Web Console

This chapter tells you how to use the online Web Console, a graphical user interface (GUI), to set or change the system configuration and monitor system activity. The Web Console application communicates with the system by translating HTML pages into Cisco IOS commands. You can enter similar configuration parameters for your system using the command-line interface (CLI).

The Cisco 6400 ships with the Asynchronous Transfer Mode (ATM) address autoconfigured by Cisco Systems, allowing the switch to automatically configure attached end systems using the Interim Local Management Interface (ILMI) protocol and to establish itself as a node in a single-level Private Network-Network Interface (PNNI) routing domain.

The ILMI and PNNI protocols, when used with an IP address autoconfiguration mechanism such as Dynamic Host Configuration Protocol (DHCP) or Bootstrap Protocol (BOOTP), allow the Cisco 6400 to be entirely self-configured. Before using the Web Console to configure your Cisco 6400, you must assign an IP address or use DHCP to obtain an address for the system.

This chapter discusses the following topics:

Note For a description of the commands mentioned in this chapter, refer to the *Cisco 6400 Command Reference*, the *ATM and Layer 3 Switch Router Command Reference*, and the Cisco IOS Command Reference documentation.

Web Console Installation

Before you can use the Web Console to configure your Cisco 6400, you must install the Web Console HTML pages. You can install the Web Console from the PCMCIA disk in the node switch processor (NSP) disk slot 0 (disk0:) or from a TFTP server. After the HTML pages are installed, they can be updated at any time using the procedure described in the "Loading New Web Console Pages" section on page A-24.

Using Automatic Installation of the Web Console

Automation installation of the Web Console requires a PCMCIA disk with a Web Console software image of Cisco IOS Release 12.0(5)DB or later. If you plan to use an earlier Web Console software release, proceed to the "Installing the Web Console from the PCMCIA Disk" or "Installing the Web Console from a TFTP Server" sections.

To let the NSP install the Web Console application automatically, complete the following steps beginning in EXEC mode:

Step 1 Insert the PCMCIA disk with the Web Console image into disk slot 0 of the NSP.

Step 2 Use the **dir disk0:** command to see if the Web Console image (indicated with the arrow below) is on disk0:. If the image is not on disk0:, proceed to Step 3. If you successfully locate the image on disk0:, skip to Step 4.

```
Switch# dir disk0:
Directory of disk0:/

  3  -rw-      628224   Jan 01 2000 00:08:55  c6400s-html.tar.120-5.DB
376  -rw-        2134   Jan 05 2000 22:05:27  startup.config

109760512 bytes total (109130154 bytes free)
Switch#
```

Step 3 Download the Web Console image (Cisco IOS Release 12.0(5)DB or later) from Cisco.com to disk0:. You might have to first download the image to an interim site on the local network, and then copy the image to disk 0:.

Step 4 Type **reload**. This will reboot the NSP.

```
Switch# reload
```

After rebooting, the NSP checks disk0: for a Web Console image. If the Web Console image is present, the NSP automatically extracts the HTML pages from the image.

Installing the Web Console from the PCMCIA Disk

To install the Web Console pages from the PCMCIA disk, complete the following steps in EXEC mode:

Step 1 Insert the PCMCIA disk with the Web Console image into disk slot 0 of the NSP.

Step 2 Create a directory, **nsp-html**, for the Web Console files on disk0:.

```
Switch# mkdir disk0:/nsp-html
```

Step 3 Extract the Web Console pages from disk0: to the **nsp-html** directory:

```
Switch# archive tar /xtract disk0:c6400s-html.tar disk0:/nsp-html
```

Installing the Web Console from a TFTP Server

To install the Web Console pages from a TFTP server, complete the following steps:

Step 1 Insert the PCMCIA disk with the Web Console image into disk slot 0 of the NSP.

Step 2 Set the HTTP path by entering the following command. You must supply the TFTP server name and directory.

```
Switch(config)# ip http path tftp://tftpservername/yourdir/nsp-html
```

Step 3 Copy the Web Console image to the TFTP server (choose one of the following):

a. From disk slot 0 of the NSP:

```
Switch# copy disk0:c6400s-html.tar tftp://tftpservername/yourdir
```

b. From Cisco.com—Download the Web Console image to the TFTP server and directory.

Step 4 In the directory with the Web Console image on the TFTP server, uncompress the image by using the **tar -xvf c6400s-html.tar** UNIX command:

```
tar -xvf c6400s-html.tar
x 6400.html, 15446 bytes, 31 tape blocks
x 6400_bottom.gif, 2881 bytes, 6 tape blocks
x 6400_left.gif, 8018 bytes, 16 tape blocks
x 6400_left_bottom.gif, 2545 bytes, 5 tape blocks
x 6400_left_left.gif, 1014 bytes, 2 tape blocks
....
x subscribervp.gif, 3855 bytes, 8 tape blocks
x subscribervp.html, 12580 bytes, 25 tape blocks
x subscribervphlp.html, 6965 bytes, 14 tape blocks
x sysadvancehlp.html, 8765 bytes, 18 tape blocks
x system.gif, 3809 bytes, 8 tape blocks
```

Running the Web Console

After you have installed Web Console on the NSP, open a browser (Netscape Navigator 4.x or above or Microsoft Internet Explorer 4.x or above) on any other workstation, using the following settings:

- Enable the JavaScript option.
- Set the browser memory and disk cache sizes to a minimum or 4096 kilobytes.
- Set the browser cache to local disk.

Enter the IP address of the network management Ethernet (NME) on the Cisco 6400 as the URL and press **Enter** to run the Web Console.

Note Netscape Navigator 4.6 or 4.7 is required to use the Web Console image from Cisco IOS Release 12.0(7)DB1.

Using the Web Console

The Cisco 6400 Web Console is an embedded HTML website residing on PCMCIA disk0: or on your TFTP server. You can assign a bookmark to the Web Console access page and use the other browser functions as you would with any website. You can also use the live image of the switch on the Web Console Status page to monitor switch activity and confirm configuration changes without having to go into the wiring closet. Online help is available on all pages.

Note Web Console uses HTTP, which is an in-band form of communication: you access the switch through one of its Ethernet ports. Therefore, you should ensure that you do not disable or otherwise misconfigure the port that you are using to communicate with the switch. As a system administrator, you might want to write down the number of the port you are connected to. For the same reason, changes to the switch IP information should be done with care.

Making Changes with the Web Console

Web Console pages function much like other GUIs. When you display a Web Console page, it contains the current settings that have been defined for the switch. You change the system configuration by entering information into fields, adding and removing list items, or selecting check boxes.

Changes made by entering information into fields become part of the running (current) configuration when you click **Apply**, a button that appears on every page. If you make a mistake and want to retype an entry, click **Reset** to undo the information you entered. The exception to this procedure occurs when you are making changes to lists. Items added or removed from lists immediately become part of the running configuration, and you do not need to click **Apply**.

Table A-1 lists the parameters that you can configure using Web Console.

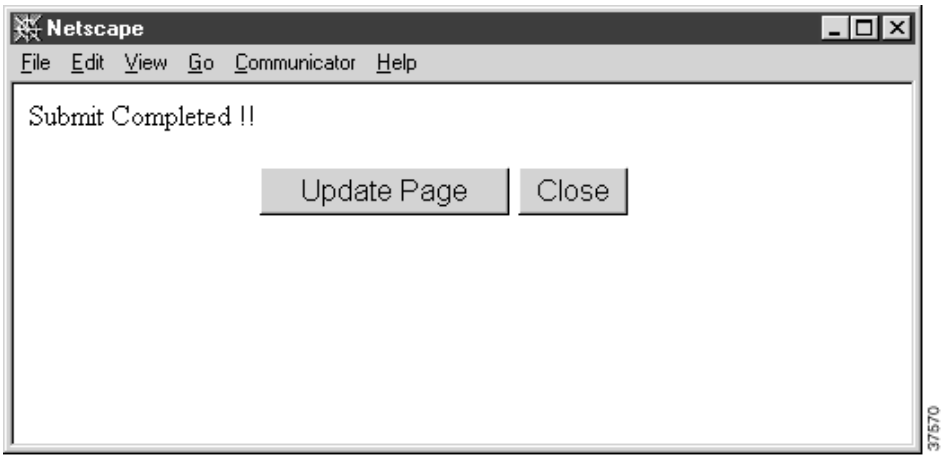
Table A-1 Features, Default Settings, and Web Console Pages

Feature	Default Setting	Web Console Page
Management		
Switch IP address, subnet mask, domain, and default gateway	0.0.0.0	Management IP
IP static route	None	Management IP
DNS server identification	Enabled	Management IP
NRP Configuration		
NRP configuration information	None	NRP
Redundancy		
Active CPU and autosynchronization characteristics	Disabled	Redundancy
Slot redundancy, primary/secondary configuration	Disabled	Redundancy
Subslot redundancy, primary/secondary configuration	Disabled	Redundancy
Subscriber		
Set up new subscribers, list current subscribers	Enabled	Subscriber
Diagnostics		
System monitoring	Enabled	Status
Security		
Switch name, password, domain, and ATM address	None	System
System reload and core dump options	None	Advanced System Configuration
SNMP contact information	None	SNMP Management
Trap manager	0.0.0.0	SNMP Management
Community strings	public/private	SNMP Management

Changing the Current Configuration

You can apply the changes you make using the Web Console to the current system configuration by clicking **Apply** on any of the Web Console pages. When you click **Apply**, the Update page is displayed. (See Figure A-1.)

Figure A-1 Update Page



The Update page allows you to confirm the changes you just made to the system configuration, before actually applying them to the running configuration of your switch. This page also indicates whether or not any errors occurred when the information was transferred to the operating system. If you are sure that you want to apply the changes to the running configuration, click **Update Page**. If you want to discard your changes, click **Close**.

Saving Changes to the Startup Configuration

The startup configuration file contains the IP addresses, passwords, and any other parameters you entered when you first configured the system. The system maintains the configuration by reloading this file when it restarts. However, the startup configuration file might not have the configuration that is currently operating the system. Changes made through the Web Console or the CLI take effect immediately but must be explicitly saved to be included in the startup configuration.

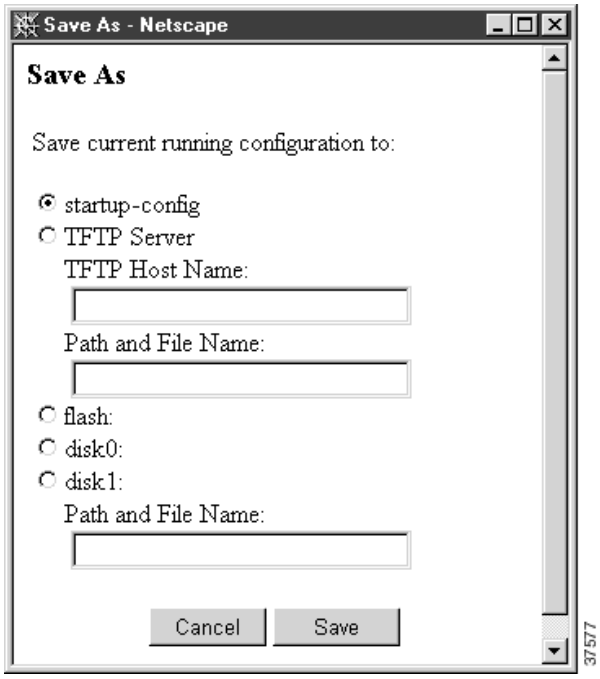
The configuration file that loads when the switch is restarted is not necessarily the same as the running configuration. If you want the running configuration to be the configuration used when the switch restarts, use the **Save As** button on each Web Console page to save the running configuration to the startup configuration file in memory.

To save the configuration to boot flash, the startup-config, the TFTP server, or one of the PCMCIA disks, follow these steps:

Step 1 Click the **Save As** button in the left frame on any of the Web Console pages.

The Save As window is displayed. (See Figure A-2.)

Figure A-2 Save As Window



Step 2 Click the button that corresponds to where you want the configuration you just entered to be stored.

Step 3 Enter a filename if you are saving to a file.

Step 4 Click the **Save** button.

Accessing the Web Console

The switch must have an IP address before you can access the Web Console. Follow the prompts when you install the switch to assign an IP address and other IP information. See the *Cisco 6400 UAC Hardware Installation and Maintenance Guide* for more information.

Follow these steps to access the Web Console:

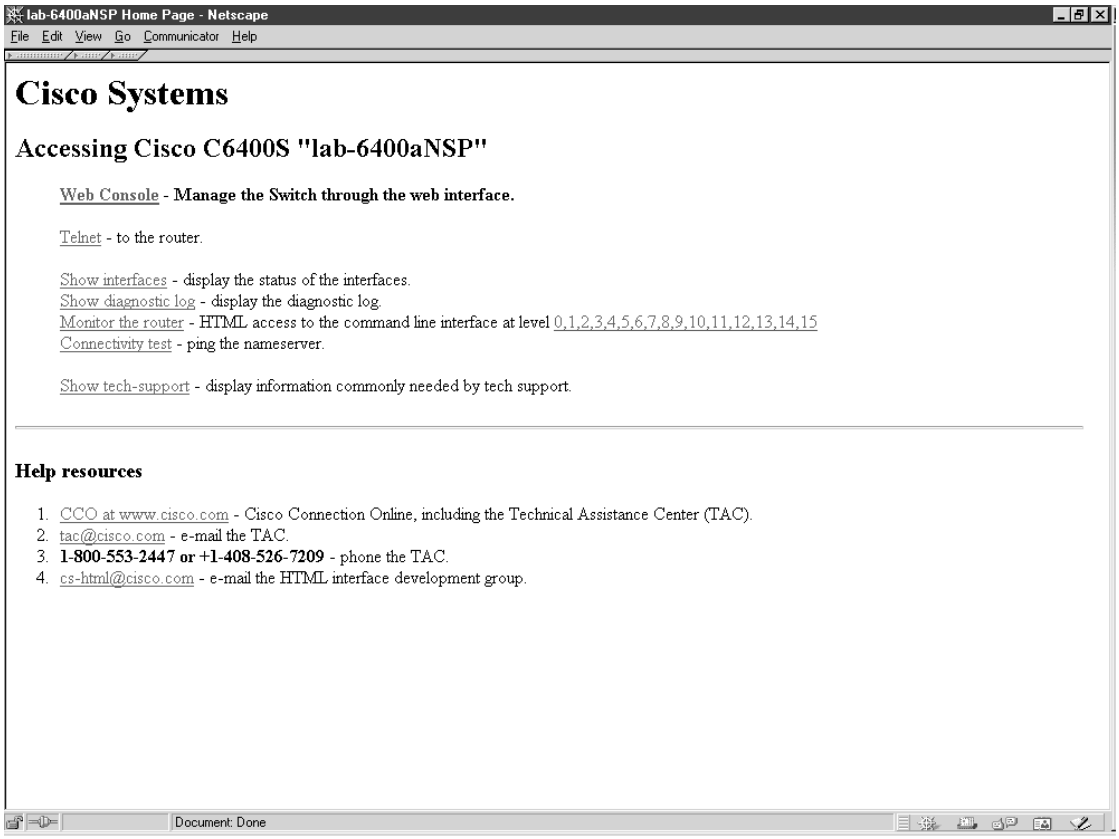
Step 1 Install the Web Console. Refer to the "Web Console Installation" section on page A-2.

Step 2 Enter the IP address of the NSP management Ethernet in the URL field.

Step 3 Click **Enter**. The Cisco Systems Access page is displayed. (See Figure A-3.)

Step 4 Click **Web Console** to display the Cisco 6400 Basic System Configuration page. (See Figure A-4.)

Figure A-3 Cisco Systems Access Page



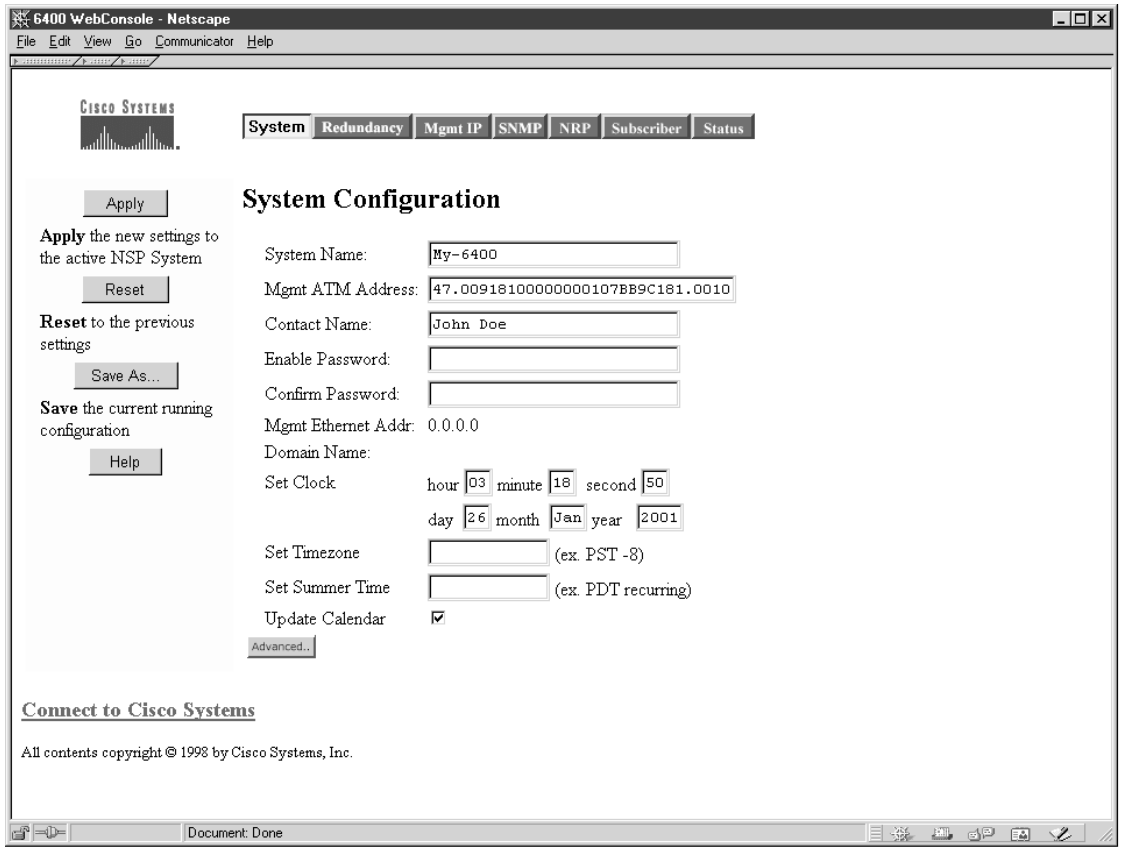
From the Access page, you can also open a Telnet connection to the NSP, show interfaces, show diagnostics, monitor the NSP, and display technical support information.

You can also access Cisco.com, the Cisco Systems customer website, from the Web Console home page. From Cisco.com, you can download the latest software and display the latest Cisco 6400 carrier-class broadband aggregator documentation.

Basic System Configuration Page

The Basic System Configuration page acts as the system home page. (See Figure A-4.) To display this page, click **Web Console** on the Cisco Systems Access page. To display the main page in Web Console, click **System** on the action bar.

Figure A-4 Basic System Configuration



Navigating in Web Console

After you have started the Web Console and displayed the Cisco 6400 home page (Figure A-4), you can use the action bar at the top of each page to move between pages. Table A-2 lists the functions that are available for each action bar selection.

Table A-2 Web Console Action Bar Options

Action Bar Option	Description
System	Allows basic system configuration
Redundancy	Allows configuration of redundant pairs of slots and subslots
Mgmt IP	Allows configuration of NME
SNMP	Allows configuration of SNMP characteristics
NRP	Shows status of NRPs
Subscriber[1]	Allows configuration of subscribers
Status	Shows status of chassis components

1. In Cisco IOS Release 12.0(7)DB1, the Subscriber option is separated into two: VC Subscriber and VP Subscriber.

Entering Basic Configuration Parameters

This information is usually entered once and not changed. Click **Apply** after entering information in the fields, **Revert** to return values to the previous settings, or **Save As** to save the configuration. Each of the fields is described in Table A-3.

Table A-3 System Configuration Field Descriptions

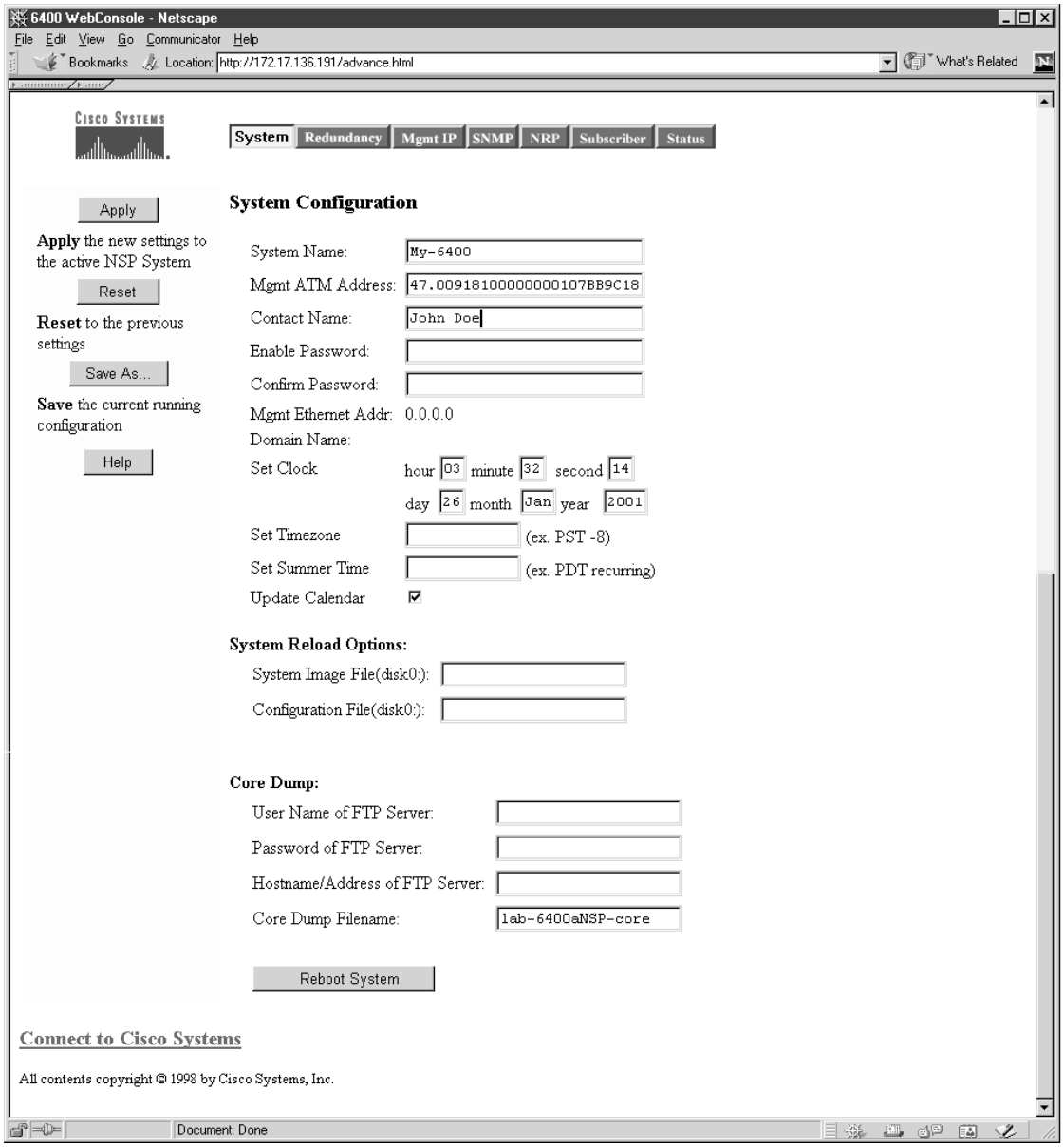
Field	Description
System Name	Enter a name for the Cisco 6400 system.
Mgmt ATM Address	Pre-assigned ATM address is entered automatically.
Contact Name	Enter a name.
Enable Password	Enter the enable password for the system.
Confirm Password	Reenter the enable password for the system.
Mgmt Ethernet Addr.	Displays the Ethernet address for the CPU. (Display only, use the Mgmt IP page to change the IP address.)
Domain Name	Displays the domain name of the system. (Display only, use the Mgmt IP page to change the domain name.)

For more information about setting your basic configuration, see Chapter 2, “Basic NSP Configuration.”

Entering Advanced Configuration Parameters

Access the advanced configuration parameters by clicking the **Advanced** button on the System Configuration page. The Advanced parameters are displayed below the basic parameters. (See Figure A-5.)

Figure A-5 Advanced System Configuration



Note To return to the System Configuration page, click **System** in the Action bar.

Enter the System Reload Options and Core Dump parameters described in Table A-4 and then click **Apply**.

Table A-4 Advanced System Configuration Field Descriptions

Field	Description
System Reload Options	
System Image File	Enter the path and name of the Cisco IOS image file to be loaded when the system reboots.
Configuration File	Enter the path and the name of the configuration file that the image file reads to configure the system.
Core Dump	
User Name of FTP Server	Enter a valid user name for the FTP server where you want the core dump file sent.
Password of FTP Server	Enter a valid password for the FTP server where you want the core dump file sent.
Hostname/Address of FTP Server	Enter the host name and address for the FTP server where you want the core dump file sent.
Core Dump Filename	Enter the name you want used for the core dump file.

Use the **Reboot System** button on this page to reboot the system at any time.

Note Cisco recommends that core dumps be turned off to ensure enhanced high system availability (EHSA) performance. If core dumps are turned on, NSP failovers will only occur after the core dump is complete.

System Reload Options

This section describes the files used by the system when it reloads its software. Some of these files reside in memory, either boot flash or disk. To determine the names of the files to use, enter the **dir** command at the CLI. Here is an example of the display that results:

```
Switch# dir bootflash:

Directory of bootflash:

  2  -rwx      843947   Mar 01 1993 00:02:18  6400-h-mz-112.8-SA
  4  drwx        3776   Mar 01 1993 01:23:24  nsp-html
 66  -rwx         130   Jan 01 1970 00:01:19  env_vars
 68  -rwx        1296   Mar 01 1993 06:55:51  config.text

1728000 bytes total (456704 bytes free)
```

To view the system reload settings, use the **show bootvar** command as follows:

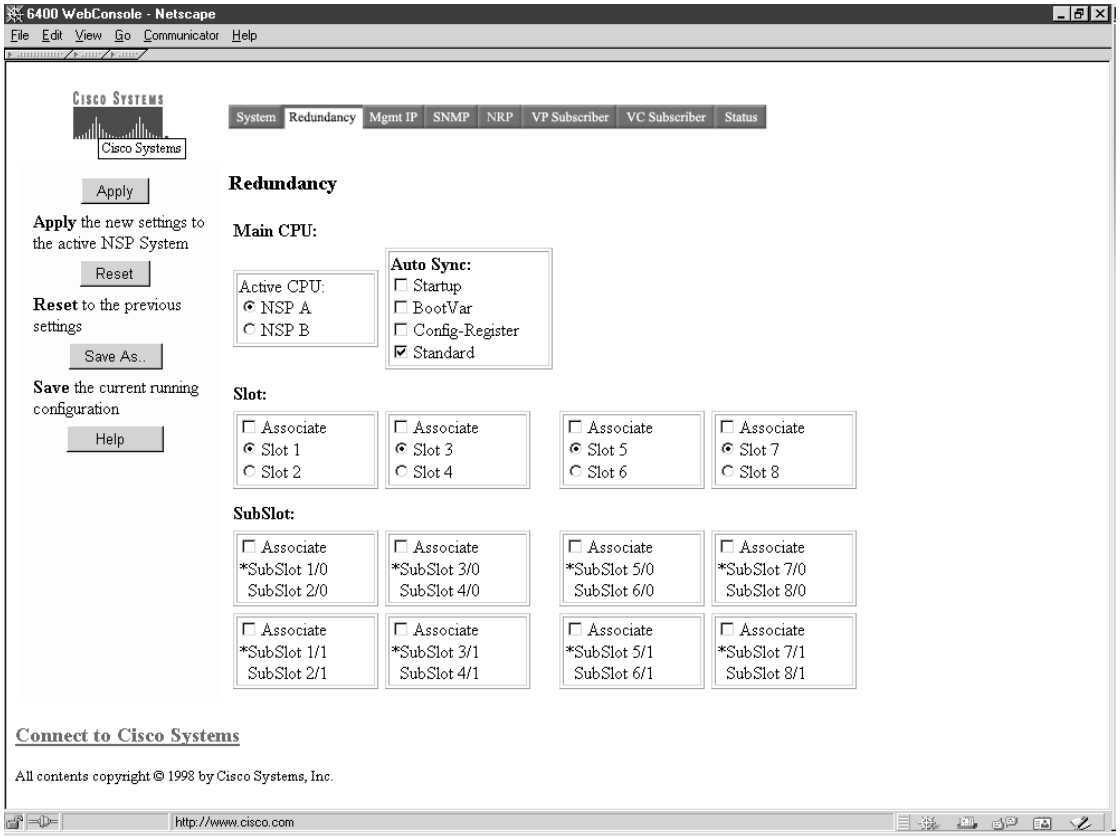
```
Switch# show bootvar
BOOT variable = disk0:c6400-wp-mz,12;
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2101
```

Configuring Redundancy

Use the Redundancy page to set up redundant CPUs, slots, and subslots. This page also allows you to set the primary/secondary relationship between redundant pairs. To display this page, click **Redundancy** on the action bar.

Figure A-6 shows the slots and subslots listed on the redundancy page.

Figure A-6 Redundancy Page



For more information about configuring redundancy, see Chapter 5, "Redundancy and SONET APS Configuration."

Enabling CPU, Slot, and Subslot Redundancy

To set redundancy for a pair of CPUs, slots, or subslots, do the following:

Step 1 Click the **Associate** check box for the pair.

Step 2 Choose the primary slot or subslot by clicking the appropriate button.

Step 3 Click **Apply.**

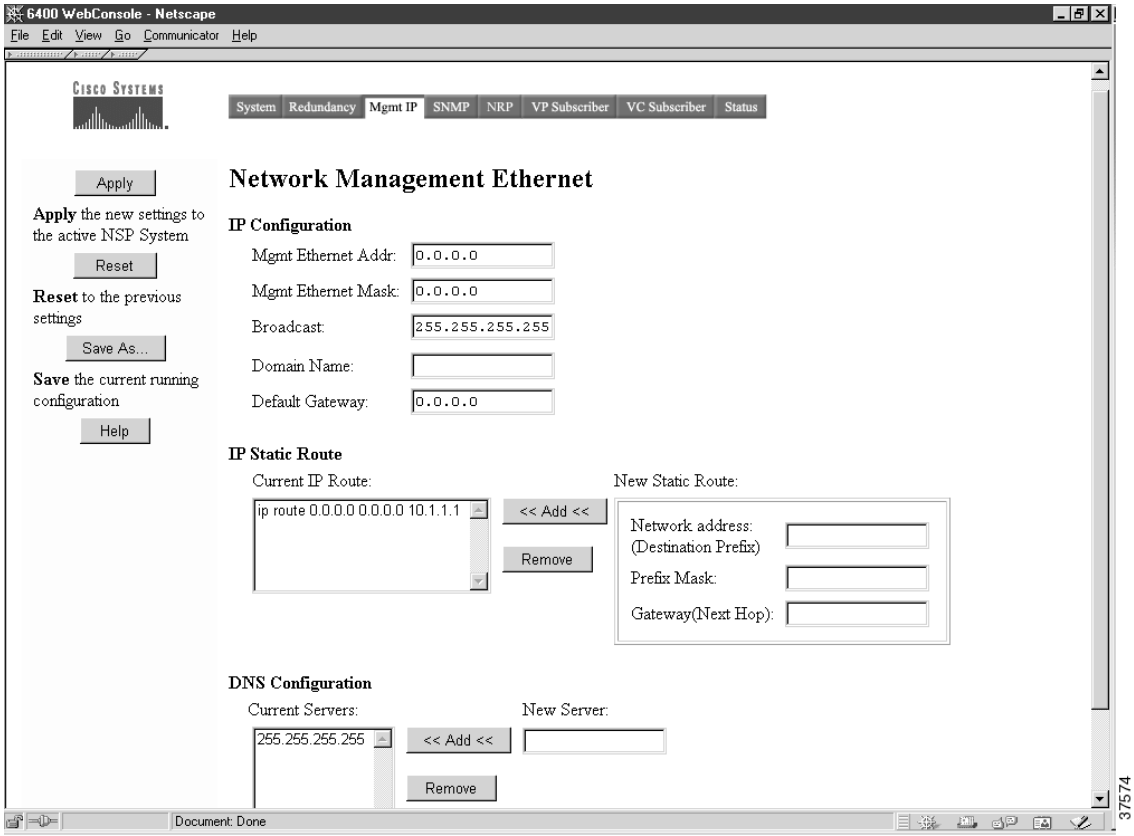
For the CPU, you can also set the configuration synchronization option as described in the "Synchronizing Redundant NSPs" section on page 5-4.

IP Address Management

To manage the IP address used for the NME port, static IP routes, and DNS servers, use the Mgmt IP page. (See Figure A-7.) To display this page, click **Mgmt IP** on the action bar.

Caution Changing the switch IP address on this page will end your Web Console session. If this occurs, you can restart Web Console by entering the new IP address in the browser URL field.

Figure A-7 Mgmt IP Page



Setting the Management IP Configuration

The IP address of the switch is entered or changed through the Setup program or the CLI. If you change it on this page, the new value takes effect when you click **Apply** and could cause you to lose contact with the switch. When entering data in the IP Configuration fields, you can always select **Revert** to return the page to its previous state. You might need to contact a network administrator to obtain the IP address information.

Note If the Cisco 6400 is configured for NME consolidation, do not use the Web Console to configure management information. See the "Network Management Ethernet Interface" section on page 2-6 for more information.

Follow these steps to enter the IP parameters for the management Ethernet:

Step 1 Enter the subnet mask (Mgmt Ethernet Mask) for the switch.

Step 2 Enter the broadcast address for the switch.

Step 3 Enter the domain name of the NME.

Step 4 Enter the IP address of the default gateway, or router. This field is filled automatically if a discovery protocol finds a router connected to a switch port.

Step 5 Click **Apply** to save the current information to your running configuration.

Step 6 Click **Save As** to save the current information to your configuration file, Flash memory, disk, or TFTP server.

Setting Static Routes

Static routes for the NME are manually entered into the Static Address table. They are not aged (dropped) from the table when not in use, and they are not lost when the system resets. To set IP static routes used on the Ethernet management network, follow these steps:

Step 1 Enter the destination network Ethernet address for the new static route in the Network Address field.

Step 2 Enter the subnet mask for the static route in the Prefix Mask field.

Step 3 Enter the IP address for the next hop router in the Gateway (Next Hop) field.

Step 4 Click **Add**.

To remove static routes, follow these steps:

Step 1 Select the static route you want to remove from the list of current IP routes.

You must remove the last static route entry unless you have a default gateway specified. Otherwise, you will no longer be able to access the Web Console on this system.

Step 2 Click **Remove**.

Adding and Removing Domain Name Servers

A Domain Name Server (DNS) converts domain names into their corresponding IP addresses. To define DNS servers that are used on the NME, follow these steps:

Step 1 Enter the Ethernet address of a new DNS in the New Server field.

Step 2 Click **Add**.

To remove a DNS, follow these steps:

Step 1 Select the DNS you want to remove from the list of current servers.

Step 2 Click **Remove**.

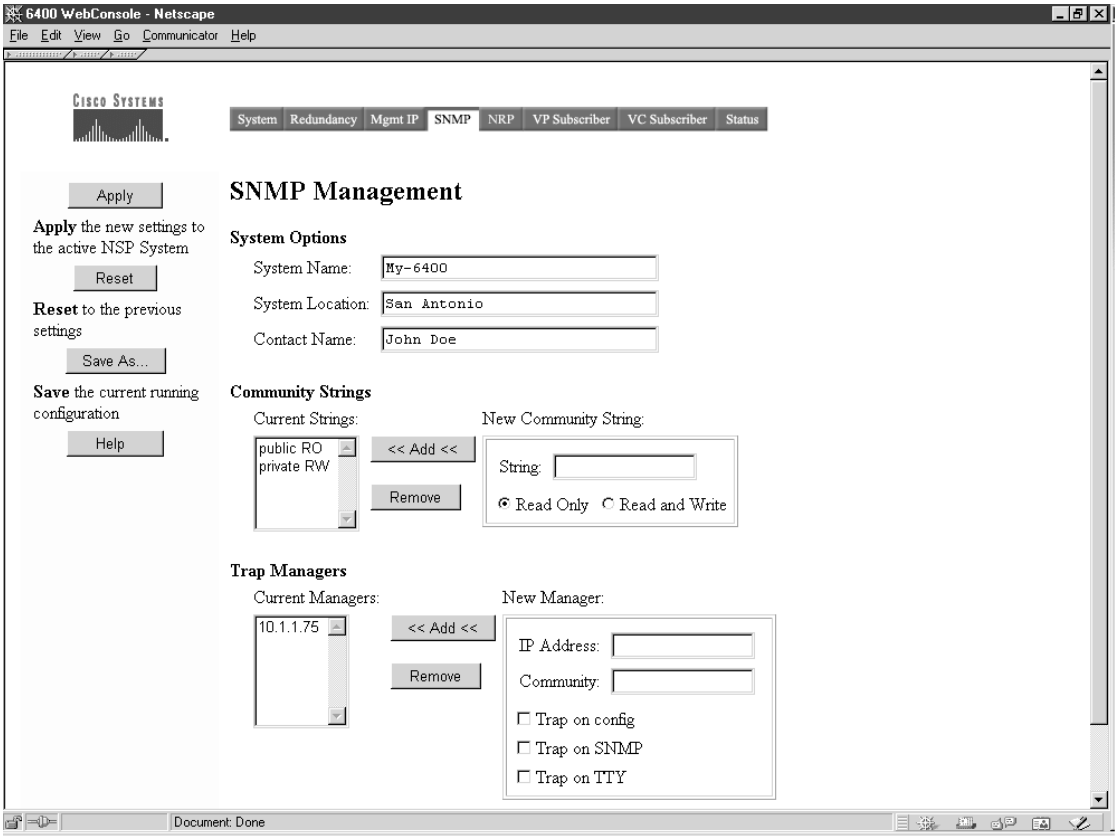
SNMP Management

Use the SNMP page (see Figure A-8) to perform the following tasks:

- Enter information about the switch (System Options)
- Enter community strings that serve as passwords for SNMP messages
- Enter trap managers and their community strings to receive traps (alerts) about switch activity
- Set the classes of traps that a trap manager receives

For more information about configuring SNMP management options, see the "Simple Network Management Protocol" section on page 6-1. Also see the "Configuring Simple Network Management Protocol (SNMP)" chapter of the "Cisco IOS System Management" part of the *Cisco IOS Configuration Fundamentals Configuration Guide*.

Figure A-8 SNMP Page



Entering System Options

System Option information is used by network management applications to identify the switch on a topology map. To begin entering the information, proceed as follows:

Step 1 Enter a name to be used for the system.

Step 2 Enter the location of the system.

Step 3 Enter the name of a person or organization associated with the system.

Step 4 Click **Apply** to save the current information to your running configuration.

Step 5 Click **Save As** to save the current information to your configuration file, Flash memory, disk, or TFTP server.

Entering Community Strings

Community strings serve as passwords for SNMP messages. You can enter them with either of the following characteristics:

- Read Only—Enables requests accompanied by the string to display MIB-object information
- Read and Write—Enables requests accompanied by the string to display MIB-object information and to set MIB objects

To supply a community string, proceed as follows:

Step 1 Enter a character string in the String field.

Step 2 Click **Read Only** or **Read and Write**.

Step 3 Click **Add**.

To remove community strings, select a string from the Current Strings list and click **Remove**.

Adding Trap Managers

A trap manager is a management station that receives and processes traps.

Follow these steps to add a trap manager:

Step 1 Enter the IP address or name of the station in the IP Address field.

Step 2 Enter a character string in the Community field. This string can be any length.

Step 3 Select the class of traps that the trap manager is to receive. Select a check box to enable one or all of the following:

- Trap on config—Generate traps on all changes to the switch configuration.
- Trap on SNMP—Generate the supported SNMP traps.
- Trap on TTY—Generate the serial-port-related TTY traps.

Step 4 Click **Add**.

To remove trap managers, follow these steps:

Step 1 Select a manager from the Current Managers list and click **Remove**.

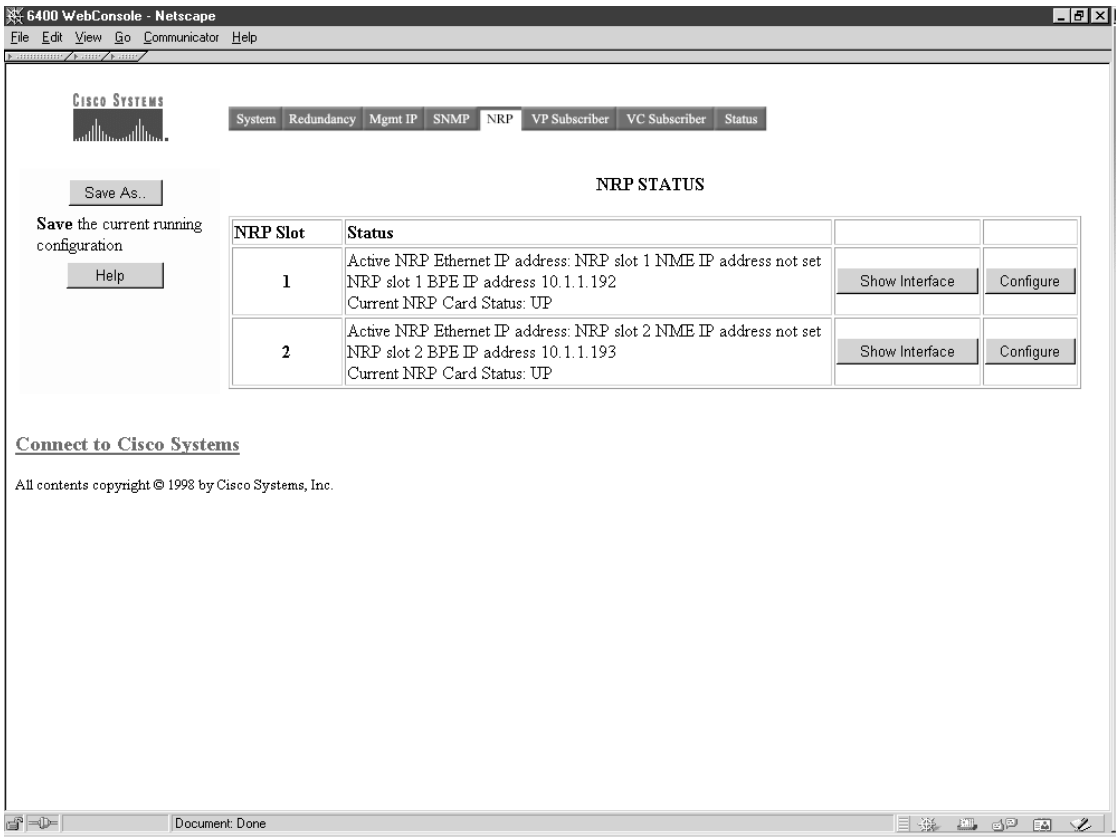
Step 2 Click **Apply** to save the current information to your running configuration.

Step 3 Click **Save As** to save the current information to your configuration file, Flash memory, disk, or TFTP server.

NRP Status

The NRP page allows you to display information about any of the node route processors (NRPs) installed in the Cisco 6400 chassis. To display the NRP page (Figure A-9), click **NRP** in the action bar.

Figure A-9 NRP Page



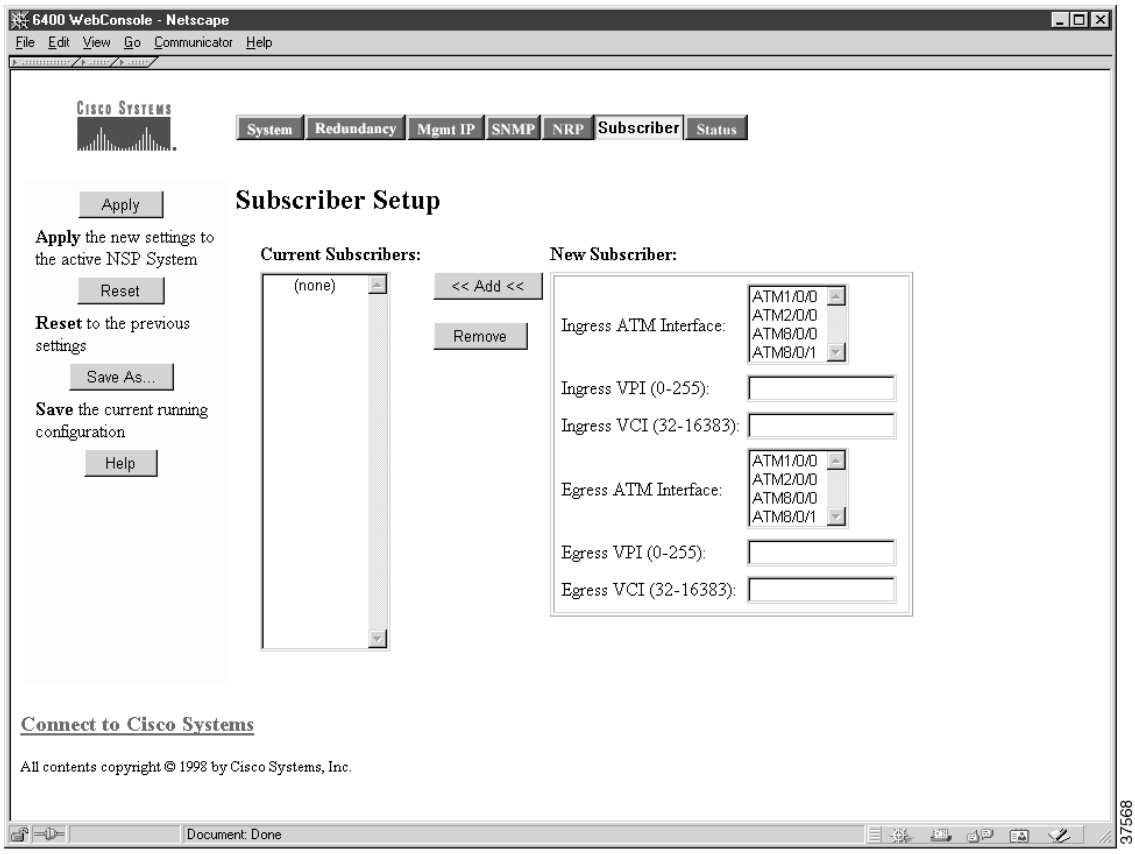
Subscriber Management

Use the Subscriber Setup page (see Figure A-10) to set and display the cross-connections for each of your current system subscribers. Subscribers are defined according to the ingress and egress ports, the virtual path identifier (VPI), and virtual channel identifier (VCI). To display the Subscriber page, click **Subscriber** in the action bar.

In Cisco IOS Release 12.0(7)DB1, the subscriber page is split into two pages: VC Subscriber Setup (see Figure A-11) and VP Subscriber Setup (see Figure A-12).

For more information about configuring virtual circuits for your subscribers, see the "Internal Cross-Connections" section on page 2-10.

Figure A-10 Subscriber Setup Page



Adding and Removing Subscribers

To add new subscribers and set up the virtual circuits, follow these steps:

Step 1 Select the ATM interface into which the subscriber packets arrive at the switch.

Step 2 Enter the incoming VPI.

Step 3 Enter the incoming VCI.

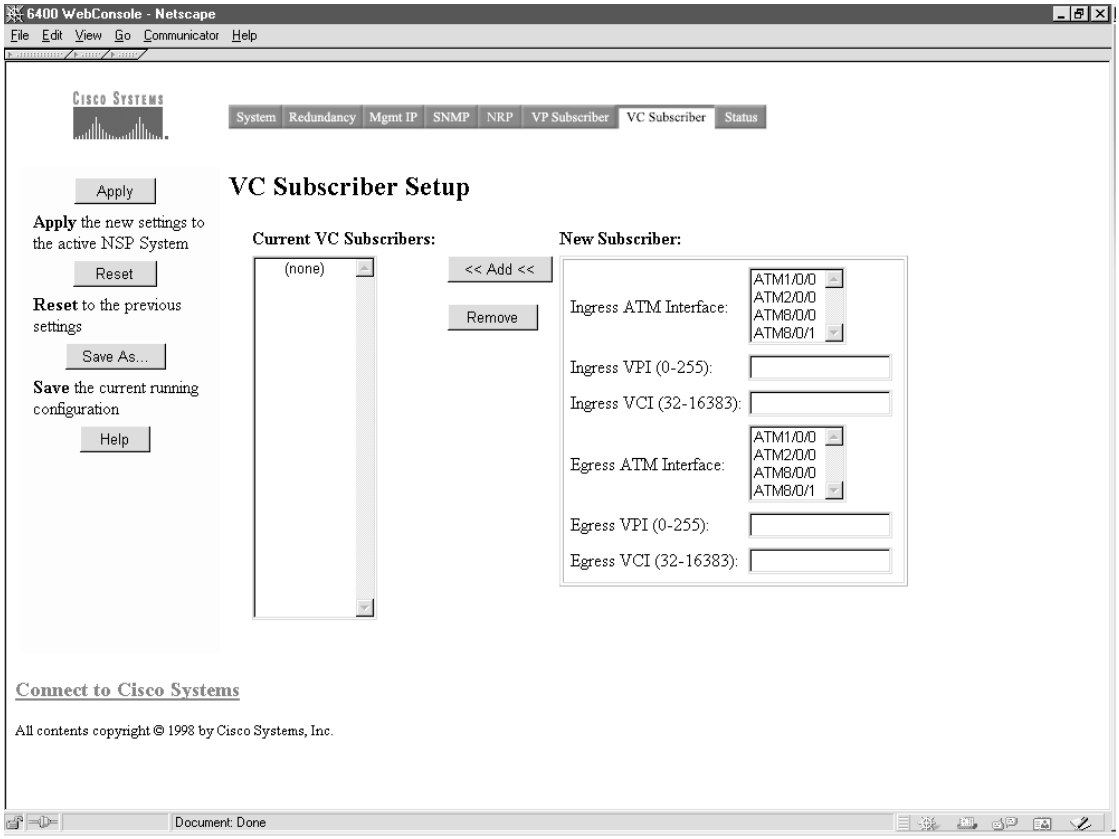
Step 4 Enter the outgoing (egress) ATM interface. This is the other side of the cross-connection.

Step 5 Enter the outgoing VPI and VCI.

Step 6 Click **Add**.

The new subscriber information is displayed in the Current Subscriber list.

Figure A-11 VC Subscriber Setup Page—Cisco IOS Release 12.0(7)DB1



To remove subscribers, follow these steps:

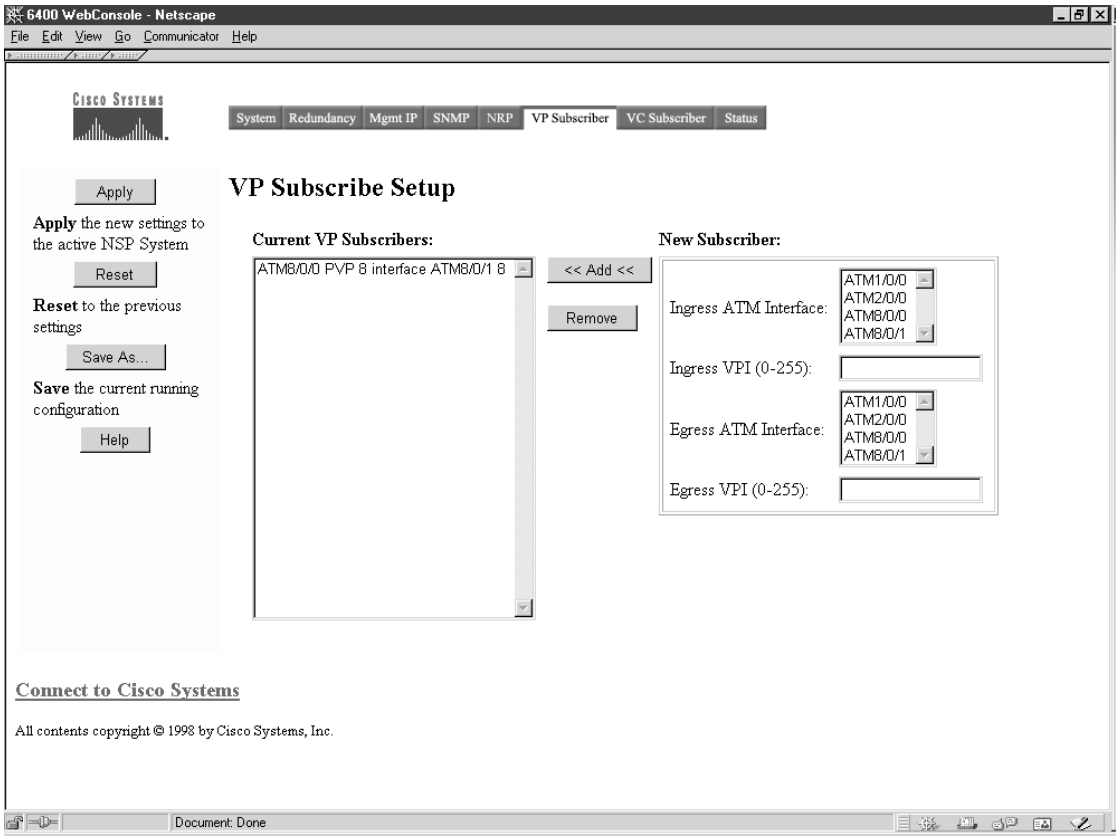
Step 1 Select a subscriber from the list of subscribers.

Step 2 Click **Remove.**

Step 3 Click **Apply** to save the current subscribers to your running configuration.

Step 4 Click **Save As** to save the current subscribers to your configuration file, Flash memory, disk, or TFTP server.

Figure A-12 VP Subscriber Setup Page—Cisco IOS Release 12.0(7)DB1

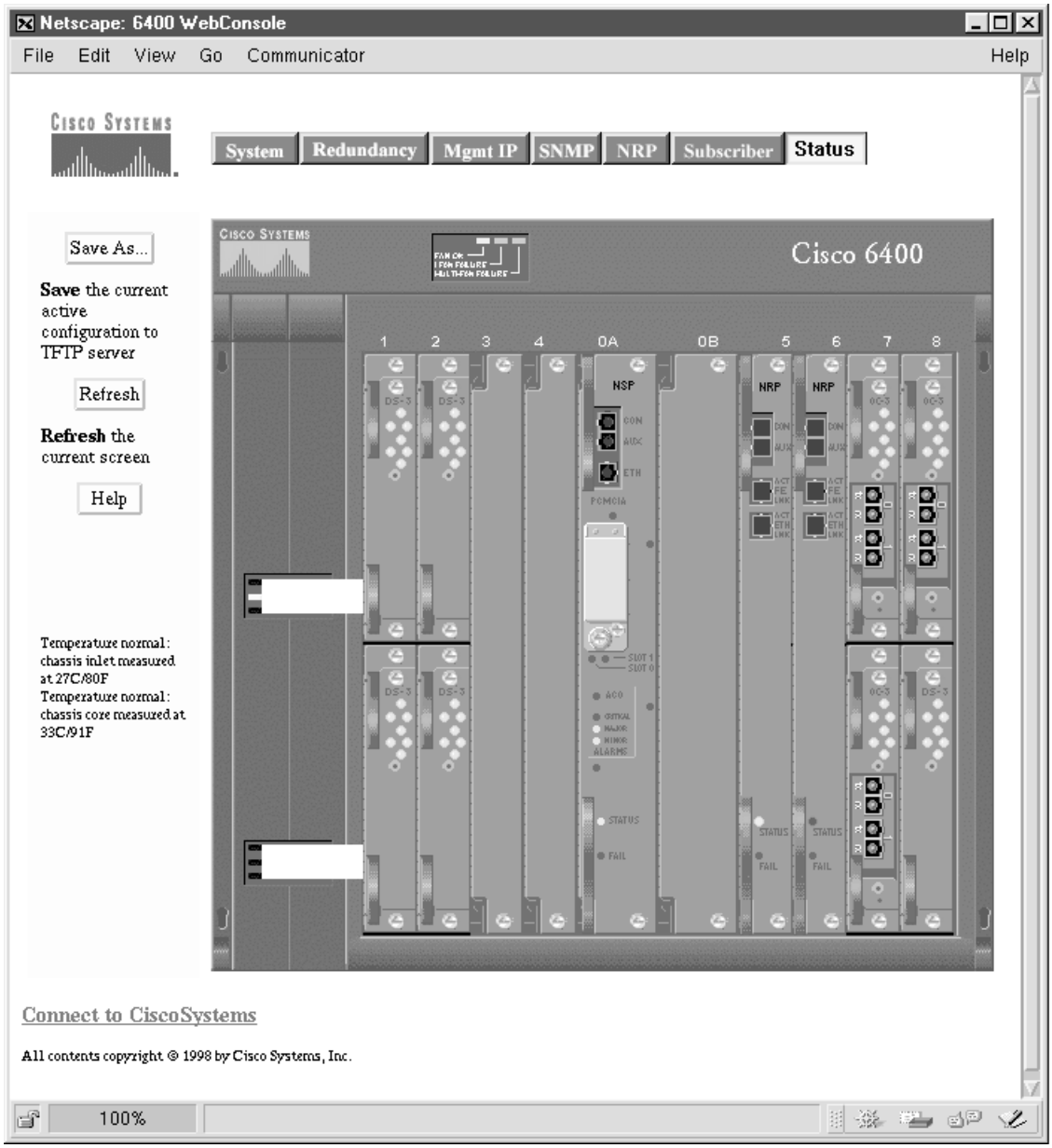


System Status

This page has a *live* image (see Figure A-13) of the system that displays much of the same information as the LEDs on the front of the system. You can use this image in the following ways:

- Display the status of ports. Colors indicate the status.
- Display the status and redundancy configuration of the NSPs.

Figure A-13 System Status



Loading New Web Console Pages

Cisco 6400 systems are shipped with the Web Console pages described in this chapter. However, from time to time, you might want to load updated Web Console pages into local memory (either Flash memory or Flash disk) on your system.

To load new Web Console pages onto your system, perform the following tasks from the privileged EXEC mode:

	Command	Purpose
Step 1	**copy** *tftp://tftpservername/../c6400s-html.tar* **disk0:***c6400s-html.tar*	Copy the new tar file with the Web Console pages to disk0:.
Step 2	**rename disk0:***nsp-html* **disk0:***nsp-html.old*	Rename the existing Web Console directory to save the current pages before extracting the new pages.
Step 3	**archive tar /table** *URL*	List the contents of the tar archive accessible at the URL shown.
Step 4	**archive tar /xtract** *source destination*	Unpack the Web Console pages and store them in the specified location.

After you have verified that the new Web Console pages are working properly, you can delete the old Web Console directory *(nsp-html.old).* Commonly, this procedure is performed at the same time that a new Cisco IOS image is downloaded. The Cisco IOS image is typically stored in Flash memory, and the HTML pages are usually stored on the PCMCIA disk in disk slot 0 (disk0:). Nevertheless, the operating system allows you to specify any valid file system location as the destination.

Example

The following example shows how to extract files on a TFTP server and install them on disk0: of the NSP:

```
Switch# archive tar /xtract tftp://tftpservername/directory/c6400s-html.tar disk0:
```