Directory Administration Tool

This chapter describes the Directory Administration Tool (DAT) including information about:

- How to Log In
- How to Manage Devices
- How to Manage Groups
- How to Manage Applications
- Managing Directory Setup
- How to Manage Bulk Data
- Managing IMGW Parameters

The Data administration Tool (DAT) presents you with a web-based user interface that allows you to populate and manage the data in the directories. You can View/Add/Delete/Modify CNS agent-enabled devices and legacy devices and switches devices (see "Intelligent Modular Gateway" section on page 1-5), groups of devices, and applications in the directory. Also, you can View/Add/Delete/Modify events specific to each application. DAT also provides you with the additional capability of bulk data upload.

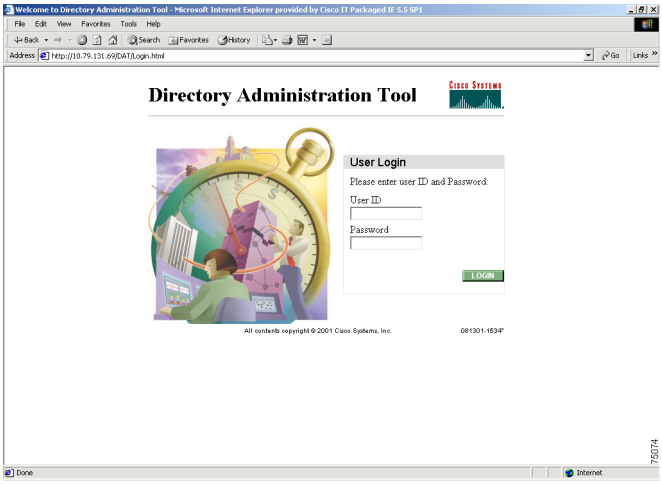
How to Log In

To connect to the DAT user interface, follow these steps:

Step 1 From the Tools main menu of the Cisco CNS Configuration Engine user interface, click **DAT**.

The login window appears (see Figure 5-1).

Figure 5-1 Directory Administration Tool Login Window



Step 2 Enter your **User ID**.

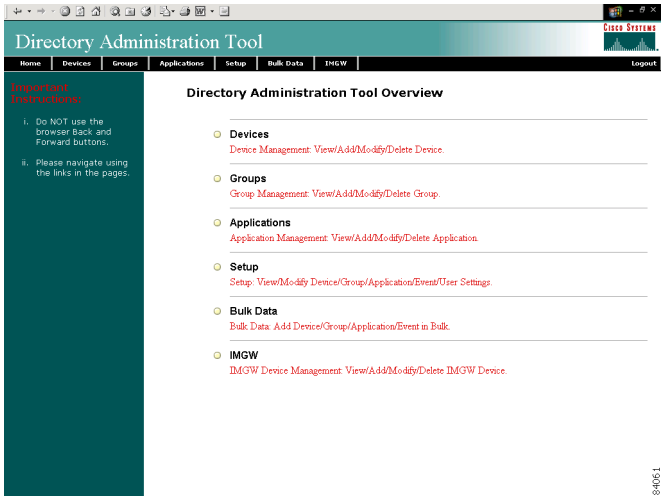
This is the user name for the Cisco CNS Configuration Engine administrative account that you entered during **Setup**.

Step 3 Enter your password.

Step 4 Click **LOGIN**.

The Directory Administration Tool Home page appears (see Figure 5-2).

Figure 5-2 Directory Administration Tool Home Page



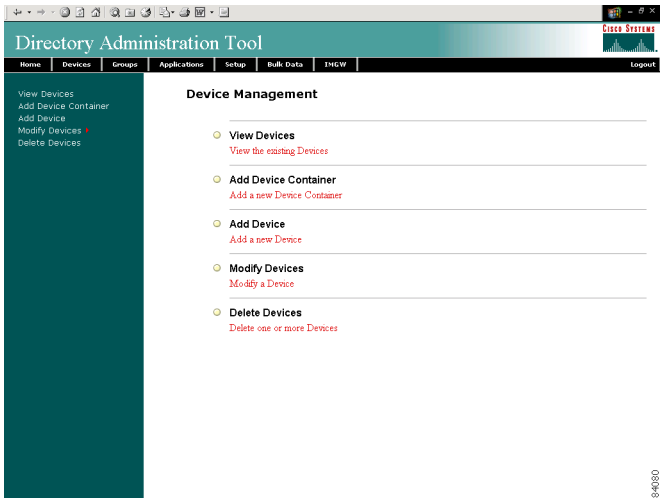
How to Log Out

To log out of the system, click the **Logout** tab.

How to Manage Devices

To view and modify devices, from the Home page, click **Devices**. The Device Management page appears (see Figure 5-3).

Figure 5-3 Device Management Page



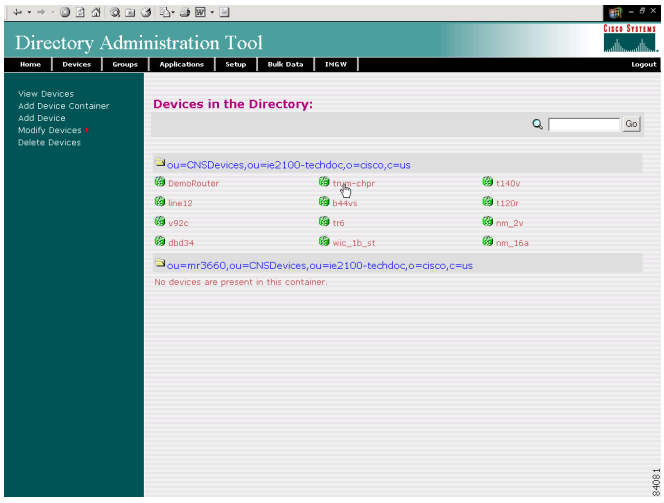
How to View Devices in the System

To view the devices currently in the system, follow these steps:

Step 1 From the Device Management page, click **View Device**.

The Device List page appears (see Figure 5-4).

Figure 5-4 Device List



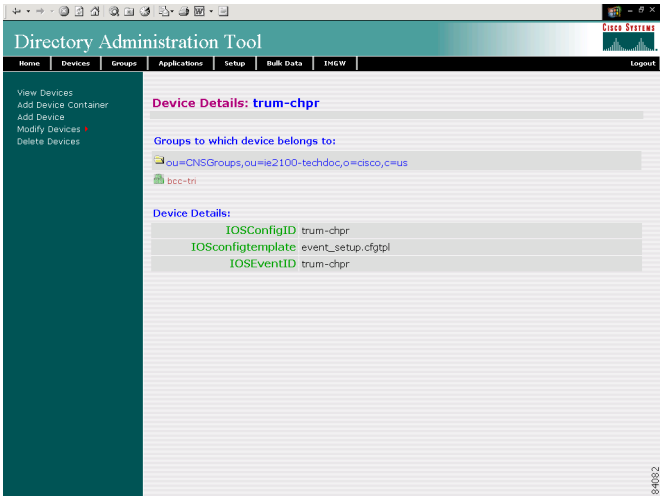
Note Devices with no parent attributes are shown with a dully-shaded icon, so you can easily identify the devices with no groups associated.

Step 2 Click on the icon for the device configuration you wish to view.

Information about that device appears (see Figure 5-5).

Step 3 To return to the main menu, click the **Home** tab.

Figure 5-5 Device Details



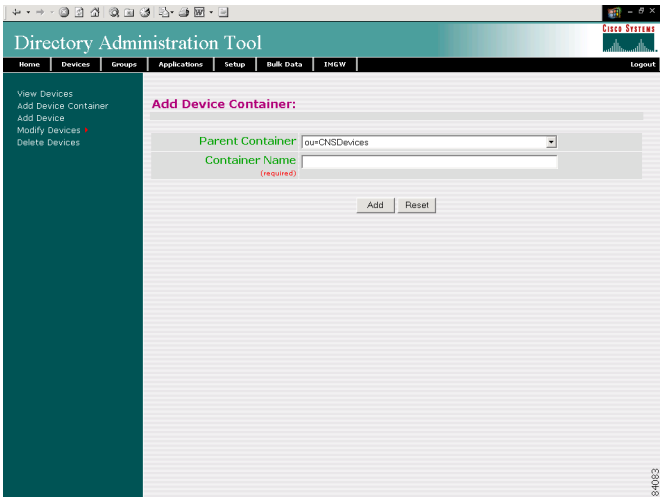
How to Add a Device Container

To add a device container to the system, follow these steps:

Step 1 From the Device Management page, click **Add Device Container**.

The Add Device Container page appears (Figure 5-6).

Figure 5-6 Add Device Container



Step 2 Enter a value in the **Container Name** field.

Step 3 To clear the field and enter a new value, click **Reset**.

Step 4 To add this device container, click **Add**.

Step 5 To return to the main menu, click the **Home** tab.

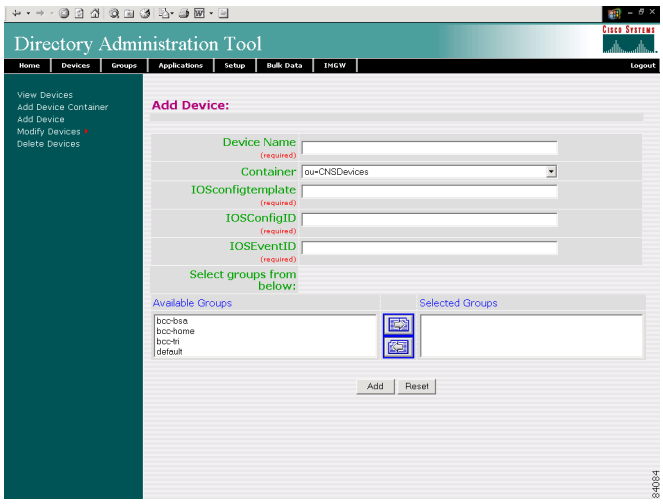
How to Add a Device

To add a device to the system, follow these steps:

Step 1 From the Device Management page, click **Add Device**.

The Add Device page appears (see Figure 5-7)

Figure 5-7 Add Device



Step 2 Enter a value in the **Device Name** field.

Step 3 Select a container from the Container pull-down menu.

Step 4 Enter a template ID for this device in the **IOSConfigtemplate** field.

Step 5 Enter a value for the unique configuration ID in the **IOSConfigID** field.

Step 6 Enter a value for the unique event ID in the **IOSEventID** field.

Step 7 From the **Available Groups** list, select the groups into which this device belongs.

Step 8 To clear all field and enter new values, click **Reset**.

Step 9 To add this device to the system, click **Add**.

Step 10 To return to the main menu, click the **Home** tab.

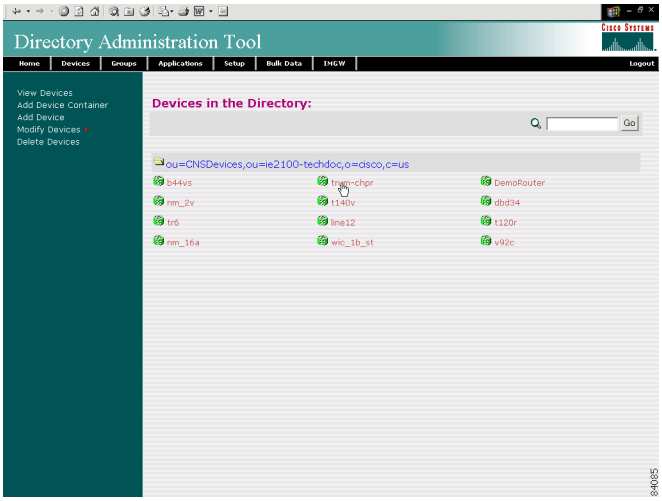
How to Modify Devices Details

To modify a device details, follow these steps:

Step 1 From the Device Management page, click **Modify Devices**.

The Devices in the Directory list appears (see Figure 5-8).

Figure 5-8 Devices in the Directory

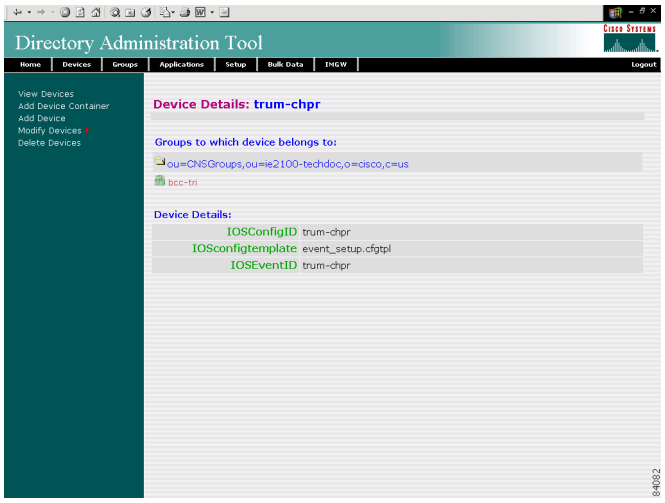


Note Devices with no parent attributes are shown with a dully-shaded icon, so you can easily identify the devices with no groups associated.

Step 2 Click on the icon for the device you wish to modify.

The Device Details page appears (see Figure 5-9)

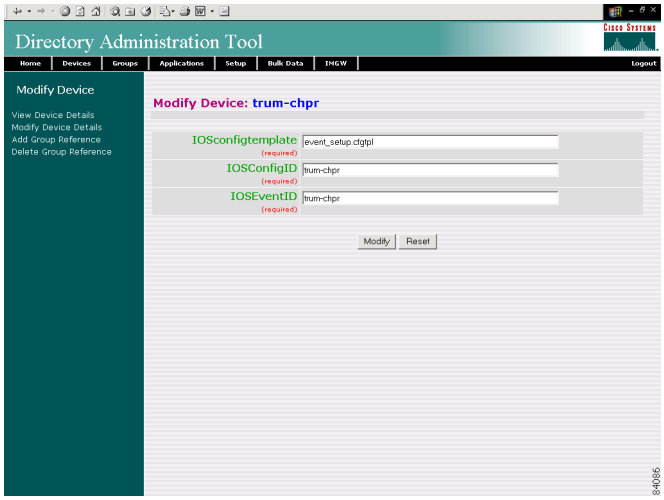
Figure 5-9 Device Details



Step 3 To modify the detail information about this device, in the left side-bar menu, click **Modify Device Details**.

The Modify Device task page appears (see Figure 5-10).

Figure 5-10 Modify Task



Step 4 Modify all appropriate fields.

Step 5 To clear all field and enter new values, click **Reset**.

Step 6 To apply these changes to this device, click **Apply**.

Step 7 To return to the main menu, click the **Home** tab.

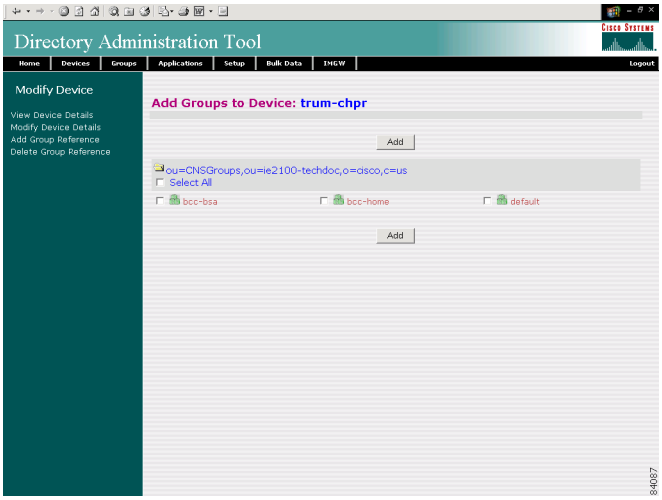
How to Add Device Group References to a Device

To add groups in which this device is referenced as a member, follow these steps:

Step 1 From the Modify Device page left side-bar menu, click **Add Group Reference**.

The Group Reference page appears (see Figure 5-11).

Figure 5-11 Add Groups to Device



Step 2 Check the groups in which you want this device to appear.

Step 3 To apply these changes to this device, click **Add**.

Step 4 To return to the main menu, click the **Home** tab.

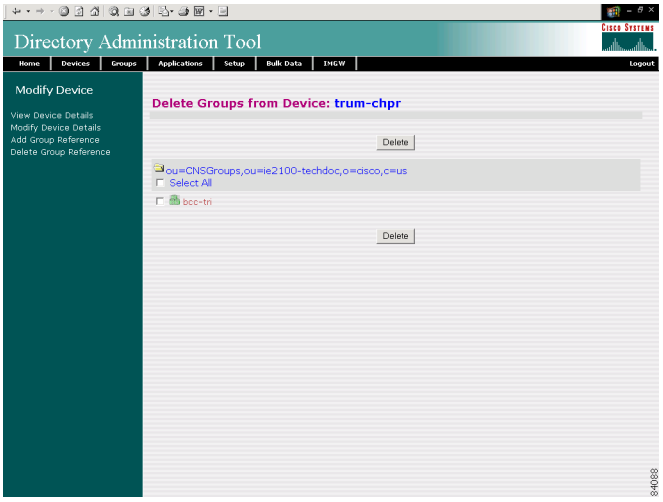
How to Delete Device Group References to a Device

To delete groups in which this device is referenced as a member, follow these steps:

Step 1 From the Modify Device page left side-bar menu, click **Delete Group Reference**.

The Delete Devices from Group page appears (see Figure 5-12).

Figure 5-12 Delete Devices from Group



Step 2 Check those group references you want to delete.

Step 3 To these group references, click **Delete**.

Step 4 To return to the main menu, click the **Home** tab.

How to Delete Devices

The delete device function relative to groups is different for each type of directory.

For DCL, if the device is the only member of a group when you delete the device, the associated group is also deleted. This is because the group is now empty.

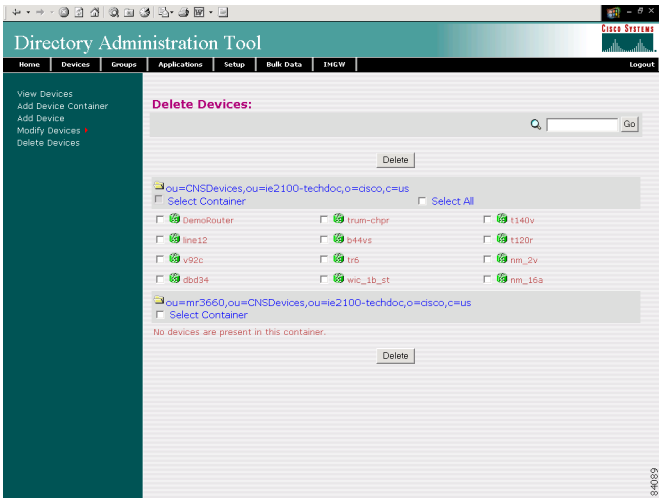
For AD, NDS, and iPlanet, if the device is the only member of a group when you delete the device, the group remains in an empty state. However, the device reference is deleted from the group.

To delete devices from the system using DAT, follow these steps:

Step 1 From the Device Management page, click Delete Devices.

The Delete Devices page appears (see Figure 5-13)

Figure 5-13 Delete Devices



Note Devices with no parent attributes are shown with a dully-shaded icon, so you can easily identify the devices with no groups associated.

Step 2 Select the devices you want to delete from the system.

Step 3 To delete this device, click **Delete**.

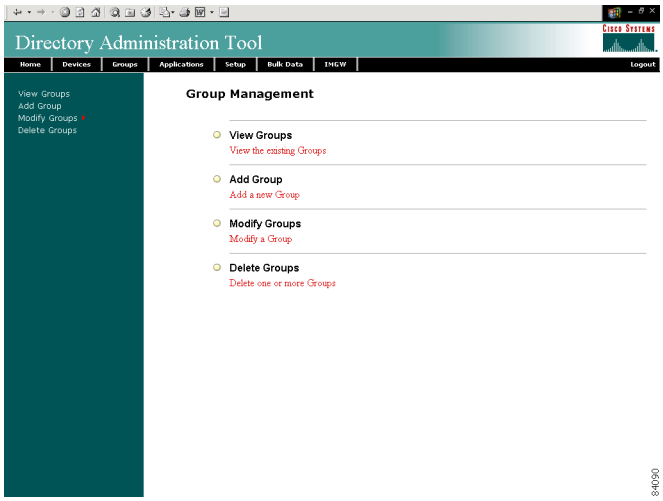
Step 4 To return to the main menu, click the **Home** tab.

How to Manage Groups

To view and modify groups, from the main menu, click the **Groups** tab.

The Group Management page appears (see Figure 5-14).

Figure 5-14 Group Management



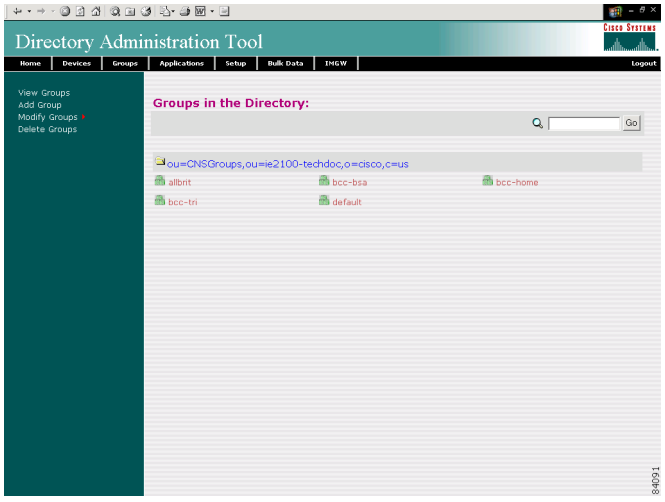
How to View Groups in the System

To view all the groups in the system, follow these steps:

Step 1 From the Group Management page, click **View Groups**.

The group listing appears (see Figure 5-15).

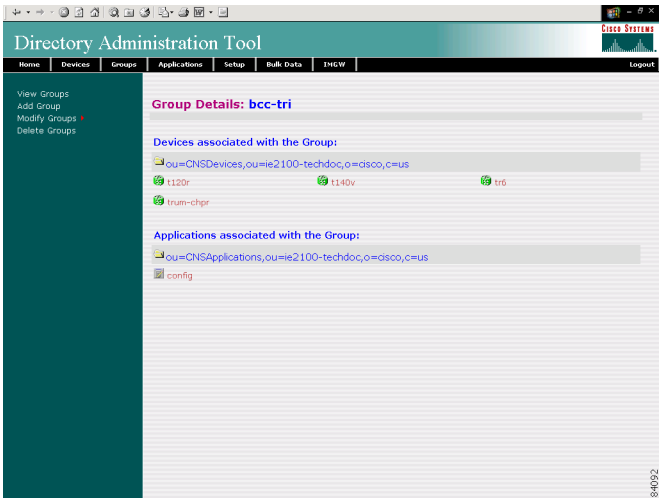
Figure 5-15 Groups in the System



Step 2 To view the details of a particular group, click on the icon associated with the group you want to view.

The Groups Detail page appears (see Figure 5-16).

Figure 5-16 Groups Details



Step 3 To return to the main menu, click the **Home** tab.

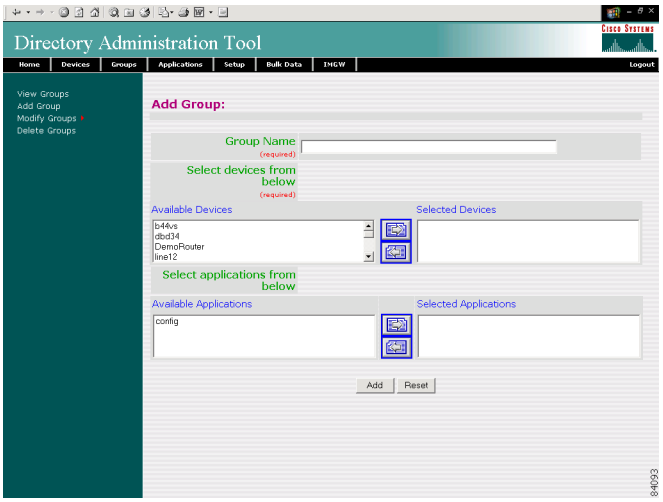
How to Add a Group

To add a group to the system, follow these steps:

Step 1 From the Group Management page, click **Add Group**.

The Add Group page appears (see Figure 5-17).

Figure 5-17 Add Group



Step 2 Enter a value for the group name in the **Group Name** field.

Step 3 From the list of available devices, select the devices you want associated with this group.

Step 4 From the list of available applications, select the applications you want associated with this group.

Step 5 Modify all appropriate fields.

Step 6 To clear all field and enter new values, click **Reset**.

Step 7 To add this group, click **Add**.

Step 8 To return to the main menu, click the **Home** tab.

Modifying Groups

To modify a group, follow these steps:

Step 1 From the Group Management page, click **Modify Group**.

The Group list appears (see Figure 5-15).

Step 2 Click on the icon associated with the group you want to modify.

The group details appear (see Figure 5-16).

Step 3 From the left side-bar menu, choose which aspect of the group you want to modify.

Modifying Group Details

Using the user interface to modify group details (attributes) is possible only if you have extended the group objectclass in the directory with extra attributes.

How to Populate a Group Attribute

Before you can populate a group attribute, you must extend the directory schema manually. The Cisco CNS Configuration Engine cannot add new attributes to the group objectclass in the directory.

Once you have extended the schema, you can populate the new object class using DAT by following these steps:

Step 1 In the DAT user interface, under **Group Setup**, click on **Add More Attributes to the UI**.

(See "How to View and Modify Group Setup" section on page 5-31.)

Step 2 Enter the new attributes.

Step 3 Click **Save**.

Now, when you go to **Modify Groups**, you can modify these new attributes under **Modify Group Details**.

How to Modify Group Details

To modify group details, follow these steps:

Step 1 From the Group Management page, click **Modify Groups**.

The group list appears (see Figure 5-15).

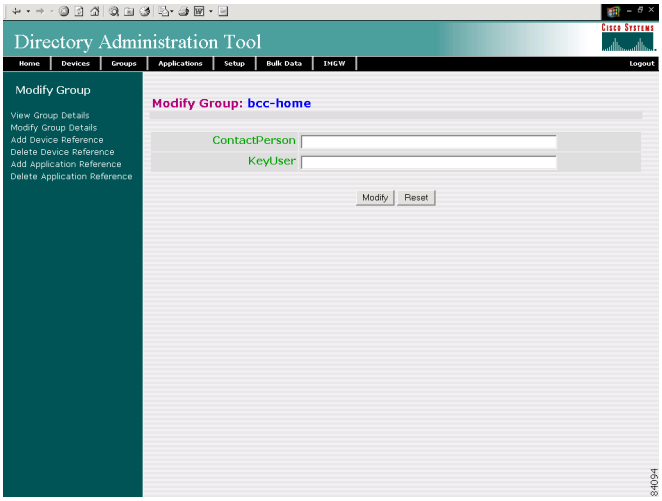
Step 2 Click on the icon associated with the group you want to modify.

The Group Details page appears (see Figure 5-16).

Step 3 To modify the group attributes, from the left side-bar menu, click on **Modify Group Details**.

The modify attributes task page appears (see Figure 5-18).

Figure 5-18 Modify Group Details



Note The attributes shown in Figure 5-18 are sample values used only for illustration purposes. For more information about adding attributes to the directory, see "How to Modify Group Details" section on page 5-14.

Step 4 Modify all appropriate attributes.

Step 5 To clear all field and enter new values, click **Reset**.

Step 6 To modify this group, click **Modify**.

Step 7 To return to the main menu, click the **Home** tab.

How to Add Device References to a Group

To add devices to a group, follow these steps:

Step 1 From the Group Management page, click **Modify Groups**.

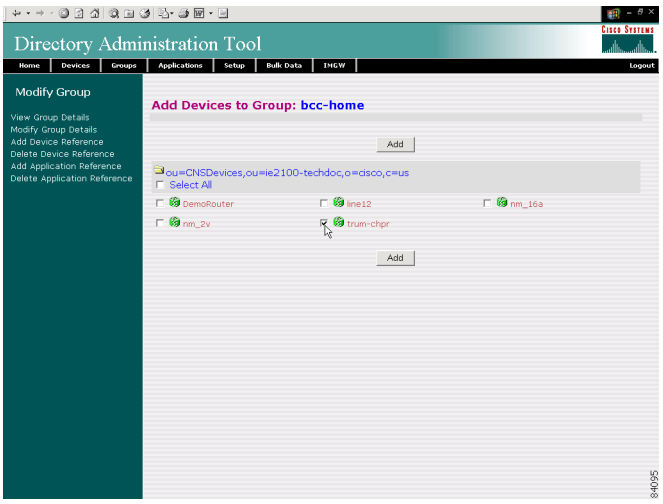
The group list appears (see Figure 5-15).

Step 2 Select the group you want to modify by clicking on its icon.

Step 3 To add devices to this group, from the left side-bar menu, click on **Add Device Reference**.

The device list appears (see Figure 5-19).

Figure 5-19 Add Devices to Group



Step 4 Check all devices you want to appear in this group.

Step 5 To modify the group with these devices, click **Add**.

Step 6 To return to the main menu, click the **Home** tab.

How to Delete Devices from a Group

To delete devices to a group, follow these steps:

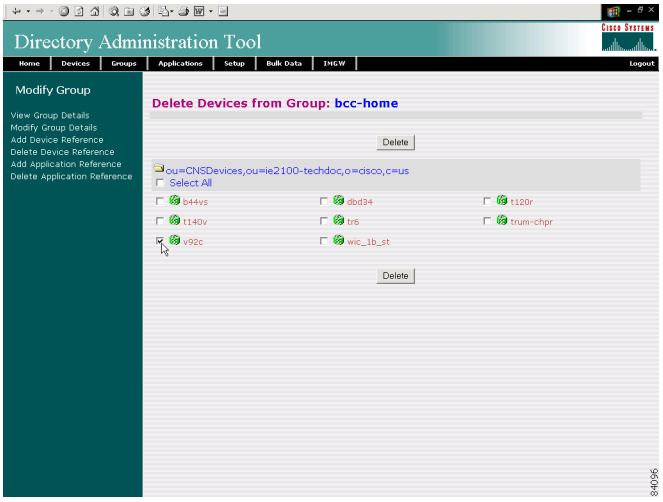
Step 1 From the Group Management page, click **Modify Groups**.

The group list appears (see Figure 5-15).

Step 2 Select the group you want to modify by clicking on its icon.

The list of devices currently associated with this group appears (see Figure 5-20).

Figure 5-20 Delete Devices from Group



Step 3 Check all devices you want to delete from this group.

Step 4 To delete these devices from this group, click **Delete**.

Step 5 To return to the main menu, click the **Home** tab.

How to Add Applications to a Group

To add applications to a group, follow these steps:

Step 1 From the Group Management page, click **Modify Groups**.

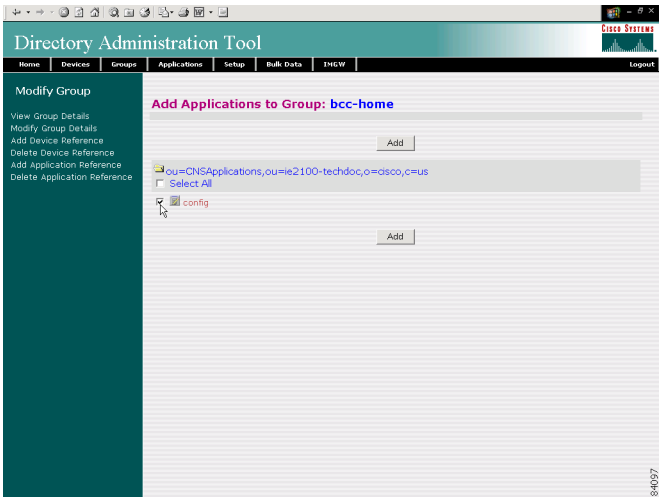
The group list appears (see Figure 5-15).

Step 2 Select the group you want to modify by clicking on its icon.

Step 3 To add applications to this group, from the left side-bar menu, click on **Add Application Reference**.

A list of applications appears (see Figure 5-21).

Figure 5-21 Add Applications to Group



Step 4 Check the applications you want to add to this group.

Step 5 To modify the group with these applications, click **Add**.

Step 6 To return to the main menu, click the **Home** tab.

How to Delete Applications from a Group

To delete applications to a group, follow these steps:

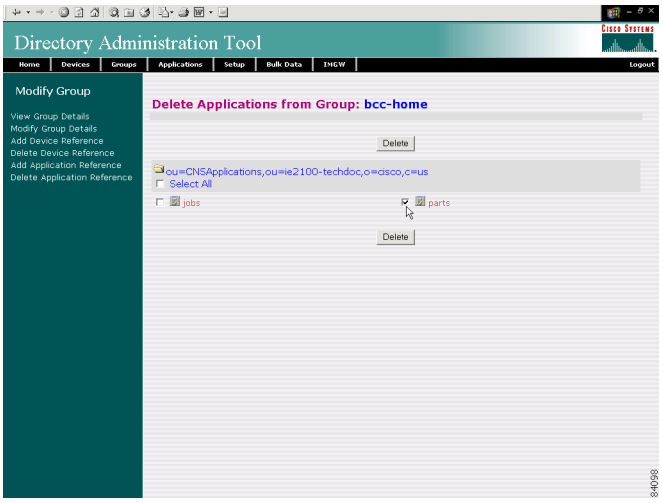
Step 1 From the Group Management page, click **Modify Groups**.

The group list appears (see Figure 5-15).

Step 2 Select the group you want to modify by clicking on its icon.

The list of applications currently associated with this group appears (see Figure 5-22).

Figure 5-22 Delete Applications from Group



Step 3 Check the applications you want to delete from this group.

Step 4 To delete these applications from this group, click **Delete**.

Step 5 To return to the main menu, click the **Home** tab.

How to Delete Groups

To delete group(s) from the system using DAT, follow these steps:

Step 1 From the Device Management page, click Delete Groups.

The Delete Groups page appears

Step 2 Select the group(s) you want to delete from the system.

Step 3 To delete this group(s), click **Delete**.

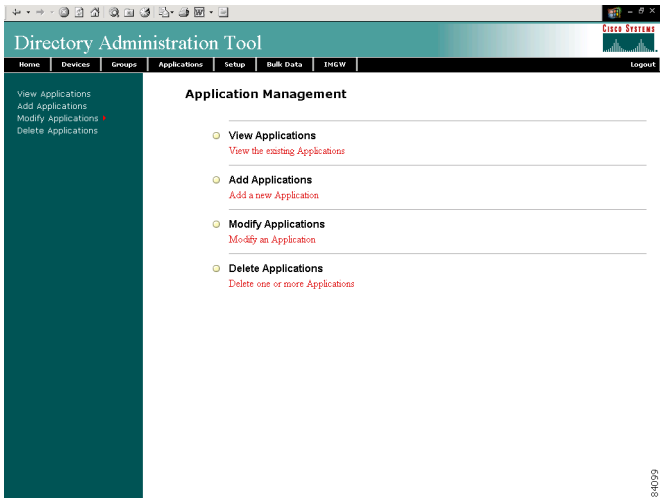
Step 4 To return to the main menu, click the **Home** tab.

How to Manage Applications

To view and modify applications, from the main menu, click the **Applications** tab.

The Application Management page appears (see Figure 5-23).

Figure 5-23 Application Management



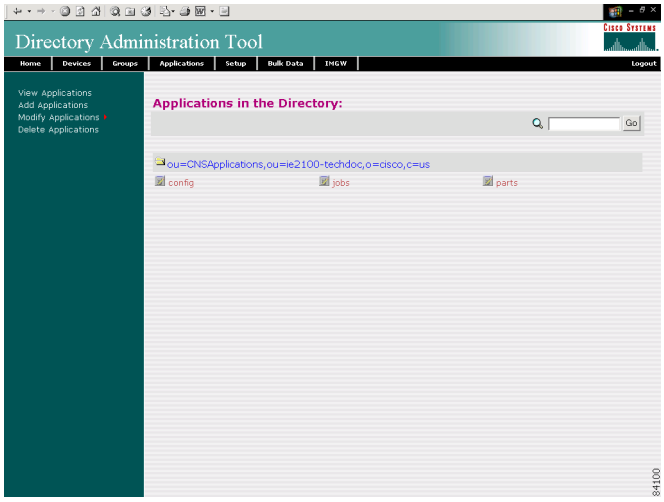
How to View Applications on the System

To view the current list of applications running on the system, follow these steps:

Step 1 From the Application Management page, click **View Applications**.

The application list appears (see Figure 5-24).

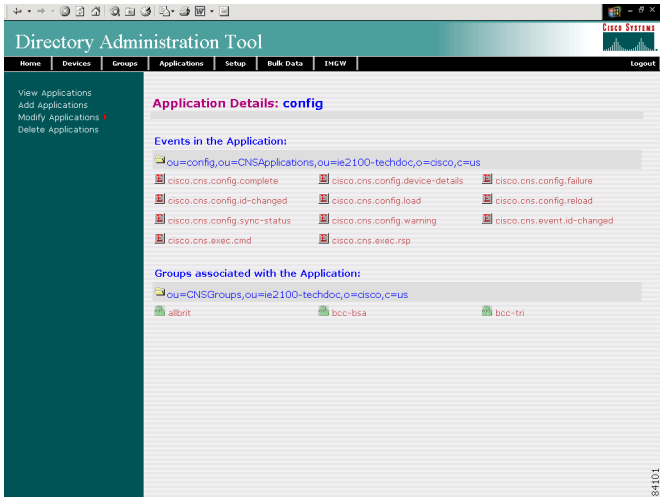
Figure 5-24 Applications List



Step 2 To view the details of an application, click on the icon associated with application you want to view.

The application details appear (seeFigure 5-25) listing the events in the application and group currently associated with this application.

Figure 5-25 Application Details



Step 3 To return to the main menu, click the **Home** tab.

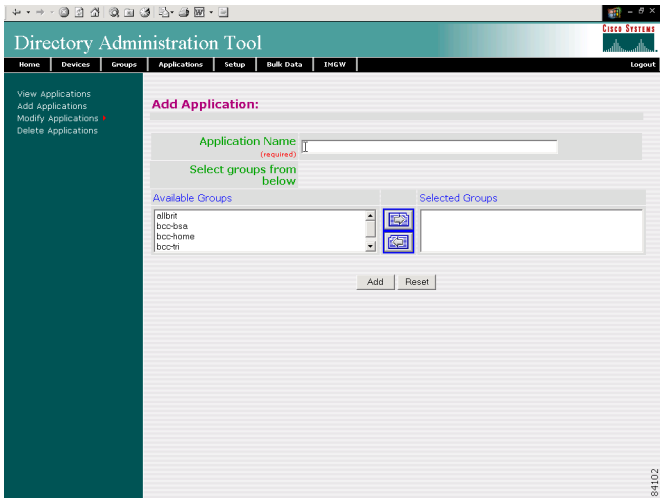
How to Add Applications

To add an application to the system, follow these steps:

Step 1 From the Application Management page, click **Add Application**.

The Add Application page appears (see Figure 5-26).

Figure 5-26 Add Applications



Step 2 Enter a value in the **Application Name** field.

Step 3 From the list of Available Groups, choose the groups with which you want this application associated.

Step 4 To clear your entries and start over, click **Reset**.

Step 5 To add this application to the system, click **Add**.

After adding an application, you get a success message with a link to add events to that application. Clicking the link takes you to the add events screen (see "How to Add Events to an Application" section on page 5-24).

Step 6 To return to the main menu, click the **Home** tab.

Modifying Applications

To modify an application, follow these steps:

Step 1 From the Application Management page, click **Modify Application**.

The Application list appears (see Figure 5-24).

Step 2 Click on the icon associated with the application you want to modify.

The application details appear (see Figure 5-25).

Step 3 From the left side-bar menu, choose which aspect of the application you want to modify.

Modifying Application Details

Using the user interface to modify application details (attributes) is possible only if you have extended the application objectclass in the directory with extra attributes.

How to Populate an Application Attribute

Before you can populate a application attribute, you must extend the directory schema manually. The Cisco CNS Configuration Engine cannot add new attributes to the application objectclass in the directory.

Once you have extended the schema, you can populate the new object class using DAT by following these steps:

Step 1 In the DAT user interface, under **Application Setup**, click on **Add More Attributes to the UI**.

(See "How to View and Modify Application Setup" section on page 5-32.)

Step 2 Enter the new attributes.

Step 3 Click **Save**.

Now, when you go to **Modify Application**, you can modify these new attributes under **Modify Application Details**.

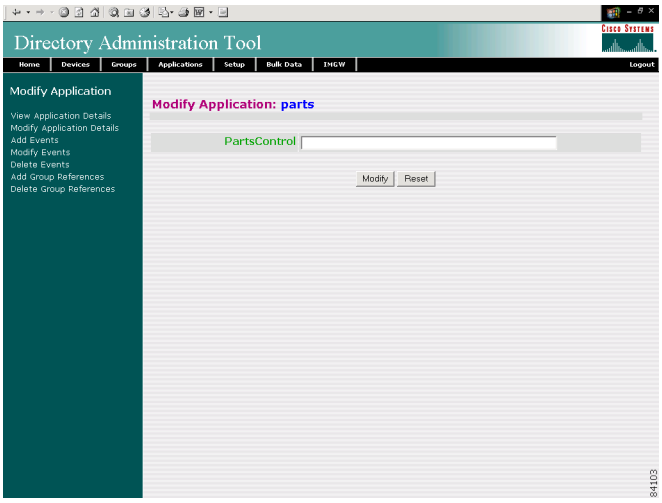
How to Modify Application Details

To modify application details (attributes), follow these steps:

Step 1 From the left side-bar menu, click **Modify Applications Details**.

The modify attributes task page appears.

Figure 5-27 Modify Application Details



Note The attribute shown in Figure 5-27 is a sample value used only for illustration purposes. For more information about adding attributes to the directory, see "How to Populate an Application Attribute" section on page 5-23.

Step 2 Modify all appropriate attributes.

Step 3 To clear all field and enter new values, click **Reset**.

Step 4 To modify this application, click **Modify**.

Step 5 To return to the main menu, click the **Home** tab.

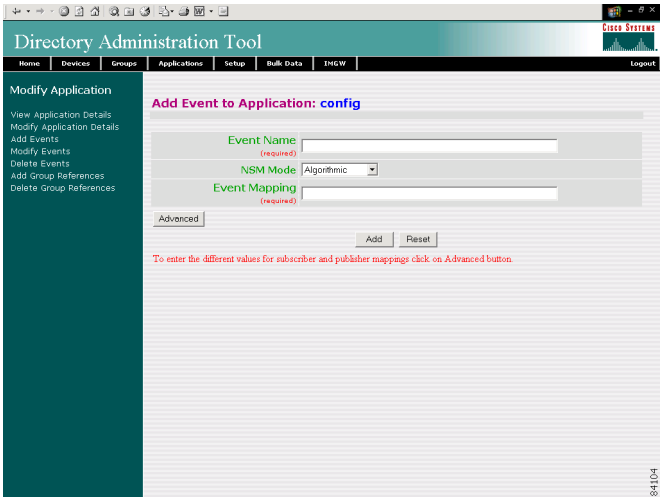
How to Add Events to an Application

To add events to this application, follow these steps:

Step 1 From the left side-bar menu, click **Add Events**.

The Add Events page appears (see Figure 5-28).

Figure 5-28 Add Events to an Application



Step 2 Enter a value in the **Event Name** field.

All the events that are added in the internal directory for **config** application are as follows:

```
cisco.cns.config.load
cisco.cns.config.complete
cisco.cns.config.warning
cisco.cns.config.failure
cisco.cns.config.sync-status
cisco.cns.exec.cmd
cisco.cns.exec.rsp
cisco.cns.config.id-changed
cisco.cns.config.reload
cisco.cns.config.device-details
cisco.cns.event.id-changed
```

Step 3 From the NSM Mode pull down menu, choose a mode.

- Algorithmic — NSM server uses a mapping algorithm
- Non-algorithmic — NSM server mapping algorithm is overridden by the application

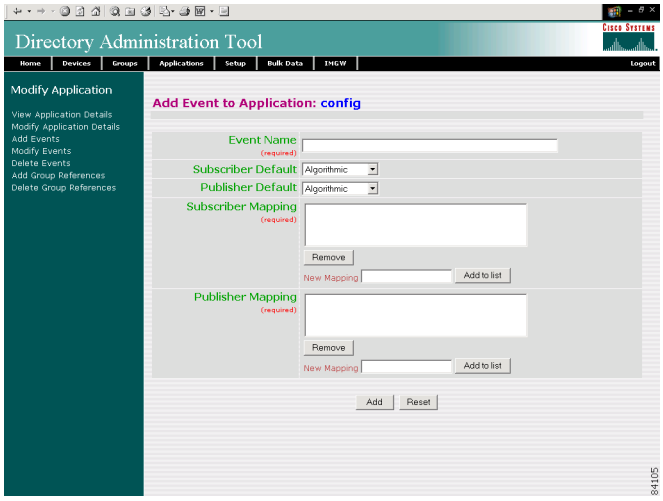
Step 4 Enter the event mapping in the **Event Mapping** field.

For more information about naming events, see "NameSpace Mapper" section on page 1-4.

Step 5 To change Subscriber and Publisher parameters from default, click **Advanced**.

The Advanced Event page appears (see Figure 5-29).

Figure 5-29 Advanced Event Add



Step 6 Select the Subscriber Default mode from the pull down menu.

Step 7 Select the Publisher Default mode from the pull down menu.

Step 8 To add a new subscriber mapping, enter the subscriber mapping in the **New Mapping** field, the click **Add to list**.

Step 9 To remove a subscriber mapping, in the **Subscriber Mapping** list, select the desired mapping, then click **Remove**.

Step 10 To add a new publisher mapping, enter the publisher mapping in the **New Mapping** field, the click **Add to list**.

Step 11 To remove a publisher mapping, in the **Publisher Mapping** list, select the desired mapping, then click **Remove**.

Step 12 To add this event to the system, click **Add**.

Step 13 To clear your entries and start over, click **Reset**.

Step 14 To return to the main menu, click the **Home** tab.

How to Modify Events in an Application

To modify events to this application, follow these steps:

Step 1 From the Application Management page, click **Modify Application**.

The application list appears (see Figure 5-24).

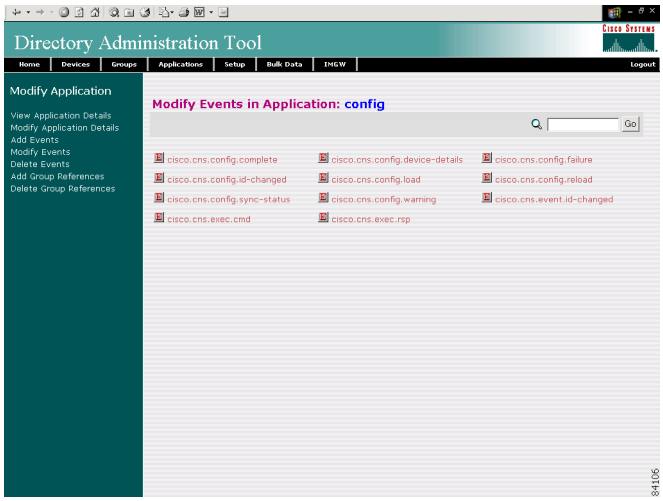
Step 2 Click on the icon associated with the application for which you want to modify events.

The Application Details page appears (see Figure 5-25).

Step 3 From the left side-bar menu, click **Modify Events**.

The events list for this application appears (see Figure 5-30).

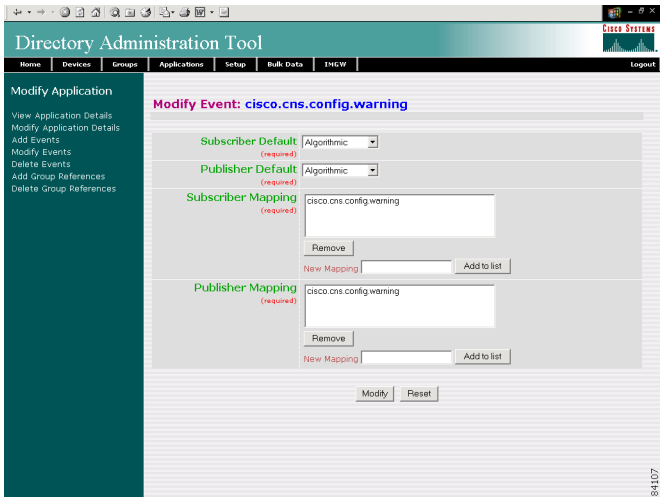
Figure 5-30 Modify Events in Application



Step 4 Click on the icon associated with the event you want to modify.

The Modify Event page appears (see Figure 5-31).

Figure 5-31 Modify Event



Step 5 Modify all appropriate fields.

Step 6 To clear your entries and start over, click **Reset**.

Step 7 To Modify this event, click **Modify**.

Step 8 To return to the main menu, click the **Home** tab.

How to Delete Events in a Application

To delete events from an application, follow these steps:

Step 1 From the Application Management page, click **Modify Application**.

The application list appears (see Figure 5-24).

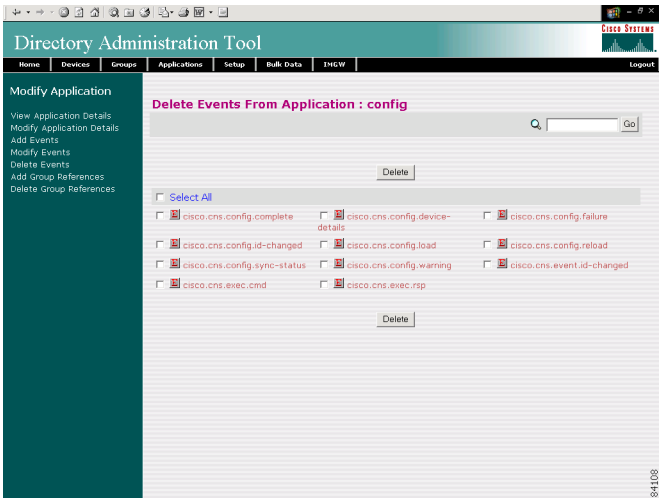
Step 2 Click on the icon associated with the application from which you want to delete events.

The Application Details page appears (see Figure 5-25).

Step 3 From the left side-bar menu, click **Delete Events**.

The delete events list for this application appears (see Figure 5-32).

Figure 5-32 Delete Events from Application



Step 4 Check all events you want to delete from this application.

Step 5 To delete these events, click **Delete**.

Step 6 To return to the main menu, click the **Home** tab.

How to Add Group References to an Application

To add group references to an application, follow these steps:

Step 1 From the Application Management page, click **Modify Application**.

The application list appears (see Figure 5-24).

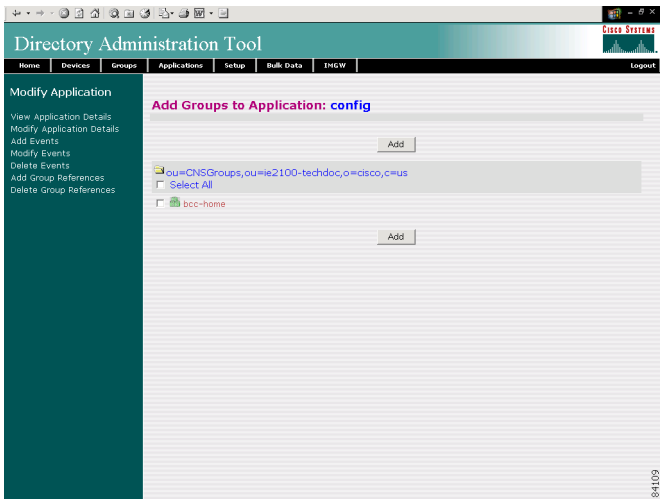
Step 2 Click on the icon associated with the application from which you want to add groups.

The Application Details page appears (see Figure 5-25).

Step 3 From the left side-bar menu, click **Add Group References**.

A list of available groups to add to this application appears (see Figure 5-33).

Figure 5-33 Add Groups to an Application



Step 4 Check all groups you want associated with this application.

Step 5 To add these group references to this application, click **Add**.

Step 6 To return to the main menu, click the **Home** tab.

How to Delete Group References from an Application

To delete group references from an application, follow these steps:

Step 1 From the Application Management page, click **Modify Application**.

The application list appears (see Figure 5-24).

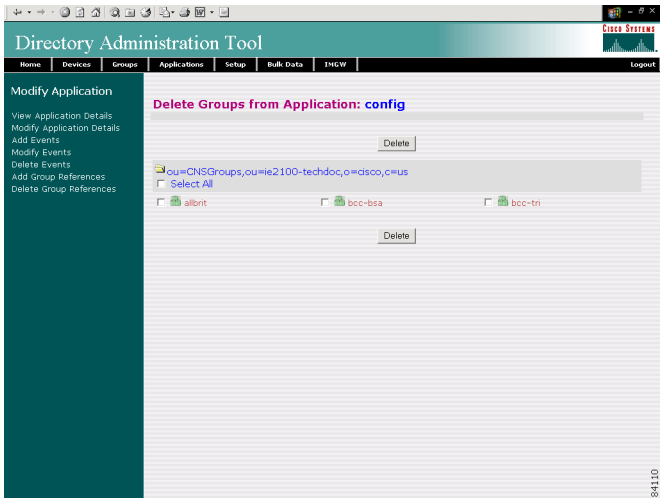
Step 2 Click on the icon associated with the application from which you want to delete groups.

The Application Details page appears (see Figure 5-25).

Step 3 From the left side-bar menu, click **Delete Group References**.

A list of groups currently associated with this application appears (see Figure 5-34).

Figure 5-34 Delete Groups from an Application



Step 4 Check all groups you want to delete from this application.

Step 5 To delete these groups to this application, click **Delete**.

Step 6 To return to the main menu, click the **Home** tab.

How to Delete Applications

To delete an application, follow these steps:

Step 1 From the Application Management page, click **Delete Application**.

The Application list appears (see Figure 5-24).

Step 2 Click the icon(s) associated with the application you want to delete.

Step 3 To delete these applications, click **Delete**.

Step 4 To return to the main menu, click the **Home** tab.

Managing Directory Setup

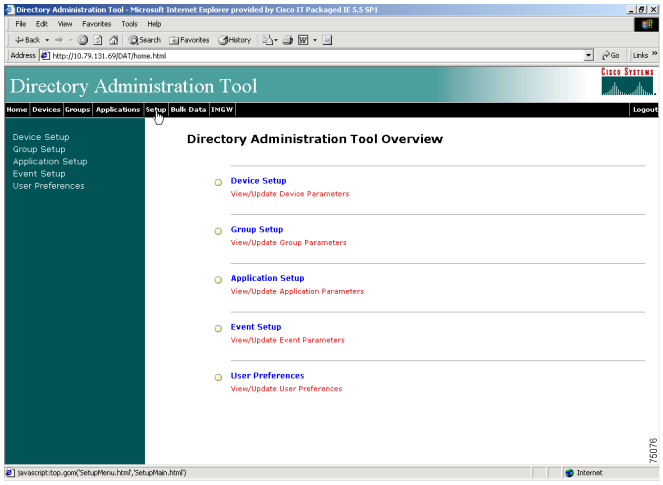
When the Cisco CNS Configuration Engine is setup, DAT also gets configured with the values as entered by the user during setup. If you have extended the schema, then you have to provide the information about the new attributes (name of the attribute, whether the attribute is mandatory or not, and whether the attribute is single-valued or multi-valued).

Note Adding attributes in setup does not add these attributes to the directory. These attributes are written only to the DAT property files.

There are some attributes related to directories that get default values during initial setup of the system. You may need to change some of these attributes to match your specific values.

From the DAT main menu, click the Setup tag. The Setup page appears (see Figure 5-35).

Figure 5-35 Setup Page



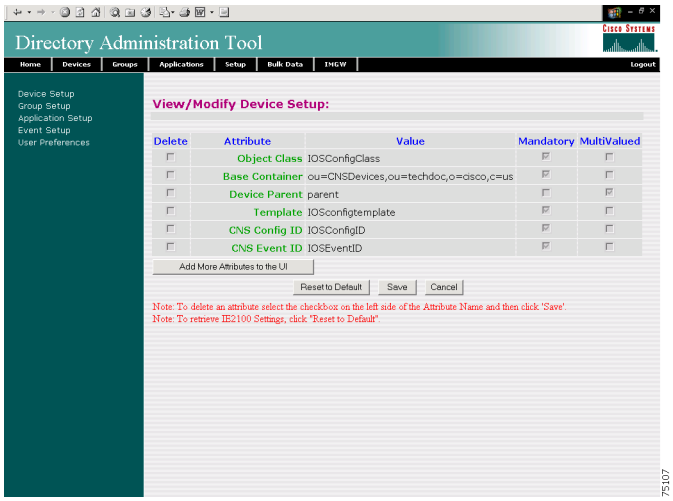
How to View and Modify Device Setup

To view and modify device setup, follow these steps:

Step 1 From the Setup main menu, choose, **Device Setup**.

The Device Setup page appears (see Figure 5-36).

Figure 5-36 View and Modify Device Setup



Step 2 To modify device setup, change all appropriate fields.

With this page, you can add new attributes that you intend to populate through DAT. The names of the other attributes; template, uniqueconfigid, uniquedeviceid, Parent (device-group association) are also listed in this page.These values are the same as entered during the Cisco CNS Configuration Engine setup. These attributes are made mandatory. To change any of these values, the Cisco CNS Configuration Engine setup has to be run again. These are the attributes that DAT recognizes initially.If you want more attributes to be managed by DAT, you can add those attribute details on this page.

Step 3 To add more attributes, click **Add More Attributes to the UI**.

Here you can add more attributes to the Device objectClass. You can add new attributes to a Device by giving the attribute name and whether it is mandatory, multi valued.

Note Adding attributes in setup does not add these attributes to the directory. These attributes are written only to the DAT property files. Before you can use the DAT UI to populate a newly added attribute, directory schema must have been extended with that new attribute.

Step 4 To reset this device setup to default values, click **Reset to Default**.

This restores the Cisco CNS Configuration Engine settings for only device setup.

Step 5 To save your changes, click **Save**.

Step 6 To cancel this task, click **Cancel**.

Step 7 To return to the main menu, click the **Home** tab.

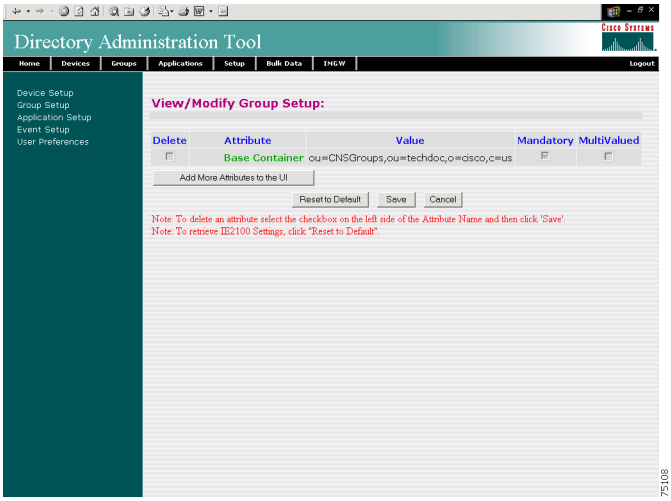
How to View and Modify Group Setup

To view and modify group setup, follow these steps:

Step 1 From the Setup main menu, choose, **Group Setup**.

The Group Setup page appears (see Figure 5-37).

Figure 5-37 View and Modify Group Setup



Step 2 To add more attributes, click **Add More Attributes to the UI**.

Here you can add new attributes to the group objectClass; for example, you might be interested in designating a contact person for each of the groups. This can be done by adding an attribute to the group object class in the directory. You can add new attributes to a group by giving the attribute name and whether it is mandatory, or multi valued.

Note Adding attributes in setup does not add these attributes to the directory. These attributes are written only to the DAT property files. Before you can use the DAT UI to populate a newly added attribute, directory schema must have been extended with that new attribute.

Step 3 To reset this group setup to default values, click **Reset to Default**.

This restores the Cisco CNS Configuration Engine settings for only group setup.

Step 4 To save your changes, click **Save**.

Step 5 To cancel this task, click **Cancel**.

Step 6 To return to the main menu, click the **Home** tab.

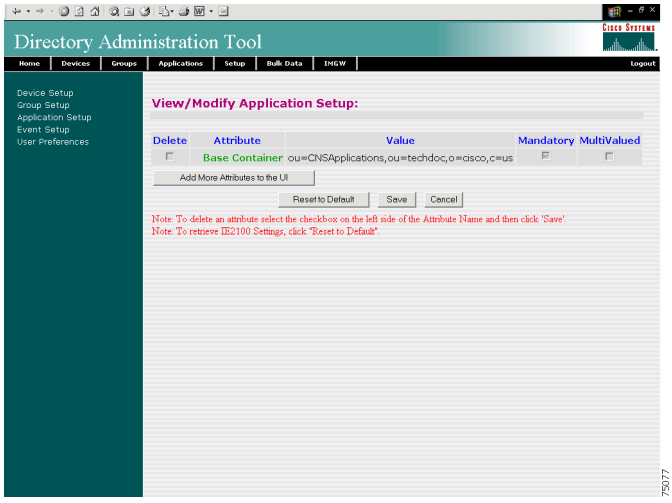
How to View and Modify Application Setup

To view and modify application setup, follow these steps:

Step 1 From the Setup main menu, choose, **Application Setup**.

The Application Setup page appears (see Figure 5-38).

Figure 5-38 View and Modify Application Setup



Step 2 Click **Save**.

Step 3 To add more attributes, click **Add More Attributes to the UI**.

Here you can add more attributes to the application objectClass; for example, you might be interested in designating a contact person for each of the applications. This can be done by adding an attribute to the application object class in the directory. You can add new attributes to applications by giving the attribute name and whether it is mandatory, or multi valued.

Note Adding attributes in setup does not add these attributes to the directory. These attributes are written only to the DAT property files. Before you can use the DAT UI to populate a newly added attribute, directory schema must have been extended with that new attribute.

Step 4 To reset this application setup to default values, click **Reset to Default**.

This restores theCisco CNS Configuration Engine settings for only application setup.

Step 5 To save your changes, click **Save**.

Step 6 To cancel this task, click **Cancel**.

Step 7 To return to the main menu, click the **Home** tab.

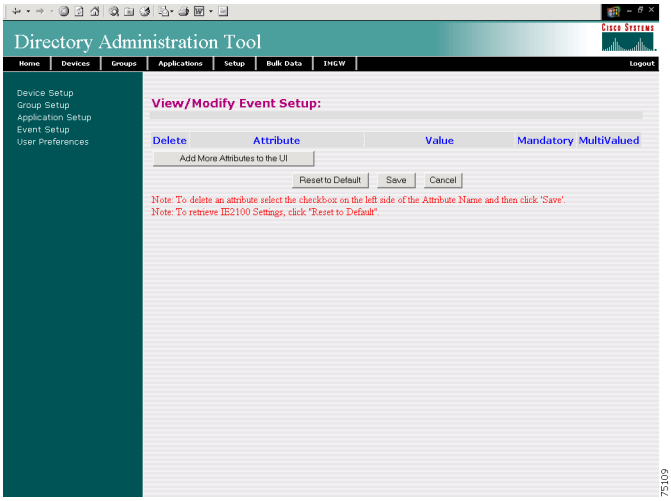
How to View and Modify Event Setup

To view and modify Event setup, follow these steps:

Step 1 From the Setup main menu, choose, **Event Setup**.

The Event Setup page appears (see Figure 5-39).

Figure 5-39 View and Modify Event Setup



Step 2 To modify event setup, change all appropriate fields.

If you use the default NSM schema, you will notice that there are no fields to be modified here. This is because there are no attributes required for the event object class. However if you have extended the schema and added some extra attributes to the event object class then you can modify those attributes by changing the name of the attribute in the **Value** text box and updating the Mandatory and MultiValued check boxes.

Step 3 To add more attributes, click **Add More Attributes to the UI**.

Here you can add more attributes to the event objectClass; for example, you might be interested in adding an extra event to the object class. This can be done by adding an attribute to the event object class in the directory. You can add new attributes to events by giving the attribute name and whether it is mandatory, or multi valued.

Note Adding attributes in setup does not add these attributes to the directory. These attributes are written only to the DAT property files. Before you can use the DAT UI to populate a newly added attribute, directory schema must have been extended with that new attribute.

Step 4 To save your changes, click **Save**.

Step 5 To cancel this task, click **Cancel**.

Step 6 To return to the main menu, click the **Home** tab.

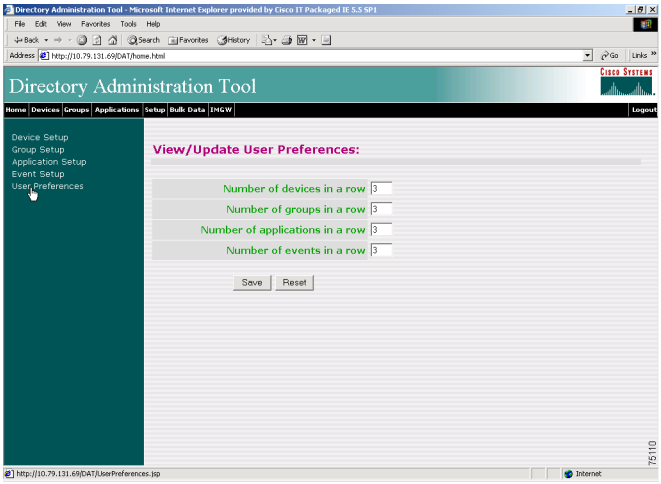
How to View and Modify User Preferences

To view and modify user preferences, follow these steps:

Step 1 From the Setup main menu, choose, **User Preferences**.

The User Preferences page appears (see Figure 5-40).

Figure 5-40 View and Modify User Preferences



Step 2 To modify user preferences, change all appropriate fields.

This consists of the following options:

- Number of devices in a row
- Number of groups in a row
- Number of applications in a row
- Number of events in a row.

These options can be changed by changing the value in the text box.

Step 3 To save your changes, click **Save**.

Step 4 To cancel this task, click **Cancel**.

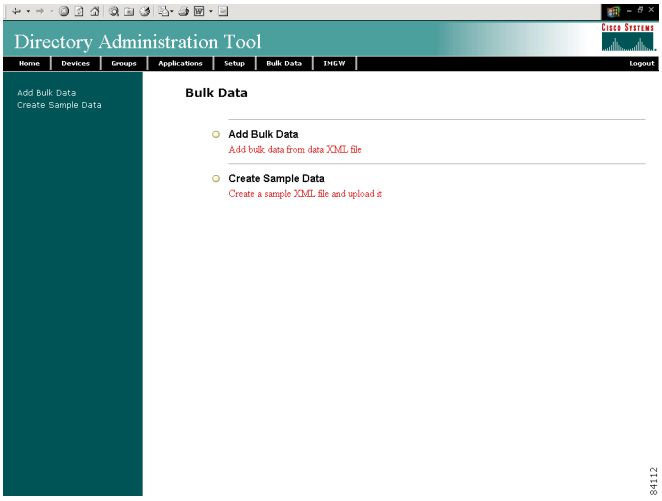
Step 5 To return to the main menu, click the **Home** tab.

How to Manage Bulk Data

To manage bulk data loads, from the main menu, click the **Bulk Data** tab.

The Bulk Data main menu appears (see Figure 5-41).

Figure 5-41 Bulk Data



XML DTD

The following example shows the Document Type Definition (DTD) for the XML bulk upload:

```
<?xml version="1.0" encoding="utf-8"?>
<!ELEMENT cns-bulk-upload (cns-element-data)>
<!ATTLIST cns-bulk-upload
    stop-on-error (true | false) "false"
>
<!ELEMENT cns-element-data (NSM-DATA | IMGW-DATA)>
<!ELEMENT IMGW-DATA (imgw-device*)>
<!ATTLIST IMGW-DATA
    op-type (add) #REQUIRED
>
<!ELEMENT imgw-device (device-id, gateway-id?, hop-information*)>
<!ELEMENT device-id (#PCDATA)>
<!ELEMENT gateway-id (#PCDATA)>
<!ELEMENT hop-information (device-type, ip-address?, port?, username?, password?)>
<!ELEMENT device-type (#PCDATA)>
<!ELEMENT ip-address (#PCDATA)>
<!ELEMENT port (#PCDATA)>
```

```
<!ELEMENT username (#PCDATA)>
<!ELEMENT password (#PCDATA)>
<!ELEMENT NSM-DATA (cns-device-container*, cns-device-info*, cns-application-info*,
cns-group-info*)>
<!ATTLIST NSM-DATA
    op-type (add) #REQUIRED
    validate-data (true | false) #REQUIRED
>
<!ELEMENT cns-device-container (device-container-name+, parent-container?)>
<!-- This tag is to add the sub containers for devices-->
<!ELEMENT device-container-name (#PCDATA)>
<!ELEMENT parent-container (#PCDATA)>
<!-- This is an optional tag that specifies which container the dev. container object is
to be added-->
<!ELEMENT cns-device-info (cns-device-name, cns-extended-attr*, device-container?)>
<!ELEMENT device-container (#PCDATA)>
<!-- This is an optional tag that specifies which container this object is to be added-->
<!ELEMENT cns-device-name (#PCDATA)>
<!ELEMENT cns-extended-attr (#PCDATA)>
<!ELEMENT cns-application-info (cns-application-name, cns-subject-mapping*,
application-container?)>
<!ELEMENT application-container (#PCDATA)>
<!-- This is an optional tag that specifies which container this object is to be added-->
<!ELEMENT cns-application-name (#PCDATA)>
<!ELEMENT cns-subject-mapping (cns-original-subject, cns-pub-mapping*, cns-sub-mapping*,
cns-pub-default, cns-sub-default, cns-extended-attr*)>
<!ELEMENT cns-original-subject (#PCDATA)>
<!ELEMENT cns-pub-mapping (#PCDATA)>
<!ELEMENT cns-sub-mapping (#PCDATA)>
<!ELEMENT cns-pub-default (#PCDATA)>
<!ELEMENT cns-sub-default (#PCDATA)>
<!ELEMENT cns-group-info (cns-group-name, cns-group-application-name*, cns-group-member*,
cns-extended-attr*, group-container?)>
<!ELEMENT group-container (#PCDATA)>
<!-- This is an optional tag that specifies which container this object is to be added-->
<!ELEMENT cns-group-name (#PCDATA)>
<!ELEMENT cns-group-application-name (#PCDATA)>
<!ELEMENT cns-group-member (#PCDATA)>
<!ATTLIST cns-group-application-name
    application-container CDATA #IMPLIED
>
<!ATTLIST cns-group-member
    device-container CDATA #IMPLIED
>
<!ATTLIST cns-extended-attr
    name CDATA #REQUIRED
>
```

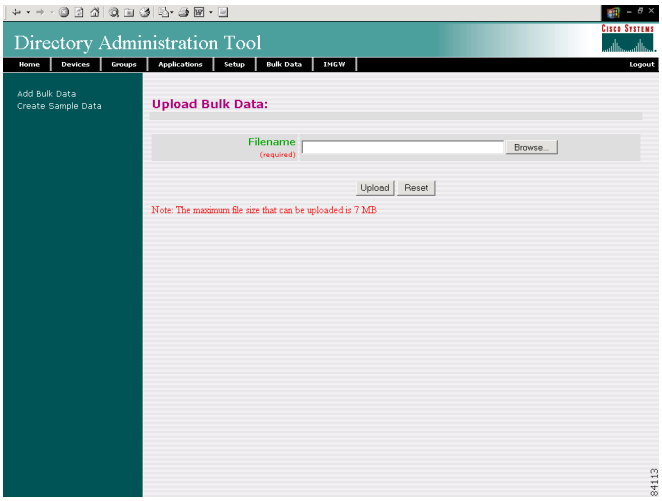
How to Upload Bulk Data

To upload bulk data to your system, follow these steps:

Step 1 From the Bulk Data main menu, click **Add Bulk Data**.

The Upload Bulk Data page appears (see Figure 5-42).

Figure 5-42 Upload Bulk Data



Step 2 If you know the filename of the data file you want to load, enter it in the **Filename** field, otherwise use the browse function.

Step 3 To use the browser to locate the filename of the data file you want to upload, click **Browse**.

Step 4 To clear your entry and start over, click **Reset**.

Step 5 To initiate the upload, click **Upload**.

Step 6 To return to the main menu, click the **Home** tab.

Command-Line Upload of Bulk Data

You can also upload the XML file to the directory using a command line utility as follows:

Step 1 FTP the bulk upload XML file to the */opt/CSCOdat/scripts/* directory on the CNS 2100 Series system.

Step 2 Login to the box using Telnet

Step 3 Go to: **/opt/CSCOdat/scripts/**

Step 4 Run the following command to invoke the bulk upload command line utility:

./upload.sh <*xml filename***>**

For example: **./upload.sh my_bulk_data.xml**

This uploads the data to the LDAP directory.

Creating Sample Data for Bulk Upload

Even though the DTD (see "XML DTD" section on page 5-35) outlines the structure of the input XML file, it does not convey the information about what values should be given for each tag. By looking at the sample data files (NSM and IMGW) in this section, you can get an idea of how the data should be arranged in the Bulk Upload XML file.

You can create sample data files for both NSM and IMGW devices.

NSM Data Sample

The following example shows an NSM data sample for bulk upload:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE cns-bulk-upload SYSTEM "BulkUpload.dtd">
<cns-bulk-upload stop-on-error="false">
    <cns-element-data>
        <NSM-DATA op-type="add" validate-data="false">
            <cns-device-container>
                <device-container-name>SampleSubDevices</device-container-name>
            </cns-device-container>
            <cns-device-container>
                <device-container-name>SubSubDevices</device-container-name>

<parent-container>ou=SampleSubDevices,ou=CNSDevices,ou=cns-pokhran4,o=infy,c=in</parent-co
ntainer>
            </cns-device-container>
            <cns-device-info>
                <cns-device-name>SampleDevice1</cns-device-name>
                <cns-extended-attr
name="IOSconfigtemplate">DemoRouter.cfgtpl</cns-extended-attr>
                <cns-extended-attr name="IOSConfigID">SampleDevice1</cns-extended-attr>
                <cns-extended-attr name="IOSEventID">SampleDevice1</cns-extended-attr>
            </cns-device-info>
            <cns-device-info>
                <cns-device-name>SampleDevice2</cns-device-name>
                <cns-extended-attr
name="IOSconfigtemplate">DemoRouter.cfgtpl</cns-extended-attr>
                <cns-extended-attr name="IOSConfigID">SampleDevice2</cns-extended-attr>
                <cns-extended-attr name="IOSEventID">SampleDevice2</cns-extended-attr>
            </cns-device-info>
            <cns-device-info>
                <cns-device-name>SampleDevice3</cns-device-name>
                <cns-extended-attr
name="IOSconfigtemplate">DemoRouter.cfgtpl</cns-extended-attr>
                <cns-extended-attr name="IOSConfigID">SampleDevice3</cns-extended-attr>
                <cns-extended-attr name="IOSEventID">SampleDevice3</cns-extended-attr>
            </cns-device-info>
            <cns-device-info>
                <cns-device-name>SampleDevice4</cns-device-name>
                <cns-extended-attr
name="IOSconfigtemplate">DemoRouter.cfgtpl</cns-extended-attr>
                <cns-extended-attr name="IOSConfigID">SampleDevice4</cns-extended-attr>
                <cns-extended-attr name="IOSEventID">SampleDevice4</cns-extended-attr>

<device-container>ou=SampleSubDevices,ou=CNSDevices,ou=cns-pokhran4,o=infy,c=in</device-co
ntainer>
            </cns-device-info>
            <cns-device-info>
                <cns-device-name>SampleDevice5</cns-device-name>
```

```
                <cns-extended-attr
name="IOSconfigtemplate">DemoRouter.cfgtpl</cns-extended-attr>
                <cns-extended-attr name="IOSConfigID">SampleDevice5</cns-extended-attr>
                <cns-extended-attr name="IOSEventID">SampleDevice5</cns-extended-attr>

<device-container>ou=SubSubDevices,ou=SampleSubDevices,ou=CNSDevices,ou=cns-pokhran4,o=inf
y,c=in</device-container>
            </cns-device-info>
            <cns-application-info>
                <cns-application-name>SampleTestApp</cns-application-name>
                <cns-subject-mapping>
                    <cns-original-subject>SampleTestApp.Event1</cns-original-subject>

<cns-pub-mapping>SampleTestApp.Event1.cns-pub-mapping</cns-pub-mapping>

<cns-sub-mapping>SampleTestApp.Event1.cns-sub-mapping</cns-sub-mapping>
                    <cns-pub-default>0</cns-pub-default>
                    <cns-sub-default>0</cns-sub-default>
                </cns-subject-mapping>
                <cns-subject-mapping>
                    <cns-original-subject>SampleTestApp.Event2</cns-original-subject>

<cns-pub-mapping>SampleTestApp.Event2.cns-pub-mapping</cns-pub-mapping>

<cns-sub-mapping>SampleTestApp.Event2.cns-sub-mapping</cns-sub-mapping>
                    <cns-pub-default>0</cns-pub-default>
                    <cns-sub-default>0</cns-sub-default>
                </cns-subject-mapping>
            </cns-application-info>
            <cns-group-info>
                <cns-group-name>SampleGroup1</cns-group-name>
                <cns-group-application-name>SampleTestApp</cns-group-application-name>
                <cns-group-member>SampleDevice1</cns-group-member>
                <cns-group-member>SampleDevice2</cns-group-member>
                <cns-group-member>SampleDevice3</cns-group-member>
            </cns-group-info>
            <cns-group-info>
                <cns-group-name>SampleGroup2</cns-group-name>
                <cns-group-application-name>SampleTestApp</cns-group-application-name>
                <cns-group-member>SampleDevice1</cns-group-member>
                <cns-group-member>SampleDevice2</cns-group-member>
                <cns-group-member>SampleDevice3</cns-group-member>
                <cns-group-member
device-container="ou=SampleSubDevices,ou=CNSDevices,ou=cns-pokhran4,o=infy,c=in">SampleDev
ice4</cns-group-member>
                <cns-group-member
device-container="ou=SubSubDevices,ou=SampleSubDevices,ou=CNSDevices,ou=cns-pokhran4,o=inf
y,c=in">SampleDevice5</cns-group-member>
            </cns-group-info>
        </NSM-DATA>
    </cns-element-data>
</cns-bulk-upload>
```

IMGW Data Sample

The following example shows an IMGW data sample for bulk upload:

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE cns-bulk-upload SYSTEM "BulkUpload.dtd">
<cns-bulk-upload stop-on-error="false">
    <cns-element-data>
        <IMGW-DATA op-type="add">
            <imgw-device>
                <device-id>SampleIMGWDevice1</device-id>
                <gateway-id>SampleIMGWGatewayID1</gateway-id>
            </imgw-device>
            <imgw-device>
                <device-id>SampleIMGWDevice2</device-id>
                <gateway-id>SampleIMGWGatewayID2</gateway-id>
                <hop-information>
                    <device-type>IOS_LOGIN</device-type>
                    <ip-address>0.0.0.0</ip-address>
                    <port>0000</port>
                    <username>Sampleusr2</username>
                    <password>Samplepwd2</password>
                </hop-information>
            </imgw-device>
            <imgw-device>
                <device-id>SampleIMGWDevice3</device-id>
                <gateway-id>SampleIMGWGatewayID3</gateway-id>
                <hop-information>
                    <device-type>IOS_LOGIN</device-type>
                    <ip-address>0.0.0.0</ip-address>
                    <port>0000</port>
                    <username>Sampleusr3</username>
                    <password>Samplepwd3</password>
                </hop-information>
                <hop-information>
                    <device-type>IOS_LOGIN</device-type>
                    <ip-address>0.0.0.0</ip-address>
                    <port>0000</port>
                    <username>Sampleuser3</username>
                    <password>Samplepasswd3</password>
                </hop-information>
            </imgw-device>
            <imgw-device>
                <device-id>SampleIMGWDevice4</device-id>
                <gateway-id>SampleIMGWGatewayID4</gateway-id>
                <hop-information>
                    <device-type>IOS_LOGIN</device-type>
                    <ip-address>0.0.0.0</ip-address>
                    <port>0000</port>
                    <username>Sampleusr4</username>
                    <password>Samplepwd4</password>
                </hop-information>
                <hop-information>
                    <device-type>IOS_LOGIN</device-type>
                    <ip-address>0.0.0.0</ip-address>
                    <port>0000</port>
                    <username>Sampleuser4</username>
                    <password>Samplepasswd4</password>
                </hop-information>
            </imgw-device>
            <imgw-device>
                <device-id>SampleIMGWDevice5</device-id>
                <gateway-id>SampleIMGWGatewayID5</gateway-id>
```

```
                    <hop-information>
                        <device-type>IOS_LOGIN</device-type>
                        <ip-address>0.0.0.0</ip-address>
                        <port>0000</port>
                        <username>Sampleusr5</username>
                        <password>Samplepwd5</password>
                    </hop-information>
                    <hop-information>
                        <device-type>IOS_LOGIN</device-type>
                        <ip-address>0.0.0.0</ip-address>
                        <port>0000</port>
                        <username>Sampleuser5</username>
                        <password>Samplepasswd5</password>
                    </hop-information>
                </imgw-device>
            </IMGW-DATA>
        </cns-element-data>
</cns-bulk-upload>
```

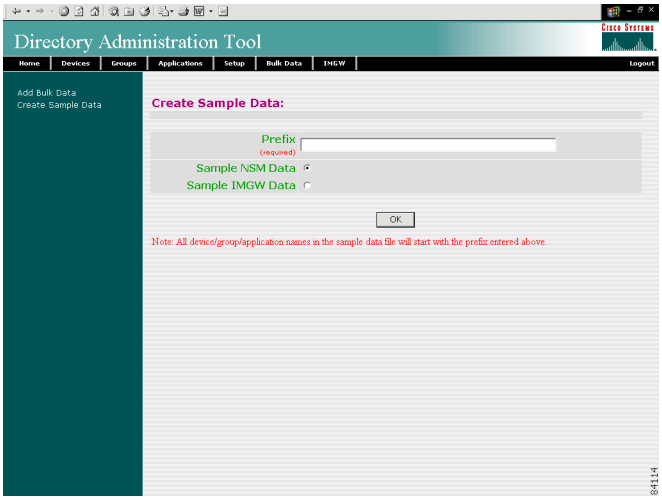
How to Create Sample Data for Bulk Upload

To create sample data on your system, follow these steps:

Step 1 From the Bulk Data main menu, click **Add Bulk Data**.

The Upload Bulk Data page appears (see Figure 5-43).

Figure 5-43 Create Sample Data



Step 2 Enter the prefix name for this sample in the **Prefix** field.

Step 3 Select whether this is for NSM or IMGW device.

Step 4 To create this sample, click **OK**.

Step 5 To return to the main menu, click the **Home** tab.

Updating Configurations for IMGW Devices

In order to modify configurations for IMGW devices, corresponding CNS devices with the same device names must be created in the Configure Registrar.

The steps for updating configurations for IMGW devices in the Configure Registrar are outlined as follows:

Step 1 Create a CNS device, making sure its device name is the same as that of its corresponding IMGW device (see "How to Add a Device" section on page 3-12).

Provide ConfigID, EventID, and a template file as the ConfigTemplate.

Note ConfigID must be the same as the device name.

Step 2 Create template file if it does not exist (see "Templates and Template Management" section on page 3-42).

Step 3 Edit template parameters for the device (see "How to Edit Device Templates" section on page 3-14).

Step 4 Preview the configuration for the device (see "How to View Device Configuration" section on page 3-11).

Step 5 Update the device configuration (see "How to Update a Device Configuration" section on page 3-16).

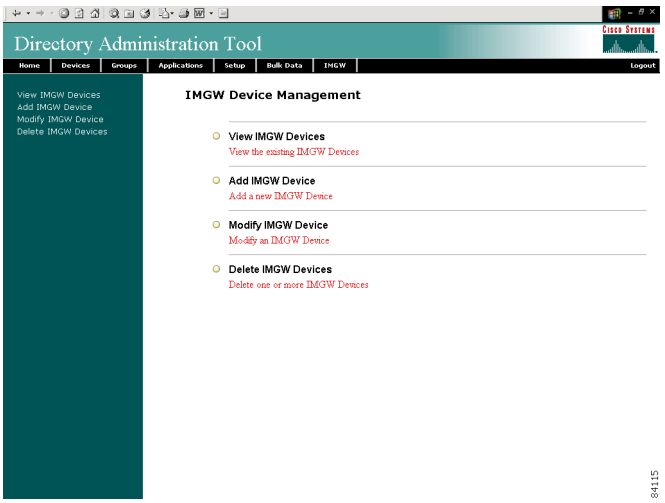
Check the response message returned by IMGW (see "How to View Log Files" section on page 3-36).

Managing IMGW Parameters

To manage IMGW parameters, from the main menu, click the **IMGW** tab.

The IMGW main menu appears (see Figure 5-44).

Figure 5-44 IMGW Device Management



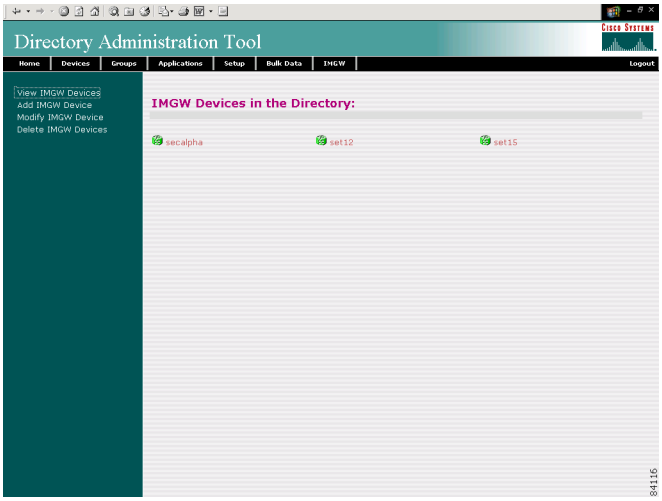
How to View IMGW Devices

To view IMGW devices in the system, click **View IMGW Devices**.

The IMGW Devices page appears (see Figure 5-45).

You can see the details of a particular device by clicking on the device icon.

Figure 5-45 IMGW Devices in the System



Adding IMGW Devices to the System

This section describes how to add IMGW devices to the system. However, before adding a device to IMGW, you should be familiar with hop tables.

Hop Tables

To access devices by means of Telnet, it is necessary to construct hop tables (see "HopInfo Examples" section on page 5-46). These are tables that indicate what network path exists to the device, as well as 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 log in 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 linecards 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 5-1 shows the fields in the HopInfo structure:

Table 5-1 HopInfo Structure

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

Currently Supported Device Types

Table 5-2 through Table 5-9 on page 5-45 provide the HopInfo list for devices that are directly accessible on the network by IMGW. For accessing devices by way of Commserver, see Table 5-10 on page 5-45.

All the rows in these tables are mandatory. Also, the device_type fields cannot be NULL or empty. The fields marked with **X** are mandatory in IMGW unless they are not required on the device-side.

Table 5-2 Cisco IOS Device Directly Connected

device_type	ip_address	port	username	password
IOS_LOGIN	X		X	X
IOS_EN			X	X

Table 5-3 Cisco IOS Device Directly Connected Supporting SSH

device_type	ip_address	port	username	password
IOS_LOGIN:SSH	X		X	X
IOS_EN			X	X

Table 5-4 Catalyst Device Directly Connected

device_type	ip_address	port	username	password
CATALYST_LOGIN	X		X	X
CATALYST_EN			X	X

Table 5-5 Catalyst IOS MSFC Blade Directly Connected

device_type	ip_address	port	username	password
CATALYST_LOGIN	X		X	X
IOS_CAT_BLADE		X	X	X
IOS_EN			X	X

Table 5-6 Catalyst IOS Device Directly Connected

device_type	ip_address	port	username	password
CATIOS_LOGIN	X		X	X
CATIOS_EN			X	X

Table 5-7 CSS Device Directly Connected

device_type	ip_address	port	username	password
CSS_LOGIN	X		X	X
CSS_EN			X	X

Table 5-8 CE Device Directly Connected

device_type	ip_address	port	username	password
CE_LOGIN	X		X	X
CE_EN			X	X

Table 5-9 PIX Device Directly Connected

device_type	ip_address	port	username	password
PIX_LOGIN	X		X	X
PIX_EN			X	X

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 5-10 Partial HopInfo List For Commserver Access

device_type	ip_address	port	username	password
COMMSERVER_LOGIN	X		X	X
COMMSERVER		X	///////////////	X

Note 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 5-11 Cisco IOS Device Directly Connected

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

Table 5-12 Cisco IOS Device Directly Connected Supporting SSH

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

Table 5-13 Cisco IOS Device Connected With Commserver

device_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 5-14 Catalyst IOS MFSC Blade Directly Connected

device_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 5-15 Catalyst IOS MFSC Blade Accessed With Commserver

device_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

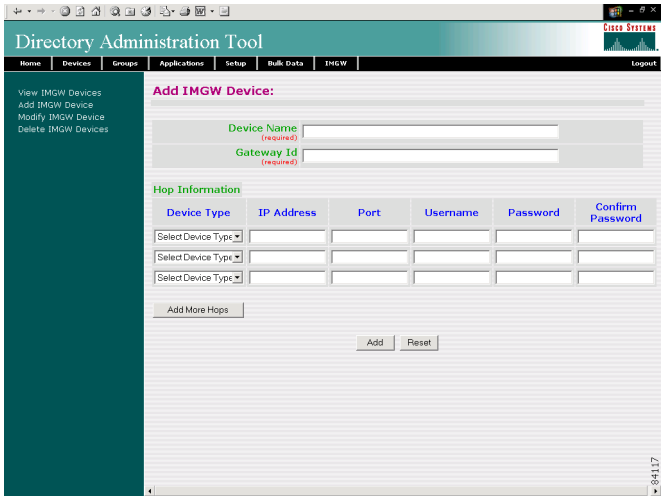
How to Add an IMGW Device

To add an IMGW device to the system, follow these steps:

Step 1 From the IMGW main menu, click **Add IMGW Device**.

The Add IMGW Device page appears (see Figure 5-46).

Figure 5-46 Add IMGW Devices



Step 2 Enter the name of the device in the **Device Name** field.

Step 3 Enter the gateway ID in the **Gateway Id** field.

Note The gateway ID for IMGW devices must be the same as that entered during **Setup** (see "Re-configure IMGW Parameters" section on page 2-9). By convention, hostname is used as the gateway ID.

Step 4 Enter parameters about each hop in the **Hop Information** fields.

For more information, see "Hop Tables" section on page 5-43.

Step 5 To add more hops, click **Add More Hops**.

Step 6 To clear your entries and start over, click **Reset**.

Step 7 To add this IMGW device to the system, click **Add**.

Step 8 To return to the main menu, click the **Home** tab.

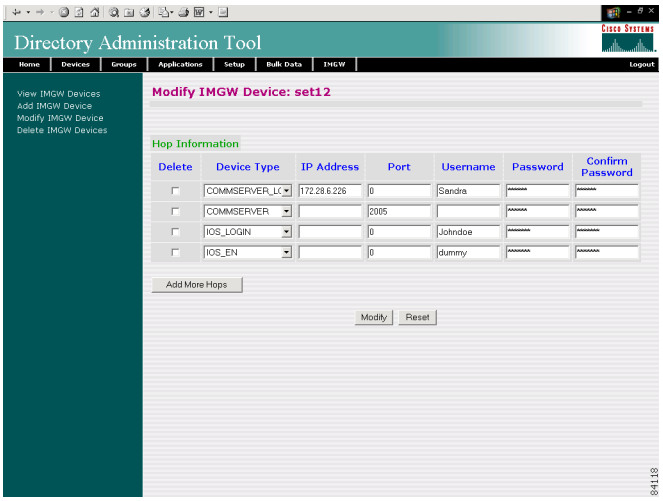
How to Modify IMGW Devices

To modify an IMGW device to the system, follow these steps:

Step 1 From the IMGW main menu, click **Modify IMGW Device**.

The Modify IMGW Device page appears (see Figure 5-47).

Figure 5-47 Add IMGW Devices



Step 2 Modify all required fields.

Step 3 To add more hops, click **Add More Hops**.

Step 4 To delete a hop, select the **Delete** check-box.

Step 5 To clear your entries and start over, click **Reset**.

Step 6 To apply these changes, click **Modify**.

Step 7 To return to the main menu, click the **Home** tab.

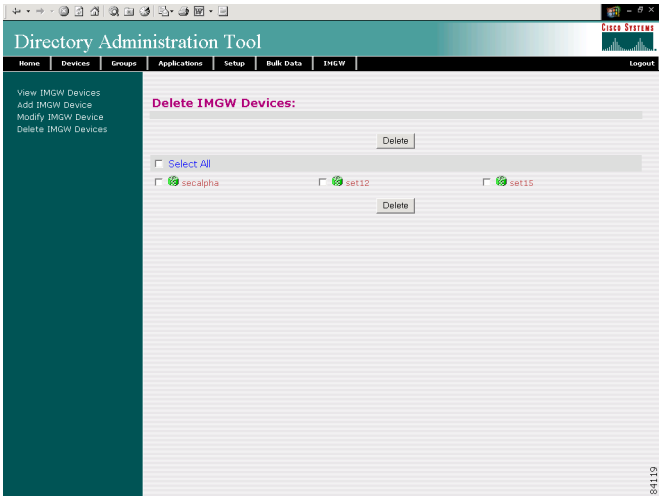
How to Delete IMGW Devices

To delete IMGW devices from the system, follow these steps:

Step 1 From the IMGW main menu, click **Delete IMGW Devices**.

The delete IMGW devices page appears (see Figure 5-48).

Figure 5-48 Delete IMGW Devices



Step 2 Check all IMGW devices you want to delete from the system.

Step 3 To delete these IMGW devices, click **Delete**.

To return to the main menu, click the **Home** tab.