APPENDIX A

Cisco CNS IE2100 Appliances

Cisco IP Solution Center (ISC) supports the Cisco CNS IE2100 Device Access Protocol for communication with any Cisco IOS device, such as uploading a configuration file from a device, downloading a configlet to a device, or executing a command on a device and obtaining a result. ISC also supports CNS Plug-and-Play.

To use the Cisco CNS IE2100 functionality on ISC, you must first set up the Cisco CNS IE2100 appliance and the ISC workstation as explained in an appendix in the *Cisco IP Solution Center Installation Guide, 5.0*.

This appendix includes the following sections. Implement these sections in sequence:

Note The "Using Plug-and-Play" section on page A-7 is optional.

1. Creating a Cisco CNS IE2100 Appliance, page A-1
2. Creating a Cisco IOS Device Using the Cisco CNS Device Access Protocol, page A-3
3. Using Plug-and-Play, page A-7

Creating a Cisco CNS IE2100 Appliance

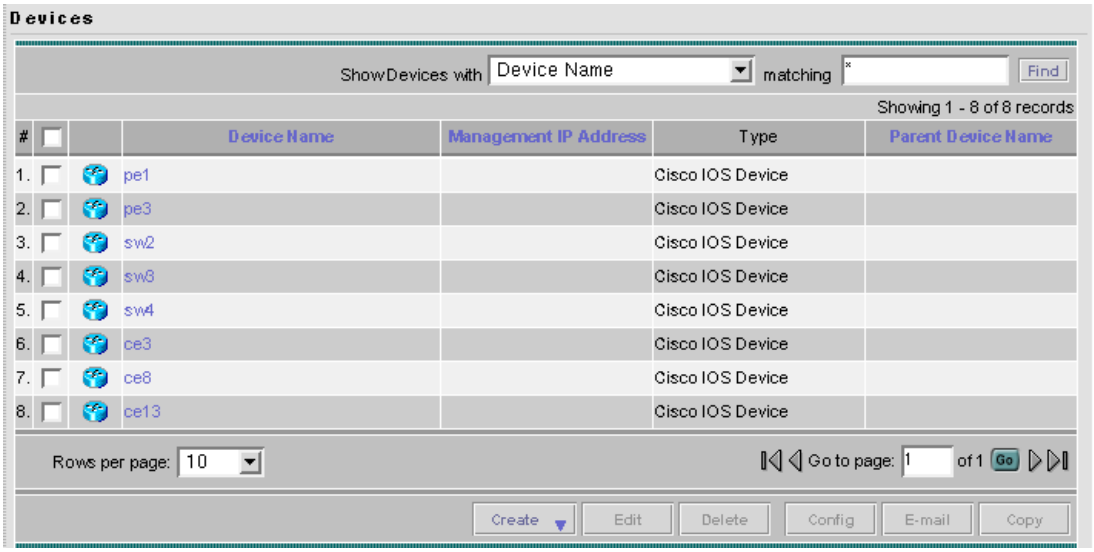
ISC supports multiple Cisco CNS IE2100 appliances. To create a Cisco CNS IE2100 appliance, follow these steps:

Note For more information, see the Devices section of Chapter 3, "Service Inventory — Inventory and Connection Manager."

Step 1 Choose **Service Inventory > Inventory and Connection Manager > Devices**.

Step 2 A window appears as shown in Figure A-1, "Devices Window."

Figure A-1 Devices Window

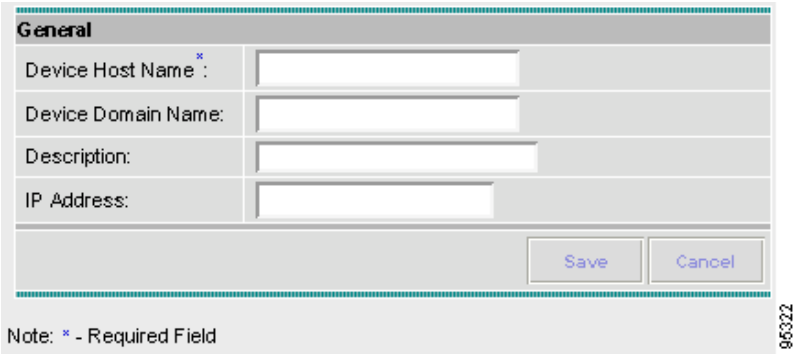


Step 3 Click the **Create** button.

Step 4 From the **Create** menu, click **IE2100**.

A window appears as shown in Figure A-2, "Create IE2100 Device Window".

Figure A-2 Create IE2100 Device Window



Step 5 Enter the **Device Host Name** and if applicable, the IE2100 **Device Domain Name**. The **Description** field is optional. If the Cisco CNS IE2100 appliance is not registered with DNS, then you *must* enter the **IP Address** of the Cisco CNS IE2100 appliance. Click **Save**.

Figure A-1 reappears with the IE2100 listed as a device.

Creating a Cisco IOS Device Using the Cisco CNS Device Access Protocol

Each Cisco CNS IE2100 appliance can serve multiple Cisco IOS devices. A Cisco IOS device can only be served by one Cisco CNS IE2100 appliance.To create a Cisco IOS device using the Cisco CNS Device Access Protocol, follow these steps:

Note For more information, see the Devices section of Chapter 3, "Service Inventory — Inventory and Connection Manager."

Step 1 Choose **Service Inventory > Inventory and Connection Manager > Devices**.

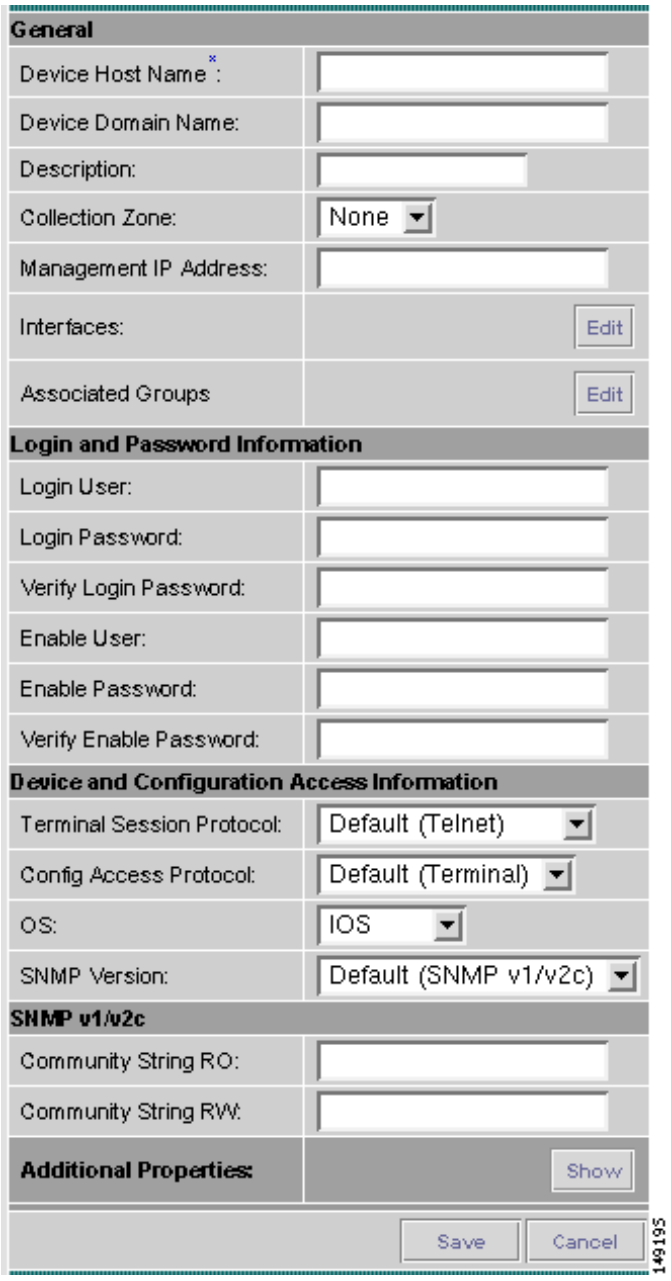
Step 2 A window appears as shown in Figure A-1, "Devices Window."

Step 3 Click the **Create** button.

Step 4 From the **Create** menu, click **Cisco Device**.

A window appears as shown in Figure A-3, "Create Cisco Device Window."

Figure A-3 Create Cisco Device Window



Step 5 In the **General** section, enter the **Device Host Name** and **Device Domain Name**.

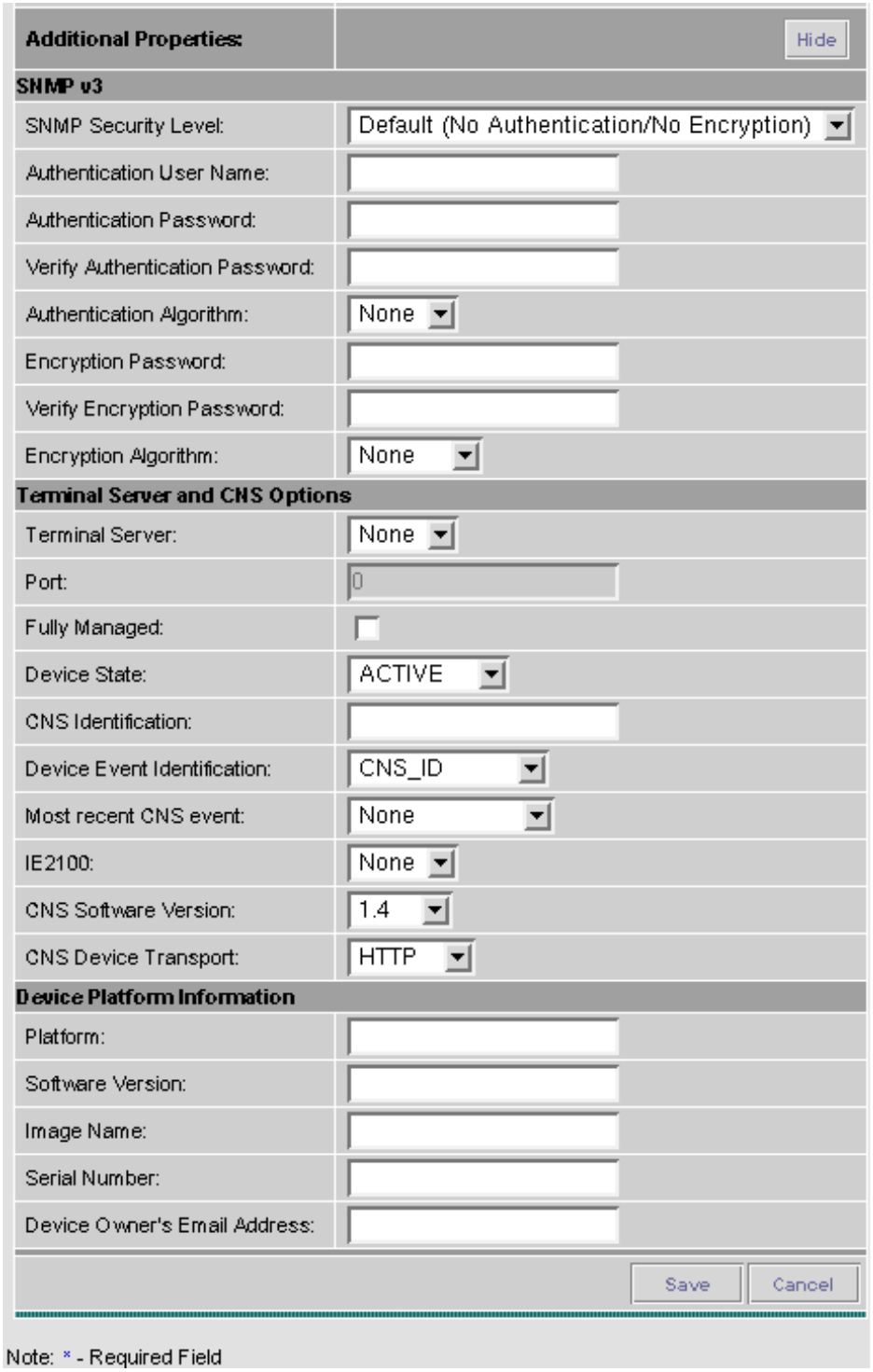
For **CNS Device Access Protocol**, you do not need to define the parameters in the **Login User** and **Login Password** sections.

For the **Device and Configuration Access Information** section, you must choose **CNS** for the **Terminal Session Protocol**.

For the **Device and Configuration Access Information** section, the only valid **OS** selection is **IOS**. **IOS XR** is not supported for Cisco CNS IE2100 appliances with ISC.

Step 6 Click the **Show** button for **Additional Properties** at the bottom of the window and this window expands to add the additional information that is shown in Figure A-4, "Cisco Device Additional Properties," appears.

Figure A-4 Cisco Device Additional Properties



Step 7 The following steps pertain to the **Terminal Server** and **CNS Options** section**.**

Step 8 Check the **Fully Managed** check box if you want the device to become a fully managed device. For fully managed devices, ISC sends e-mail notifications upon receipt of device configuration changes originated outside ISC and schedules enforcement audit tasks upon detection of possible intrusion.

Note Be sure to set the DCPL parameters for e-mail and Fully Managed, as explained in the "Config" section on page 9-23. Choose **Administration > Control Center**. Choose a Host and then click **Config**. Then in the TOC in the left column, be sure to enter appropriate information in the following fields: **SYSTEM > email > from**; **SYSTEM > email > smtpHost**; **SYSTEM > fullyManaged > auditableCommandsFileLocation (if information is not given here, all commands are audited)**; **SYSTEM > fullyManaged > enforcementAuditScript**; and **SYSTEM > fullyManaged > externalEventsEmailRecipients**.

Note Verify that the **cns config notify** command is configured for the IOS device. This command ensures that configuration change events, which are the basis of the fully-managed feature, are sent out on the event bus. If this command is not configured on the device, the fully-managed feature will not work, because there will be no config-changed events reaching ISC.

Step 9 Specify the **Device State**, as follows:

- Choose **ACTIVE** (the default) if the router is physically present on the network.
- Choose **INACTIVE** if the router is not yet physically present on the network.

Step 10 Specify the **Device Event Identification**, as follows:

- Choose **HOST_NAME** if the **Device Host Name** as defined in Step 5 is to be used as the **CNS Identification** for this device.
- Choose **CNS_ID** if the device CNS Identification string is other than the **Device Host Name**.
- If you have selected **CNS_ID** as the **Device Event Identification**, you must enter the **CNS Identification** parameter in the field labeled **CNS Identification**. This must be a unique argument. It is used to create the device in the corresponding Cisco CNS IE2100 repository and to listen to events pertaining to this device.

Note Verify that the **cns id string {CNS_ID} event** command is configured for the IOS device. If this command is not present on the device, the IE2100 will not send out any events on the bus using this CNS ID, and hence communication with the device will fail.

Step 11 Select the Cisco CNS **IE2100** appliance that serves this Cisco IOS device. Select one entry from the drop-down list of IE2100 devices already defined in the repository.

Step 12 Use the drop-down list for **CNS Software Version** to choose the version of Cisco CNS Configuration Engine that manages the IOS device (1.3, 1.3.1, 1.3.2, 1.4, 1.5, or 2.0).

Step 13 Use the drop-down list for **CNS Device Transport** to choose HTTP or HTTPS as the transport mechanism used by ISC to create, delete, or edit devices in the IE2100 repository. If HTTPS is used, the Cisco CNS Configuration Engine must be running in secure mode.

Step 14 Click **Save**. Figure A-1 reappears with the Cisco IOS device listed.

Using Plug-and-Play

ISC supports the Plug-and-Play device configuration through a Cisco CNS IE2100 appliance. ISC supports devices not physically present on the network.

The procedures for using Plug-and-Play when the Cisco IOS device is not physically present on the network vary depending on whether there is an initial configuration file for the device.

Follow these steps if the Cisco IOS device *does not* have an initial configuration file:

Step 1 Create a Cisco IOS Device as described in the "Creating a Cisco IOS Device Using the Cisco CNS Device Access Protocol" section.

Step 2 Define the Cisco IOS device properties as shown in Figure A-4.

Be sure to specify the **Device State** as **INACTIVE** because the device is not physically present on the network

Step 3 Click **Save**.

A Cisco IOS Device entry is created in the ISC repository and in the corresponding Cisco CNS IE2100 appliance repository.

Follow this step if the Cisco IOS device *does* have an initial configuration file:

Step 1 Import the initial configuration file into ISC using the Inventory Manager functionality, explained in Chapter 3, "Service Inventory — Inventory and Connection Manager" in this manual.

Be sure to specify the **Device State** as **INACTIVE** because the device is not physically present on the network.

The Inventory Manager create a Cisco IOS Device entry in the ISC repository. Also, it creates an entry in the corresponding Cisco CNS IE2100 repository, and associates the specified initial configuration file with this new device in the Cisco CNS IE2100 repository.

You can provision the newly created inactive Cisco IOS Device for different services. Because the device is not physically present on the network, ISC saves the configlets associated with these services in its repository and tries to download them to the device only after the device has come up. Until the device is physically present on the network, the service request goes into the **WAIT_DEPLOY** state. The service requests are explained in the user guides for each of the services.

After the device comes up and connects to its corresponding Cisco CNS IE2100 appliance, the device retrieves and applies its initial configuration if there is one waiting for it in the Cisco CNS IE2100 repository.

ISC detects that the device has come onto the network and performs the following actions:

- Changes the Cisco IOS Device state from **INACTIVE** to **ACTIVE**.

  ISC performs a collect config of the IOS device and stores it in the ISC repository.

- Verifies whether any ISC service has been waiting for this device to come up and tries to download the corresponding configlets to the device to complete the service request.