

# **Device and Subdevice Manager**

To access Device tasks, log into the system (see "Logging In" section on page 2-23). Then, from the Home page, click the **Devices** tab.

The Device Functional Overview page appears showing:

- View Device
- Add Device
- Discover Device
- Edit Device
- Resynchronize Device
- Clone Device
- Delete Device
- Update Device
- Subdevices
- Query Device Inventory
- Delete Files on Device
- Dynamic Operations

# **Viewing Device Configuration**

Step 1 From the Devices Functional Overview page, click View Device.

The Groups list appears.

**Step 2** From the Groups list, select the group that holds the device you want to view.



You can also use the Advance Search feature on many GUI pages to locate devices based on user-define search parameters (see "Using Advanced Search Feature" section on page 3-30).

**Step 3** The View Device list page appears (see Figure 3-1).

Figure 3-1	View Device List			
View Device				Advanced Search>>
Groups(1)	Group: /config/default Device(s) Count: 1	Connected: 0	Not Connected: 1	80
				5

**Step 4** Click on the icon for the device you want to view.

The Configuration for that device appears (see Figure 3-2).

0	version 12.0	
1	service timestamps debug uptime	
2	service timestamps log uptime	
3	no service password-encryption	
4	service udp-small-servers	
5	service tcp-small-servers	
6	hostname	
7	boot system flash c7200-is-mz	
8	enable secret 5 \$1\$cMdl\$.e37TH540MWB2GW5gMOn3/	
9	enable password cisco	
0	cns trusted-server all-agents imgw-test35	
1	cns trusted-server all-agents imgw-test35.cisco.com	
2	cns id udi	
3	cns id udi event	
4	cns id udi image	
5	cns event imgw-test35.cisco.com encrypt 11014 keepalive 120 2 reconnect-time 10	
6	cns config partial imgw-test35.cisco.com encrypt 443	
7	cns inventory	
8	cns exec encrypt 443	
9	cns image server https://imgw-test35:443/cns/HttpMsgDispatcher status https://imgw-test35:443/cns/HttpMsgDispatcher	
0	cns notifications encapsulation xml	
1	end	
2	%Serial 0%	

Note

The device configuration displayed is the configuration as it appears at the configuration server. It might not be the configuration running on the device.

- Step 5 To view subdevices (if applicable), in the left navigation pane, click View Subdevices.
- **Step 6** To view Images associated with this device (if applicable), in the left navigation pane, click **View Images**.

# **Previewing Device Configuration**

- **Step 1** From the Devices Functional Overview page, click **Edit Device**. The Groups list appears.
- **Step 2** From the Groups list, select the group that holds the device in question. The Edit Device list appears.
- **Step 3** Form the Edit Device list, select the group that holds the device you want to **Preview Device Configuration** or
- Step 4 From the Devices Functional Overview page, click View Device. The Groups list appears (see Figure 3-3).

Figure 3-3 Preview Device Configuration



**Step 5** From the Groups list, select the group that holds the device you want to **Preview Device Configuration** (see Figure 3-4).

~

2S	how Line Numbers	1
De	vice: dev-1	
0	version 12.0	
1	service timestamps debug uptime	
2	service timestamps log uptime	
3	no service password-encryption	
4	service udp-small-servers	
5	service tcp-small-servers	
6	hostname	
7	boot system flash c7200-is-mz	
8	enable secret 5 \$1\$cMdl\$.e37TH540MWB2GW5gMOn3/	
9	enable password cisco	
10	cns trusted-server all-agents imgw-test35	
11	cns trusted-server all-agents imgw-test35.cisco.com	
12	cns id udi	
13	cns id udi event	
14	cns id udi image	
15	cns event imgw-test35.cisco.com encrypt 11014 keepalive 120 2 reconnect-time 10	
16	cns config partial imgw-test35.cisco.com encrypt 443	
17	cns inventory	
18	cns exec encrypt 443	
19	cns image server https://imgw-test35:443/cns/HttpMsgDispatcher status https://imgw-test35:443/cns/HttpMsgDispatcher	
20	cns notifications encapsulation xml	
21	end	
22	%Serial 0%	

Fiaure 3-4	Device Configuration
i iguio o 4	Device Conniguration

To preview subdevices configuration (if applicable), in the left navigation pane, click View Subdevices. Step 6

# **Using Advanced Search Feature**

Step 1	From the Hierarchal View of groups (for example, see Figure 3-1), click Advanced Search.
Step 2	Use the drop-down arrow to select: Config ID, Event ID, or Device Name for the desired device
Step 3	Then enter a value that corresponds to the first part of the argument, then click Go.
	The results of the search are listed (see Figure 3-5).

Vie Sear	ew Devi ch Device <b>Q</b>	ice Hierarchal View> Device Name 💌 (c7200*	<u>•&gt;</u>
	Devices	Associated Groups	
8	c7200e1	/config/default	
8	c7200e4	/config/default /config/East	
8	c7200e6	/config/East	
8	c7200w3	/config/West /config/West/pao-1	
8	c7200w7	/config/West /config/West/sjc-1 /config/West/pao-1	29607

## Figure 3-5 Advanced Search Page

# **Adding Devices**

There are three variations to the Add Device procedures based on Device Type:

- Non-Agent Enabled Device (see below).
- Agent Enabled Device (see "Adding Agent Enabled Devices" section on page 3-39).
- PIX Firewall Device (see "Adding PIX Firewall Devices" section on page 3-44).
- ASA Firewall Device (see "Adding ASA Firewall Devices" section on page 3-47).

# **Adding Non-agent Enabled Devices**

Step 1	1 From the Devices Functional Overview page, click Add Device			
The Device Information page appears (see Figure 3-6).				
	Figure 3-6 Devi	ce Information Page		
	Create Device			
	Enter device information			
	Device Name: (required)	c7200e6		
	Unique ID: (required)	c7200e6		
	Device Type: (required)	Non-Agent Enabled Device 💌		
	Template File Name:	Select file: DemoRouter.cfgtpl     Select file: DemoRouter.cfgtpl     Test URL		
		Back Next Finish Cancel \$		

**Step 2** Enter a valid value (no spaces) in the **Device Name** field.

Table 3-1 shows valid values for these attributes.

Attribute	Description	Valid Values
Device Name	The name used as <b>cn</b> (common name) of the device.	a-z A-Z 0-9 -(hyphen) _ (under-score) . (period) :(colon)
Unique ID	Unique ID of the device.	Default or a-z A-Z 0-9 -(hyphen) _ (under-score) . (period) .(comma) :(colon) /(forward-slash) =(equal) +(plus)
Device Type	Type of device	From drop-down list
Template File Name	Name of the configuration template to associate with the device.	From drop-down list, or user-defined

Table 3-1Valid Values for Add Device

**Step 3** In the **Unique ID** field, accept the default value that appears or enter another valid value (no spaces).

Step 4 For Device Type, from the drop-down list, select Non-Agent Enabled Device.

**Step 5** Select the Template file name, then click **Next**.

The Group Membership page appears (see Figure 3-7).

Figure 3-7 Group Membership

## **Create Device**

```
Select group membership

DEVICE TYPE: Agent Enabled Device

/

East

West

default
```

## <u>P</u> Tip

Use the Group Manager to set up groups before you add a device (see "Creating Groups" section on page 6-96).

**Step 6** Check to select the group(s) of which you want this device to become a member, then click **Next**.

The non-agent information (IMGW) page appears (see Figure 3-8).

## Figure 3-8 Non-agent (IMGW) Information Page

## Create Device Enter non-agent device information DEVICE TYPE: Non-Agent Enabled Device Gateway Id (required) Device Type (required) CATIOS

Agent Tree Config Agent

	Agent Type   Conlig	Agent		
Hop Information				
Нор Туре	IP Address	Port	Username	Password
Select a Hop Type	•			
Add Another Hop	]			
		Back Next Finish C	Cancel	129358

**Step 7** Enter the name of the device in the **Device Name** field.

Table 3-2 lists valid values for these fields.

Table 3-2 Valid Values for Add IMGW Device

Attribute	Description	Valid Values
Device Name	The name used as <b>cn</b> (common name) of the IMGW device.	Non-empty string excluding the special characters:
		!, ", #, \$, %, &, ', (, ), *, /, <, >, ?, @,  ^, `, ~
Gateway ID	Gateway identifier for this device. This value is established during <b>Setup</b> . See Cisco Configuration Engine Installation and Configuration Guide.	Non-empty string excluding the special characters: !, ", #, \$, %, &, ', (, ), *, /, <, >, ?, @,  ^, `, ~
Device Type	Type of IMGW device.	From drop-down list
Agent Type	Type of agent you want IMGW to simulate.	From drop-down list

**Step 8** Enter the gateway ID in the **Gateway Id** field.

## 

**Note** This value is established during **Setup**. See *Cisco Configuration Engine Installation and Configuration Guide*.

**Step 9** Enter the appropriate Device and Hop information.

<u>)</u> Tip

Before you enter Hop information, see "Hop Tables" section on page 3-36.

Table 3-3 shows valid values for these fields.

## Table 3-3 Valid Values for IMGW Device Hop Information

Attribute	Description	Valid Values
Нор Туре	Type of IMGW hop.	From drop-down list
IP Address	IP address of the connecting node in the hop	Valid IP address of the following format: 10.1.14.216
Port	Port number of the node.	Integer values
Username	Username to login to the hop node.	String excluding the special characters:
		!, ", #, \$, %, &, ', (, ), *, /, <, >, ?, @,  ^, `, ~
Password	Password to login to the hop node.	Non-null string

Step 10 To add another hop, click Add Another Hop, then enter hop information.

- Step 11 To go back one page, click Back.
- Step 12 To end this task, click Finish.
- **Step 13** To continue, click **Next**.

The Confirm IDs page appears

## Figure 3-9 Confirm IDs Page

## **Create Device**

Confirm IDs DEVICE TYPE: Non-Agent Enabled De	wice	
Event ID: (required)	c7200e6	
Config ID: (required)	c7200e6	
Image ID: (optional, use to create a CIS Device)	c7200e6	
C-1 1		California attachede
Subdevices availab	le:	Subdevices attached:
Sundevices availan	Je:	

- Step 14 To go back one page, click Back.
- Step 15 To end this task, click Finish.

Step 16 To continue, click Next.

If you click Next, the Image Association page appears (see Figure 3-10).

inguice in cicate bettee > intage Associatio	Figure 3-10	Create Device > Image Asso	ociation
----------------------------------------------	-------------	----------------------------	----------

## **Create Device**

Step 3: Please Select Image(s) to associate with this device

	Name	Image Type	Image Locations	OverWrite	Erase FileSystem	Destination
0	image1 💌	IOS	ftp://ttp:test@10.1.7.24/tttp/c7200-is-mz.123-1.9.T 💌			
					Ad	dd Another Row

Step 4: Please select a configuration file	that will be sent to the device upon activation of the new image:	
Template File:	Select file: DemoRouter.cfgtpl ▼	
	O Enter URL: Test URL	
	Back Next Finish Cancel	

**Step 17** Select the image from the **Name** drop-down list.

The **Image Type** field and **Image Location** drop-down box are populated with corresponding information for the image.

- Step 18 From the Image Location drop-down list, select the desired location.
- Step 19 To add another row for image location, click Add Another Row.

You can locate multiple copies of an image on separate servers. This allows you to do load-sharing when updating a large number of devices. Each device in a large group can be associated with a copy of the image located at one of many server locations.

**Step 20** In the Destination field, enter a valid URL where the image will be copied.

For example:

## disk0:/c7200-mz

- **Step 21** To indicate which image is to be activated on the device after distribution, select the radio button in front of each row.
- **Step 22** Select the Configuration Control template file you want to send to this device for activation of a new image:

 $\rho$ Tip

Use the Configuration Control template that contains the CLI commands required for image activation for this device (see "Configuration Control Templates" section on page 12-127). If you do not have such a template, see "Adding a Template" section on page 12-138.

- a. To select a template file from the drop-down list, click the Select file radio button.
- **b.** Use the drop-down list to choose a template file.

OR

To use an external template:

- a. Choose Enter URL.
- **b.** Enter the full URL for the server, directory, and filename where the template is stored. Currently, only **http** is supported.

c. To test access to the external template, click Test URL.

If the server is unavailable or the external template cannot be accessed, an error appears. You can still save this logical device, but the template is not available until you have access to the external template.

Step 23 To clear this task, click Cancel.

Step 24 To go back to the previous page, click Back.

**Step 25** To finish creating this device, click **Finish**.

## **Hop Tables**

To access devices by means of Telnet, it is necessary to construct hop tables (see "HopInfo Examples" section on page 3-38). These are tables that indicate what network path exists to the device, and all the authentication information necessary at each stage, or hop.

## What You Should Know About Device Hop Information

The Hop Information (HopInfo) structure describes one portion of the path between source and destination. HopInfo can be chained together to specify how to login to a device. Examples of uses of this structure include:

- Devices with basic authentication mode requiring IP address, username, and password
- Devices with additional authentication modes such as Cisco IOS enable mode
- Embedded-within-embedded applications such as line cards on a Catalyst switch

The latter two examples require a login, but not a hop to a different device. Therefore, they are referred to as *virtual* hops.

Table 3-4 shows the fields in the HopInfo structure:

Field	Purpose
hop_type	String indicating type of hop.
ip_address	IP address of device (string)
port	TCP port on which to access device (integer)
username	Username with which to login to device (string)
password	Password with which to login to device (string)

#### Table 3-4 HopInfo Structure

## **Currently Supported Device Types**

Table 3-5 through Table 3-12 on page 3-38 provide the HopInfo list for devices that are directly accessible on the network by IMGW. For accessing devices by way of Commserver, see Table 3-13 on page 3-38.

All the rows in these tables are mandatory. Also, the hop\_type fields cannot be NULL or empty. The fields marked with  $\mathbf{X}$  are mandatory in IMGW unless they are not required on the device-side.

## Table 3-5 Cisco IOS Device Directly Connected

hop_type	ip_address	port	username	password
IOS_LOGIN	Х		Х	Х
IOS_EN			Х	Х

## Table 3-6 Cisco IOS Device Directly Connected Supporting SSH

hop_type	ip_address	port	username	password
IOS_LOGIN:SSH	Х		Х	Х
IOS_EN			Х	Х

## Table 3-7 Catalyst Device Directly Connected

hop_type	ip_address	port	username	password
CATALYST_LOGIN	Х		Х	Х
CATALYST_EN			Х	Х

## Table 3-8 Catalyst IOS MSFC Blade Directly Connected

hop_type	ip_address	port	username	password
CATALYST_LOGIN	Х		Х	Х
IOS_CAT_BLADE		Х	Х	Х
IOS_EN			Х	Х

## Table 3-9 Catalyst IOS Device Directly Connected

hop_type	ip_address	port	username	password
CATIOS_LOGIN	Х		Х	Х
CATIOS_EN			Х	Х

## Table 3-10 CSS Device Directly Connected

hop_type	ip_address	port	username	password
CSS_LOGIN	Х		Х	Х
CSS_EN			Х	Х

Table 3-11	CE Device Directly Connected
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hop_type	ip_address	port	username	password
CE_LOGIN	Х		Х	Х
CE_EN			Х	Х

## Table 3-12 PIX Device Directly Connected

hop_type	ip_address	port	username	password
PIX_LOGIN	Х		Х	Х
PIX_EN			Х	Х

When any of the above devices is accessed by way of a Commserver (such as a Cisco 2511 Access Server), the resultant HopInfo list has the following two rows prepended to the respective HopInfo list for that device:

## Table 3-13 Partial HopInfo List For Commserver Access

hop_type	ip_address	port	username	password
COMMSERVER_LOGIN	Х		Х	Х
COMMSERVER		Х	///////////////////////////////////////	Х



Because the current release does not support port username, the username field of HopInfo structure for COMMSERVER is always ignored by IMGW. Do not set up the port username on the Commserver.

## **HopInfo Examples**

## Table 3-14 Cisco IOS Device Directly Connected

hop_type	ip_address	port	username	password
IOS_LOGIN	172.28.6.90		Johndoe	Passnow
IOS_EN			dummy	compass

## Table 3-15 Cisco IOS Device Directly Connected Supporting SSH

hop_type	ip_address	port	username	password
IOS_LOGIN:SSH	172.28.6.90		Johndoe	Passnow
IOS_EN			dummy	compass

hop_type	ip_address	port	username	password
COMMSERVER_LOGIN	172.28.6.226		Sandra	Me1100
COMMSERVER		2005	///////////////////////////////////////	Lab123
IOS_LOGIN			Johndoe	Passnow
IOS_EN			dummy	compass

## Table 3-16 Cisco IOS Device Connected With Commserver

## Table 3-17 Catalyst IOS MFSC Blade Directly Connected

hop_type	ip_address	port	username	password
CATALYST_LOGIN	172.29.132.32		Admin	Raining
IOS_CAT_BLADE		15	Admin	winding
IOS_EN			dummy	moonlight

## Table 3-18 Catalyst IOS MFSC Blade Accessed With Commserver

hop_type	ip_address	port	username	password
COMMSERVER_LOGIN	172.28.22.229		Kldfg	Dsdsfg
COMMSERVER		2010	///////////////////////////////////////	Dadada
CATALYST_LOGIN			Admin	Raining
IOS_CAT_BLADE		15	Admin	winding
IOS_EN			dummy	moonlight

# **Adding Agent Enabled Devices**

Step 1

From the Devices Functional Overview page, click Add Device.The Device Information page appears (see Figure 3-11).

## Figure 3-11 Device Information Page

## Create Device



**Step 2** Enter a valid value (no spaces) in the **Device Name** field.

Table 3-19 shows valid values for these attributes.

Table 3-19	Valid	Values	for	Add	Device

Attribute	Description	Valid Values
Device Name	The name used as <b>cn</b> (common name) of the device.	a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)
Unique ID	Unique ID of the device.	Default or a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)
Device Type	Type of device	From drop-down list
Template File Name	Name of the configuration template to associate with the device.	From drop-down list, or user-defined

**Step 3** In the **Unique ID** field, accept the default value that appears or enter another valid value (no spaces).

- Step 4 For Device Type, from the drop-down list, select Agent Enabled Device.
- **Step 5** Select the Template file name, then click **Next**.



To associate an external template to this device, select Enter URL with the appropriate path.

The Group Membership page appears (see Figure 3-12).

Figure 3-12	Group Membership Page
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## **Create Device**

Select group membership DEVICE TYPE: Agent Enabled Device	
/ East	129359

## <u>}</u> Tip

- Use the Group Manager to set up groups before you add a device (see "Creating Groups" section on page 6-96).
- Step 6 Check to select the group(s) of which you want this device to become a member, then click Next.The device IDs page appears (see Figure 3-13).

Figure 3-13 Device IDs Page	Figure 3-1	Device	IDs Page
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## Create Device

Confirm IDs DEVICE TYPE: Non-Agent Enabled De	vice				
Event ID: (required)	c7200e6				
Config ID: (required)	c7200e6				
Image ID: (optional, use to create a CIS Device)	c7200e6				
Subdevices availab	le:	Subdevices attached:			
			-		
	Back Next Finish	Cancel	12932		

**Step 7** Enter the appropriate IDs.

Table 3-20 shows valid values for these attributes.

Attribute	Description	Valid Values
Event ID	Event ID to be associated with this device.	Default, or a-z A-Z 0-9 -(hyphen) _ (under-score) . (period) ,(comma) :(colon) /(forward-slash) =(equal) +(plus)
Config ID	Configuration ID to be associated with this device.	Default, or a-z A-Z 0-9 -(hyphen) _ (under-score) . (period), (comma) :(colon) /(forward-slash) =(equal) +(plus)
Image ID	Image ID to be associated with this device.	Default, or a-z A-Z 0-9 -(hyphen) _ (under-score) . (period) ,(comma) :(colon) /(forward-slash) =(equal) +(plus)

Table 3-20	Valid Values for Agent Enabled Device IDs

- **Step 8** If applicable, select and assign subdevices to this device.
- **Step 9** To go back one page, click **Back**.
- **Step 10** To end this task, click **Finish**.
- **Step 11** To continue by associating this device with an image, click **Next**.

If you click Next, the Image Association page appears (see Figure 3-14).

#### Figure 3-14 Create Device > Image Association

## **Create Device**

Step 3: Please Select Image(s) to associate with this device

	Name	Image Type		Image Locations		OverWrite	Erase FileSyst	em	Destination
0	image1 💌	IOS	ftp://ftp:test@10.1.7.24/tftp/c7200-is-mz.123-1.9.T 💌						
	Add Another Row								
Step	Step 4: Please select a configuration file that will be sent to the device upon activation of the new image:								
		Temp	late File:	Select file:	DemoRouter.cfgtpl 💌				
	C Enter URL: Test URL								
	<u> </u>								
	Back Next Finish Cancel								

Back	Next Finish	Cancel

Step 12 Select the image from the Name drop-down list.

> The Image Type field and Image Location drop-down box are populated with corresponding information for the image.

- Step 13 From the Image Location drop-down list, select the desired location.
- Step 14 To add another row for image location, click Add Another Row.

You can locate multiple copies of an image on separate servers. This allows you to do load-sharing when updating a large number of devices. Each device in a large group can be associated with a copy of the image located at one of many server locations.

Step 15 In the Destination field, enter a valid URL where the image will be copied.

For example:

#### disk0:/c7200-mz

- Step 16 To indicate which image is to be activated on the device after distribution, select the radio button in front of each row.
- Step 17 Select the Configuration Control template file you want to send to this device for activation of a new image:

<u>}</u> Tip

Use the Configuration Control template that contains the CLI commands required for image activation for this device (see "Configuration Control Templates" section on page 12-127). If you do not have such a template, see "Adding a Template" section on page 12-138.

- a. To select a template file from the drop-down list, click the Select file radio button.
- **b.** Use the drop-down list to choose a template file.

OR

To use an external template:

- a. Choose Enter URL.
- **b.** Enter the full URL for the server, directory, and filename where the template is stored. Currently, only **http** is supported.
- c. To test access to the external template, click Test URL.

If the server is unavailable or the external template cannot be accessed, an error appears. You can still save this logical device, but the template is not available until you have access to the external template.

Step 18 To clear this task, click Cancel.

**Step 19** To go back to the previous page, click **Back**.

**Step 20** To finish creating this device, click **Finish**.

## **Adding PIX Firewall Devices**

**Step 1** From the Devices Functional Overview page, click Add Device.

The Device Information page appears (see Figure 3-15).

## Figure 3-15 Device Information Page

## **Create Device**

Enter device information Device Name: PIXSJdevice (required) Unique ID: PIXdevice1 required Device Type: **Pix Firewall Device** ¥ (required) Template File Name: DemoRouter.cfgtpl 🗸 Select file: Test URL Enter URL: Back Next Finish Cancel

2092.87

## **Step 2** Enter a valid value (no spaces) in the **Device Name** field.

Table 3-21 shows valid values for these attributes.

Table 3-21	Valid	Values f	or Ade	d Device

Attribute	Description	Valid Values
Device Name	The name used as <b>cn</b> (common name) of the device.	a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)
Unique ID	Unique ID which is configured on the device.	Default or a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)
Device Type	Type of device	From drop-down list
Template File Name	Name of the configuration template to associate with the device.	From drop-down list, or user-defined

- **Step 3** In the **Unique ID** field, accept the default value that appears or enter another valid value (no spaces).
- Step 4 For Device Type, from the drop-down list, select PIX Firewall Device.
- **Step 5** Select the Template file name, then click **Next**.

The Group Membership page appears (see Figure 3-16).

## Figure 3-16 Group Membership Page

#### **Create Device**

Select group membership DEVICE TYPE: Agent Enabled Device / East West default



Use the Group Manager to set up groups before you add a device (see "Creating Groups" section on page 6-96).

Step 6 Check to select the group(s) of which you want this device to become a member, then click Next.The PixAuthentication Password page appears (see Figure 3-17).

## Figure 3-17 PIX Authentication Password Page

## Create Device

Create Device

Step 2: Enter the Authentication Password for Pix Devices

Authentication Password: (required)	Xeletek	
Confirm Authentication Password: (required)	Xelabalax	
	Back Next Finish Cancel	101501

**Step 7** Enter authentication password for PIX devices.

A case-sensitive password of up to 16 alphanumeric and special characters. Any character can be used in the password except a question mark and a space.

**Step 8** Click the Next button. The PIX Configuration and Error Actions Type page appears (see Figure 3-18).

## Figure 3-18 PIX Configuration and Error Actions Type Page

Select the Configuration and Error actions type for the	Pix Firewall Device.	
Configuration action:	<ul> <li>Replace. Specifies that the current configuration should be cleared before applying the new configuration.</li> <li>Merge. Allows merging the current configuration with the new configuration file.</li> </ul>	
Error action:	<ul> <li>Continue. Specifies to continue with applying the new configuration, even if there is a configuration error.</li> <li>Revert. Specifies to revert to the old configuration from flash without rebooting, if there is a configuration en</li> <li>Stop. Specifies to immediately stop reading the rest of the configuration when a command causes an error.</li> </ul>	ror.
	Back Next Finish Cancel	2092.81

- **Step 9** From the **Configuration and Error Actions Type** page, choose the appropriate options (Replace, Merge, Continue, Revert, and Stop).
- **Step 10** To go back one page, click **Back**.
- **Step 11** To end this task, click **Finish**.
- **Step 12** To continue by associating this device with an image, click **Next**.
- **Step 13** If you click **Next**, the Image Association page for PIX Firewall Devices appears.
- Step 14 Select the image from the Name drop-down list.

The **Image Type** field and **Image Location** drop-down box are populated with corresponding information for the image.



Only PIX or PDM images can be associated with a PIX device.

**Step 15** From the **Image Location** drop-down list, select the desired location.

Step 16 To add another row for image location, click Add Another Row.

	Note	For PIX devices, you can have only one PIX image and one PDM image.					
Step 17	To ind of eac	indicate whether the image is to be activated on the device after distribution, check the box in front each row.					
Step 18	To can	To cancel creating a device and return to the Devices main menu, click Cancel.					
Step 19	To go	To go back to the previous page, click <b>Back</b> .					
Step 20	To fini	sh creating this device, click <b>Finish</b> .					

# **Adding ASA Firewall Devices**

Step 1	tep 1From the Devices Functional Overview page, click Add Device.The Device Information page appears (see Figure 3-19).				
	Figure 3-19	Device Information Pa	age		
	Create Devi	ce			
	Enter device inform	nation			
		Device Name: (required)	ASASJdevice		
		Unique ID: (required)	ASAdevice1		
		Device Type: (required)	Agent Enabled Device		
		Template File Name:	Select file: DemoRouter.cfgtpl     Test URL:     Test URL		
			Back Next Finish Cancel		
			20274		

**Step 2** Enter a valid value (no spaces) in the **Device Name** field.

Table 3-22 shows valid values for these attributes.

Attribute	Description	Valid Values
Device Name	The name used as <b>cn</b> (common name) of the device.	a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)
Unique ID	Unique ID which is configured on the device.	Default or a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)
Device Type	Type of device	From drop-down list
Template File Name	Name of the configuration template to associate with the device.	From drop-down list, or user-defined

Table 3-22Valid Values for Add Device

**Step 3** In the **Unique ID** field, accept the default value that appears or enter another valid value (no spaces).

Step 4 For Device Type, from the drop-down list, select ASA Firewall Device.

209275

**Step 5** Select the Template file name, then click **Next**.

The Group Membership page appears (see Figure 3-20).

Figure 3-20 Group Membership Page

## Create Device

Select group membership DEVICE TYPE: ASA Firewall Device / \_\_\_\_\_ default

# $\mathbf{\rho}$

Tip

Use the Group Manager to set up groups before you add a device (see "Creating Groups" section on page 6-96).

Step 6 Check to select the group(s) of which you want this device to become a member, then click Next.The ASA Authentication Password page appears (see Figure 3-21).

## Figure 3-21 ASA Authentication Password Page

## Create Device

# Enter the Authentication Password for ASA Devices DEVICE TYPE: ASA Firewall Device Authentication Password: (required) Confirm Authentication Password: (required) Back Next Cancel

**Step 7** Enter authentication password for ASA devices.

A case-sensitive password of up to 16 alphanumeric and special characters. Any character can be used in the password except a question mark and a space.

209276

Step 8 Click the Next button. The ASA Configuration and Error Actions Type page appears (see Figure 3-17).

## Figure 3-22 ASA Configuration and Error Actions Type Page

## Create Device

Select the Configuration and Error actions type for the	ASA Firewall Device.	
Configuration action:	<ul> <li>Replace. Specifies that the current configuration should be cleared before applying the new configuration.</li> <li>Merge. Allows merging the current configuration with the new configuration file.</li> </ul>	
Error action:	<ul> <li>Continue. Specifies to continue with applying the new configuration, even if there is a configuration error.</li> <li>Revert. Specifies to revert to the old configuration from flash without rebooting, if there is a configuration error</li> <li>Stop. Specifies to immediately stop reading the rest of the configuration when a command causes an error.</li> </ul>	r.
	Back Next Finish Cancel	00277

- **Step 9** From the **Configuration and Error Actions Type** page, choose the appropriate options (Replace, Merge, Continue, Revert, and Stop).
- Step 10 To go back one page, click Back.
- Step 11 To end this task, click Finish.
- **Step 12** To continue by associating this device with an image, click **Next**.
- Step 13 If you click Next, the Image Association page for PIX Firewall Devices appears.
- Step 14 Select the image from the Name drop-down list.

The **Image Type** field and **Image Location** drop-down box are populated with corresponding information for the image.



- **Step 15** From the **Image Location** drop-down list, select the desired location.
- Step 16 To add another row for image location, click Add Another Row.

<u>Note</u>

For ASA devices, you can have only one ASA image and one ASDM image.

- **Step 17** To indicate whether the image is to be activated on the device after distribution, check the box in front of each row.
- **Step 18** To cancel creating a device and return to the Devices main menu, click **Cancel**.
- **Step 19** To go back to the previous page, click **Back**.
- **Step 20** To finish creating this device, click **Finish**.

# **Discovering Devices**

Cisco Configuration Engine can discover a device once the device (for this example: **router-3460**) is configured for CNS. For more information about this, see *CNS Image Agent* at:

http://www.cisco.com/en/US/docs/net\_mgmt/configuration\_engine/3.5/installation/guide/CE\_3\_ig\_sec urity.html

During the execution of **setup.sh** for the Cisco Configuration Engine host, the settings configured would be:

```
...
For detail information about the parameters in this setup, refer to "Cisco Configuration
Engine Administration Guide."
...
Encryption settings:
------
Enable cryptographic (crypto) operation between Event Gateway(s)/Config server and
device(s) (y/n)? n
Each Event Gateway process serves 500 devices. Maximum number of
Event Gateways allowed is 20.
Enter number of Event Gateways that will be started with crypto operation:[1] 0
Enter number of Event Gateways that will be started with plaintext operation: [5] 2
Enter Cisco-CE Event Bus Network Parameter: [ce_host_hostname or ce_host_ip_address]
```



For more information about running **setup.sh**, see the *Cisco Configuration Engine Installation and Configuration Guide*.

Step 1 Log in to router-3460

**Step 2** Using the Cisco IOS CLI command: **show running configuration**, verify that **router-3460** is configured with IP routing. For example:

```
hostname router-3460
...
ip cef
ip host ce_host 10.1.2.3
...
interface Ethernet0/0
ip address 10.1.2.4 255.255.255.0
...
ip default-gateway 10.1.2.1
```

```
...
ip classless
ip route 0.0.0.0 0.0.0.0 10.1.2.1
```

where:

**router-3460** is the hostname identifying the device for Cisco Configuration Engine and 10.1.2.3 is the IP address of the Cisco Configuration Engine.

**Step 3** Log in to **router-3640** and perform the following operations:

```
configure terminal ip host ce_host 10.1.2.3
cns trusted-server all-agents ce_host
cns id string router-3460
cns id string router-3460 event
cns event ce_host 11013
cns config notify all interval 1 old-format
cns config partial ce_host 80
cns exec 80
```

## 

Note

The above configuration will support Discover Device as well as downloading a configuration, which requires **cns config partial ce\_host 80**.

- Step 4 Verify IP connectivity between ce\_host and router-3640 by issuing the ping command from ce\_host to router-3640 and from router-3640 to ce\_host.
- **Step 5** Create a template.

For our example, name it router-3460.

You must insert a minimum of one line in the template. You can add a ! for this.



For more information about creating a template, see Chapter 12, "Templates."

**Step 6** On the Device Functional Overview page, choose **Discover Device**.

	No Devices Discovered	
View Device)	10 Devices Discover ed	
Add Device		
Discover Device		
Edit Device		
Resync Device		
Clone Device		
Delete Device		
Update Device		
Subdevices!		
Query Device Inventory		
Delete Files on Devices		
Dynamic Operations		
<< Up		

#### Figure 3-23 Discover Device Page

When the discovery task completes, the following information appears:

```
Discover Devices

There are 1 device(s) currently connected to the IE2100 but not yet created in the

directory.

Select the devices you want to create and click on 'Create'.

Device Name DeviceID Connected Time Template Name Group Name

router-3640 router-3640 1/19/06 9:46:03 AM

- DemoRouter.cfgtpl

- Acquire Running Config /config/default

- Acquire Startup Config
```

# Step 7 Click on the check box for router-3640, then click on the radio button and move the cursor to router-3640.cfgtpl.

## Step 8 Choose Create.

The following information appears:

```
Status of Discovered Device Creation:
Device Name Template Name Status
router-3640 router-3640.cfgtpl Success
```

#### **Step 9** On the Device Functional Overview page, choose **View Device**.

You should see an icon for router-3640.

The icon color should be green indicating communication between **ce\_host** and **router-3640** has been established.

## Notes:

- Before a device is discovered or created, we recommend that you configure a template for the device. When Cisco Configuration Engine discovers a device, or you create a device, you then must associate the device with a template. Although Cisco Configuration Engine has a default sample template (DemoRouter.cfgtpl) already created, it is very unlikely that your device will be configured using DemoRouter.cfgtpl. Therefore, create a new template.
- 2. If Create Device is performed after configuring a template for router-c3460, then Cisco Configuration Engine will not discover this router (you will not see an icon for router-c3460 when Discover Device is selected). If you want Cisco Configuration Engine to discover the device then create only a template for the device—DO NOT use the Create Device operation. If you use Create Device, and you go to Discover Device, you will not see an icon for router-c3460. However, in either case, View Device should show an icon for router-c3460.
- **3.** The Cisco Configuration Engine host uses odd numbered event ports for messages sent in plain text. For example, the default Cisco Configuration Engine setting is **5** event gateway ports without crypto enabled. Devices use ports 11013, 11015, 11017, 11019, 11021 depending on what you configured on the device (for **cns event 10.1.2.3 11013** this means event gateway port 11013 is used by **router-c3640** to communicate with the Cisco Configuration Engine host, 10.1.2.3).
- 4. The Cisco Configuration Engine host uses even numbered event ports for message sent encrypted starting with 11014. For example, if you set the number of event gateways to 2 during setup, then ports 11014 and 11016 would be available for use by a device.

Note

- The ports for Event Gateways with crypto operation are even numbers that start from 11012.
- The ports for Event Gateways with plaintext operation are odd numbers that start from 11011.

# **Editing Devices**

🦳 default

	From the Devices Functional Overview page, click Edit Device.				
	The Groups list	appears.			
From the Groups list, select the group that holds the device in question.					
	The Edit Device	The Edit Device list appears (see Figure 3-24).			
	Figure 3-24	Edit Dev	vice List		
	Edit Device				
					Advanced Search>>
	Groups config	*	Group: /config/	East	_
	<mark>East</mark> <b>-</b> West		🗑 c7200e2a	🐯 c7200e2b	🔞 c7200e2c

129319

Step 3 Click on the icon for the device you want to edit. The device configuration appears (see Figure 3-25).

De	vice: dev-1	
0	version 12.0	
1	service timestamps debug uptime	
2	service timestamps log uptime	
3	no service password-encryption	
4	service udp-small-servers	
5	service tcp-small-servers	
6	hostname	
7	boot system flash c7200-is-mz	
8	enable secret 5 \$1\$cMdl\$.e37TH540MWB2GW5gMOn3/	
9	enable password cisco	
10	cns trusted-server all-agents imgw-test35	
11	cns trusted-server all-agents imgw-test35.cisco.com	
12	cns id udi	
13	cns id udi event	
14	cns id udi image	
15	cns event imgw-test35.cisco.com encrypt 11014 keepalive 120 2 reconnect-time 10	
16	cns config partial imgw-test35.cisco.com encrypt 443	
17	cns inventory	6
18	cns exec encrypt 443	
19	cns image server https://imgw-test35:443/cns/HttpMsgDispatcher status https://imgw-test35:443/cns/HttpMsgDispatcher	
20	cns notifications encapsulation xml	
21	end	
22	%Serial 0%	

Figure 3-25 Device Configuration

**Step 4** From the left navigation pane, choose the edit function you want to use.

# **Editing Non-agent Enabled Device Information**

Step 1

## From the Edit Device page, click Edit Information.

The device information editor page appears (see Figure 3-26).

Figure 3-26

Non-agent Device Information Editor



- **Step 2** To modify the device name, enter a valid value (no spaces) in the **Device Name** field, then click **Next**.
- **Step 3** Select Group Membership, then click **Next**.

The Non-agent Edit Device Information page appears (see Figure 3-27).

Figure 3-27 Non-agent Information Page

## Edit Device

Enter non-agent dev DEVICE TYPE: Non	ice information Agent Enabled Devi	ice			
	Gateway Id (required)	0.3.9.8			
	Device Type (required)	CATIOS	•		
	Agent Type	Config Agent			
Hop Information					
Нор Туре	IP Address	Port	Username	Password	Confirm Password
Add Another H	Нор				
		Back Next	Finish Cancel		129456

- **Step 4** Edit all appropriate fields, then to end this task, click **Finish**.
- **Step 5** To continue, click **Next**.

The device IDs page appears (see Figure 3-28).

## Figure 3-28 Edit Non-agent Device IDs Page

Edit Device	
Confirm IDs DEVICE TYPE: Non-Agent Enabled De	evice
Event ID: (required)	c7200e6
Config ID: (required)	c7200e6
Image ID: (optional, use to create a CIS Device)	
Subdevices availab	le: Subdevices attached:
Subdevices availab	le: Subdevices attached:
Subdevices availab	le: Subdevices attached:

**Step 6** Modify devices IDs as required, then click **Finish**.

# **Editing Agent Enabled Device Information**

Step 1	From the Edit Device	page, click Edit Information.
	The device information	on editor page appears (see Figure 3-29).
	Figure 3-29 Age	nt Enabled Device Information Page
	Edit Device	
	Enter device information	_
	Device Name: (required)	c7200e2c
	Device Type: (required)	Agent Enabled Device
	Template File Name	Select file: DemoRouter.cfgtpl     Test URL: Test URL
		Back Next Finish Cancel 226621

Step 2 To modify the device name, enter a valid value (no spaces) in the Device Name field, then click Next.Step 3 Select Group Membership, then click Next.

The device IDs page appears (see Figure 3-30).

Figure 3-30	Agent	enabled Device IDs Pag	e
Edit Device			
Confirm IDs <b>DEVICE TYPE: Agent</b> I	Enabled Device		
	Event ID: (required)	c7200e2c	
	Config ID: (required)	c7200e2c	
(optional, use to creat	Image ID: e a CIS Device)	c7200e2c	
Sul	devices availab	ole:	Subdevices attached:
card2c		Card2t	

## **Step 4** Modify device IDs as required, then click **Finish**.

# **Editing PIX Device Information**

Step 1	From the Edit Device p	age, click Edit Information.
	The device information	editor page appears (see Figure 3-31).
	Figure 3-31 PIX De	evice Information Page
	Edit Device	
	Enter device information	
	Device Name: (required)	c7200e1
	Unique ID: (required)	c7200e1
	Device Type: (required)	Pix Firewall Device
	Template File Name:	<ul> <li>Select file: DemoRouter.cfgtpl ▼</li> <li>C Enter URL: Test URL</li> </ul>
		Back Next Finish Cancel

Step 2 To modify the device name and Image ID, if applicable, then click Next.

**Step 3** Select Group Membership, then click **Next**.

The PIX Device Authentication Password page appears, see Figure 3-32.

Figure 3-32 PIX D	evice Authentication Password
Edit Device	
Enter the Authentication Password fo DEVICE TYPE: Pix Firewall Device	or Pix Devices
Authentication Password: (required)	locace:
Confirm Authentication Password: (required)	Relation
	Back Finish Cancel 828

**Step 4** Modify the authentication password if required, then click **Finish**.

A case-sensitive password of up to 16 alphanumeric and special characters. Any character can be used in the password except a question mark and a space.

# **Editing ASA Device Information**

Step 1 From the Edit Device page, click Edit Information.The device information editor page appears (see Figure 3-33).

# Figure 3-33 ASA Device Information Page

## Edit Device

Enter device information

Unique ID: (required)       ASAdevice1         Device Type: (required)       ASA Firewall Device          Template File Name:       Image: Select file:	Device Name: (required)	ASASJdevice
Device Type: (required)       ASA Firewall Device         Template File Name:       Image: Select file:	Unique ID: (required)	ASAdevice1
Template File Name:  Select file: DemoRouter.cfgtpl	Device Type: (required)	ASA Firewall Device 👻
Enter URL:     Test URL	Template File Name:	<ul> <li>Select file: DemoRouter.cfgtpl ▼</li> <li>Enter URL: Test URL</li> </ul>

Back

Next

Finish

Cancel

Step 2 To modify the device name and Image ID, if applicable, then click Next.

9282

Cancel

Back Next

Step 3 Select Group Membership, then click Next.

The ASA Device Authentication Password page appears, see Figure 3-34.



## **Edit Device**

Enter the Authentication Password for ASA Devices **DEVICE TYPE: ASA Firewall Device** 

Authentication Password: (required)	••••
Confirm Authentication Password: (required)	••••

**Step 4** Modify the authentication password if required, then click **Finish**.

A case-sensitive password of up to 16 alphanumeric and special characters. Any character can be used in the password except a question mark and a space.

## **Editing Device Templates**

Step 1From the Edit Device page, click Edit Template.The template editor appears (see Figure 3-35).

[emplate File: [ DemoRouter.cfgtpl ]	Attributes:	IOSdomain	•	Add
		IOSdomain		
! 		IOShostname		-
Version 12.0		IOSipaddress		
service timestamps debug uptime		IOSpassword		
service timestamps log uptime		IOSprotocol		
no service password-encryption		IOSroutingprotocol		
service udp-small-servers		INSsubnetmask		
service top-small-servers		IOStimeout		
! heatmans DanaDautau		SW1InterfaceName		
nostname Demokouter		SW2InterfaceName		
: hash such a flack a flack a set		Logical Clat Number		
DOOL SYSTEM FIASH C/200-13-MZ		-Logical Slot Number	s- 📩	
enable secret 5 %1%cmd1%.e3/1H540NWBZGW5gNUN3/				
enable password cisco				
ip subnet-zero				
: intenfere FertFthemat0/0				_
incertace Fastconerneco/o				
no ip address				
no ip directed-broadcast				
no ip route-cache				
no ip mroute-cache				
balf dumlar				
hall-duplex				
: interfece Ethernet1 (0				
in address 10 10 1 1 255 255 255 240				
no in directed-broedcest				
no ip untecced-broadcasc				
no in proute-cache				
interface Ethernet1/1				
no in address				
no in directed-broadcast				
Inened: DemoBouter cfatol			Line 1	
			2.10	

#### Figure 3-35 Template Editor

- **Step 2** In the **Attributes** field, click the drop-down arrow.
- Step 3 Choose the attribute you want to add to the template, then click Add.
- **Step 4** Repeat Steps 2 and 3 for all attributes you want to add to the template file.
- **Step 5** Delete all unusable strings from the template file.
- **Step 6** Edit strings as necessary.

The default multi-line begin and end tags are  $^{C}$  and  $^{C}$  respectively. The delimiter for these tags are: ~ ! @ ^ & \* - = |. Do not use # or %.

For example, a multi-line test banner might be:

```
banner exec ^C
This is a Test Banner
1. Hi
2. Hello
3. Test is 1234567890
^C
```

- Step 7 To save your edits, click Save.
- **Step 8** To save this version as a new template, click **Save as**.

# **Editing Device Parameters**

## **Step 1** From the Edit Device page:

- a. If you have administrator-level access click Edit Parameter-admin.
- b. To use Operator-level access click Edit Parameter-operator.

The parameters editor appears.

- **Step 2** Edit all active lines as required.
- **Step 3** To save your edits, click **Save Parameters**.

## **Editing Contact Information**

Step 1	From the Edit Device page, click Edit ContactInfo.		
	The contact information appears.		
Step 2	Edit all active fields as required.		
Step 3	To clear your entries, click Reset.		
Step 4	To save your edits, click Update.		

## **Editing Subdevices**

For complete information about working with subdevices, including editing (except PIX devices), see "Working with Subdevices" section on page 3-71.

# **Editing Image Association Information**

Step 1	From the Edit Device page, click Edit Images.
	The Edit Device Image page appears.
Step 2	Edit image and configuration information as required.
Step 3	To revert to the previous state, click Cancel.
Step 4	To complete this task, click <b>Finish</b> .

# **Resynchronizing Devices**

If the password of a device becomes corrupted so that there is a mismatch between the device and the corresponding password information help in the directory, you can resynchronize the device with the Cisco Configuration Engine by using the Resync Device function.

- **Step 1** From the Devices Functional Overview page, click **Resync Device**.
- Step 2 From the Resync Device page, click on the icon for the device you want to re-synchronize.



PIX devices will not be visible on this page.

**Step 3** In the confirmation window that appears, click **Ok**.

# **Cloning Devices**

Step 1	From the Devices Functional Overview page, click Clone Device.
	The Groups list appears.
Step 2	From the Groups list, select the group that holds the device you want to clone
	The Clone Device list appears (see Figure 3-36).

Figure 3-36 Clone Device List



129351

Clone Device: c7200e2c

Step 1: Enter Number Of copies

r		
Number Of Copies: (required)	h	
	Back Next Finish	Cancel

Step 4Determine the number of copies, then click Next.The Step 2 page appears (see Figure 3-38).

Figure 3-38 Clone Device > Name and IDs				
Clone Device: c7200e2c				
Step	2: Create 1 copies o	f c7200e2c using:		
		Prefix	Suffix	
	Device Name	copyOf	1	
	Event ID	copyOf	1	
	Config ID	copyOf	1	
	Image ID	copyOf	1	
Also	Clone:			
V	SubDevice(s)	SubDevice Name Prefix SubDevice ID Prefix	copyOf copyOf	
	Image(s)			
		Back	xt Finish Cancel	

Step 5Enter prefix and suffix for each device copy, then click Next.The Step 3 page appears (see Figure 3-39).

## Figure 3-39 Clone Device > Review Parameters

#### Clone Device: c7200e2c

Step 3: Review parameters

The following Devices will be created:

Device Names		Event Ids	Config Ids	Image Ids
copyOfc7200e2c1		copyOfc7200e2c1	copyOfc7200e2c1	copyOfc7200e2c1
The above devices will be created with the following attributes:				
ImageRefList	C7200-IS-MZ			
Template	DemoRouter.cfgtpl			
ActivationTemplate	DemoRouter.cfgtpl			
IOSsubdevices	card2b			
Group	ou=East,ou=config.ou=CNSApplications.ou=techdoc.o=cisco.c=us			
AdminDevType	generic_device			
		Back Next F	Finish Cancel	

- **Step 6** Review the parameters you set for this clone.
- Step 7 If you want to make changes, click Back.
- Step 8 To finish this task, click Finish.

# **Deleting Devices**

Step 1	From the Devices Functional Overview page, click Delete Device.
	The Groups list appears.
Step 2	From the Groups list, select the group that holds the device you want to delete.
	The device list appears.
Step 3	Click the check box for the device(s) you want to delete.
Step 4	Click <b>Submit</b> .
	A list of devices selected for deletion appears.
Step 5	To continue, click <b>Delete</b> .

# **Updating Device Configurations and Images**

To send an updated version of the configuration or a new image to a device, from the Devices Functional Overview page, click **Update Device**. The Update Device Functional Overview page appears showing:

- Update Configuration
- Update Image
- Customize

# **Updating Device Configurations**

Step 1	From the Update Devices Functional Overview page, click Update Config.
	The Groups list appears.
Step 2	From the Groups list, select the group that holds the device you want to update.

**Step 3** Click the check box next to the icon for the device(s) you want to update (see Figure 3-40).

## Figure 3-40 Update Config Group/Device Selection Page

Update Device Config	Advanced Search>>
Croups config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Co	✓ Group: /config/East         ✓ Select All         ✓ 😢 c2600-1       ✓ 🕲 c7200e4       ✓ 🕲 c7200e6         View Devices       Save Devices       Submit       % gamma



PIX devices will not be visible on this page.

Step 4 Click Submit.

The update notification page appears (see Figure 3-41).

## Figure 3-41 Update Configuration Notification Information

## **Notification Information**

Please mark the notification checkbox and complete the step below if a notification will be sent upon job complete.

Step 1:	Send Notification	
Step 2:	Send upon:	☐ Job complete success ☐ Job complete failure ☐ Job is canceled
Step 3:	To: Subject: Note:	
		Next Reset

**Step 5** If you want an email notification sent when the update job completes, fill in the information on this page, then click **Next**.



This page is optional. You can skip to the next page by clicking Next.

The update task dialog box appears (see Figure 3-42).

G · O · 🖹 🖻		👷 🥹 🙆 - 🍃 🏭 🥸 🗃 👘	- 8 ×
Configuratio	on Eng	gine so(0.0)	SYSTEMS
Home Devices	Users Jo	bs Tools Image Service UserID: admin	Logout
Undate Config	Updat	te Config	
Update Image Customize	Please co	omplete the steps below to perform an Config Update:	
ee op	Step 1:	⊙ Update device with pre-configured template and parameters	
		○ Select static configuration file: DemoRouter.cfgtpl	
	Sten 2		
	Step 2.	Coming Action O Apply to running config O Apply and save to NVRAM O overwrite NVRAM	
	Step 3:	□ Syntax Check	
	Step 4:	☐ If devices are not connected yet, send out triggers again after device connected for 5 minutes.	
	Step 5:	⊙ Immediate	
		○ At a future time: 00 : 15 (hh:mm) on January 💌 1 💌 2008 💌	
	Step 6:	Device Batch Size: 20	
	Step 7:	Text Description for Job.	
		Update Cancel	
			8
6 Done		S Local intranet	1010

Figure 3-42 Update Task

**Step 6** For Step 1, select the source of the configuration.

**Step 7** For Step 2, choose the **Config Action** task you require.

- Apply to running config applies the configuration to the current running configuration.
- Apply and save to NVRAM applies the configuration without causing it to persist in NVRAM.
- Overwrite NVRAM applies the change and causes it to persists in NVRAM.
- **Step 8** For Step 3, if required, check the **Syntax Check** check box.
- **Step 9** For Step 4, if devices are not connected, check this check box to send out triggers.
- **Step 10** For Step 5, select the date and time to send the configuration update.
- **Step 11** For Step 6, determine the batch size.

## <u>}</u> Tip

The max batch size for IMGW should be set at 25.

- **Step 12** For Step 7, if applicable, enter a description for this update job.
- Step 13 Click Update.

# **Updating Device Images**

Step 1	From the Update Device Functional Overview page, click Update Image.				
	The Groups list appears.				
Step 2	From the Groups list, select the group that holds the device you want to update.				
Step 3	<b>Click</b> the check box next to the icon for the device(s) you want to update (see Figure 3-43).				
	Figure 3-43	Update Image Group/Device Selection Page			
	Update Dev	vice Image Advanced Search>>			
	Groups config East Vivest default	Image: Config/West         Image: Config/West			
Step 4	Note PIX/A	ASA devices will not be visible on this page.			
	The update no	otification page appears (see Figure 3-41).			
Step 5	If you want a click <b>Next</b> .	notification sent when the update job completes, fill in the information on this page, then			
	Note This p	bage is optional. You can skip to the next page by clicking Next.			
	The Update Ir	nage page appears (see Figure 3-44).			
	Figure 3-44 Image Selection Page				
	Update Ima	nge			
	• Update image with (With this option, e	<b>1 preset image.</b> ach device will use its own associated image for update.)			
	C Select image and (With this option, a	update device with selected image. Il devices will use the selected image for update.)			
		Next Cancel 52			

Step 6 Select the image you want to use for updates, then click Next.

If you select to update the device by selecting an image other than its present image, the next page gives you a list of images from which to select.

The Update Image worksheet appears (see Figure 3-45).

## Figure 3-45 Update Image Worksheet

Update	Image
--------	-------

Step 1:	Option 1: Distribute Image Option 2: Activate Image	
Step 2:	⊙ Immediate ○ At a future time: 00 : 15 (hh mm) on January ♥ 1	♥ 2009 ♥
Step 3:	Device Batch Size: 2	
Step 4:	Setup Search Parameters to delete files: Available Search Parameters: End of list	Selected Search Parameters:
Step 5:	<ul> <li>Always perform delete file operation.</li> <li>Perform delete file operation if free space is needed.</li> </ul>	
Step 5: Step 6:	<ul> <li>Always perform delete file operation.</li> <li>Perform delete file operation if free space is needed.</li> <li>If devices are not connected yet, send out triggers again after d</li> </ul>	levice connected for 5 minutes.
Step 5: Step 6: Step 7:	<ul> <li>Always perform delete file operation.</li> <li>Perform delete file operation if free space is needed.</li> <li>If devices are not connected yet, send out triggers again after d Text Description for Job:</li> </ul>	levice connected for 5 minutes.
Step 5: Step 6: Step 7: Step 8:	<ul> <li>Always perform delete file operation.</li> <li>Perform delete file operation if free space is needed.</li> <li>If devices are not connected yet, send out triggers again after d</li> <li>Text Description for Job:</li> <li>Apply activation template to nvram.</li> <li>Overwrite startup-config with activation template.</li> </ul>	levice connected for 5 minutes.

- **Step 7** To distribute the image, click the check box for **Distribute Image**.
- **Step 8** To activate the image, click the check box for **Activate Image**.



All three agents (event, partial config, and image) must be running on the device for the activation process to succeed.

Note

For the image to become active on the device, you must have a Configuration Control template associated with this device that contains the CLI commands for image activation (see "Configuration Control Templates" section on page 12-127).

- Step 9 To update the image immediately, click the radio button for Immediate.
- Step 10 To update the image at a specified time in the future, click the radio button for At a future time:
  - **a.** Enter a time value.
  - **b.** Enter a date value.

#### Step 11 Set the **Device Batch Size**.

This is the number of concurrent image updates. This feature allows you to limit the number of concurrent requests to a server. When one batch of image update requests has been satisfied, the next batch starts.



The max batch size for IMGW should be set at 25. And for HTTP only (no event agent) mode, the batch size must be same as the number devices in the submitted job.

Note	

If you are running a device image update session to a mix of IMGW and agent devices, the effective device batch size limit for IMGW devices-concurrent Telnet session limit-is equal to the value (default = 25) set for this attribute in the **Setup** program (see *Cisco Configuration* Engine Installation and Configuration Guide).

- Step 12 If applicable, enter a text description of the job.
- Step 13 To perform an evaluation rather than an actual update, click the check box at the bottom of this pane.
- To continue, complete the steps called for, then click Update. Step 14

The Update Image Status page appears (see Figure 3-46). You can use this Job ID to perform job-related tasks (see Chapter 5, "Configuration and Image Update Jobs Manager").

#### Figure 3-46 Job ID for Update Image

## **Update Image Status**

Device Name	Distributed Image(s)	Activated Image(s)
Device2	image3 image2	image2
Your request has been assigned	the job id: 1062710890226	

## **Customize Job Template**

- From the Update Device Functional Overview page, click Customize. Step 1 The Groups list appears.
- Step 2 From the Groups list, select the group that holds the device you want to update.

**Step 3** Click the check box next to the icon for the device(s) you want to update (see Figure 3-47).

## Figure 3-47 Custom Flow Control Device Update Selection Page

## Update Device using Custom Flow Control Template

Groups config — East — West — defauit	Group: /config/West	Advanced Searc	<u>n&gt;&gt;</u>
	View Devices	Save Devices Submit	2959(
•			1



PIX devices will not be visible on this page.

## Step 4 Click Submit.

The Update Device using Customized Job Template appears (see Figure 3-48).

#### Figure 3-48 Customized Job Template Form

#### Update Device using Customized Job Template

Please complete the steps below to submit a Customized Job:

	Step 1:	Customized Job Template: test1.inv 💌	
	<b>Step 2</b> :	⊙ Immediate	
		○ At a future time: 00 : 15 (hh:mm) on January 🔽 1 👻 2005 🛩	
	Step 3:	Device Batch Size: 2	
	Step 4:	Text Description for Job:	
	🔲 Pleas	se check here if you want to perform an Evaluation and not an actual job submission.	119
		Submit Cancel	149
Step 5	Comp	lete the Customized Job Template form, then click Submit.	
	The ne	ext page shows the Job ID for this update task.	
Step 6	To che	eck the status of this job go to <b>Jobs &gt; Query Jobs</b> , then click on	the Job ID for this Job.

## **Configuration Control Template**

To restart a device with a new image, you must issue the CLI commands that you would normally enter from the device console to activate a new image.

For example, if you want to restart a Cisco 3600 Series router with an image named *3600.image*, from the device console, you would issue the following CLI commands:

## no boot system boot system flash:3600.image

you must provide the device with a Configuration Control template that contains the required CLI commands for image activation.

If you do not have such a template, see "Adding a Template" section on page 12-138. Also, you must associate this Configuration Control template with the particular device (see "Adding Devices" section on page 3-31).

The content of the Configuration Control template for image activation should contain the CLI commands that you would normally enter from the device console to activate a new image on the device.

# Working with Subdevices

A subdevice is a configuration object for network modules in a modular router. When working with subdevices, it is very important to pick the correct type of interface card or module.



PIX Firewall devices do not have subdevices.

To work with subdevices, from the Devices Functional Overview page, click Subdevices.

The Subdevices Functional Overview page appears showing:

- View Subdevice
- Add Subdevice
- Edit Subdevice
- Clone Subdevice
- Delete Subdevice

## **Viewing Subdevices**

**Step 1** From the Subdevices Functional Overview page, select **View Subdevice**.

The list of subdevices appears (see Figure 3-49).

## Figure 3-49 View Subdevice

View Subdevice			
Please select from the fo	llowing list:		
		Q,	Go
default			
	Subdevice1		01511

Step 2 Click on the icon for the device configuration you want to view. The Configuration for that device appears.

**Note** The subdevice configuration displayed is the configuration as it appears at the configuration server. It might not be the configuration running on the subdevice.

# **Adding Subdevices**

Step 1 From the Subdevices Functional Overview page, click Add Subdevice.

The Subdevice Information page appears (see Figure 3-50).

## Figure 3-50 Subdevice Information Page

Device Name: (required)	pard2b	
Config ID: (required)	card2b	
Device Type: (required)	AIM-COMPR2	
Template File Name:	<ul> <li>Select file: DemoRouter.cfgtpl ▼</li> <li>C Enter URL: Test URL</li> </ul>	
	Modify Reset	129330

**Step 2** Enter a valid value (no spaces) in the **Device Name** field.

Table 3-23 shows valid values for this task.

Table 3-23 Valid Values for Add Subdevice

Attribute	Description	Valid Values
Device Name	The name used as <b>cn</b> (common name) of the device.	a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)
ConfigID	Configuration ID attribute of the device.	a-z A-Z 0-9 -(hyphen) _ (under-score) . (period)

Attribute	Description	Valid Values
Device Type		From drop-down list
Template File Name	Name of the configuration template to associate with the device.	From drop-down list, or user-defined

#### Table 3-23 Valid Values for Add Subdevice (continued)

- **Step 3** Accept the default value that appears or enter another valid value (no spaces) in the **Config ID** field.
- Step 4 From the Device Type drop-down list, choose the type of device to which this subdevice is associated. Device type is the name of the network module as defined in the Cisco product catalog (price list).

## **Step 5** Choose a template file.

To use a template on your Cisco Configuration Engine:

- a. Choose Select file.
- **b.** Use the drop-down list to choose a template.
- OR

To use an external template:

- a. Choose Enter URL.
- **b.** Enter the full URL for the server, directory, and filename where the template is stored. Currently, only **http** is supported.
- c. To test access to the external template, click Test URL.

If the server is unavailable or the external template cannot be accessed, an error appears. You can still save this logical subdevice, but the template is not available until you have access to the external template.

- **Step 6** To clear your entries, click **Reset**.
- **Step 7** To add this device, click **Add**.

## **Editing Subdevices**

**Step 1** From the Subdevices Functional Overview page, click **Edit Subdevice**.

**Step 2** From the Edit Subdevice page, click on the icon for the subdevice you want to edit.

The subdevice configuration appears with a menu of edit functions in the left navigation pane:

- Edit Information
- Edit Template
- Edit Parameter-Admin Administrator-level view
- Edit Parameter-Operator Operator-level view; used by Administrator to verify what Operator can see after Administrator has used Edit > AttributInfo under the Template Manager
- Edit ContactInfo

**Step 3** From the left navigation pane, choose the edit function you want to use.

# **Editing Subdevice Information**

Step 1	From the Edit Subdevice page, click Edit Information.
	The subdevice information editor dialog box appears (see Figure 3-50).
Step 2	Modify all applicable fields.
	For valid values, see Table 3-23.
Step 3	To clear your entries, click <b>Reset</b> .
Step 4	To update device information, click Modify.

# **Editing Subdevice Template**

From the Edit Subdevice left navigation pane, click Edit Template.
The template editor appears.
In the Attributes field, click the drop-down arrow.
Choose the attribute you want to add to the template, then click Add.
Repeat Steps 2 and 3 for all attributes you want to add to the template file.
Delete all unusable strings from the template file.
Edit strings as necessary.
The default multi-line begin and end tags are $^{C}$ and $^{C}$ respectively. The delimiter for these tags are: ~ ! @ ^ & * - =  . Do not use # or %.
A multi-line test banner might be:
<pre>banner exec ^C This is a Test Banner 1. Hi 2. Hello 3. Test is 1234567890 ^C</pre>

- **Step 7** To save your edits, click **Save**.
- **Step 8** To save this version as a new template, click **Save as**.

# **Editing Subdevice Parameters**

Step 1	From t	From the Edit Subdevice left navigation pane, click Edit Parameter-Admin.			
	The pa	The parameters editor appears.			
	Note	<b>Vote</b> Operator-level privileges do not include access to these parameters.			
Step 2	Modify	parameters values as required.			
Step 3	To save your edits, click Save Parameters.				

# **Editing Contact Information**

Step 1	From the Edit Device left navigation pane, click Edit ContactInfo.
	The contact information appears.
Step 2	Edit all active fields as required.
Step 3	To clear your entries, click <b>Reset</b> .
Step 4	To save your edits, click Update.

# **Cloning Subdevices**





**Step 2** The Step 1 page appears (see Figure 3-52).

## Figure 3-52 Clone Subdevice > Number of Copies

Clone Subdevice: card	12b
Step 1: Enter Number Of copies	
Number Of Copies: (required)	1
	Back Next Finish Cancel

Enter the number of copies you want to make, then click **Next**. The Step 2 page appears (see Figure 3-53).

Figure 3-53 Clone Subdevice > Name and ID	Figure 3-53	Clone Subdevice > Name and II	Ds
-------------------------------------------	-------------	-------------------------------	----

Step 2: Create 1 copies (	of card2b using:	6. <i>6</i> 7
	Prepx	sugux
Sub-Device Name	copyOf	1
Unique ID	copyOf	1
	Back	Next Finish Cancel

**Step 3** Enter prefix and suffix for each device copy, click **Next**. The Step 3 page appears (see Figure 3-54).

## Figure 3-54 Clone Subdevice > Review Parameters

## Clone Subdevice: card2b

Clone Subdevice: card2b

Step 3: Review parameters

The following Sub-Devices will be created:

Sub-Device Names	;	Unique Ids	
copyOfcard2b1		copyOfcard2b1	
The above devices will be created with the following attributes:		utes:	
Template	DemoRouter.cfgpl		
IOSlinecardtype	AIM-COMPR2		
AdminDevType	line_card		

Back Next Finish Cancel

129357

**Step 4** Review the parameters you set for this clone.

- **Step 5** If you want to make changes, click **Back**.
- **Step 6** To finish this task, click **Finish**.

# **Deleting Subdevices**

Step 1From the Subdevices Functional Overview page, click Delete Device.The Delete Subdevice page appears (see Figure 3-55).



Delete Subdevice Please select from the following list:		
	Q.	Go
Next Reset		
Select All Devices in the Page		
🗖 lineCardV1 a		
Next Reset		29451

- **Step 2** Check to select the subdevice(s) you want to delete.
- Step 3 To proceed, click Next.

A status page appears indicating that the subdevice has been selected for deletion (see Figure 3-56).

## Figure 3-56 Delete Subdevices Confirmation



**Step 4** To delete this subdevice, click **Delete**.

# **Querying Device Inventory**

You can use the Query Device Inventory feature to get a reports from devices about:

- Running image information
- Hardware information
- File system list
- **Step 1** From the Devices Functional Overview page, click **Query Device Inventory**.

The Query Device Inventory screen appears.

## Figure 3-57 Query Device Inventory Page

Query Device Inve	itory	Advanced Search>>
Groups config Groups East West default	Group: /config/East Select All C2600-1 Solution	C 😵 c7200e6 vices Submit 👯

Step 2 Check the device(s) for which you want to get an inventory report(s), then click Submit.The Query Notification Information page appears (see Figure 3-58).

#### Figure 3-58 Query Notification Information Page

## **Notification Information**

Please mark the notification checkbox and complete the step below if a notification will be sent upon job complete.

Step 1:	🗆 Send Notification		
Step 2:	Send upon:	□ Job complete success □ Job complete failure □ Job is canceled	
Step 3:	To:		
	Note:		×
		Next Reset	

**Step 3** If you want an email notification sent when the query completes, fill in the information on this page, then click **Next**.

<u>Note</u>

This page is optional. You can continue by clicking Next.

The Query Attributes Page appears (see Figure 3-59).

#### Figure 3-59 Query Attributes Page.

## **Query Inventory**

Please complete the steps below to perform an Query Inventory:

Step 1:	Immediate C At a future time: 00 : 15 (hh:mm) on January ▼ 1 ▼ 2005 ▼	
Step 2:	Device Batch Size: 2	
Step 3:	Timeout (in Minute per Device):	
Step 4:	Text Description for Job:	
	Query Cancel	129460

- Step 4 Set all applicable attributes, then click **Query**. The query is submitted as a Job. A page appears indicating the job number for this query.
- Step 5 To check the status of this job, go to **Jobs > Query Job**.
- Step 6 Use the drop-down arrow to select Completed Jobs.
- Step 7 For the Inventory Job you want, click either the job number or the entry in the Status column. The Job Status page appears (see Figure 3-60).

#### Figure 3-60 Job Status Page

**Job Status** 

Joh ID	1110995830322	
Description	Query c7200-ha3 Inventory	
Schedule Time	Wed Mar 16 09:57:10 PST 2005	
Timeout	0 minute(s)	
Charles -	Completed	
Status	oompreter	
Total: 1 Completed: 1 Stop	omporta	[View A11]
Total: 1 Completed: 1 Stop Device Name	opped: 0 Status	[ <u>View A11]</u>
Total: 1 Completed: 1 Stop Device Name c7200-ha3	Completed [View]	[ <u>View A11]</u>

**Step 8** To view the inventory report, click **View**.

Device inventory report appears (see Figure 3-61).

ImageID:c260	00-1		Reported Time:	1993-03	-05T22:57:37
Running Imag	e Information				
Description (Version String)	12.2(12h)				
Image File	flash:c2600-ik8o3s-mz.122- 12h	Image MD5			
Config Variable		Config Reg	Confi Boot	g Reg Next	
Boot Variable		Bootldr Variable	Retur Reas	rn To ROM on	reload
Return To ROM Time	2003-11-04T00:00:00	Started At	2003-11-04T00:00:00		

## Figure 3-61 Sample Device Inventory Report

Hardware Information						
Vendor	ndor cisco Platform Name 2611 Hardware Revision 0x202					
Processor Type		Main Mem Size	30649288	IO Mem Size	4194312	
Hardware Serial #	JAB03170532	MidPlane Version				
Processor Rev						
Hardware Rework						

File System List				
[FileSys	name=[nvram	:], type=[i	nvram], size=[29688], freespace=[26473], readable=[1],	
	writeable=[1]			
	Directory 0:	name=[/],	fullname=[nvram:/], size=[29688], readflag=[1],	
		writeflag=[	1], owner=[], modDate=[1969-12-31T00:00:00]	
	File O under (	Directory[/]	: name=[startup-config],	
			fullname=[nvram:/startup-config],	
			size=[1110], readflag=[1], writeflag=[1], owner=[],	ស្រ
			modDate=[1969-12-31T00:00],	14
	i			II +

# **Delete Files on Device**

**Step 1** From the Devices Functional Overview page, click **Delete Files on Device**.

The Delete File on Device page appears (see Figure 3-62).

Figure 3-62 Delete Files on Device Page

Delete File On Device	5	Advanced Se	<u>arch&gt;&gt;</u>
Config Config Config West Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Config Conf	Group: /config/West Select A11 C 8 c7200w3 View Devices	C 😢 c7200w7 Save Devices Submit	129461

**Step 2** Check the device(s) on which you want to delete files, then click **Submit**.

The Delete Device Files Notification Information page appears (see Figure 3-63).

## Figure 3-63 Delete Device Files Notification Information Page

#### **Notification Information**

Please mark the notification checkbox and complete the step below if a notification will be sent upon job complete.

Step 1:	🗆 Send Notification		
Step 2:	Send upon:	☐ Job complete success ☐ Job complete failure ☐ Job is canceled	
Step 3:	To:		
	Subject:		
	Note:		
			5
		Next Reset	12936

**Step 3** If you want an email notification sent when the query completes, fill in the information on this page, then click **Next**.

This page is optional. You can continue by clicking Next.

The Delete Files parameter page appears (see Figure 3-64).

## Figure 3-64 Delete Files Parameter Page

## **Delete Files On Device**

Please complete the steps below to perform the action:

$Step \ 1:$	Select Search Parameters:		
	Available Search Parameters:	Selected Search Parameters:	
	spla	End of list	
	sp1b		
	test2	>	
Step 2:	Apply to: Dootflash Dovram Z Other file syste	ma	
	rippiy to:		
Step 3:	• Immediate		
	O ALL ANNU STRUCTURE (15 ALL MARK) on Lanuary	/ T 1 T 2005 T	
	At a ruture time: 100 . 113 (mi.min) on 100.000.		
Step 4:	Text Description for Job:		
	Text Description for 500. J		2
	Preview Submit	Cancel	346
	T TOTION CADIM		ŝ

Step 4 Complete the steps on this page, then to preview, click **Preview**.

**Step 5** When you are satisfied with the task parameters, click **Submit**.

# **Dynamic Operations**

Dynamic Operations allows you to perform operations on devices that all respond to having the same attributes based on the Query used to find them.

To use this feature you must have query objects available before starting Dynamic Operations. If no Queries have been created, you will see a message stating that there are no query objects available.

To create a Query, go to the "Creating Queries" section on page 8-108.

**Step 1** From the Devices Functional Overview page, click **Dynamic Operations**.

The Dynamic Operations page appears (see Figure 3-65).

Figure 3-65	Dynamic Operations Page
-------------	-------------------------

			Q.	Go
Select Query (required)	all_c7200s 💌			
O Add Group				
O Delete Device				
Opdate Config				
O Update Image				
O Query Device Invento	bry			
O Delete Files on Device	e			
E	Back Next Cancel	List Devices	1	

- **Step 2** Use the down-arrow key to select the Query you want to use.
- Step 3 Select the operation you want to perform on devices that respond to the Query, then click List Devices.The result of the Query appears (see Figure 3-66).

Figure 3-66	Devices Responding to Query
-------------	-----------------------------

Following devices are returned after executing the query:

Devices	Associated Groups	
🔞 c7200-1	/config/default	
67200-2 e7200-2	/config/default	
🔞 c7200-hai	/config/default	
🔞 c7200-ha2	/config/default	
🔞 c7200-ha3	/config/default	

**Step 4** To continue with the selected operation, click **Next**.