Release 2.0 supports CSG release 3.1(3)C4(1) and later, and GGSN release 6.0.
1.1(1) through 1.1(4)	1.4(1)m	12.2(14)ZA2 or later releases with a Supervisor Engine 2 with an MSFC2	PSD Release 1.1(1) supports CSG release 3.1(3)C4(1)

## Hardware Requirements

Table 1-4 lists the PSD hardware versions supported by Cisco IOS software.

**Table 1-4 PSD Supported Hardware Version**

Cisco IOS Software
Supervisor Engine 2 with an MSFC2 or Supervisor 720 with an MSFC3

# Required Tools

**Note**

Before installing the PSD, you must install the Catalyst 6500 series switch chassis, and at least one Supervisor engine. For information on installing the switch chassis, refer to the *Catalyst 6000 Family Installation Guide*.

These tools are required to install the PSD in the Catalyst 6500 series switch:

- Flat-blade screwdriver
- Phillips-head screwdriver
- Wrist strap or other grounding device
- Antistatic mat or antistatic foam

Whenever you handle the PSD, always use a wrist strap or other grounding device to prevent electrostatic discharge (ESD).

# Installing and Removing the PSD

**Warning**

**During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.**

All the Catalyst 6500 series family switches support hot swapping, which allows you to install, remove, replace, and rearrange modules without turning off the system power. For more information on removing the PSD from a switch, see the [“Removing a Module” section on page 1-12](#).

**Caution**

Do not remove the PSD from the switch until the PSD has shut down completely and the STATUS LED is orange. You can corrupt data files, or damage the PSD if you remove it from the switch before it completely shuts down.

When the system detects that a module has been installed or removed, the system automatically runs diagnostic and discovery routines, acknowledges the presence or absence of the module, and resumes system operation.

To install and use the PSD, you need to complete the following actions:

- Perform the initial installation by placing the PSD in a switch.
- At the switch CLI, session to the PSD CLI and provide a basic configuration.
- Test network connectivity by pinging an external client.

This section describes how to install and verify the operation of the PSD in the Catalyst 6500 family switch, and contains the following sections:

- [Slot Assignments, page 1-12](#)
- [Removing a Module, page 1-12](#)
- [Installing a Module, page 1-13](#)
- [Verifying the Installation, page 1-21](#)

## Slot Assignments

The Catalyst 6509 switch chassis has nine slots. The module can occupy any slot in the Catalyst 6500 series chassis.



### Note

The Catalyst 6509-NEB switch has vertical slots numbered 1 to 9 from right to left. Install the modules with the component side facing to the right.

- Slot 1 is reserved for the Supervisor engine.
- Slot 2 can contain an additional redundant Supervisor engine in case the Supervisor engine in slot 1 fails.
- If a redundant Supervisor engine is not required, slots 2 through 6 on the 6-slot chassis, (slots 2 through 9 on the 9-slot chassis and slots 2 through 13 on the 13-slot chassis) are available for switching modules, or other application modules.
- Install switching-module filler plates, which are blank switching-module carriers, in the empty slots to maintain consistent airflow through the switch chassis.

## Removing a Module

This section describes how to remove an existing module from a chassis slot.



### Warning

**During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.**



### Warning

**Before you install, operate, or service the system, read the *Site Preparation and Safety Guide*. This guide contains important safety information you should know before working with the system.**



### Warning

**Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.**

To remove a Supervisor engine or module from the chassis, perform these steps:

### Step 1

Disconnect any network interface cables attached to the Supervisor engine or module.



### Note

The PSD does not have any interface cable connections. It communicates through the chassis backplane.

### Step 2

Verify that the captive installation screws on all of the modules in the chassis are tight.

This action ensures that the space created by the removed module is maintained.



**Note** If the captive installation screws are loose, the electromagnetic interference (EMI) gaskets on the installed modules will push the modules toward the open slot, reducing the opening size and making it difficult to install the replacement module.

**Step 3** Loosen the two captive installation screws on the Supervisor engine or module.

**Step 4** Depending on the orientation of the slots in the chassis (horizontal or vertical), perform one of the following sets of steps:

#### Horizontal slots

- a. Place your thumbs on the left and right ejector levers, and simultaneously rotate the levers outward to unseat the module from the backplane connector.
- b. Grasp the front edge of the module and slide the module part of the way out of the slot. Place your other hand under the module to support the weight of the module. Do not touch the module circuitry.

#### Vertical slots

- a. Place your thumbs on the ejector levers located at the top and bottom of the module, and simultaneously rotate the levers outward to unseat the module from the backplane connector.
- b. Grasp the edges of the module, and slide the module straight out of the slot. Do not touch the module circuitry.

**Step 5** Place the module on an antistatic mat or antistatic foam, or immediately reinstall it in another slot.

**Step 6** If the slot is to remain empty, install a module filler plate to keep dust out of the chassis and to maintain proper airflow through the chassis.



#### Warning

**Blank faceplates (filler panels) serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards and faceplates are in place.**

## Installing a Module

This section describes how to install modules in the Catalyst 6500 series and Catalyst 6000 family switches.



#### Caution

To prevent ESD damage, handle modules by the carrier edges only.



#### Warning

**During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself.**

**Warning**

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**Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.**

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**Warning**

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**Before you install, operate, or service the system, read the *Site Preparation and Safety Guide*. This guide contains important safety information you should know before working with the system.**

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To install a Supervisor engine or module in the chassis, perform these steps:

- 
- Step 1** Choose a slot for the Supervisor engine or module.
- Step 2** Verify that there is enough clearance to accommodate any interface equipment that you will connect directly to the Supervisor engine or module ports. If possible, place modules between empty slots that contain only module filler plates.
- Step 3** Verify that the captive installation screws are tightened on all modules installed in the chassis. This action ensures that the EMI gaskets on all modules are fully compressed in order to maximize the opening space for the new module or the replacement module.

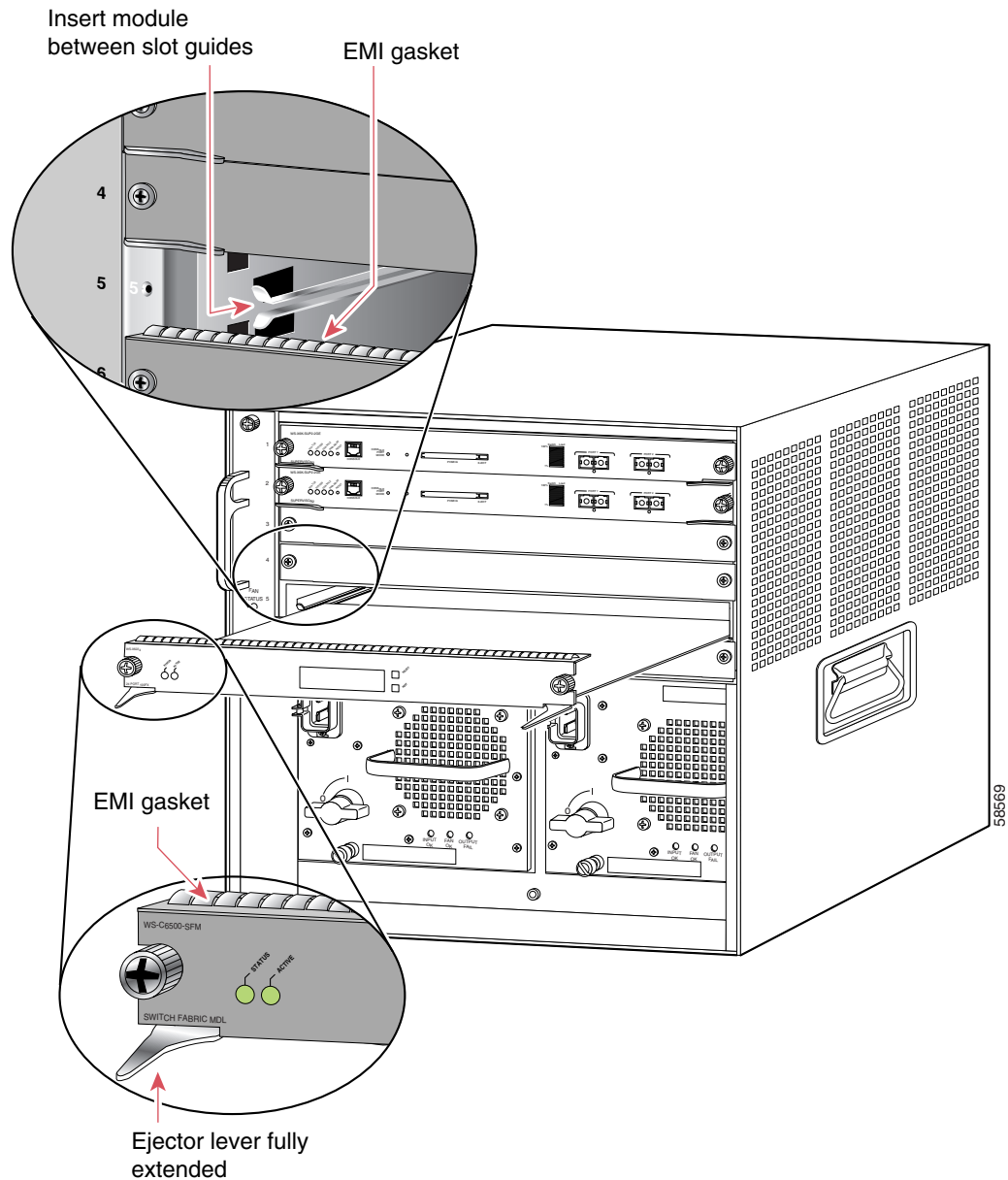
**Note**

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If the captive installation screws are loose, the EMI gaskets on the installed modules will push adjacent modules toward the open slot, reducing the opening size and making it difficult to install the replacement module.

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- Step 4** Remove the module filler plate by removing the two Phillips pan-head screws from the filler plate. To remove a module, refer to [“Removing a Module” section on page 1-12](#).
- Step 5** Fully open both ejector levers on the new or replacement module. (See [Figure 1-2](#).)

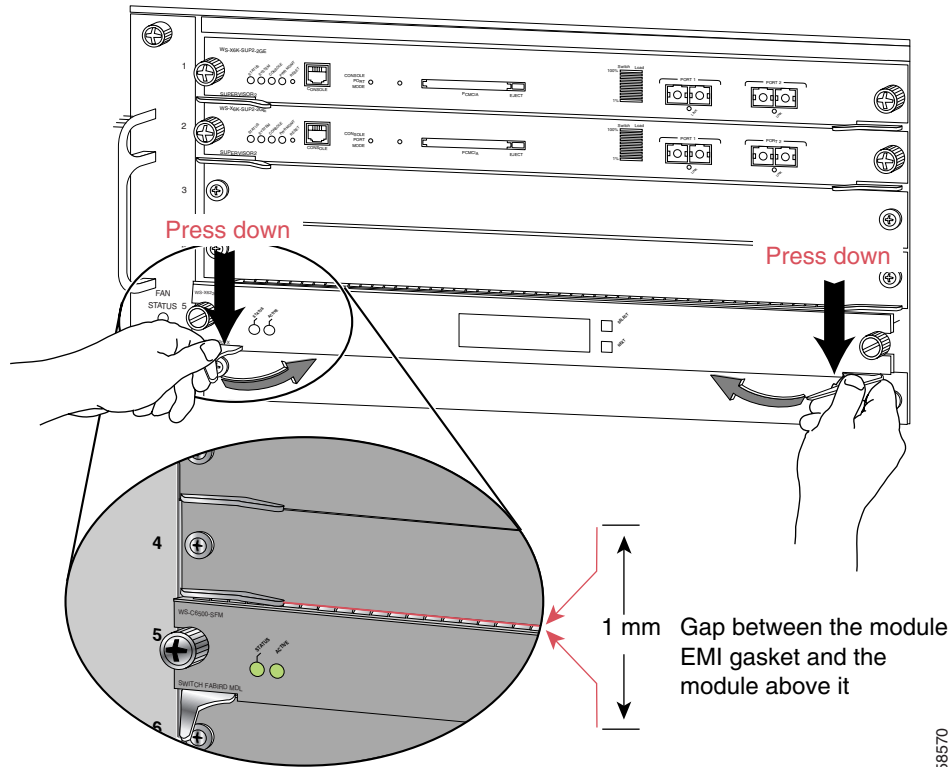
**Figure 1-2** Positioning the Module in a Horizontal Slot Chassis

**Step 6** Depending on the orientation of the slots in the chassis (horizontal or vertical), perform one of these sets of steps:

#### Horizontal slots

- a. Position the Supervisor engine or module in the slot. (See [Figure 1-2](#).) Make sure that you align the sides of the module carrier with the slot guides on each side of the slot.
- b. Carefully slide the Supervisor engine or module into the slot until the EMI gasket along the top edge of the module makes contact with the module in the slot above it and both ejector levers have closed to approximately 45 degrees in relation to the module faceplate. (See [Figure 1-3](#).)

**Figure 1-3** Clearing the EMI Gasket in a Horizontal Slot Chassis



- c. Using the thumb and forefinger of each hand, grasp the two ejector levers and press down to create a small (0.040 inch [1 mm]) gap between the module's EMI gasket and the module above it. (See [Figure 1-3](#).)



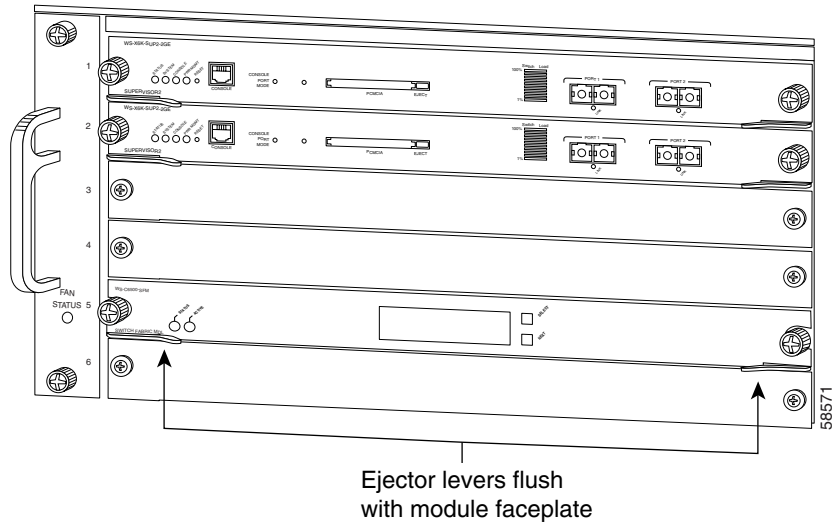
**Caution**

Do not press down too hard on the levers because they can bend and be damaged.

- d. While pressing down, simultaneously close the left and right ejector levers to fully seat the Supervisor engine or module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate. (See [Figure 1-4](#).)

58570



**Figure 1-4 Ejector Lever Closure in a Horizontal Slot Chassis**

**Note** Failure to fully seat the module in the backplane connector can result in error messages.

- e. Tighten the two captive installation screws on the Supervisor engine or module.

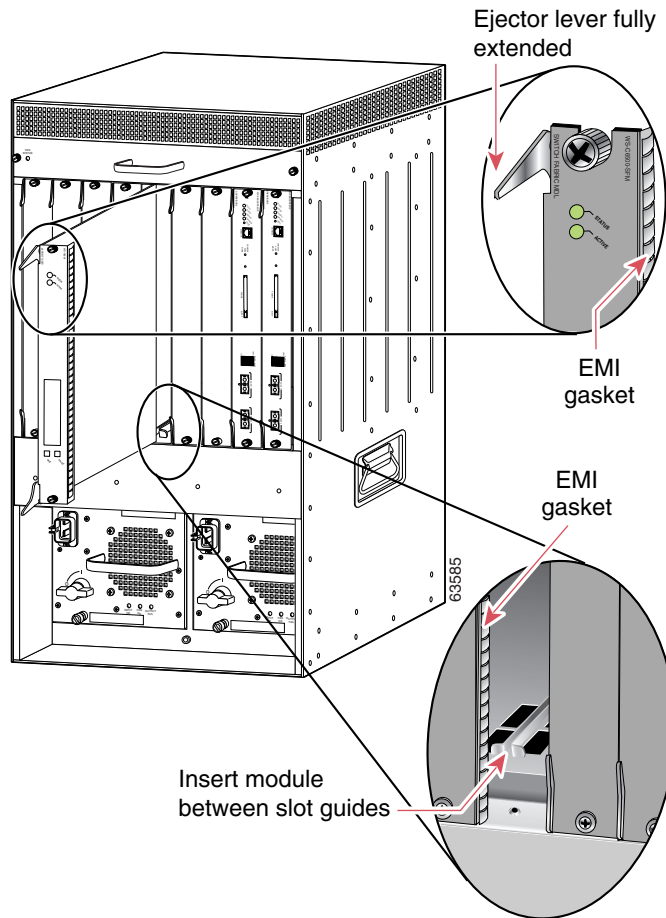


**Note** Make sure that the ejector levers are fully closed before tightening the captive installation screws.

#### Vertical slots

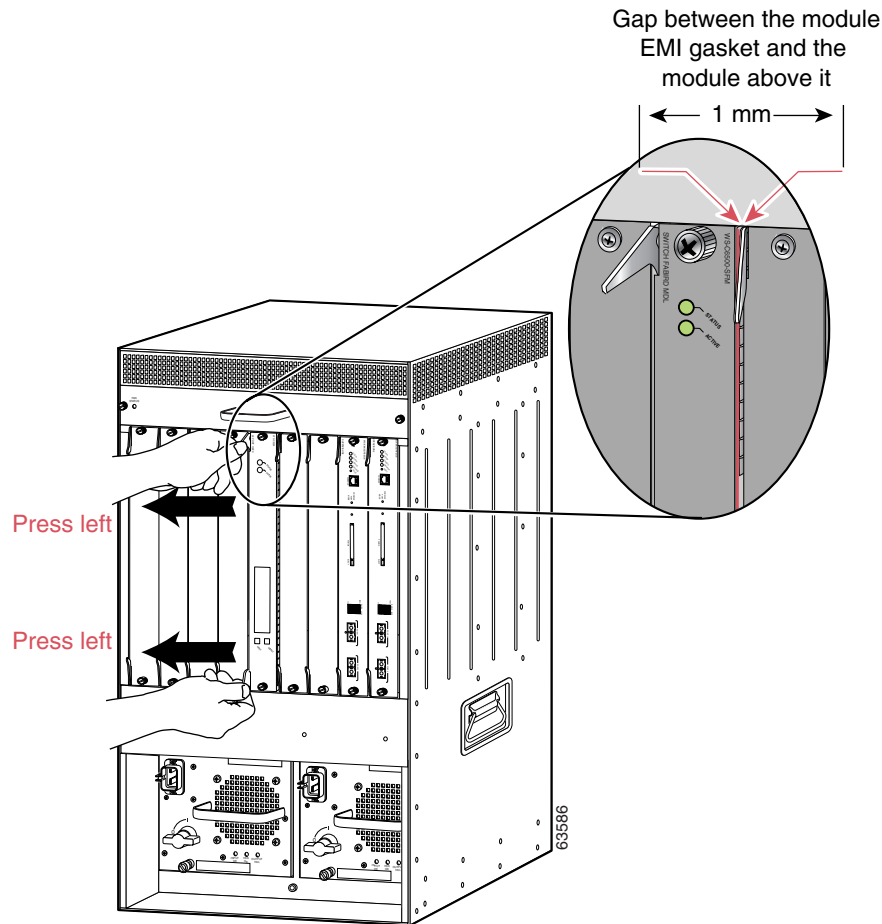
- a. Position the Supervisor engine or switching module in the slot. (See [Figure 1-5](#).) Make sure that you align the sides of the switching module carrier with the slot guides on the top and bottom of the slot.

**Figure 1-5** Positioning the Module in a Vertical Slot Chassis



- b. Carefully slide the Supervisor engine or module into the slot until the EMI gasket along the right edge of the module makes contact with the module in the slot adjacent to it and both ejector levers have closed to approximately 45 degrees with respect to the module faceplate. (See [Figure 1-6](#).)
- c. Using the thumb and forefinger of each hand, grasp the two ejector levers and exert a slight pressure to the left, moving the module approximately 0.040 inches (1 mm) to create a small gap between the module's EMI gasket and the module adjacent to it. (See [Figure 1-6](#).)

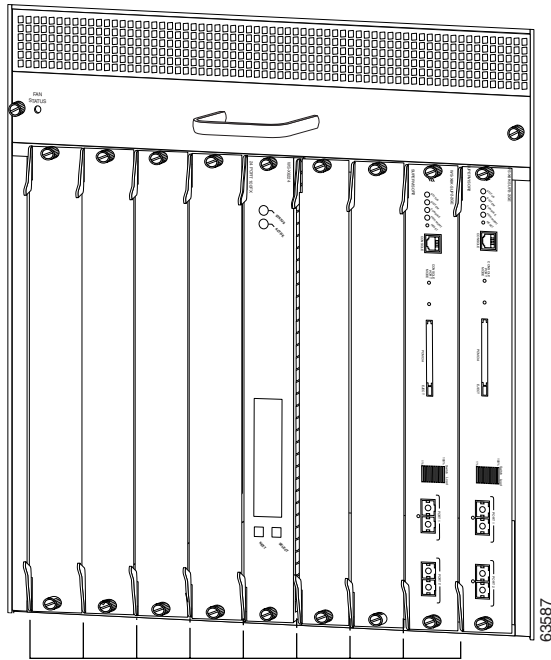
**Figure 1-6** Clearing the EMI Gasket in a Vertical Slot Chassis



**Caution**

Do not exert too much pressure on the ejector levers. They will bend and be damaged.

- d. While pressing on the ejector levers, simultaneously close them to fully seat the Supervisor engine or module in the backplane connector. The ejector levers are fully closed when they are flush with the module faceplate. (See [Figure 1-7](#).)

**Figure 1-7 Ejector Lever Closure in a Vertical Slot Chassis**

All ejector levers flush  
with module faceplate

- e. Tighten the two captive installation screws on the module.

**Note**

Make sure that the ejector levers are fully closed before tightening the captive installation screws.

**Note**

For information regarding installation details for the Cisco 7600 Internet Router, go to the following URL:  
[http://www.cisco.com/en/US/products/hw/routers/ps368/products\\_module\\_installation\\_guide\\_book09186a008007cd9d.html](http://www.cisco.com/en/US/products/hw/routers/ps368/products_module_installation_guide_book09186a008007cd9d.html)

## Verifying the Installation

This section describes how to verify the PSD installation.

### Cisco IOS Software

To verify that the system acknowledges the new module and has brought it online, enter the **show module** [*mod-num* | **all** ] command.

This example shows the output of the **show module** command:

```
Router#show module
Mod Ports Card Type                               Model                               Serial No.
-----
 1    2 Catalyst 6000 supervisor 2 (Active)         WS-X6K-SUP2-2GE                     SAL06396QLA
 2    2 Catalyst 6000 supervisor 2 (Standby)        WS-X6K-SUP2-2GE                     SAL061800UB
 3   48 48 port 10/100 mb RJ45                    WS-X6348-RJ-45                      SAL06200V6W
 4    3 Network Analysis Module                    WS-SVC-NAM-1                        SAD064403UB
 5    3 Persistent Storage Device                  WS-SVC-PSD-1                        SAD060301SU
 6    3 Persistent Storage Device                  WS-SVC-PSD-1                        SAD060301SV

Mod MAC addresses                               Hw   Fw       Sw       Status
-----
 1 0006.d65b.e1bc to 0006.d65b.e1bd             3.10 6.1(3)   7.5(0.94) Ok
 2 0005.7485.bde8 to 0005.7485.bde9             3.7  6.1(3)   7.5(0.94) Ok
 3 0009.1243.23cc to 0009.1243.23fb             6.1  5.4(2)   7.5(0.94) Ok
 4 0002.7ee4.b046 to 0002.7ee4.b04d             1.0  7.2(1)   2.2(1a)  Ok
 5 00e0.b0ff.3630 to 00e0.b0ff.3637             0.101 7.5(0.61) 1.0(1)   Ok
 6 00e0.b0ff.3530 to 00e0.b0ff.3537             0.101 7.5(0.61) 1.0(1)   Ok

Mod Sub-Module                               Model                               Serial                               Hw   Status
-----
 1 Policy Feature Card 2                      WS-F6K-PFC2                        SAL06396LVK                       3.3  Ok
 1 Cat6k MSFC 2 daughterboard                 WS-F6K-MSFC2                       SAL06365RJM                       2.5  Ok
 2 Policy Feature Card 2                      WS-F6K-PFC2                        SAL061735WF                       3.2  Ok
 2 Cat6k MSFC 2 daughterboard                 WS-F6K-MSFC2                       SAL06131NAL                       2.3  Ok

Mod Online Diag Status
-----
 1 Pass
 2 Pass
 3 Pass
 4 Pass
 5 Pass
 6 Pass
```

When the PSD initially boots, by default it runs a partial memory test. To perform a full memory test, enter the **hw-module module module\_number reset device:partition mem-test-full** command.

A full memory test takes more time to complete than a partial memory test depending on the memory size. [Table 1-5](#) lists the memory test time and approximate boot time for a partial memory test.

**Table 1-5** Module Boot Time

Module	Boot Time
WS-SVC-PSD-1	9 minutes

You also can use the **hw-module module *module\_number* mem-test-full** command in a Cisco IOS system. This example shows how to do a full memory test for module 4:

```
Router(config)# hw-module module 4 mem-test-full
```

**Note**

Cisco recommends that you run a full online diagnostic when you boot your PSD for the first time. You can use the following commands to perform this task:

```
router# configure terminal diag level complete
```

## Configuring the PSD

See the following sections for configuration tasks for the PSD. Each task in the list is identified as either required or optional.

- [Configuring the Supervisor for the PSD, page 1-23](#)
- [“Adding the PSD to the Corresponding VLAN” section on page 1-23](#)
- [“Initial PSD Configuration” section on page 1-23](#)
- [“Transferring and Purging Data Files and Datastores” section on page 1-27](#)
- [“Administering the PSD” section on page 1-27](#)

There are several external interfaces that are available to configure and manage the PSD. They include the following:

### **MP (Maintenance Partition) Command Line Interface.**

When you boot the MP image (from compact flash), and login to the card, you are presented with a command line interface that allows you to perform activities such as administration tasks, configuration, troubleshooting, and to upgrade the application image.

### **AP (Application Partition) Command Line Interface.**

When you boot the AP image from the hard disk, and login to the card, you are presented with a command line interface that is similar to IOS. The AP commands allow you to configure the PSD, and to display the status of the PSD.

There is a specific subset of the PSD CLI commands for the following tasks:

- Taking the PSD into service
- Taking the PSD out of service
- Creating a data store for a client
- Deleting a data store
- Showing PSD related status and datastore information
- Enabling access to a datastore
- Disabling access to a datastore

### IOS Supervisor Command Line Interface.

This is the command line provided by the IOS image on the Supervisor card. There are IOS commands that allow you to interact with the PSD card. The Supervisor CLI also provides commands by which the CSG or GGSN is configured to communicate with the PSD card.

**SNMP interfaces.** The SNMP agent on the PSD can be configured and activated. When activated, you can then define a read community string. A network agent with connectivity to the PSD, and knowledge of the SNMP read community string, may issue SNMP get/walk type requests to manage and monitor the PSD.

## Configuring the Supervisor for the PSD

### Adding the PSD to the Corresponding VLAN

By default, the PSD is in trunking mode with native VLAN 1.

**Note**

By default the PSD will use vlan1 for its network traffic; however, you can configure the PSD to use another vlan with the **persistent-store module** command.

### Initial PSD Configuration

Before you can use the PSD for data storage, you must log into the PSD root account and configure the following:

- IP address
- Subnet mask
- IP broadcast address
- IP host name
- Default gateway
- Domain name
- Datastore Creation and Access Control
- Inservice
- If applicable, the DNS name server
- If you are using an external SNMP manager to communicate with the PSD, configure the following:
  - SNMP MIB variables
  - Access control for the SNMP agent
  - System group settings on the PSD

To configure these required parameters for the PSD, follow these steps:

**Step 1** Enter this command to verify that the PSD is installed and that the power is on:

```
Router# show module mod
```

**Step 2** Establish a console session with the PSD by entering:

```
Router# session slot module_number processor 1
```



**Note** Sometimes attempts to session into the PSD console from the supervisor fail immediately after startup, or immediately after a PSD restart, even though the “module online” message for the PSD blade has appeared at the supervisor. Always wait 60 seconds after the “module online” message appears on the supervisor for the PSD module before you attempt to session into the PSD from the supervisor.

The hardware and firmware of the PSD performs self-checks on boot up, then notifies the supervisor that the PSD module is online. This results in the “module online” message at the supervisor console. Concurrently, the firmware starts the PSD application on the PSD processors. The PSD application requires about 50 seconds to initialize itself, and the application does not accept session requests from the supervisor until this initialization is complete.

**Step 3** At the login prompt, type **root** to log in to the root account.

**Step 4** At the password prompt, type **cisco** as the root password.



**Note** If you have not changed the password from the factory-set default, a warning message displays. If you decide to change the password from the default, see the [“Changing the PSD CLI Passwords” section on page 1-29](#) for more information.

**Step 5** Configure the IP address and subnet mask by entering:

```
root@localhost# ip address ip-address subnet-mask
```

**Step 6** Configure the IP broadcast address by entering:

```
root@localhost# ip broadcast broadcast-address
```

**Step 7** Configure the IP host name used in the CLI prompt, **show** commands, and log messages by entering:

```
root@localhost# ip host [host-name]
```

**Step 8** Configure the default gateway by entering:

```
root@localhost# ip gateway default-gateway
```



**Note** This gateway should always be the IP address of VLAN1 on the Supervisor.

**Step 9** Configure the domain name for the PSD by entering:

```
root@localhost# ip domain domain-name
```

**Step 10** Configure one or more IP addresses as DNS name servers by entering:

```
root@localhost# ip nameserver ip-address [ip-address2] [ip-address-3]
```



**Note** The **ip nameserver** command can accept up to a maximum of three name server addresses (two addresses are optional).

**Step 11** Verify the PSD configuration by entering:

```
root@localhost# show ip
```



**Step 12** Configure a datastore for a Cisco client by entering:

```
root@localhost# datastore create cisco
root@localhost# datastore access enable cisco 1.2.3.4 port number
root@localhost# show datastore all or cisco
```

**Step 13** Put the PSD inservice by entering:

```
root@localhost# in-service
```



**Note** The following steps are optional configuration tasks:

**Step 14** Configure the SNMP syslocation MIB variable by entering:

```
root@localhost# snmp-agent location-string
```



**Note** The MIB variables in [Step 13](#) and [Step 14](#) must be valid DisplayString texts, each with a maximum length of 64 characters.

**Step 15** Set the SNMP sysContact MIB variable by entering:

```
root@localhost# snmp-contact contact-string
```

**Step 16** Set the SNMP sysName MIB variable by entering:

```
root@localhost# snmp-name name-string
```



**Note** You can delete the SNMP location, SNMP contact, or SNMP name by entering the respective command without any parameters.

**Step 17** Set the SNMP agent community string parameter password for read-write access by entering:

```
root@localhost# snmp-community community-string
```



**Note** Clear the SNMP community string with the **snmp delete community** command.

**Step 18** Verify the SNMP access controls and settings by entering:

```
root@localhost# show snmp
```

**Step 19** Enable telnet access to your PSD module from a remote location by entering:

```
root@localhost# telnet-server enable
```

After completing this configuration, the PSD is ready to use with other Cisco clients.

This example shows how to configure the PSD:

```
Router# session slot 8 processor 1
The default escape character is Ctrl-^, then x.
You can also type 'exit' at the remote prompt to end the session
Trying 127.0.0.81 ... Open

Cisco Persistent Storage (WS-SVC-PSD-1)
```

```

login: root
Password:

Cisco Persistent Storage Device (WS-SVC-PSD-1) Console, 1.0(1)
Copyright (C) 2002-2003 by cisco Systems, Inc.

WARNING! Default password has not been changed!

root@localhost.localdomain# ip address 192.18.12.221 255.255.255.192
root@localhost.localdomain# ip host psd1
root@psd1.localdomain# ip gateway 192.18.12.193
root@psd1.localdomain# ip domain cisco.com
root@psd1.cisco.com# ip nameserver 161.44.11.21
root@psd1.cisco.com# show ip
IP address:          192.18.12.221
Subnet mask:         255.255.255.192
IP Broadcast:       192.18.255.255
DNS Name:           psd1.cisco.com
Default Gateway:    192.18.12.193
Nameserver(s):      161.44.11.21
FTP Server:         disabled
Telnet Server:      disabled
root@psd1.cisco.com# snmp-agent enable
root@psd1.cisco.com# snmp-agent community read
root@psd1.cisco.com# snmp-agent location "Cisco Lab, Building 10 Lab 4"
root@psd1.cisco.com# snmp contact "Lab Admin, 555-1212"
root@psd1.cisco.com# show snmp-agent
SNMP Agent:         psd1.cisco.com
status:             enabled
ip address:         172.18.12.221
community string:  read
SNMPv1:             supported
SNMPv2c:            supported
SNMPv3:             not-supported
sysDescr:           Linux psd1.cisco.com 2.4.18 #1 SMP Wed Jul 16 11:18:19 EDT 2
003 i686
sysObjectID:        OID: enterprises.ucdavis.ucdSnmpAgent.linux
sysContact:          Lab Admin, 555-1212
sysName:             not-configured
sysLocation:         Cisco Lab, Building 10 Lab 4
root@psd1.cisco.com#

```

**Caution**

The PSD does not provide a dynamic method to save and restore your configuration. Additionally, if you need to change PSD modules in the Catalyst chassis, you will need to configure the new module. Cisco recommends that you perform the following procedure to save and store your PSD configuration details:

**Step 1** Session into the PSD:

```
router# session slot slot_num processor processor
```

**Step 2** Issue the **configuration save** command.

**Note**

You can also issue the following **show** commands, and copy and paste the various **show** output into your preferred text editor:

```
root@localhost.localdomain# show ip
root@localhost.localdomain# show snmp-agent
root@localhost.localdomain# show datastore all .
Save this file in a secure location for backup purposes.
```

**Note**

For specific information on how to configure the PSD to communicate with the CSG, refer to the “PSD Configuration for Content Services Gateway” chapter in the *Cisco Content Service Gateway Installation and Configuration Guide*.

## Transferring and Purging Data Files and Datastores

The PSD allows you transfer and purge whole datastores, as well as individual files that exist in a datastore. See [Troubleshooting the PSD, page 1-43](#) for more information about how to identify corrupt data files.

To transfer and purge datastores and datastore files, perform the following procedure:

- Step 1** Issue the **datastore transfer** command to push files to a designated URL using FTP. You can keep or delete all data files, all salvage files, or all files. Here is the syntax:

```
datastore transfer {keep | delete} {data-files | salvage-files | all} data-store-name
ftp-url
```

The specified URL has the following format:

```
ftp://username:password@hostname/fully-qualified-destination-directory
```

- Step 2** After you have transferred data and/or salvage files to an FTP server, you can purge specific files of a datastore by issuing the **datastore purge** command. You can purge data files, salvage files, or all files. Here is the syntax:

```
datastore purge transferred {data-files | salvage-files | all} data-store-name
```

## Administering the PSD

This section contains the various administrative tasks you can perform on the PSD with Cisco IOS:

- [Logging in to the PSD, page 1-28](#)
- [Changing the PSD CLI Passwords, page 1-29](#)
- [Resetting the PSD, page 1-30](#)
- [Upgrading the PSD Software, page 1-30](#)

## Logging in to the PSD


**Note**

The PSD has one user level “root”. The default password is “cisco”.

Table 1-6 shows the user levels and passwords for the PSD’s Application Partition.

**Table 1-6 Application Image Password**

Application Image (located on the hard disk)	
User	Password
root	cisco

Table 1-7 shows the user levels and passwords for the PSD’s Application Partition.

**Table 1-7 PSD Users and Passwords for the MP**

Maintenance Image (located on the compact flash)	
User	Password
root	cisco
guest	cisco


**Note**

The guest account in the PSD maintenance image has “All Read” and “All Write” privileges. On the application image, the root user has full access and there is no “guest” account.

When you boot into either the application image or the maintenance image and set up IP information, that information is synched between the images. However, if you change passwords, that information is not synched between the images, and is not reflected on the unchanged image.

To allow remote Telnet sessions, use the **telnet-server enable** command.

To log in to the PSD, follow these steps:

- 
- Step 1** Log in to the Catalyst 6500 switch using the Telnet connection or the console port connection.
- Step 2** At the CLI prompt, establish a console session with the PSD using the **session slot slot\_number processor 1** command, as follows:
- ```
Router# session slot 8 processor 1
The default escape character is Ctrl-^, then x.
You can also type 'exit' at the remote prompt to end the session
Trying 127.0.0.81 ... Open

Persistent Storage Module (WS-SVC-PSD-1)
```
- Step 3** At the PSD login prompt, type **root** to log in as the root user or **guest** to log in as a guest user.
- ```
login: root
```

- Step 4** At the password prompt, enter the password for the account. The default password for the root account is “cisco” and the default password for the guest account is “cisco”.

Password:

After a successful login, the command line prompt appears as follows:

```
Persistent Storage Module (WS-SVC-PSD-1) Console, 1.0(1)
Copyright (c) 1999-2002 by cisco Systems, Inc.
```

```
WARNING! Default password has not been changed!
```

```
root@localhost#
```

---

## Changing the PSD CLI Passwords

If you have not changed the password from the factory-set default, a warning message displays when you log in to the PSD.



**Note**

New passwords must be at least six characters in length, and may include uppercase and lowercase letters, numbers, and punctuation marks.

---



**Note**

If the PSD maintenance image passwords are lost for the root or guest account, the maintenance image must be upgraded. After the upgrade, the passwords are set to the default. See [Table 1-6 on page 1-28](#).

---

To change the password, follow these steps while you are logged in to the root account on the PSD:

- Step 1** Enter this command:

```
root@localhost# password username
```

To change the root password, make a Telnet connection to the PSD and use the **password root** command.

To change the guest password in MP mode only, make a Telnet connection to the PSD and use the **password guest** command.

- Step 2** Enter the new password:

```
Changing password for user root
New UNIX password:
```

- Step 3** Enter the new password again:

```
Retype new UNIX password:
passwd: all authentication tokens updated successfully
```

---

This example shows how to set the password for the root account:

```
root@localhost# password root
Changing password for user root
New UNIX password:
Retype new UNIX password:
passwd: all authentication tokens updated successfully
```

If you forget or lose the password, you can enter the **clear module pc-module *module number* password** command from the IOS Supervisor CLI to restore the password for the root account to “cisco”.

## Resetting the PSD

If you cannot reach the PSD through the CLI or an external Telnet session, enter the **hardware\_module module\_number reset** command to reset and reboot the PSD. The reset process requires several minutes.

When the PSD initially boots, by default it runs a partial memory test. To perform a full memory test, use the **mem-test-full** keyword in the **hw-module module *module\_number* reset device:partition mem-test-full** command.

When you next reset the PSD, the full memory test runs. A full memory test takes more time to complete than a partial memory test. See [Table 1-5](#) for memory test times.

You can also use the **hw-module module *module\_number* mem-test-full** configuration to run a memory test. This example shows a full memory test for module 5:

```
Router(config)# hw-module slot 5 memory test full
```

To reset the module from the CLI, perform this task in privileged mode:

Task	Command
Reset the module.	<b>hw-module module <i>mod_num</i> reset device: <i>partition</i> mem-test-full</b> The device: <i>partition</i> value is the string for PC boot device, for example: <b>hdd:x</b> designates the hard disk, <b>cf:x</b> designates the compact Flash where <b>x</b> is the number for the partition on each device.

This example shows how to reset the PSD that is installed in slot 9 from the CLI:

```
Router# hardware_module mod 9 reset cf:1 memtest-full
```

```
Proceed with reload of module? [confirm] y
% reset issued for module 9
```



### Note

For the boot device, you can specify hdd:1 for the application image or cf:1 for the maintenance image.

## Upgrading the PSD Software

You can upgrade both the application software and the maintenance software. To upgrade the application software, see the “[Upgrading the PSD Application Software](#)” section on page 1-34. To upgrade the maintenance software, see the “[Upgrading the PSD Maintenance Software](#)” section on page 1-31.

**Caution**

If you are upgrading from Release 1.0(x) to Release 1.1(1), you will lose all existing data because the hard drive must be repartitioned to enable the PSD to use of the additional 20GB of disk space. If you perform a normal upgrade, the IP and data store configurations will be preserved; however, if you perform an upgrade and specify the “-install” option, you will lose your data and data store configurations.

**Note**

Upgrading from Release 1.x to 2.0 will preserve data when you upgrade without the "-install" option.

**Upgrading the PSD Maintenance Software****Note**

In the event that you need to upgrade your MP image, refer to the following URL for image location: <http://www.cisco.com/cgi-bin/tablebuild.pl/cat6000-serv-maint>

To upgrade the PSD maintenance software, follow these steps:

- Step 1** Copy the PSD maintenance software image to a directory accessible to FTP.
- Step 2** Log in to the switch through the console port or through a Telnet session.
- Step 3** If the PSD is running in the application image go to [Step 4](#). If the PSD is not running in the application image, enter this command in the privileged mode:

```
Router# hardware_module module 9 reset
Device BOOT variable for reset = hdd:1
Warning:Device list is not verified.

Proceed with reload of module? [confirm]
% reset issued for module 9
Router#
00:31:11:%SNMP-5-MODULETRAP:Module 9 [Down] Trap
00:31:11:SP:The PC in slot 9 is shutting down. Please wait ...
00:31:25:SP:PC shutdown completed for module 9
00:31:25:%C6KPWR-SP-4-DISABLED:power to module in slot 9 set off (admin
request)
00:31:28:SP:Resetting module 9 ...
00:31:28:%C6KPWR-SP-4-ENABLED:power to module in slot 9 set on
00:33:26:%SNMP-5-MODULETRAP:Module 9 [Up] Trap
00:33:26:%DIAG-SP-6-BYPASS:Module 9:Online Diagnostics is Bypassed
00:33:26:%OIR-SP-6-INSCARD:Card inserted in slot 9, interfaces are now
online
```

- Step 4** After the PSD is back online, establish a console session with the PSD and log in to the root account.
- Step 5** Upgrade the PSD maintenance software by entering:

```
root@localhost# upgrade ftp-url
```

*ftp-url* is the FTP location and name of the PSD software image file.

**Note**

If the FTP server does not allow anonymous users, use the following syntax for the *ftp-url* value: `ftp://user@host/absolute-path/filename`. Enter your password when prompted.

- Step 6** Follow the screen prompts during the upgrade.

**Step 7** After completing the upgrade, log out of the PSD.

**Step 8** Boot into the maintenance image with the following command to reset the PSD maintenance software:

```
Router# hardware_module module 9 reset cf:1
Device BOOT variable for reset = cf:1
Warning:Device list is not verified.

Proceed with reload of module? [confirm]
% reset issued for module 9

Router#
00:16:06:%SNMP-5-MODULETRAP:Module 9 [Down] Trap
00:16:06:SP:The PC in slot 9 is shutting down. Please wait ...
00:16:21:SP:PC shutdown completed for module 9
00:16:21:%C6KPWR-SP-4-DISABLED:power to module in slot 9 set off (admin
request)
00:16:24:SP:Resetting module 9 ...
00:16:24:%C6KPWR-SP-4-ENABLED:power to module in slot 9 set on
00:18:21:%SNMP-5-MODULETRAP:Module 9 [Up] Trap
00:18:21:%DIAG-SP-6-BYPASS:Module 9:Online Diagnostics is Bypassed
00:18:21:%OIR-SP-6-INSCARD:Card inserted in slot 9, interfaces are now
online
Router#
```

**Step 9** (Optional) Verify the initial configuration after the PSD comes back online by logging into the PSD root account and enter the following command:

```
root@localhost# show ip
```

**Step 10** Upgrade the Bios using the following commands:

- a. Boot the PSD to the MP.
- b. At the login prompt enter **guest**.
- c. At the password prompt enter **cisco**.
- d. Enter `router# hw-module module module_number cf:1`
- e. Session to the PSD from the switch CLI.
- f. Issue the `session slot module_number proc 1` command.
- g. Enter `upgrade-bios` and follow the prompts
- h. Enter the following Bios file name: **B01MQ009.ROM**

**Step 11** (Optional) Reboot into the application image by entering:

```
Router# hardware_module module 9 reset
```

---

This example shows how to upgrade the PSD maintenance software:

```
Router#
Router# hardware_module module 9 reset
Device BOOT variable for reset = hdd:1
Warning:Device list is not verified.

Proceed with reload of module? [confirm]
% reset issued for module 9

Router#
00:31:11:%SNMP-5-MODULETRAP:Module 9 [Down] Trap
00:31:11:SP:The PC in slot 9 is shutting down. Please wait ...
00:31:25:SP:PC shutdown completed for module 9
```



```
00:31:25:%C6KPWR-SP-4-DISABLED:power to module in slot 9 set off (admin
request)
00:31:28:SP:Resetting module 9 ...
00:31:28:%C6KPWR-SP-4-ENABLED:power to module in slot 9 set on
00:33:26:%SNMP-5-MODULETRAP:Module 9 [Up] Trap
00:33:26:%DIAG-SP-6-BYPASS:Module 9:Online Diagnostics is Bypassed
00:33:26:%OIR-SP-6-INSCARD:Card inserted in slot 9, interfaces are now
online
Router#

Router# session slot 9 proc 1
The default escape character is Ctrl-^, then x.
You can also type 'exit' at the remote prompt to end the session
Trying 127.0.0.91 ... Open

Persistent Storage Module (WS-SVC-PSD-1)

login:root
Password:

Cisco Persistent Storage Module (WS-SVC-PSD-1) Console, 2.2(0.1)
Copyright (c) 1999-2002 by cisco Systems, Inc.

WARNING! Default password has not been changed!
root@localhost.cisco.com#

root@localhost.cisco.com# upgrade ftp://host/pub/rmon/mp.1-1-0-1.bin.gz
user password:

Downloading image...
ftp://host/pub/rmon/mp.1-1-0-1.bin.gz (11065K)
- [#####] 11065K | 837.65K/s
11331153 bytes transferred in 13.21 sec (837.64k/sec)

Uncompressing the image...

Verifying the image...

Applying the Maintenance image.
This may take several minutes...

Upgrade of Maintenance image completed successfully.
root@hostname.cisco.com# exit

Router# hardware_module module 9 reset cf:1
Device BOOT variable for reset = cf:1
Warning:Device list is not verified.

Proceed with reload of module? [confirm]
% reset issued for module 9
Router#
02:27:19:%SNMP-5-MODULETRAP:Module 9 [Down] Trap
02:27:19:SP:The PC in slot 9 is shutting down. Please wait ...
02:27:36:SP:PC shutdown completed for module 9
02:27:36:%C6KPWR-SP-4-DISABLED:power to module in slot 9 set off (admin
request)
02:27:39:SP:Resetting module 9 ...
02:27:39:%C6KPWR-SP-4-ENABLED:power to module in slot 9 set on
02:29:37:%SNMP-5-MODULETRAP:Module 9 [Up] Trap
02:29:37:%DIAG-SP-6-BYPASS:Module 9:Online Diagnostics is Bypassed
02:29:37:%OIR-SP-6-INSCARD:Card inserted in slot 9, interfaces are now
online
Router#
```

## Upgrading the PSD Application Software

To upgrade the PSD application software, follow these steps:

- Step 1** Copy the PSD application software image to a directory accessible to FTP.
- Step 2** Log in to the switch through the console port or through a Telnet session.
- Step 3** If the PSD is running in the maintenance image, go to [Step 4](#). If the PSD is not running in the maintenance image, enter this command in privileged mode:

```
Router# hardware_module module 9 reset cf:1
Device BOOT variable for reset = cf:1
Warning:Device list is not verified.

Proceed with reload of module? [confirm]
% reset issued for module 9
Router#
00:03:31:%SNMP-5-MODULETRAP:Module 9 [Down] Trap
00:03:31:SP:The PC in slot 9 is shutting down. Please wait ...
00:03:41:%SNMP-5-COLDSTART:SNMP agent on host R1 is undergoing a cold
start
00:03:46:SP:PC shutdown completed for module 9
00:03:46:%C6KPWR-SP-4-DISABLED:power to module in slot 9 set off (admin
request)
00:03:49:SP:Resetting module 9 ...
00:03:49:%C6KPWR-SP-4-ENABLED:power to module in slot 9 set on
00:05:53:%SNMP-5-MODULETRAP:Module 9 [Up] Trap
00:05:53:%DIAG-SP-6-BYPASS:Module 9:Online Diagnostics is Bypassed
00:05:53:%OIR-SP-6-INSCARD:Card inserted in slot 9, interfaces are now
online
Router#
```

- Step 4** After the PSD is back online, establish a console session with the PSD and log in to the root account.

```
Router# session slot 9 proc 1
The default escape character is Ctrl-^, then x.
You can also type 'exit' at the remote prompt to end the session
Trying 127.0.0.91 ... Open

Persistent Storage Module (WS-SVC-PSD-1)

Maintenance Partition

login:root
Password:

Persistent Storage Module (WS-SVC-PSD-1) Console, 1.4(1)m
Copyright (c) 1999, 2000, 2001 by cisco Systems, Inc.
```

- Step 5** Upgrade the PSD application software by entering:

```
root@localhost# upgrade ftp-url
```

*ftp-url* is the FTP location and name of the PSD software image file.



**Note** If the FTP server does not allow anonymous users, use the following syntax for the *ftp-url* value: `ftp://user@host/absolute-path/filename`. Enter your password when prompted.

- Step 6** Follow the screen prompts during the upgrade.

**Step 7** After completing the upgrade, log out of the PSD.

**Step 8** Reset the PSD to the AP image by entering:

```
Router# hardware_module mod 8 reset
Device BOOT variable for reset =
Warning:Device list is not verified.

Proceed with reload of module? [confirm]
% reset issued for module 8

Router#
00:26:55:%SNMP-5-MODULETRAP:Module 8 [Down] Trap
00:26:55:SP:The PC in slot 8 is shutting down. Please wait ...
```

**Step 9** (Optional) Verify the initial configuration after the PSD comes back online by logging into the PSD root account and then entering:

```
root@localhost# show ip
root@localhost# show snmp
```

---

This example shows how to upgrade the PSD application software:

```
Router# hardware_module module 9 reset cf:1
Device BOOT variable for reset = cf:1
Warning:Device list is not verified.

Proceed with reload of module? [confirm]
% reset issued for module 9

Router#
00:16:06:%SNMP-5-MODULETRAP:Module 9 [Down] Trap
00:16:06:SP:The PC in slot 9 is shutting down. Please wait ...
00:16:21:SP:PC shutdown completed for module 9
00:16:21:%C6KPWR-SP-4-DISABLED:power to module in slot 9 set off (admin
request)
00:16:24:SP:Resetting module 9 ...
00:16:24:%C6KPWR-SP-4-ENABLED:power to module in slot 9 set on
00:18:21:%SNMP-5-MODULETRAP:Module 9 [Up] Trap
00:18:21:%DIAG-SP-6-BYPASS:Module 9:Online Diagnostics is Bypassed
00:18:21:%OIR-SP-6-INSCARD:Card inserted in slot 9, interfaces are now
online

Router# session slot 9 proc 1
The default escape character is Ctrl-^, then x.
You can also type 'exit' at the remote prompt to end the session
Trying 127.0.0.91 ... Open

Persistent Storage Module (WS-SVC-PSD-1)

Maintenance image

login:root
Password:

Maintenance image version:1.4(1)m

root@localhost.cisco.com# upgrade ftp://psdlab-pc1/pub/rmon/c6psd2.2-2-0-8.bin.gz

Downloading the image. This may take several minutes...
ftp://psdlab-pc1/pub/rmon/c6psd2.2-2-0-8.bin.gz (59198K)
/tmp/upgrade.gz [#####] 59198K | 821.24K/s
```

```
60619473 bytes transferred in 72.08 sec (821.23k/sec)

Upgrade file ftp://psdlab-pc1/pub/rmon/c6psd2.2-2-0-8.bin.gz is downloaded.
Upgrading will wipe out the contents on the hard disk.
Do you want to proceed installing it [y|N]:y

Proceeding with upgrade. Please do not interrupt.
If the upgrade is interrupted or fails, boot into
Maintenance image again and restart upgrade.

Creating PSD application image file...

Initializing the application image partition...
Applying the image, this may take several minutes...
Performing post install, please wait...
Upgrade complete. You can boot from the Application image.

root@hostname.cisco.com# exit

[Connection to 127.0.0.91 closed by foreign host]
Router#

Router# hardware_module module 9 reset
Device BOOT variable for reset =
Warning:Device list is not verified.

Proceed with reload of module? [confirm] y
% reset issued for module 9

Router#
00:24:04:%SNMP-5-MODULETRAP:Module 9 [Down] Trap
00:24:04:SP:The PC in slot 9 is shutting down. Please wait ...
00:24:18:SP:PC shutdown completed for module 9
00:24:18:%C6KPWR-SP-4-DISABLED:power to module in slot 9 set off (admin
request)
00:24:21:SP:Resetting module 9 ...
00:24:21:%C6KPWR-SP-4-ENABLED:power to module in slot 9 set on
00:26:19:%SNMP-5-MODULETRAP:Module 9 [Up] Trap
00:26:19:%DIAG-SP-6-BYPASS:Module 9:Online Diagnostics is Bypassed
00:26:19:%OIR-SP-6-INSCARD:Card inserted in slot 9, interfaces are now
online
```

# Saving and Restoring Configurations

For general information about saving and restoring configurations, refer to the *Catalyst 6000 Family IOS Software Configuration Guide* or to the *Cisco 7600 Series Internet Router IOS Software Configuration Guide*.

The PSD provides a method to save and restore your configuration.

Additionally, if you need to change PSD modules in the Catalyst chassis, you will need to configure the new module. Cisco recommends that you perform the following procedure to save and store your PSD configuration details:

---

**Step 1** Session into the PSD:

```
router# session slot slot_num processor processor
```

Issue the `root@localhost.localdomain# show ip command` and archive the IP address information for future reference.

**Step 2** Establish connectivity to an IP server on which to write files.

**Step 3** Issue the `configuration save` command.

---



**Note**

Using certain special characters in a password can cause problems when you issue the `configuration save` command. The characters are as follows: ` & ( ) | ; " ' < >

---

If you choose not to put an FTP server on your network, you can use the following instructions to save and restore your configuration.

---

**Step 1** Session into the PSD:

```
router# session slot slot_num processor processor
```

**Step 2** From there, issue the following `show` commands, and copy and paste the various `show` output into your preferred text editor:

```
root@localhost.localdomain# show ip
root@localhost.localdomain# show snmp-agent
root@localhost.localdomain# show datastore all
```

**Step 3** Save this file in a secure location for backup purposes.

---

## Restoring

If you need to restore a previous configuration, use the following instructions:

---

**Step 1** Session into the PSD:

```
router# session slot slot_num processor processor
```

**Step 2** Enter the `restore` command. The PSD will reboot 2 or 3 times, will copy the new configuration at boot up and restore the configuration

**Step 3** Boot the PSD again, and it reads the command.



**Note** Issuing the **configuration clear** command clears the configuration, and causes the PSD to go offline. The PSD is still running and ready to be configured with new values. Use this command sparingly.



**Note** If you restore a configuration that is identical to the existing configuration, the new configuration will overwrite the existing configuration, and the PSD will go through the normal reboot sequence it would use if the configuration had been different.

## Other Configuration Tasks

### Configuring the Boot Partitions on the PC Image

The PC compact flash is divided into 2 distinct operating systems. There is a Maintenance Partition (MP) that is common to all similar Cisco service cards, and there is an Application Partition (AP) that stores the PSD image. To configure the the MP and AP for the PSD, perform the following commands in global configuration mode:

Command	Purpose
<pre>Router (config)# boot device module 3 hdd:1 Device BOOT variable = cf:1 Warning: Device list is not verified.</pre>	Configures the Application Partition. hdd:1 is the default AP, and cf:1 is the MP.



**Note** Upon initial power-on the PSD card boots to the application image.

Enter the following router configuration command, where x is the slot number for the PSD:

```
Router (config)# boot device module x hdd:1
```



**Note** We advise that you only use this procedure when directed by Cisco TAC.

## Additional PSD Software Commands

The PSD also supports these CLI commands, which are described in more detail in the *Catalyst 6000 Family IOS Command Reference* publication. These commands are grouped according to mode. These sections describe the Cisco IOS commands that interact with the PSD:

- [User and Privileged EXEC Commands, page 1-39](#)
- [Configuration Commands, page 1-40](#)
- The “[Command Reference](#)” section on [page 1-52](#) lists the PSD Application Commands

### User and Privileged EXEC Commands

The following commands are all performed in User and Privileged EXEC mode:

**Table 1-8** User and Privileged EXEC Commands

Command	Description
<b>hardware-module module</b> <i>module_number</i> <b>reset</b> <i>word</i>	Resets the module into the application image by default. The fast option allows you to skip the BIOS memory test for a faster boot  <b>Note</b> If you do not specify a boot device for this command, the <b>&lt;empty&gt;</b> message is displayed. For example:  Router# <b>hardware_module module 3 reset</b> Device BOOT variable for reset = <b>&lt;empty&gt;</b> Warning:Device list is not verified.
<b>hw-module module</b> <i>module_number</i> <b>reset</b> <i>word</i> <b>mem-test-partial</b>	The same as above, but an abbreviated BIOS RAM check is performed even if the full check is specified in the config of the MSFC2.
<b>hw-module module</b> <i>module_number</i> <b>memory-test-full</b>	This configuration command sets the boot option on the specified module to the full BIOS RAM check. The default is the abbreviated check.
<b>hw-module module</b> <i>module_number</i> <b>reset cf:1</b>	Resets the module into the maintenance image.
<b>hw-module module</b> <i>module_number</i> <b>shutdown</b>	Resets the module into the maintenance image and shuts down the module.
<b>reload</b>	Reloads the entire switch.
<b>remote login switch</b>	Login to the switch processor.  Set the debug level with <b>debug pc</b> {several major}  This results in additional diagnostic output on the MSFC2 console.
<b>session slot</b> <i>slot_number</i> <b>processor 1</b> <b>telnet</b> 127.0.0.module+processor (module 7+processor 1 => 127.0.0.71)	These two commands perform the same operation. Either command will drop you into a telnet session on the Multi-Service Feature Card 2 (MSFC2 loopback interface that gives access to the card hosted CLI for the PSD (or other) card in the slot specified).
<b>show interfaces Gigabit</b> <i>slot_number/port_number</i>	Displays status of the interface.
<b>show interfaces switchport</b> <i>module slot_number</i>	Displays current switch settings for the interfaces.
<b>show interface trunk</b> <i>module slot_number</i>	Displays current trunk settings for the interfaces.

**Table 1-8 User and Privileged EXEC Commands (continued)**

Command	Description
<b>show module</b>	Displays installed modules, versions, and states. <b>Note</b> This command does not show the signature level.
<b>show module psd</b> <i>module_number</i> <b>port</b> <i>port_number</i> [ <b>state</b>   <b>traffic</b> ]	Displays module information for a specified PSD.
<b>show running-config</b>	Displays the configuration that is currently running.
<b>show startup-config</b>	Displays the saved configuration.

## Configuration Commands

The following commands are all performed in either global configuration mode or the interface configuration mode:

- [Global Configuration Mode, page 1-40](#)
- [Interface Configuration Mode, page 1-40](#)

### Global Configuration Mode

The following commands are all performed in global configuration mode:

Command	Description
<b>power enable module</b> <i>slot_number</i>	Turns the power on for the PSD if it is not already on.
<b>no power enable module</b> <i>slot_number</i>	Shuts down the PSD and removes power.
<b>clock timezone</b> <i>zone offset</i>	Sets the timezone for the switch or PSD.
<b>clock summer-time zone recurring</b>	Sets the switch to use summertime settings.
<b>clock calendar valid</b>	Sets the current calendar time as the switch time on startup.
<b>persistent-store module</b>	Sets the PSD vlan that the PSD uses for network traffic.

### Interface Configuration Mode

The following commands are configuration commands performed in interface configuration mode:

Command	Description
<b>switchport</b>	Sets interface as a switchport.
<b>switchport trunk encapsulation dot1q</b>	Sets dot1q as the encapsulation type.
<b>switchport trunk native vlan</b> <i>vlan</i>	Sets native VLAN for the trunk port.
<b>switchport trunk allowed vlan</b> <i>vlans</i>	Sets allowed VLANs for a trunk.
<b>switchport mode trunk</b>	Sets the interface as a trunk port.
<b>switchport capture</b>	Sets the interface as a capture port.
<b>switchport access vlan</b> <i>vlan</i>	Sets the access VLAN for the interface.
<b>switchport mode access</b>	Sets the interface as an access port.





## MP Commands

Administrators can boot the MP and session into the CLI. There is a set of interfaces available on the MP to administer and diagnose the PSD. One of the key features of the MP is to provide the ability to install a new AP image. The following table summarizes the MP commands:

**Table 1-9 MP Command on the PSD**

Command	Description
<b>clear log upgrade</b>	Clears the logs generated as a result of upgrade of AP from MP.
<b>clear ip</b>	Clears all the network parameters of the PSD. This includes the ip address, default gateway, domain name server and the domain name. The shared network info stored in a separate partition will be deleted and marked as deleted.  Clearing the parameters ensures that there is no clash in IP addresses when the MP is first booted in the field.
<b>disable-guest</b>	Disable the guest account on the MP.
<b>enable-guest</b>	Enables the guest account on the MP.
<b>ip address</b> [ <i>ip address</i> ] [ <i>subnet</i> ]	Configures the IP address for the PSD used to access the external network.
<b>ip broadcast</b> [ <i>broadcast-address</i> ]	Sets the broadcast ip address.
<b>ip clear</b>	Clears the IP values only.
<b>ip gateway</b> [ <i>default-gateway</i> ]	Specifies the default gateway for the network.
<b>ip host</b> [ <i>host-name</i> ]	Configures the name of the machine.
<b>logout</b>	Logout of the MP shell.
<b>ip nameserver</b> [ <i>name-server1</i> ] [ <i>name-server2</i> ]	Configures the IP addresses of a Domain Name Server. You can configure a maximum of 2 name servers.
<b>passwd</b>	Changes the password for the current user.
<b>passwd-guest</b>	Changes the password for the guest account
<b>ping</b> <i>host-name</i>   <i>IP address</i>	Pings a specified host on the network, and verifies that the network parameters are configured correctly.
<b>show images</b>	Displays the images stored in the various application partitions. You can use this information to select the device and partition to upgrade.
<b>show ip</b>	Displays the network parameters of the PSD.
<b>show log upgrade</b>	Displays the logs generated as a result of upgrade of AP from MP.
<b>show tech-support</b>	Displays information from the HDD from the MP. It shows information such as boot log and version files. If the AP will not boot, you could boot the MP and use this command to troubleshoot the boot problem and display AP configuration.  This command is specific to the PSD. It gathers available diagnostic information from the HDD daughter card, even if the application partition is not bootable.

Table 1-9 MP Command on the PSD

Command	Description
show version	Displays information such as major version, minor version of the MP, CPU type, number of processors on the PC, compact flash/hard disk size, size of DRAM, and other info available in the SMBIOS structures.
syscli	<p>Displays the “Komodo” diagnostics prompt, and accepts all Komodo+ diagnostics commands listed below. This command has no effect and reports no errors when invoked by the root user. It invokes the diagnostic command interpreter when used by the guest account.</p> <p> <b>Caution</b> The diagnostics available under <b>syscli</b> are only meant to be used by TAC. These diagnostic commands are not meant to be part of normal customer operations.</p> <ul style="list-style-type: none"> <li>• <b>help</b></li> <li>• <b>ecount</b> [n]</li> <li>• <b>edown</b> <i>port number</i></li> <li>• <b>elpbk</b> <i>port number</i></li> <li>• <b>eping</b> <i>port number</i></li> <li>• <b>estat</b></li> <li>• <b>etest</b></li> <li>• <b>komodo+</b> <i>options</i></li> <li>• <b>ra</b> -d <i>deviceType</i> -n <i>deviceNumber</i> -a <i>action</i> -o <i>offset</i> -v <i>setValues</i></li> <li>• <b>scplog</b> [-s   -v <i>logLevel</i>]</li> </ul>
upgrade-bios	Upgrades the BIOS on the PSD card.
upgrade <i>ftp-url</i> [--install]   [ <i>device:partition-number</i> ]	<p>Upgrades the image where <i>ftp-url</i> is the URL specifying the ftp server containing the image and the path to the image. It will be of the form: ftp://user:password@server-name/path. The name of the ftp server or its IP address can be specified.</p> <p> <b>Note</b> If the password is not specified, the user will be prompted to enter the password “--install”</p>

# Troubleshooting the PSD

This section provides troubleshooting information for the PSD.

**Symptom** When a **reset** command is entered from the Supervisor CLI, the system always boots into the maintenance image.

**Possible Cause** If the boot device is configured in the Supervisor as `cf:1`, typing a **reset** *module* command always boots to the maintenance image.

**Recommended Action** Override the configured boot device in the Supervisor by entering the boot string during reset.

- In Cisco IOS software, reconfigure using the **no boot device cf:1** command.

**Symptom** You are unable to log into the maintenance image with the same password for the PSD application image.

**Possible Cause** The PSD application image and the maintenance image have different password databases for the root and guest accounts. The default passwords for root and guest differ between the maintenance image and the PSD application image. Any password change performed in the PSD application image does not change the maintenance image password, and vice versa.

**Recommended Action** Use the maintenance image password.

**Symptom** You lost your password for the maintenance image and want to recover it.

**Possible Cause** The maintenance image does not support resetting passwords from the switch. Upgrading the maintenance image sets the password for root and guest to default in the maintenance image.

**Recommended Action** Use the default maintenance image passwords. Refer to [Table 1-6 on page 1-28](#).

**Symptom** When the PSD initially boots, by default it runs a partial memory test and you want to run a complete memory test.

**Possible Cause** The partial memory test is the default configuration.

**Recommended Action** To perform a full memory test, enter the **hw-module module** *module\_number* **reset** *device:partition* **mem-test-full** command.



**Note** A full memory test takes significantly more time to complete.

You can also use the **hw-module module** *module\_number* **memory test full** command. For example:

```
Router# config term
Router(config)# hw-module module 5 memory test full
Warning:Device list is not verified but still set in the boot string.
```

```

Console> (enable) show boot device module 5
Device BOOT variable = cf:1
Memory-test set to FULL

```

This example shows how to reset the partial memory test:

```

Console> (enable) set boot device cf:1 5
Device BOOT variable = cf:1
Memory-test set to PARTIAL
Warning:Device list is not verified but still set in the boot string.
Console> (enable)
Console> (enable) show boot device module 4
Device BOOT variable = cf:1
Memory-test set to PARTIAL

```

**Symptom** You cannot connect to the PSD.

**Possible Cause** The initial configuration is incorrect or not configured.

**Recommended Action** Reconfigure the PSD as described in the “Configuring the PSD” section on page 1-22.

**Symptom** The PSD fails to upgrade.

**Possible Cause** The URL to the server or the image name is incorrect.

**Recommended Action** Make sure the URL you specified is valid. Make sure the image name you specified in the URL is an official Cisco image name.

**Symptom** The PSD fails to reconfigure.

**Possible Cause** The PSD might have experienced a hardware failure.

**Recommended Action** Refer to the configuration settings that you previously saved.

**Symptom** You have a corrupt data file, need to check for corrupt data files, or need to identify unread files.

**Possible Cause** The PSD reloaded, or was improperly shut down.

**Recommended Action** To check for previously read files that are corrupt, FTP to the PSD and check the “Salvage” directory. Additionally, to identify if any unread files are corrupt, issue the **datastore validate** command.




---

**Note** If a datastore is full, issuing this command can take in excess of 30 minutes to complete.

---




---

**Note** You can retrieve data at any time, but you should not destroy a database until the client has read all data.

---

# Standards Compliance Specifications

Refer to Appendix A, “Specifications,” in the *Catalyst 6000 Family Installation Guide* and the *Catalyst 6000 Regulatory Compliance and Safety Information* publication for the standards compliance specifications.

## FCC Class B Compliance

This equipment has complies with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules.

The following information is for FCC compliance of Class B devices: The equipment described in this manual generates and may radiate radio-frequency energy. If it is not installed in accordance with Cisco’s installation instructions, it may cause interference with radio and television reception. This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in part 15 of the FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. There is no guarantee that interference will not occur in a particular installation.

Modifying the equipment without Cisco’s written authorization may result in the equipment no longer complying with FCC requirements for Class A or Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.



---

**Note** Modifications to this device not specifically approved by Cisco Systems could void the user’s authority to continue operating the device.

---

Refer to the *Catalyst 6000 Family Installation Guide* and the *Catalyst 6000 Regulatory Compliance and Safety Information* publication for additional FCC class compliance information.

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## Related Documentation

- For additional FCC class compliance information, refer to the *Catalyst 6000 Regulatory Compliance and Safety Information* publication.
- For additional information about the Cisco Content Services Gateway, refer to the following publications:
  - *Cisco Content Services Gateway Installation and Configuration Guide, Release 3.1(0)C4(x)*
  - *Release Notes for Cisco Content Services Gateway 3.1(1)C4(x)*
- For additional information about Catalyst 6000 family switches and command-line interface (CLI) commands, refer to the following:
  - *Catalyst 6000 Family Software Configuration Guide*
  - *Catalyst 6000 Family Command Reference*
  - *Site Preparation and Safety Guide*
- For detailed hardware configuration and maintenance procedures, refer to the *Catalyst 6000 Family Module Installation Guide*.

# Command Reference

This section documents new and modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.2 command reference publications. PSD-specific commands are identified.

- [configuration](#), page 1-53 (PSD)
- [datastore](#), page 1-55 (PSD)
- [datastore purge transferred](#), page 1-56 (PSD)
- [datastore transfer](#), page 1-57 (PSD)
- [datastore transfer](#), page 1-57 (PSD)
- [ftp-server](#), page 1-60 (PSD)
- [in-service](#), page 1-61 (PSD)
- [ip](#), page 1-62 (PSD)
- [log](#), page 1-63 (PSD)
- [logout](#), page 1-66 (PSD)
- [nslookup](#), page 1-67 (PSD)
- [out-of-service](#), page 1-68 (PSD)
- [password clear](#), page 1-69(PSD)
- [password root](#), page 1-70
- [persistent-store module](#), page 1-71 (IOS command)
- [ping](#), page 1-72 (PSD)
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- [show](#), page 1-75 (PSD)
- [show module persistent-store](#), page 1-77 (IOS command)
- [show tech-support](#), page 1-79 (IOS command)
- [shutdown](#), page 1-80 (PSD)
- [tech-support](#), page 1-82 (PSD)
- [telnet-server](#), page 1-83 (PSD)
- [traceroute](#), page 1-84 (PSD)
- [upgrade](#), page 1-85 (PSD)
- `root@localhost# upgrade ftp://user:passwd@host/full-path/filename`, page 1-85

# configuration

To clear all IP and data store configurations, save a PSD configuration to a specified URL, or retrieve a previously saved configuration from a specified URL, use the PSD **configuration** command.

**configuration** [**clear** | **save** | **restore** ] *ftp-url*

## Syntax Description

<b>clear</b> <i>ftp-url</i>	Clears all IP and data store configurations. This deletes all existing data stores (their associated configuration entries, access list entries, directories and data), and causes the application to restart.
<b>save</b> <i>ftp-url</i>	<p>Saves the PSD configuration to a specified URL in the following form:</p> <pre>ftp://username:password@hostname/fully-qualified-destination-directory</pre> <p>The <i>password</i> is an optional parameter. If the <i>password</i> is not specified in the URL, the user will be prompted for the password.</p> <p>The configuration is archived into a file named <b>psd.config.host.date.time</b>, and placed into the remote relative directory for subsequent retrieval. <i>host</i> is the hostname of the PSD. The configuration save includes the version of the PSD from which the configuration was archived for later use.</p>
<b>restore</b> <i>ftp-url</i>	<p>Retrieves a previously saved configuration from a specified URL in the following form:</p> <pre>ftp://username:password@hostname/fully-qualified-destination-directory/configuration-file-name</pre> <ul style="list-style-type: none"> <li>• The <i>password</i> is an optional parameter. If the <i>password</i> is not specified in the URL the user will be prompted for the password.</li> <li>• Restoring a configuration from a newer PSD version to an older PSD version is not permitted, and results in an error message.</li> <li>• The <b>configuration restore</b> command notifies you that you have to reboot after you successfully download and apply the configuration. You may choose to cancel.</li> <li>• While the <i>save</i> operation generates the target file name, you must fully qualify which one you want to restore. This qualifier allows you to save multiple configuration files, and to select which one to restore. Additionally, you may decide to archive the saved configurations using a custom naming convention.</li> </ul> <p>After reboot, the application component will handle the fact that data stores in the restored configuration file may not match with those existing in /cdr-backup directory. If this occurs, a data store entry will be added to the configuration file for each existing data store directory that does not have a corresponding configuration entry. Likewise, a new directory will be created for each data store configuration entry that does not have an associated set of directories.</p>

## Defaults

There are no default values for this command.

**Command Modes** This is a PSD application-specific command.

Command History	Release	Modification
	2.0	This command was introduced.

**Usage Guidelines** Using certain special characters in a password can cause problems when you issue the **configuration save** command. The characters are as follows:  
` & ( ) | ; " ' < >

Using these characters in a password can cause the following error responses:

**response a:**

```
Password for psdtest@bizarre.cisco.com:
sh: -c: line 1: unexpected EOF while looking for matching ``'
sh: -c: line 2: syntax error: unexpected end of file
root@inga.cisco.com#
```

**response b:**

```
Password for psdtest@bizarre.cisco.com:
sh: psd.config.inga.20050322.125632: command not found
root@inga.cisco.com#
Usage: FTP {store | retrieve} {ascii | binary} <host>
      <username> <password> <local-file> <remote-file>
      [verbose]
```

Where:

```
<host>       : host name or IP address
<username>   : user's login id
<password>   : user's password
<local-file> : local file name
<remote-file>: remote file name
root@inga.cisco.com#
```

**response c:**

```
Password for psdtest@bizarre.cisco.com:
sh: -c: line 1: syntax error near unexpected token `('
sh: -c: line 1: `/opt/psd/bin/ftp.sh store binary bizarre.cisco.com psdtest (
psd.config.inga.20050322.125707 /tftpboot/psd.config.inga.20050322.125707'
root@inga.cisco.com#
```

**Examples** The following example shows how to restore a datastore named “cisco”:

```
router# configuration restore ftp://username:password@hostname/cisco
```

# datastore

To configure and manage datastores on the PSD, use the PSD **datastore** command.

**datastore** [**create** *dsname*] [**destroy** *dsname*] [**access enable** *dsname client-ip port-number*] [**access disable** *dsname client-ip port number*] [**validate** *dsname*]

## Syntax Description

<b>create</b> <i>dsname</i>	Creates the specified datastore.
<b>destroy</b> <i>dsname</i>	Destroys the specified datastore; you will be prompted to confirm.
<b>access enable</b> <i>dsname client-ip port-number</i>	Allows the client-IP to access the specified datastore. The <i>port-number</i> configures an optional port number. This is the port number (on the accessor) where unsolicited requests from the PSD are sent.
<b>access disable</b> <i>dsname client-ip port-number</i>	Disallows the client-IP access to the specified datastore. The <i>port-number</i> configures an optional port number. This is the port number (on the accessor) where unsolicited requests from the PSD are sent.
<b>validate</b> <i>dsname</i>	Validates the named datastore; you will be prompted to confirm.

## Defaults

There are no default settings for this command.

## Command Modes

This is a PSD application-specific command.

## Command History

Release	Modification
1.0(1)	This command was introduced.
2.0	The <i>port-number</i> variable was added.

## Usage Guidelines

You cannot destroy a datastore until all associated access entries have been disabled.



### Note

Large datastores can take wait several minutes to validate.

The port number is used to send unsolicited GTP' Node Alive requests to accessors. The port number may vary from one data store to another. If the port number is not specified no unsolicited messages will be sent from the PSD to the associated accessor.

## Examples

The following example shows how to create a datastore named “cisco”, as well as configuring the access list for that datastore:

```
router# datastore create cisco
router# datastore access enable cisco 1.2.3.4 6
router# datastore validate cisco
```

# datastore purge transferred

To purge data and/or salvage files that were previously transferred to an FTP server, use the datastore purge transfer PSD application command.

**datastore purge transferred** { **data-files** | **salvage-files** | **all** } *data-store-name*

## Syntax Description

<b>data-files</b>	Purges the specified data files in a specified datastore.
<b>salvage-files</b>	Purges the specified salvage files in a specified datastore.
<b>all</b>	Purges the all files in a specified datastore.
<i>data-store-name</i>	The name of a specified datastore.

## Defaults

There are no default settings for this command.

## Command Modes

This is a PSD application-specific command.

## Command History

Release	Modification
2.0	This command was introduced.

## Usage Guidelines

## Examples

The following example shows how to purge data files from a datastore named “cisco”.

```
router# datastore purge transferred data-files cisco
```



# datastore transfer

To transfer and delete or keep specified files (data-files, salvage-files, or all) of the named datastore from the PSD to a specified URL, use the **datastore transfer** PSD application command.

```
datastore transfer {keep | delete} {data-files | salvage-files | all} data-store-name ftp-url
```

## Syntax Description

<b>keep</b>	Transfers and keeps the specified files from a specified datastore.
<b>delete</b>	Transfers and deletes the specified files from a specified datastore.
<b>data-files</b>	The specified data files in a specified datastore.
<b>salvage-files</b>	The specified salvage files in a specified datastore.
<b>all</b>	All files in a specified datastore.
<i>data-store-name</i>	The name of a specified datastore.
<i>ftp-url</i>	The specified URL to transfer files to. The format is <code>ftp://username:password@hostname/fully-qualified-destination-directory</code>

## Defaults

There are no default settings for this command.

## Command Modes

This is a PSD application-specific command.

## Command History

Release	Modification
2.0	This command was introduced.

## Usage Guidelines

The *password* parameter is optional. If you do not specify the password in the URL, you will be prompted for the password. The password prompt was created to avoid security concerns over being able to look through the command history and seeing a previous “datastore transfer” request with an included password.

If the **delete** option is enabled, the specified files will be transferred to the specified URL, and then deleted. If the **keep** option is specified, the files will be transferred but will not be deleted. You need to issue the **datastore purge** command to delete the transferred files.



### Note

The **datastore transfer** command can take a long period of time to complete for large data stores; therefore, you can cancel the command using **Ctrl-C**.

## Examples

The following example shows how to purge data files from a datastore named “cisco”.

```
router# datastore
```

# debug persistent-store

To enable diagnostic information that is dumped to the console to be displayed, use the **debug psd** command in privileged EXEC mode.

**debug persistent-store** [**all** | **info** | **error**]

Syntax Description	all	Displays all diagnostic information
	<b>info</b>	Displays messages that show a trace of the events that are occurring, and in what order they occur.
	<b>error</b>	Displays all error information.

**Defaults** No default behavior or values.

**Command Modes** Privileged EXEC

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Examples** The following example illustrates how to enable debugging using the **debug persistent-store** command:

```
ce-cat6k-4#debug persistent-store?
  all    all persistent-store debug flags
  debug  debug persistent-store info
  error  debug persistent-store error
  info   debug persistent-store info

ce-cat6k-4#debug persistent-store debug
persistent-store debug debugging is on
```

# exit

To log out of system, use the PSD **exit** command.

**exit**

---

**Syntax Description** No arguments or keywords.

---

**Defaults** No default behavior or values.

---

**Command Modes** EXEC

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	1.0(1)	This command was introduced.

---

---

**Examples** The following example illustrates the PSD **exit** command:

```
root@localhost# exit
```

## ftp-server

To enable ftp access to the datastore repository, use the PSD **ftp-server enable** command. Use the **ftp-server disable** command to disable this function.

**ftp-server enable**

**ftp-server disable**

Syntax Description	enable	Disables the FTP server for access to the datastore repository.
	disable	Disables the FTP server.

**Defaults** The default setting is that the ftp-server is **disabled**.

**Command Modes** This is a PSD application-specific command.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Usage Guidelines** You must FTP to the PSD device, and login using the root userid and password. You will be placed in the “datastore” directory where you have read access to any files which comprise the datastore(s).

**Examples** The following example illustrates how to enable the **ftp-server**:

```
root@localhost# ftp-server
disable          - disable ftp access for this device
enable          - enable ftp access for this device
root@localhost# ftp-server enable
```

# in-service

To enable the PSD for use by one or more clients, use the PSD **in-service** command in PSD configuration mode.

## **in-service**

**Syntax Description** No arguments or keywords.

**Defaults** No default behavior or values.

**Command Modes** This is a PSD application-specific command.

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	1.0(1)	This command was introduced.

**Usage Guidelines** You must issue this command before you send any data to the PSD.

**Examples** The following example illustrates the PSD **in-service** command:

```
root@localhost# in-service
```

<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">out-of-service</a>	Prohibits the PSD from receiving any data from one or more clients.

# ip

To set various IP parameters on the PSD, use the PSD **ip** command.

**ip** [**address** | **broadcast** | **domain** | **gateway** | **host** | **hosts** | **nameserver**]

## Syntax Description

<b>address</b>	Sets the system's IP address and subnet.
<b>broadcast</b>	Sets the system's broadcast address.
<b>domain</b>	Sets the system's domain name.
<b>gateway</b>	Sets the system's default gateway-address.
<b>host</b>	Sets the system's host name.
<b>hosts</b>	Adds, deletes, or replaces the hosts entries.
<b>nameserver</b>	Sets the system's nameserver entries.

## Defaults

There are no default settings for this command.

## Command Modes

This is a PSD application-specific command.

## Command History

Release	Modification
1.0(1)	This command was introduced.

## Examples

The following example illustrates the **ip hosts add** command:

```
root@localhost# ip hosts add
ip hosts add ip_address host_name [alias1] [alias2]
or
ip hosts add ftp://user:passwd@host/full-path/filename
```

# log

To set various logging parameters on the PSD, use the PSD **log** command.

**log** [**remote enable** *ip-addr* | *hostname*] [**remote disable** ] [**supervisor enable**] [**supervisor disable**] [**category enable** *category level* | **category disable** *category level*] [**default level**]

## Syntax Description

<b>remote enable</b>	Enables remote logging and forwards any messages to the remote host. Only one host may be specified.
<i>ip-addr</i>	Sets the IP address of the host.
<i>hostname</i>	Sets the host name.
<b>remote disable</b>	Disables the remote logging.
<b>supervisor enable</b>	Enables messages to be logged to the Supervisor. Syslog messages of type “critical,” “alert,” or “fatal” are candidates for IOS logging.
<b>supervisor disable</b>	Disables supervisor logging of messages.
<b>category enable</b> <i>category level</i>	<p>Enables the logging level for the specified logging category. Category granular logging is intended to be used at the direction of TAC as the output messages are used to pinpoint errors</p> <p>You can view the list of categories by using the <b>log category enable ?</b>, or <b>show log-settings</b> commands.</p> <p>Category level may be one of the following:</p> <ul style="list-style-type: none"> <li>• Fatal</li> <li>• Error</li> <li>• Warning</li> <li>• Info</li> <li>• Debug</li> <li>• Trace</li> </ul>

<b>category disable</b> <i>category</i>	Resets logging for the specified category to the default level. The Category level may be one of the following: <ul style="list-style-type: none"> <li>• Fatal</li> <li>• Error</li> <li>• Warning</li> <li>• Info</li> <li>• Debug</li> <li>• Trace</li> </ul>
<b>default level</b>	Sets the default logging level for the platform. By setting a category at a finer logging level, it is possible to debug/monitor individual categories. Level may be one of the following: <ul style="list-style-type: none"> <li>• Fatal</li> <li>• Error</li> <li>• Warning</li> <li>• Info</li> <li>• Debug</li> <li>• Trace</li> </ul>

**Defaults**

The default logging level is “info”.

**Command Modes**

This is a PSD application-specific command.

**Command History**

Release	Modification
1.0(1)	This command was introduced.

**Usage Guidelines**

**Caution** Setting the logging level to “debug” or “trace” will adversely affect the PSD’s performance. These levels should only be used by Cisco TAC.

**Examples**

The following example sets the PSDs **log** level default to **info**:

```

root@localhost# log
category          - enable or disable category logging and levels
default           - set system's default logging level
remote            - set address to forward system's log messages
supervisor        - enable or disable the supervisor logging
root@localhost# log default
debug             - Set default logging level to 'debug'
error             - Set default logging level to 'error'
fatal             - Set default logging level to 'fatal'
info              - Set default logging level to 'info'
trace             - Set default logging level to 'trace'

```



```
warn - Set default logging level to 'warn'  
root@locqlhost# log default info  
root@localhost#
```

# logout

To log out of system, use the PSD **logout** command.

## **logout**

---

### **Syntax Description**

There are no keywords or arguments for this command.

---

### **Defaults**

There are no default settings for this command.

---

### **Command Modes**

This is a PSD application-specific command.

---

### **Command History**

<b>Release</b>	<b>Modification</b>
1.0(1)	This command was introduced.

---

### **Examples**

The following example illustrates the logout command:

```
root@localhost# logout
```

# nslookup

To query nameservers, use the PSD **nslookup** command.

**nslookup** [hostname | ip-address]

Syntax Description	hostname	ip-address
	Sets the hostname of the nameserver. Only one host may be specified.	Sets the IP address of the host.

**Defaults** There are no default settings for this command.

**Command Modes** This is a PSD application-specific command.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Examples** The following example illustrates the PSD **nslookup** command:

```
root@localhost# nslookup
nslookup hostname [server]
```

# out-of-service

To prohibit the PSD from receiving any data from one or more clients, use the PSD **out of service** command.

## out-of-service

### Syntax Description

No arguments or keywords.

### Defaults

The PSD boots in an “out-of-service” state. You must put the PSD inservice to store data.

### Command Modes

This is a PSD application-specific command.

### Command History

Release	Modification
1.0(1)	This command was introduced.

### Usage Guidelines

This setting remains in effect until an administrator issues the **in-service** command.

### Examples

The following example illustrates the PSD **out-of-service** command:

```
root@localhost# out-of-service
```

### Related Commands

Command	Description
<a href="#">in-service</a>	Enables the PSD for use by one or more clients.

# password clear

To clear all previous passwords for the root user, use the PSD **password clear** command.

**password clear**

---

**Syntax Description** There are no keywords or arguments for this command.

---

**Defaults** Issuing this command returns the PSD to the default password settings.

---

**Command Modes** This is a PSD application-specific command.

---

<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	1.0(1)	This command was introduced.

---

---

**Examples** The following example illustrates the PSD **password clear** command:

```
root@localhost# password clear
```

# password root

To set a new password for the root user, use the PSD **password** command.

**password root**

---

**Syntax Description** There are no keywords or arguments for this command.

---

**Defaults** There are no default settings for this command.

---

**Command Modes** This is a PSD application-specific command.

---

Command History	Release	Modification
	1.0(1)	This command was introduced.

---



---

**Examples** The following example illustrates the PSD **password** command:

```
root@localhost# password root
Changing password for user root.
New UNIX password: password
Retype new UNIX password: password
passwd: all authentication tokens updated successfully
```




---

**Note** If you receive a message “BAD PASSWORD: it is too short,” you can ignore it, as it is only informational.

---

# persistent-store module

To configure a vlan for the PSD module to use for network traffic, use the PSD **persistent-store module** command. To unconfigure this vlan setting, use the **no** form of the command.

**persistent-store module** *slot* **vlan** *vlan\_id*

**no persistent-store module** *slot* **vlan** *vlan\_id*

Syntax Description		
	<i>slot</i>	Identifies the slot number where the persistent storage module resides.
	<b>vlan</b> <i>vlan_id</i>	Sets the identity of the vlan that the PSD uses for network traffic.

**Defaults** The default setting is vlan1.

**Command Modes** Global configuration.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Examples** The following example illustrates the PSD **persistent-store module** command:

```
router# persistent-store module 4 vlan 100
```

# ping

To ping a network device, use the PSD **ping** command.

```
ping [-nv | -c count | -i wait | -w deadline | -p pattern | -s packetsize] {hostname | IP address}
```

## Syntax Description

<b>-n</b>	Show network addresses as numbers.
<b>-v</b>	Verbose output.
<b>-c count</b>	Stop after sending count ECHO_REQUEST packets.
<b>-i wait</b>	The amount wait seconds between sending each packet.
<b>-w deadline</b>	The time for ping to wait.
<b>-p pattern</b>	Up to 16 pad bytes to fill out packets sent.
<b>-s packetsize</b>	The 8 bytes of ICMP header data.
<b>hostname</b>	The host name of the pinged device.
<b>ip address</b>	The IP address of the host.

## Defaults

There are no default settings for this command.

## Command Modes

This is a PSD application-specific command.

## Command History

Release	Modification
1.0(1)	This command was introduced.

## Usage Guidelines

Configuring **ping** on the PSD to an IP address in the same subnet as the PSD, if the host is unreachable the console returns a “Destination Host Unreachable” message, and the PSD attempts to ping a non-responsive IP address.

```
ping non-responsive-ip-address
```

The **ping** command executes, and output appears; however, the **ping** command never completes, and does not return control to the user.

To recover from the problem, use **ctrl-c** to abort the **ping** command.

Additionally, to avoid the problem, use the **-w deadline** option, and a reasonable timeout to force the command to timeout.

```
ping -w deadline 5 ip-address
```

Generally, the “5” represents the number of seconds before **ping** will exit. Use a larger number if needed.

## Examples

The following example illustrates the PSD **ping pattern** command:

```
root@localhost# ping p
root@gretel.cisco.com# ping p
```



```
PING p.cisco.com (10.83.133.67) from 172.18.12.217 : 56(84) bytes of data.  
64 bytes from p.cisco.com (10.83.133.67): icmp_seq=1 ttl=57 time=58.3 ms  
64 bytes from p.cisco.com (10.83.133.67): icmp_seq=2 ttl=57 time=58.5 ms  
64 bytes from p.cisco.com (10.83.133.67): icmp_seq=3 ttl=57 time=57.8 ms  
64 bytes from p.cisco.com (10.83.133.67): icmp_seq=4 ttl=57 time=59.3 ms  
64 bytes from p.cisco.com (10.83.133.67): icmp_seq=5 ttl=57 time=57.7 ms  
  
--- p.cisco.com ping statistics ---  
5 packets transmitted, 5 received, 0% loss, time 4039ms  
rtt min/avg/max/mdev = 57.767/58.391/59.373/0.572 ms
```

# reboot

To reboot the PSD, use the PSD **reboot** command.

**reboot**

---

**Syntax Description** There are no keywords or arguments for this command.

---

**Defaults** There are no default settings for this command.

---

**Command Modes** This is a PSD application-specific command.

---

Command History	Release	Modification
	1.0(1)	This command was introduced.

---



---

**Examples** The following example illustrates the PSD **reboot** command:



```
root@localhost# reboot
```

# show

To show system parameters, use the PSD **show** command.

```
show [status] [statistics gtp-prime] [datastore dsname | all] [statistics] [log-settings] [log
  number | all ] [bios | cpu | date | hosts | ip | log-upgrade | memory | rx-counters ]
  [snmp-agent] [tech-support] [version]
```

## Syntax Description

<b>status</b>	Summary of the current state of the PSD in fairly brief output, this is where the application will contribute its current status (i.e. this used to be the PSD SHOW STATUS command).
<b>statistics gtp-prime</b>	The <b>show statistics</b> command shows low level statistics for the PSD. Currently the only option is to show gtp-prime statistics. These are used to show any gtp' traffic counters mainly intended for Cisco technical assistance, to assist with troubleshooting.
<b>datastore</b> [ <i>dsname</i>   <i>all</i> ] [ <i>statistics</i> ]	Shows Persistent Store Application datastores. Either <i>dsname</i> or <b>all</b> are required, <b>statistics</b> is always optional.  If a datastore name is given, then that datastore and its access list is shown.  If <b>all</b> is specified, then show a list of all datastores defined and access controls.  If <b>statistics</b> is given, then the output is more verbose showing all of the traffic statistics per CSG in the access list.
	 <p><b>Note</b> This option will not tab-complete from the CLI; however, you can shorten the spelling when specified.</p>
<b>log-settings</b>	Shows a list of the logging categories and their current logging levels.  Shows the default log level.  Shows the state of any IOS or remote host logging.
<b>log</b> <i>number</i>   <i>all</i>	Shows the PSD log, line by line (without pagination). <ul style="list-style-type: none"> <li>• If no argument is specified, then the last 100 lines of the log are presented.</li> <li>• If <i>all</i> is specified, the entire log is presented line by line to the console.</li> </ul>
	 <p><b>Caution</b> Use <i>all</i> with caution as the log file can be large.</p>
	<ul style="list-style-type: none"> <li>• If <i>number</i> is specified, then the last “number” lines of the log are displayed line by line.</li> </ul>
<b>bios</b>	Shows BIOS information.
<b>cpu</b>	Shows cpu utilization.
<b>date</b>	Shows current date and time.
<b>hosts</b>	Shows hosts entries.
<b>ip</b>	Shows ip parameters.
<b>log-upgrade</b>	Shows log upgrade parameters.

<b>memory</b>	Shows memory.
<b>rx-counters</b>	Shows rx-counter variables.
<b>snmp-agent</b>	Shows snmp-agent parameters.
<b>tech-support</b>	Typically, <b>show tech support</b> should only be used by Cisco TAC:  Shows a variety of information at the display; however, shows only 100 of the last lines of logs to cut down on the amount of output. Use the <b>tech-support</b> command to gather all information, and to FTP it to a remote location for debugging, or to send it to TAC.  The <b>show tech-support</b> command is also available from the MP CLI. It will contain info that will help troubleshoot why an AP is not booting.
<b>version</b>	Shows version information.

**Defaults**

There are no default settings for this command.

**Command Modes**

This is a PSD application-specific command.

**Command History**

<b>Release</b>	<b>Modification</b>
1.0(1)	This command was introduced.

**Examples**

The following example illustrates the PSD **show** command:

```
root@localhost# show status
status: in-service
```

# show module persistent-store

To show state information about the specified port of the specified slot, use the **show module psd** command.

**show module persistent-store slot port 1-3 [state | traffic]**

Syntax	Description
<b>state</b>	Displays state information regarding gigabit ethernet interfaces on the PSD.
<b>traffic</b>	Displays traffic information regarding.

**Defaults** There are no default settings for this command.

**Command Modes** Privileged EXEC mode.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Usage Guidelines** There are 3 ports open, but the PSD only use port 1 and port 3. IOS does not support “hiding” unused ports, such as port (2).

**Examples** The following example illustrates the variables of the **show module persistent-store** command:

```
router#show module persistent-store 4 port 3 traffic
persistent-store module 4, port 3:

  Hardware is C6k 1000Mb 802.3, address is 0008.7ca8.4792 (bia 0008.7ca8.4792)
  MTU 1500 bytes, BW 1000000 Kbit, DLY 10 usec,
    reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Last input never, output 1w1d, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/2000/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    16990 packets input, 25606961 bytes, 0 no buffer
    Received 30 broadcasts, 0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
    0 input packets with dribble condition detected
    9513 packets output, 627237 bytes, 0 underruns
    0 output errors, 0 collisions, 2 interface resets
    0 babbles, 0 late collision, 0 deferred
    0 lost carrier, 0 no carrier
    0 output buffer failures, 0 output buffers swapped out
router#
```

## ■ show module persistent-store

```
router#show module persistent-store 4 port 3 state
persistent-store module 4, port 3:
  This port (Gi4/3) is not a switchable interface
cat 6k#
```

# show tech-support

To generate show output when the PSD application is not functioning, use the **show tech-support** command in the Application Partition image.

## show tech-support

**Syntax Description** There are no keywords or arguments for this command.

**Defaults** There are no default values for this command.

**Command Modes** AP command.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Examples** The following example illustrates the variable of the **show tech-support** command

```
root@localhost# show tech-support
```

Related Commands	Command	Description
	<a href="#">tech-support</a>	Generates and ftps a tech-support file to a remote host.

# shutdown

To start the shutdown procedure on the PSD, use the PSD **shutdown** command .

## **shutdown**

---

### Syntax Description

There are no keywords or arguments for this command.

---

### Defaults

There are no default values for this command.

---

### Command Modes

PSD-specific command.

---

### Command History

Release	Modification
1.0(1)	This command was introduced.

---

### Examples

The following example illustrates how to issue the **shutdown** command:

```
root@localhost# shutdown
```



# snmp-agent

To set snmp-agent parameters, use the PSD **snmp-agent** command.

**snmp-agent** [**community** | **contact** | **delete** | **enable** | **disable** | **location** | **name**]

Syntax Description	Parameter	Description
	<b>community</b>	Sets the device community string; there is not a default “read” community string, and no “write” community string is allowed.
	<b>contact</b>	Sets the device contact information.
	<b>delete</b>	Deletes the device community string.
	<b>enable</b>	Enables the snmp agent. The default setting is disabled.
	<b>disable</b>	Disables the snmp agent.
	<b>location</b>	Sets the device location.
	<b>name</b>	Sets the device name.

**Defaults** The default setting is that **snmp-agent** is disabled.

**Command Modes** This is a PSD application-specific command.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Examples** The following example enables the snmp-agent, and sets the community string to “read”:

```


root@localhost# snmp-agent
community          - set device community string
contact            - set device contact information
delete             - delete SNMP community string
disable            - disable snmp for this device
enable             - enable snmp for this device
location           - set device location
name               - set device name
root@localhost# snmp-agent enable
root@localhost# snmp-agent community
snmp-agent community community-string
root@localhost# snmp-agent community read
root@localhost#

```

# tech-support

To generate and ftp a tech-support file to remote host, use the PSD **tech-support** command.

**tech-support** *ftp://user:passwd@host/relative-path/*

Syntax Description		
<i>user</i>		The user name on the remote host.
<i>passwd</i>		The “user” password, will be prompted for if omitted.
<i>host</i>		The remote host to upload the core dump file(s) to.
<i>relative-path</i>		A directory relative to the user’s default directory.
		
	<b>Note</b>	The specific filename will be generated by the tech-support command so you only need to supply a valid directory name to place the file in.

**Defaults** The default setting is that the telnet-server is disabled.

**Command Modes** This is a PSD application-specific command.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Usage Guidelines** This command will only allow telnet logins, and does not support SSH.

**Examples** The following example generates and ftps a tech-support file to remote host “ts” (userid “ken” with password “kp”) and place in the users’s incoming directory (the directory must already exist):

```
router# tech-support ftp://ken:kp@ts:/incoming
```

The file name generated is:

psd.hostname.Mar2003.08:32:22AM

Where “hostname” is the host name of the PSD from which you entered the tech-support command. The date and time will be the current date and time the command was issued. This naming convention avoids file name confusion when you issue **tech-support** from a variety of PSDs, or from the same PSD at different times.

Related Commands	Command	Description
	<b>show tech-support</b>	Generates show output when the PSD application is not functioning.

# telnet-server

To enable outside logins, use the **telnet-server enable** command. Use the **telnet-server disable** command to disable this function.

**telnet-server enable**

**telnet-server disable**

Syntax Description	enable	Enables outside logins using telnet.
	disable	Disables outside logins using telnet.

**Defaults** The default setting is that the telnet-server is **disabled**. When **enabled**, the telnet server will use port 23.

**Command Modes** This is a PSD application-specific command.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Usage Guidelines** This command will only allow telnet logins, and does not support SSH.

**Examples** The following example uses **telnet-server** command to enable the telnet server:

```
root@localhost# telnet-server enable
```

# traceroute

To establish a traceroute to a network device, use the **traceroute** command.

```
traceroute [-Inv] [-f first_ttl] [-m max_ttl] [-p port] [-s src_addr] [-t tos] [-w waittime]
[destination host name | IP address [packetlen]]
```

Syntax Description		
<b>I</b>		ICMP ECHO instead of UDP datagrams..
<b>n</b>		Print hop addresses numerically.
<b>v</b>		Verbose output.
<b>first_ttl</b>		The initial time-to-live used in the first packet.
<b>max_ttl</b>		The maximum time-to-live (max number of hops) used.
<b>port</b>		The base UDP port number used in probes.
<b>src_addr</b>		Loose source traceroute, other src than this host.
<b>tos</b>		The type-of-service in packets to the following value.
<b>waittime</b>		The time to wait for a response to a probe.
	<b>destination hostname</b>	
	<b>IP address</b>	
	<b>packetlen</b>	

**Defaults** There are no default settings for this command.

**Command Modes** This is a PSD application-specific command.

Command History	Release	Modification
	1.0(1)	This command was introduced.

**Examples** The following example illustrates the **traceroute verbose** command:

```
root@localhost# traceroute -v
```

# upgrade

To download and install a new AP or MP image, use the PSD **upgrade** command. You must specify an ftp-url, which is the new AP or MP image you want to install.

**upgrade** *ftp\_url* [--install]

## Syntax Description

<i>ftp_url</i>	<i>ftp-url</i> specifies the new MP image you want to install. The <i>ftp_url</i> is in the form of “ <i>ftp://userid[:password]@host[:][/]relative_path</i> ”
“ <i>ftp://</i> ”	Indicates the use of the FTP protocol for the download, currently FTP is the only supported protocol.
“ <i>userid</i> ”	The userid used to log into the remote host.
<i>[:password]</i>	(Optional) Allows you to specify a password on the command line. If not specified, then you will be prompted for the password.
“ <i>@</i> ”	Required delimiter preceding the host.
<i>[:]</i>	(optional) Delimiter between the host and path, specify the colon when you do not want to specify a “/”. Some ftp servers will interpret the “/” to indicate a system root path so to circumvent this specify a colon and no leading “/” for the specification to be relative.
<i>[relative_path]</i>	The relative specification to the image, relative to the FTP user’s default directory.

## Defaults

There are no default values.

## Command Modes

EXEC

## Command History

Release	Modification
1.0(1)	This command was introduced.

## Usage Guidelines

When you boot to the MP, *ftp\_url* specifies an Application Image file (AP). The [--install] variable only applies to this usage.

When you boot to the AP, *ftp\_url* specifies a Maintenance Image file (MP). The [--install] variable does not apply to this usage.



### Caution

Do not cancel the upgrade, remove the module, or power down the module during the upgrade procedure. Doing so may cause the module to fail to come online.

## Examples

The following example illustrates the **upgrade** command:

```
root@localhost# upgrade ftp://user:passwd@host/full-path/filename
```

