



## Managing VLANs

This chapter describes the VLAN functionality supported by the Cisco 12000 Manager (C12kM) application and guides you through the process of creating and configuring VLAN objects. VLANs support logical grouping of network nodes to reduce broadcast traffic and allow more control in implementing security policies.

The main advantages of VLANs are efficient traffic separation and excellent bandwidth utilization. VLANs improve scaling by logically segmenting the physical LAN structure into sub-networks so that the packets are switched between ports within the same VLAN. This proves to be beneficial for security, broadcast containment, and accounting.

The C12kM facilitates the configuration of VLANs and also manages these VLANs that are provisioned from the EMS. C12kM also provides a synchronization facility so as to retrieve the VLAN information from the entire network.

This chapter provides the following information:

- [Launching the VLAN windows](#)
- [VLAN Synchronization](#)
- [VLAN Configuration](#)
- [VLAN Performance](#)
- [Reparenting VLANs and VLAN sub-interfaces](#)
- [Deleting VLAN objects](#)

### Launching the VLAN windows

[Table 13-1](#) displays each object type that can be used to open the C12kM windows that allow you to view performance, configuration, and synchronization of the VLAN objects. These windows have to be launched from the VLAN objects. For example, the VLAN Performance window can be launched from a Site, Shelf and Chassis, but cannot be launched from a module or an Interface object.

**Table 13-1** *Launching the VLAN Windows*

C12kM Window/Task	Objects (to select) to Open the Window					Menu Options to Select to Open Window
	Site	Shelf	Chassis	Module	Interface	
VLAN Performance	Yes	Yes	Yes	No	No	VLAN Performance
VLAN Configuration	Yes	Yes	No	No	No	VLAN Configuration

**Table 13-1** Launching the VLAN Windows

VLAN Synchronization	Yes	Yes	No	No	No	VLAN Synchronize
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## VLAN Synchronization

VLAN synchronization is provided to synchronize the EM with the VLAN information present in the network. The synchronization process gets the VLAN information from the devices in the network and all the previous VLAN information is lost. Once the VLAN synchronization is completed, all the VLAN objects and the sub-interfaces are deployed under a **DefaultDomain**. Refer “[VLAN View](#)” section on [page 2-11](#) for more details on domains.



**Note** It is recommended that synchronization should not to be performed at a time when there is heavy load on the system i.e., when all the chassis are in the performance logging state.

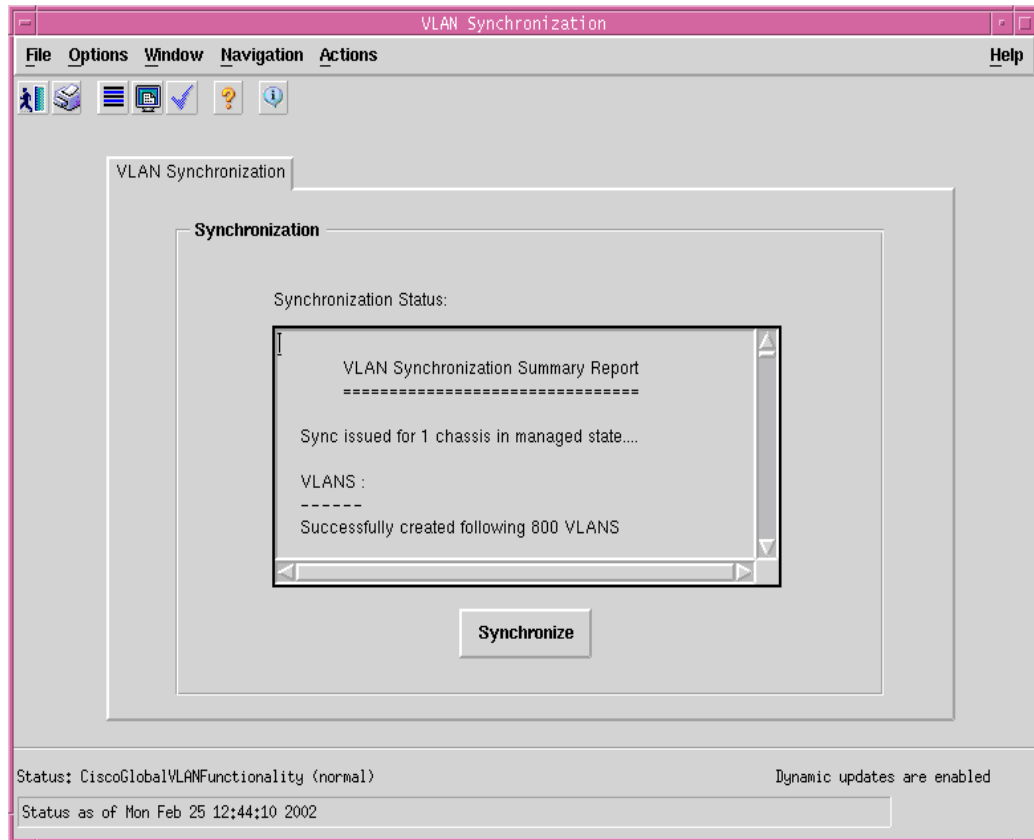


**Note** VLAN synchronization happens only on the chassis which are in a managed state i.e., normal or performance logging state.

To synchronize the VLAN objects, proceed as follows:

- Step 1** Right click (on a relevant object icon in the Map Viewer window or from an object pick list) and select the **VLAN Management>VLAN Synchronize** option. The VLAN synchronization dialog can be launched from the VLAN view or refer to [Table 13-1 on page 13-1](#) for information on which objects allow you to launch the VLAN Synchronize window.

Figure 13-1 VLAN Synchronize Window



- Step 2** Choose **Synchronize** to initiate the synchronization process. An Information window appears seeking confirmation whether to proceed with the synchronization or not

Figure 13-2 VLAN Synchronize -



- Step 3** Click **Yes** to continue with synchronization.

**Caution**

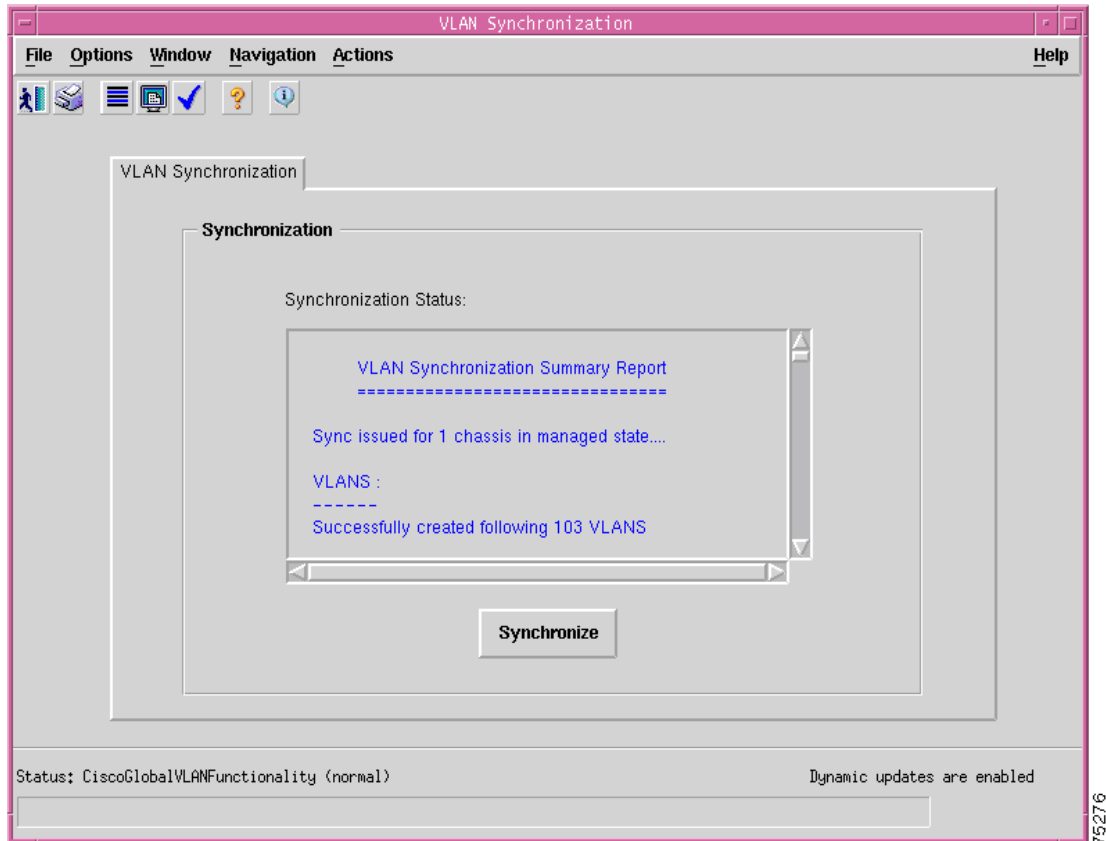
Choosing **Yes**, initiates the VLAN synchronization process and all the previous performance data and the information related to the VLAN objects is lost.

- Step 4** The status of the synchronization process is displayed in the **Synchronization Status** frame in the VLAN Synchronization window.



**Note** All the sub-interface objects are created under the VLAN objects which in turn are created under the DefaultDomain in the VLAN view.

**Figure 13-3 VLAN Synchronize - Status Window**



## Deploying VLAN objects

C12kM provides deployment wizard dialogs to deploy a Domain, VLAN and a VLAN sub-interface. All the VLAN related objects are displayed in the VLAN view. Refer [“VLAN View” section on page 2-11](#) for more details on VLAN view. A domain is deployed independent of any object. Deploying a VLAN object, typically involves the following steps:

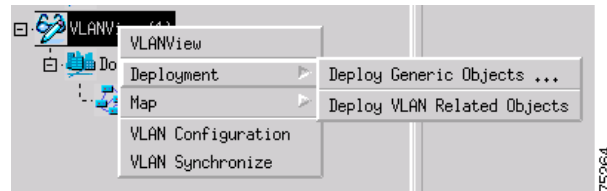
- [Deploying a Domain](#)
- [Deploying a VLAN and a sub-interface object](#)

## Deploying a Domain

To deploy a domain, proceed as follows:

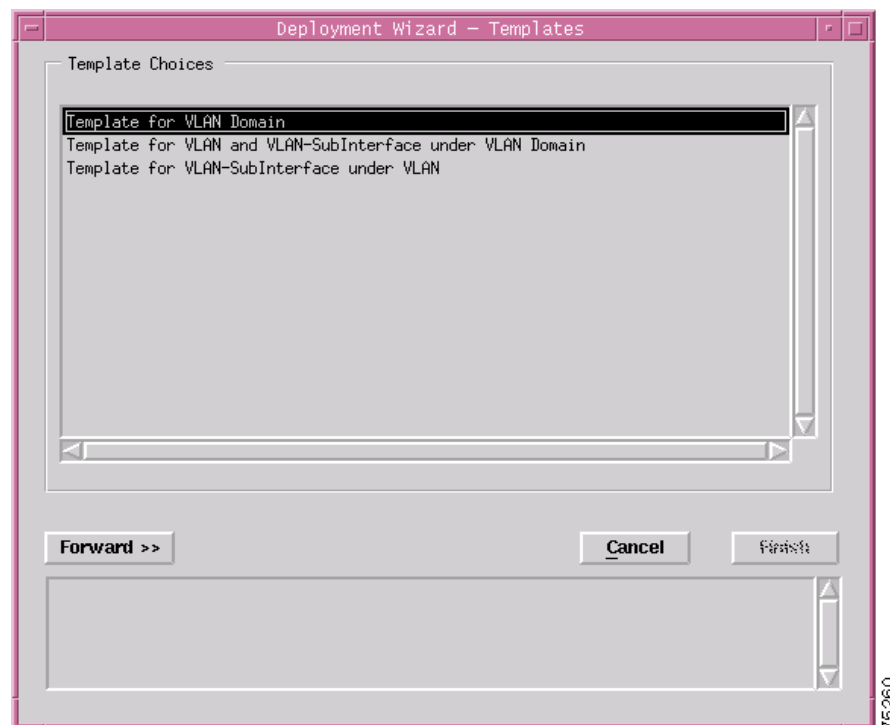
- Step 1** Place the cursor over a relevant object to determine the objects you can deploy in the VLAN view.
- Step 2** Click and hold down the right mouse button.
- Step 3** Select the **Deployment>Deploy VLAN Related Objects** option.

**Figure 13-4** Deploying a VLAN object

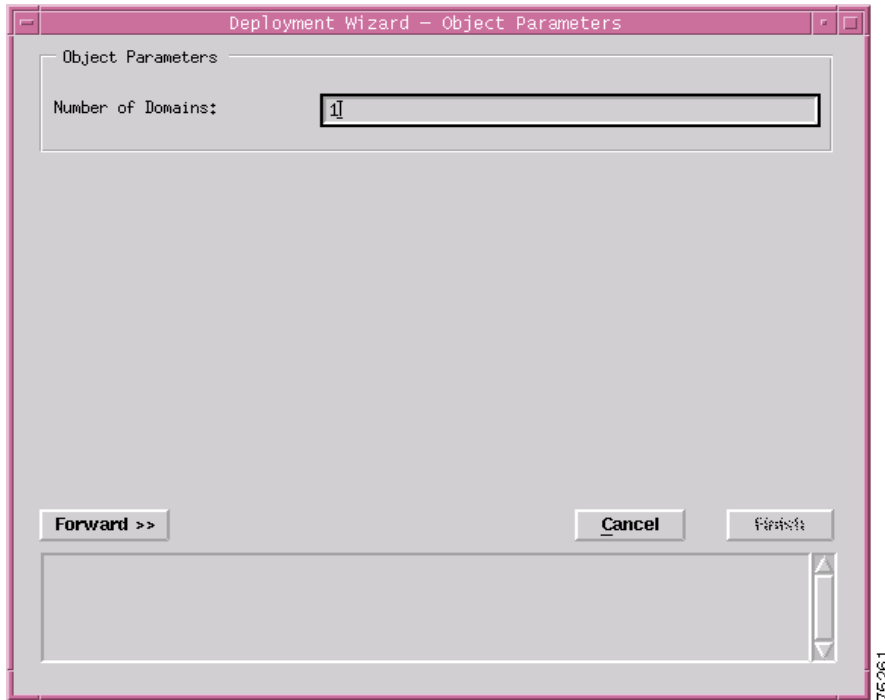


The Deployment Wizard - Templates window appears (see [Figure 13-5](#)) displaying a list of available VLAN object deployment profiles. Deployment profiles are templates that prompt you for the appropriate information required to deploy the selected object successfully.

**Figure 13-5** Deployment Wizard - Templates Window

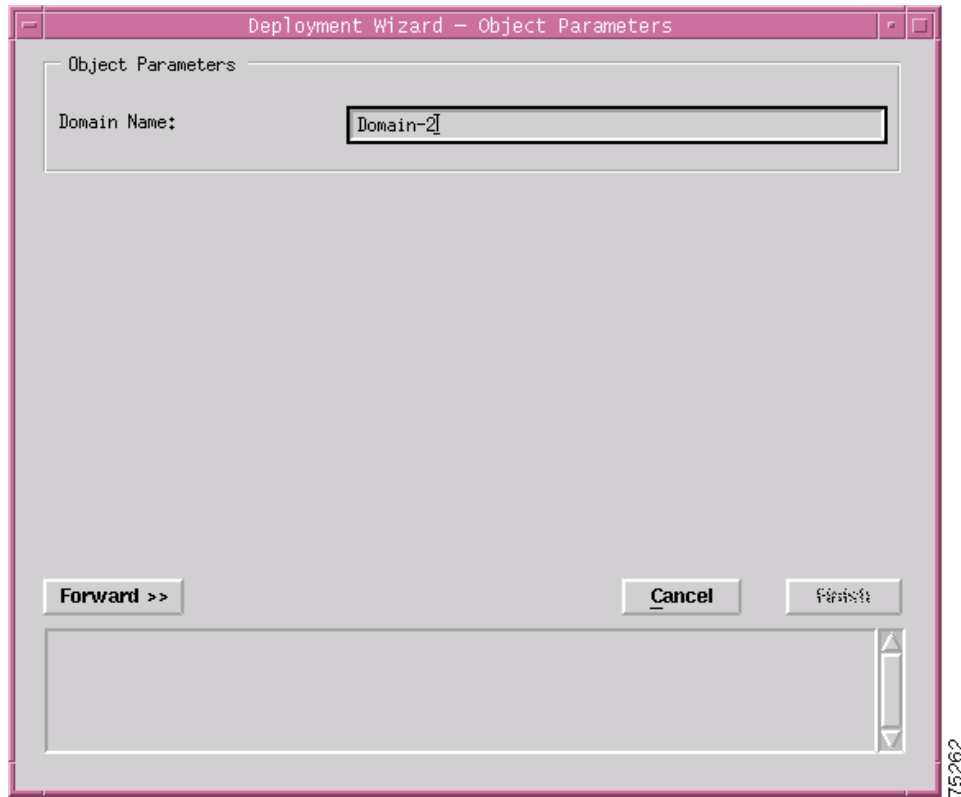


- Step 4** Select the deployment profile **Template for VLAN domain** to deploy a Domain (shown in [Figure 13-6](#)).
- Step 5** Choose **Forward**.

**Figure 13-6** Deployment Wizard - Object Parameters Window

**Step 6** Enter the number of **Domain** required. A single domain was entered in this example.

**Step 7** Choose **Forward**.

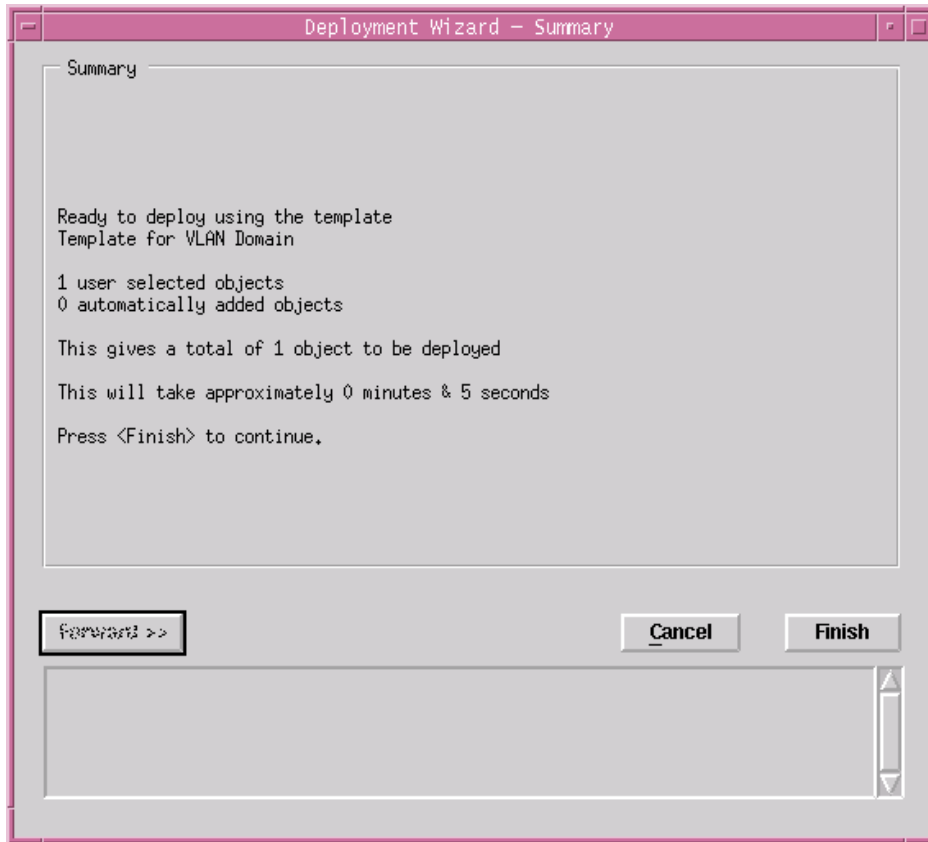
**Figure 13-7** Deployment Wizard - Object Parameters Window

**Step 8** Enter a **Domain** name. Each Domain must have a unique name. In this example the domain is called Domain-1.

**Step 9** Choose **Forward**.

The Deployment - Wizard Summary window appears. The Summary window provides details of the object you are about to deploy.

Figure 13-8 Deployment Wizard - Summary



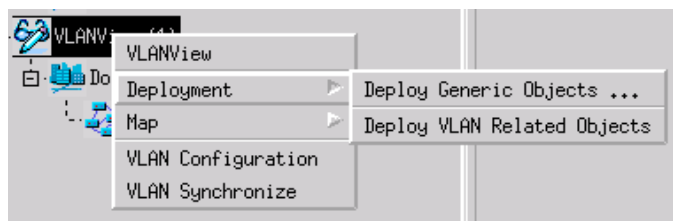
- Step 10** Choose Finish (when the Deployment Summary information is displayed) to complete deployment and close the Deployment Wizard - Summary window. The new domain object (that is, Domain-1) is created and displayed in the Map Viewer window under the VLAN view.

## Deploying a VLAN and a sub-interface object

To deploy a VLAN object and a VLAN sub-interface object from a domain, proceed as follows:

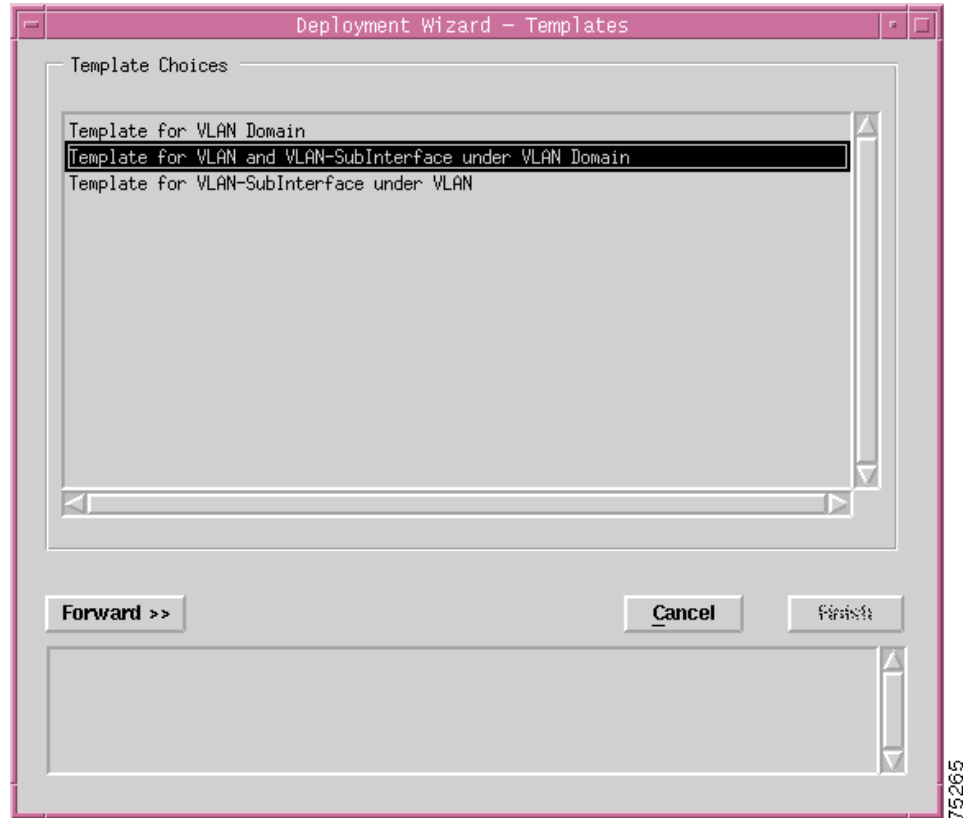
- Step 1** Place the cursor over a relevant object to determine the objects you can deploy in the VLAN view.
- Step 2** Click and hold down the right mouse button.
- Step 3** Select the **Deployment>Deploy VLAN Related Objects** option.

Figure 13-9 Deploying a VLAN object



The Deployment Wizard - Templates window appears (see [Figure 13-5](#)) displaying a list of available VLAN object deployment profiles.

**Figure 13-10 Deployment Wizard - Templates Window**

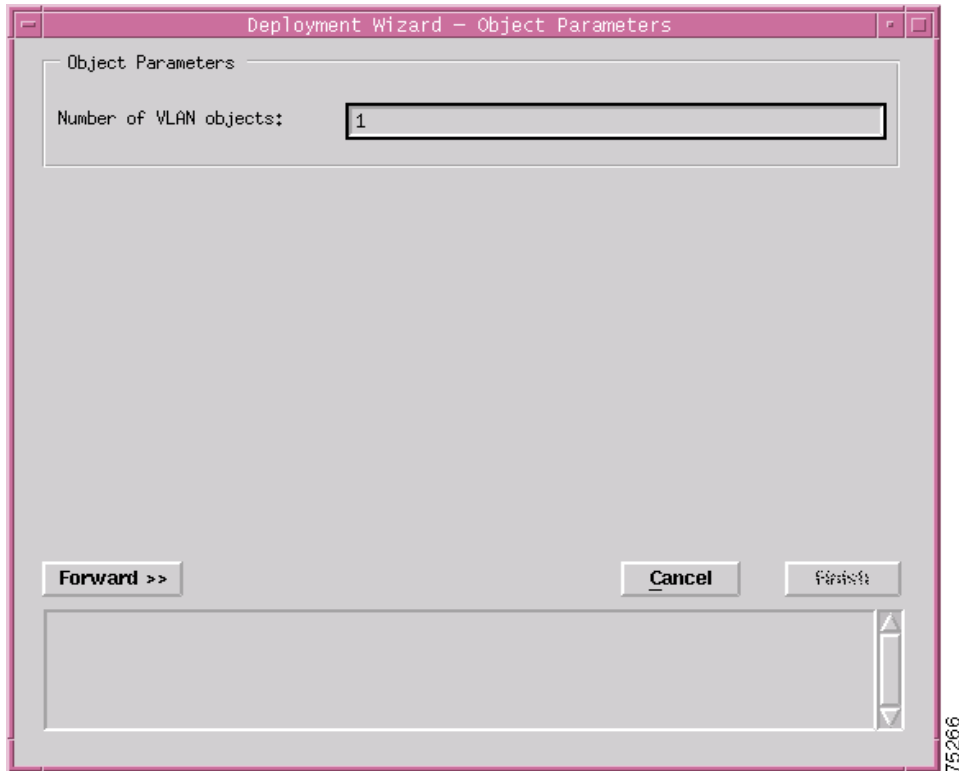


- Step 4** Select the deployment profile **Template for VLAN and VLAN-SubInterface under VLAN Domain** to deploy a VLAN object (shown in [Figure 13-6](#)).



**Note** You can deploy a sub-interface under a VLAN object by using the **Template for VLAN SubInterface under VLAN** as shown in [Figure 13-10](#) on page 13-9.

- Step 5** Choose **Forward**.

**Figure 13-11** Deployment Wizard - Object Parameters Window

- Step 6** Enter the number of **VLAN objects** required to be deployed. A single VLAN object was entered in this example.
- Step 7** Choose **Forward**.

**Figure 13-12** Deployment Wizard - Object Parameters Window

Deployment Wizard - Object Parameters

Object Parameters

VLAN number(1-4095): 1000

Number of SubInterface objects: 1

Forward >> Cancel Finish

75267

- Step 8** Enter the **VLAN number**. The VLAN number should be in the range of 1 to 4095.
- Step 9** Enter the number of SubInterface objects that should be deployed under the VLAN object.
- Step 10** Choose **Forward**.

Figure 13-13 Deployment Wizard - Object Parameters

Deployment Wizard - Object Parameters

Object Parameters

IP Address of the sub-interface: 0 0 0 0

Subnet Mask of the sub-interface: 255 0 0 0

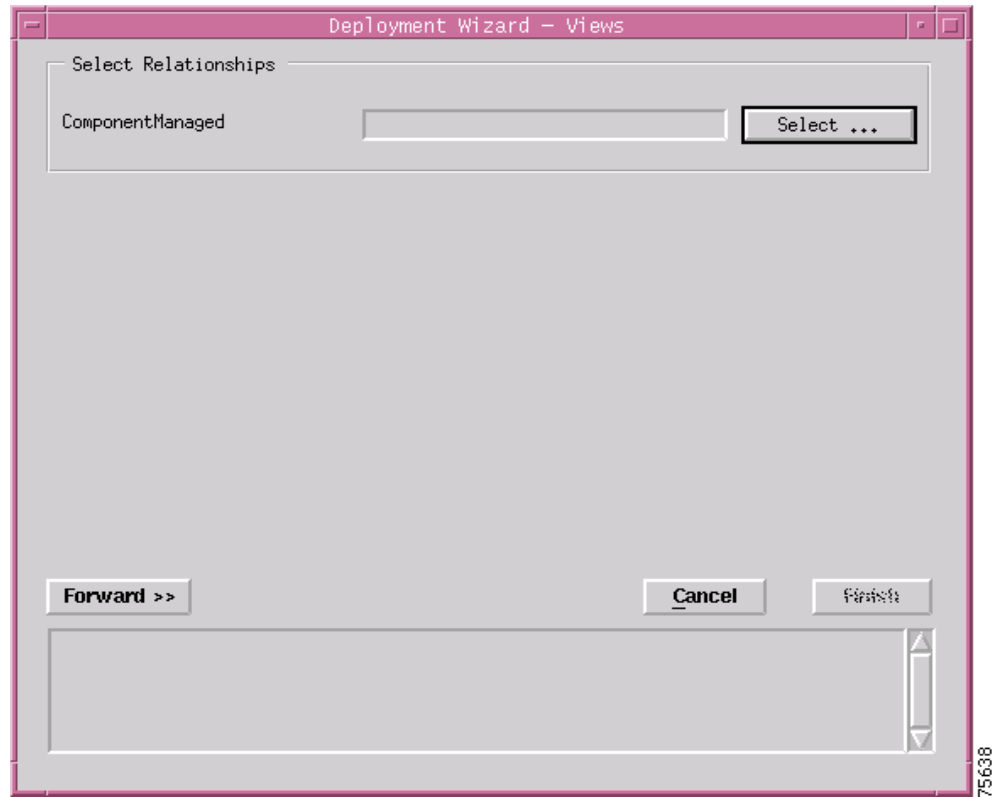
SubInterface Number (1-2147483647): 12452

Forward >> Cancel Finish

75268

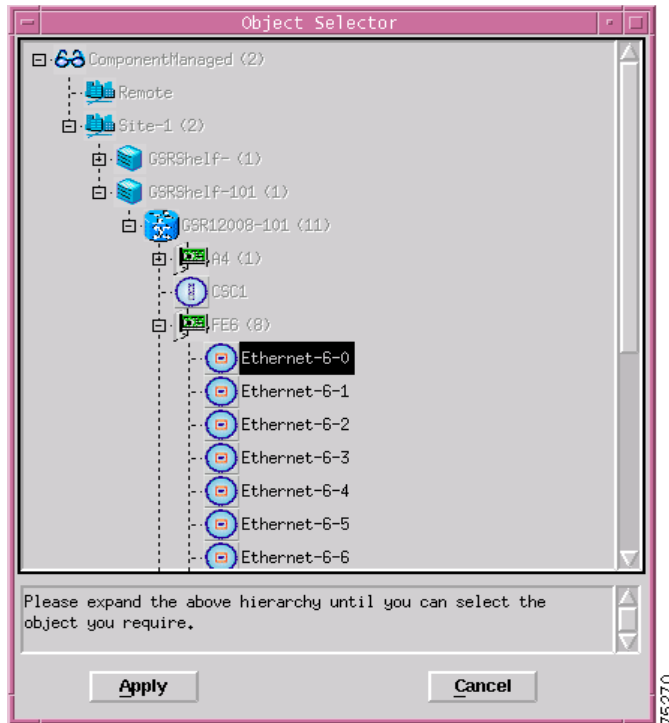
- Step 11** Enter the IP address of the sub-interface to be deployed under the VLAN object.
- Step 12** Enter the subnet mask of the sub-interface.
- Step 13** Enter the sub-interface number. The number can range between 1 to 2147483647.
- Step 14** Choose **Forward**.

Figure 13-14 Deployment Wizard - Views



**Step 15** Choose **Select**. An Object Selector window appears.

Figure 13-15 Object Selector Window

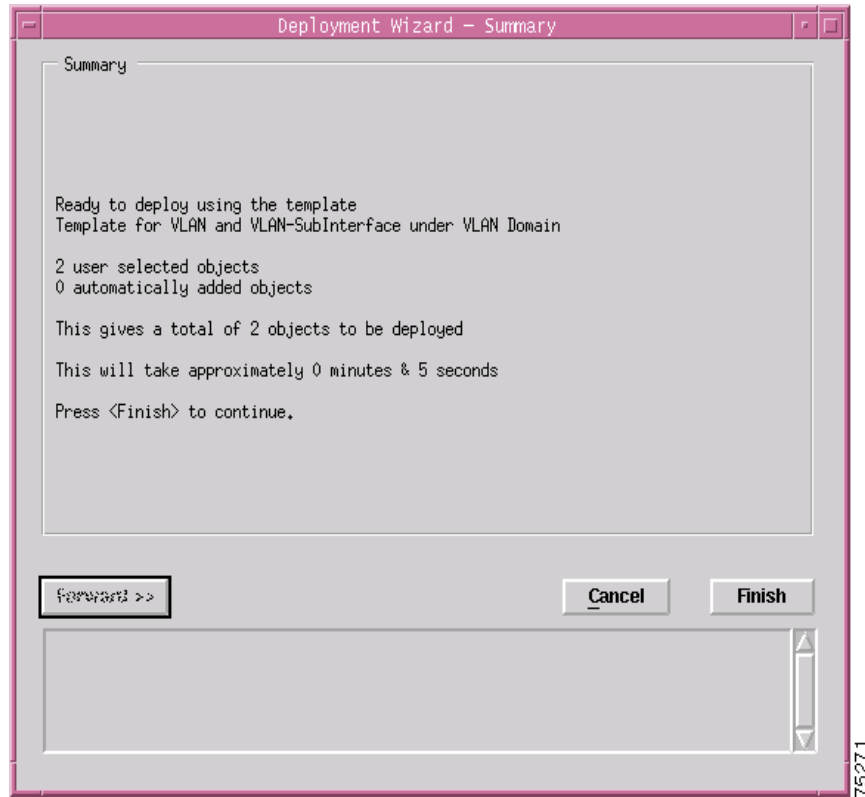


**Step 16** Navigate down the hierarchy until you find the domain you wish to deploy the VLAN object under. Click on the object, then click **Apply**. You are returned to the window (Figure 13-12 on page 13-11).

**Step 17** Choose **Forward** in (Figure 13-12 on page 13-11)

The Deployment - Wizard Summary window appears. The Summary window provides details of the object you are about to deploy.

Figure 13-16 Deployment Wizard - Summary

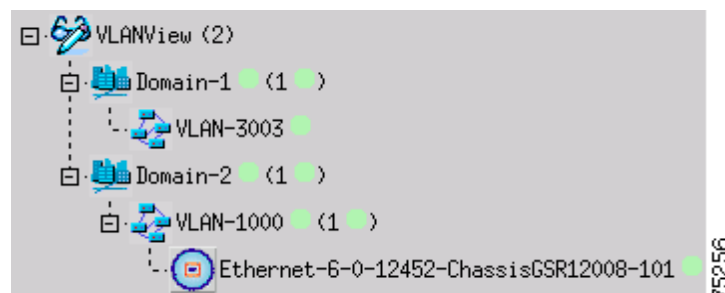


- Step 18** Choose **Finish** (when the Deployment Summary information is displayed) to complete deployment and close the Deployment Wizard - Summary window. The new VLAN object and the sub-interface object is created and displayed in the Map Viewer window.



**Note** For managing sub-interface objects, use the same dialogs as those for the interfaces.

Figure 13-17 Example showing the newly deployed Domain, VLAN and Sub-interface



# VLAN Configuration

The Configuration window allows you to commission or decommission any VLAN objects in a specific domain. It also allows the performance logging to be enabled/disabled for the sub-interfaces under a VLAN object. All the state changes ripple down to the sub-interface child objects.

The VLAN Configuration section provides the following information:

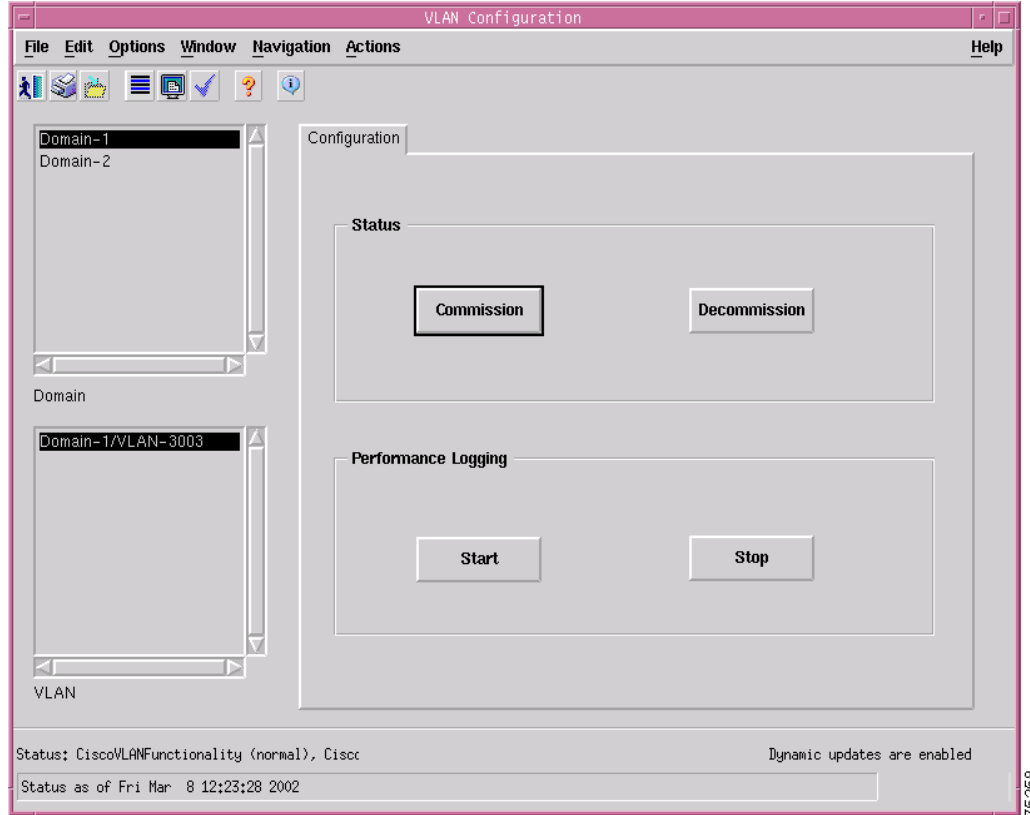
- [Viewing the VLAN Configuration Window](#)
- [Commissioning a VLAN](#)
- [Decommissioning a VLAN](#)
- [Start Performance Logging](#)
- [Stop Performance Logging](#)
- [VLAN Configuration Window—Detailed Description](#)

## Viewing the VLAN Configuration Window

To view the VLAN Configuration window, proceed as follows:

- 
- Step 1** Right click (on a relevant object icon in the Map Viewer window or from an object pick list) and select the **VLAN Management>VLAN Configuration** option. Refer to [Table 13-1 on page 13-1](#) for information on which objects allow you to launch the VLAN Configuration window. The VLAN Configuration window appears with the Configuration tab displayed:

Figure 13-18 VLAN Configuration Window



**Step 2** Choose a **Domain** and **VLAN** from the list boxes displayed at the left of the window.

## Commissioning a VLAN

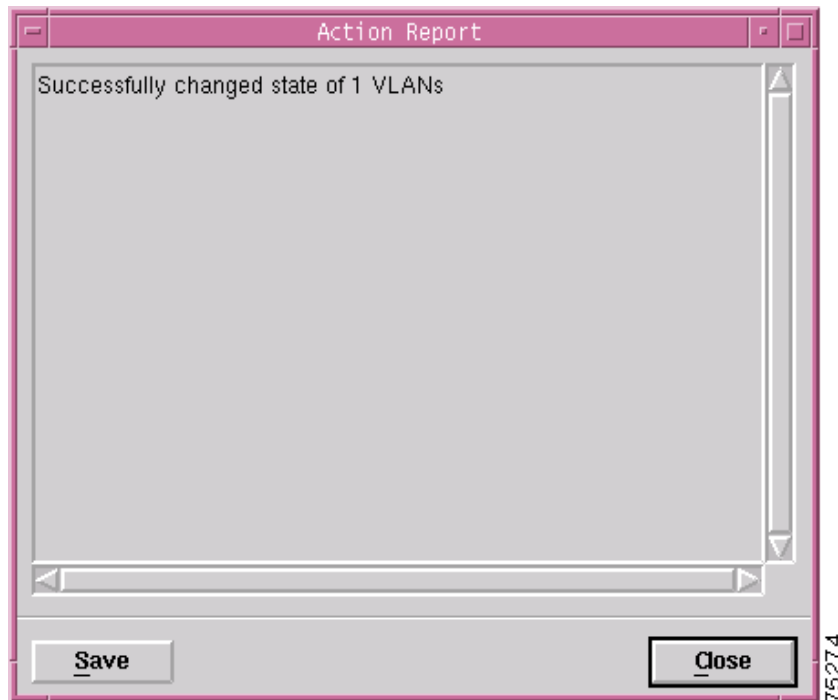


### Note

You can select multiple VLANs (from the VLAN object selector list) which allows you to commission all of the selected VLANs simultaneously. You can choose multiple VLANs in a list by holding down the Shift key and then selecting the first and last VLAN in the list. You can choose multiple individual VLANs by holding down the Ctrl key and clicking on the individual VLANs.

To commission a VLAN, proceed as follows:

- Step 1** Open the VLAN Configuration window. Refer to the [“Viewing the VLAN Configuration Window” section on page 13-16](#) for further details.
- Step 2** Choose a **Domain** and **VLAN** from the list boxes displayed at the left of the window.
- Step 3** Choose **Commission** to commission the selected VLAN. An Action Report window appears confirming that the commissioning action was completed successfully.

**Figure 13-19 Action Report Window**

- Step 4** Choose **Close** to close the Action Report window.
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## Decommissioning a VLAN



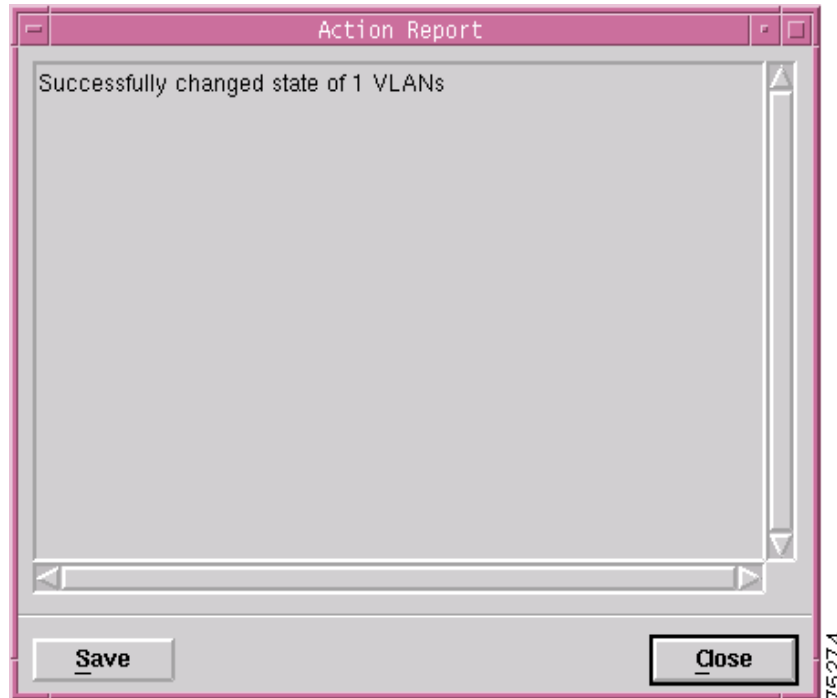
**Note** You can select multiple VLANs (from the VLAN object selector list) which allows you to decommission all of the selected VLANs simultaneously. You can choose multiple VLANs in a list by holding down the Shift key and then selecting the first and last VLAN in the list. You can choose multiple individual VLANs by holding down the Ctrl key and clicking on the individual VLANs.

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To decommission a VLAN, proceed as follows:

- Step 1** Open the VLAN Configuration window. Refer to the [“Viewing the VLAN Configuration Window”](#) section on page 13-16 for further details.
- Step 2** Choose a **Domain** and **VLAN** from the list boxes displayed at the left of the window.
- Step 3** Choose **Decommission** to decommission the selected VLAN. An Action Report window appears confirming that the decommissioning action was completed successfully.

Figure 13-20 Action Report Window



- Step 4** Choose **Close** to close the Action Report window.

## Start Performance Logging



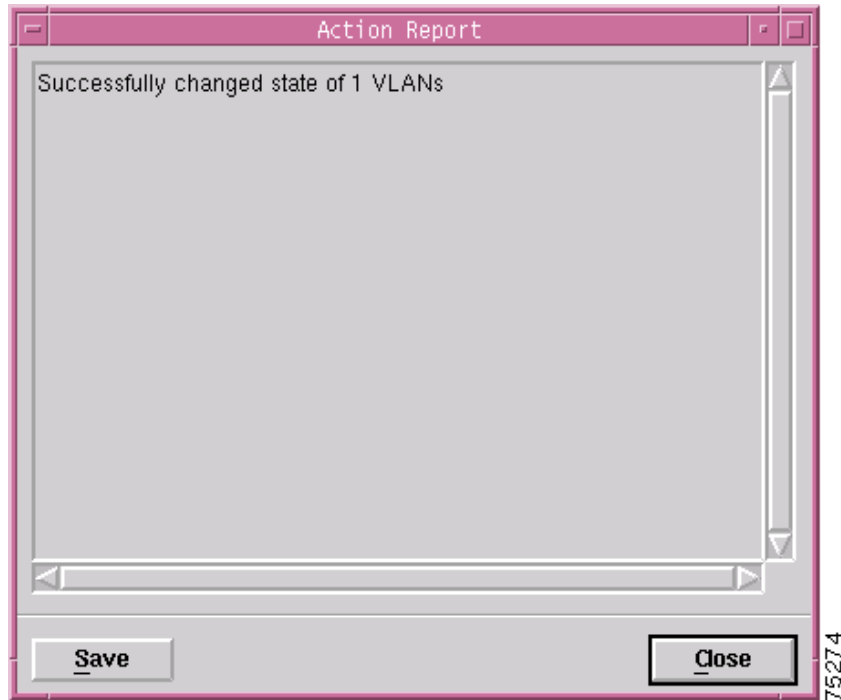
**Note** You can select multiple VLANs (from the VLAN object selector list) which allows you to start performance logging on all the selected VLANs simultaneously. You can choose multiple VLANs in a list by holding down the Shift key and then selecting the first and last VLAN in the list. You can choose multiple individual VLANs by holding down the Ctrl key and clicking on the individual VLANs.

To start performance logging, proceed as follows:

- Step 1** Open the VLAN Configuration window. Refer to the [“Viewing the VLAN Configuration Window” section on page 13-16](#) for further details.
- Step 2** Choose a **Domain** and **VLAN** from the list boxes displayed at the left of the window.
- Step 3** Choose **Start** to start performance polling on the VLAN. An Action Report window appears confirming that the state of the VLAN object was successfully changed.



**Note** There is no performance data gathered on the VLANs but all the sub-interfaces under the VLAN move to the performance logging state and the performance data is gathered for the sub-interfaces.

**Figure 13-21 Action Report Window**

- Step 4** Choose **Close** to close the Action Report window.
- 

## Stop Performance Logging



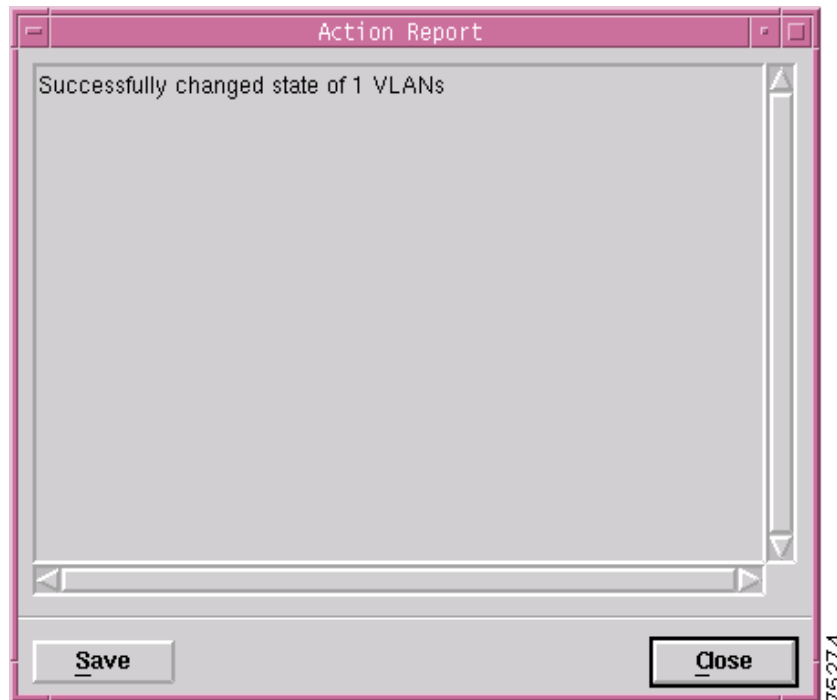
**Note** You can select multiple VLANs (from the VLAN object selector list) which allows you to stop performance logging on all the selected VLANs simultaneously. You can choose multiple VLANs in a list by holding down the Shift key and then selecting the first and last VLAN in the list. You can choose multiple individual VLANs by holding down the Ctrl key and clicking on the individual VLANs.

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To stop performance logging, proceed as follows:

- Step 1** Open the VLAN Configuration window. Refer to the [“Viewing the VLAN Configuration Window”](#) section on page 13-16 for further details.
- Step 2** Choose a **Domain** and **VLAN** from the list boxes displayed at the left of the window.
- Step 3** Choose **Stop** to stop the performance polling on the VLAN. An Action Report window appears confirming that the state of the VLAN object was successfully changed.

Figure 13-22 Action Report Window



**Step 4** Choose **Close** to close the Action Report window.

## VLAN Configuration Window—Detailed Description

The VLAN Configuration window displays a single Configuration tab.

### Configuration Tab

The Configuration tab (see [Figure 13-18 on page 13-17](#)) displays two frames: Status and Performance Logging.

#### Status

The Status frame contains two action buttons:

**Commission**—Commissions the selected VLAN.

**Decommission**—Decommissions the selected VLAN.

#### Performance Logging

The Performance Logging frame contains two action buttons:

**Start**—Starts the performance polling for the selected VLAN.

**Stop**—Stops the performance polling for the selected VLAN.

# VLAN Performance

The VLAN Performance window displays the current performance information for all the VLANs on a selected chassis. Performance polling is not done on a VLAN object, instead, when a VLAN object is moved to the performance polling state, all the child sub-interfaces are also moved into the performance polling state.

The VLAN Performance section provides the following information:

- [Viewing the VLAN Performance Window](#)
- [VLAN Performance Window—Detailed Description.](#)

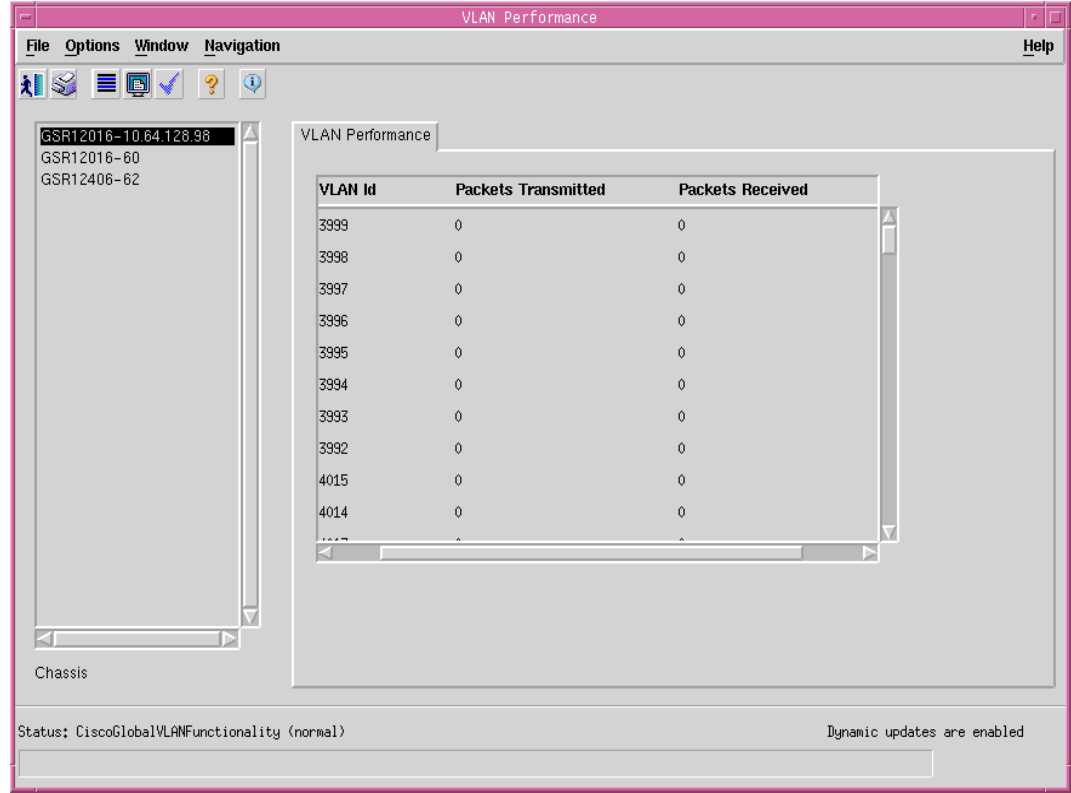
## Viewing the VLAN Performance Window

The VLAN performance data is available on a per chassis basis and the performance data is received directly from the device. The VLAN performance window displays the statistics for all the VLANs configured on a selected chassis.

To view the VLAN Performance window, proceed as follows:

- 
- Step 1** Right click (on a relevant object icon in the Map Viewer window or from an object pick list) and select the **VLAN Management>VLAN Performance** option. Refer to [Table 13-1 on page 13-1](#) for information on which objects allow you to launch the VLAN Performance window. The VLAN Performance window appears, with the **VLAN Performance** tab displayed:

Figure 13-23 VLAN Performance Window



- Step 2** Choose a **Chassis** from the list box displayed at the left of the window. The performance information for the selected chassis is displayed.

## VLAN Performance Window—Detailed Description.

The VLAN Performance window (see [Figure 13-23 on page 13-23](#)) displays a single VLAN Performance tab. The VLAN Performance tab has a single tabular frame with the following fields:

VLAN Id—Identifier for the VLAN object.

Packets transmitted—The number of packets transmitted by this VLAN.

Packets Received—The number of packets received by this VLAN.

## Reparenting VLANs and VLAN sub-interfaces

After the VLAN synchronization process is completed, all the VLAN objects and their corresponding sub-interface objects are placed under a single domain called the DefaultDomain. Reparenting allows you to relocate a VLAN object under a domain or a sub-interface object under a VLAN as per the requirements.

Reparenting is basically used to relocate the VLAN and sub-interface objects under different domains after synchronization.

**Note**

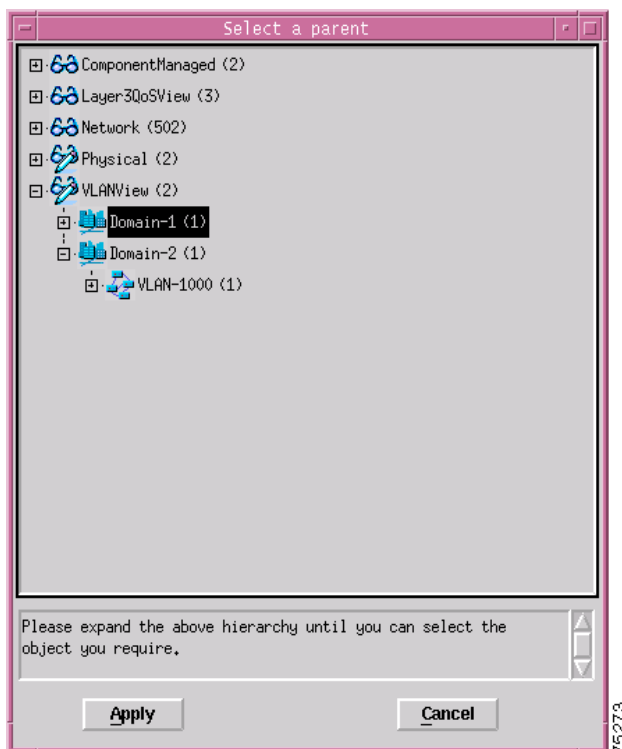
To reparent a sub-interface object under a VLAN, it is mandatory that the object id of the parent VLAN object should be identical. The VLAN object must be placed under a different domain.

For example: Say, you have deployed two domains, D1 and D2. D1 has a VLAN object V1 with sub-interface E1 placed under it and D2 has a VLAN object V2. It will not be possible to place E1 from domain D1 under V2 in domain D2 as the VLAN ids of the VLAN objects are different. But, if a VLAN object is deployed in D2 having id as V1, it would be possible for you to place sub-interface object E1 under V1 in domain D2.

To reparent a VLAN object, proceed as follows:

- Step 1** Right click (on a relevant object icon in the Map Viewer window or from an object pick list) and select the **View Manipulation>Reparent Object(s)...** option. The Reparent dialog can be launched from a VLAN or sub-interface object.

**Figure 13-24 VLAN - Reparent Objects Window**



- Step 2** Select a parent object from the list of VLAN objects displayed under the specific domain in the VLAN view.
- Step 3** Choose **Apply**.

# Deleting VLAN objects

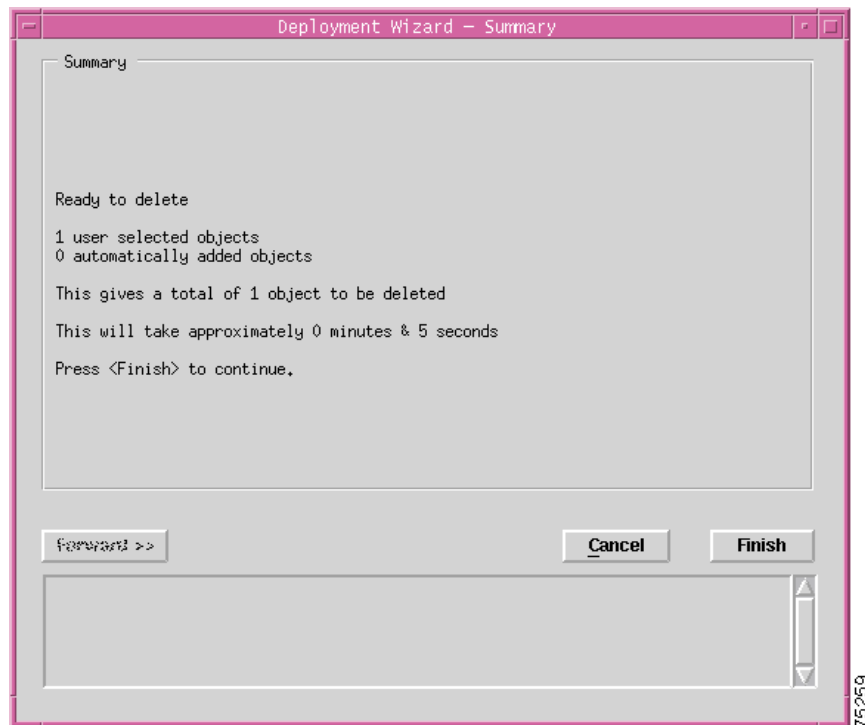


**Note** A VLAN or sub-interface object can be deleted only if it is in the decommissioned state.

To delete an existing VLAN or a sub-interface object, proceed as follows:

- Step 1** Choose the VLAN objects you wish to delete within the VLAN view. Refer to the [“VLAN View” section on page 2-11](#) for details of the VLAN view.
- Step 2** Choose **Deployment>Delete Objects**. The Deployment Wizard appears with a summary of what will be deleted.

**Figure 13-25**



- Step 3** Choose **Finish**, and the VLAN object is deleted. If deletion fails, another interface might be currently using the VLAN object, therefore you cannot delete the object.



**Note** Similarly, a domain can be deleted provided the VLAN and sub-interface objects are decommissioned.

