Deploying the C65/76M

This chapter describes how to deploy the Cisco 6500/7600 Series Manager, and consists of these sections:

Managing a Catalyst 6000 Family Switch or a Cisco 7600 Series Internet Router

Managing a Catalyst 6000 family switch or a Cisco 7600 series Internet Router using CEMF is a two-step process:

1. Deploy objects that need to be managed.

   C65/76M objects can be discovered automatically or deployed manually.

2. Commission the objects to allow CEMF to manage them.

Deploying Objects

The deployment process should be done after you install the C65/76M software for the first time, or after you install new hardware. Deployment informs the C65/76M of the presence of supported hardware.

The C65/76M objects can be automatically discovered or manually deployed. Objects can also be predeployed in CEMF before the actual installation of a Catalyst 6000 family switch or a Cisco 7600 series Internet Router in the field.

Predeployment is the process of reserving a space in CEMF for network equipment, which has not yet been physically slotted into the system rack. When an object or device is predeployed, the physical device or object is not present, but CEMF has been preconfigured to hold an object of similar type. As a result, C65/76M module objects can be deployed and the C65/76M will not monitor their status. When a module is then placed in the physical equipment, the new module will be automatically detected and management of the module will be automatically started.

C65/76M Object Hierarchy

A fully deployed C65/76M object in CEMF has the following object hierarchy:

```
Network Element
    Chassis
        Power Supplies
        Supervisor Modules
            Ethernet Interfaces
        Ethernet Modules
            Ethernet Interfaces
        Switch Fabric Modules
        FlexWAN Modules
            Port Adapter
            ATM Port Adapter
                ATM SONET Interfaces
                ATM E3 Interfaces
                ATM T3 Interfaces
        OSM GeWAN Modules
            OSM GeWAN Interfaces
        OSM PoS Modules
            Ethernet Interfaces
            OSM PoS Interfaces
        OSM Channelized SONET Modules
            Ethernet Interfaces
            OSM Channelized SONET Interfaces
                OSM Serial Sub-interfaces
                OSM PoS Sub-interfaces
        Content Switching Modules
    Software
        EtherChannels
        Syslog
        EIGRP
        BGP
        OSPF
        VTP
        VLAN
        STP
        IS-IS
        ACL
        NDE
        Loopback
        QoS
            QoS Policy Map
```

The top-level Network Element object represents the entire switch including the physical and logical components of the switch. The Chassis object, which is a child of the Network Element object, represents all the physical components of the switch. For example, the chassis frame, power supplies, modules, and ports are all represented under the Chassis object. The Software object, which is a peer of the Chassis object, represents all the logical components of the switch. For example, VLAN configurations, EtherChannels, and routing protocols are represented under the Software object.

Note The software object and its children are available only under the Catalyst6000Manager, Catalyst6500Manager, and Cisco7600Manager containment views.

Commissioning Objects

Commissioning is the action required to notify CEMF to start actively monitoring the object. Only the following C65/76M objects can be commissioned and decommissioned by the user:

- Network Element
- Supervisor Module
- Ethernet Module
- Switch Fabric Module
- FlexWAN Module
- Content Switching Module
- Port Adapter
- OSM Module

When applied to these objects, the commissioning process is propagated down to all the object's children. For example, if the Network Element object is commissioned, all the C65/76M objects are also commissioned. If only a Supervisor Module object is commissioned, then its Ethernet Interface objects are also commissioned.

When the Network Element object is commissioned, a subchassis discovery is started to determine the contents of the switch. If objects on the switch are discovered that do not currently exist in CEMF, then these objects are automatically created and populated. For example, an Ethernet module would be automatically populated with the appropriate number of interfaces when it is discovered. If the object already exists in CEMF, then a type match is made against the CEMF object and the one found during discovery. If a mismatch is found, the object is placed into the Mismatched state and an error is generated. If there is no mismatch, then the object is commissioned successfully and CEMF begins to monitor it.

Figure 4-1 shows the CEMF Map Viewer application with the C65/76M software installed. When an object is deployed in CEMF, the objects are automatically added to the Network, Physical, and the appropriate Manager Views. In this example, the Network Element objects are called "may" and "morar," the Chassis objects are called "may-Chassis" and "morar-Chassis," and the Software objects are called "may-Software" and "morar-Software."

Under the Network container, the Network Element objects are labelled by their IP addresses and added to the group representing the subnet that they belong to (192.168.12.0). Under the Physical container, the Network Element and Chassis objects are available.

Note The Software objects are available only under the Catalyst6000Manager, Catalyst6500Manager, and Cisco7600Manager containment views.

Figure 4-1 Hierarchical Structure of Deployed and Commissioned Objects

Deployment and Commissioning Process

There are three methods that can be used to enable CEMF to monitor a Catalyst 6000 family switch or a Cisco 7600 series Internet Router:

- IP Auto Discovery

  This method should be used to deploy a large number of devices that are currently connected to the network. This method automatically deploys the Network Element and Software objects for each Catalyst 6000 family switch or Cisco 7600 series Internet Router discovered.

- Manual deployment

  This method should be used if a small number of devices that are connected to the network need to be deployed. This method will deploy the Network Element and Software objects for the Catalyst 6000 family switches or Cisco 7600 series Internet Routers specified.

- Predeployment

  This method should be used to predeploy a device that is not connected to the network. The following objects can be predeployed:

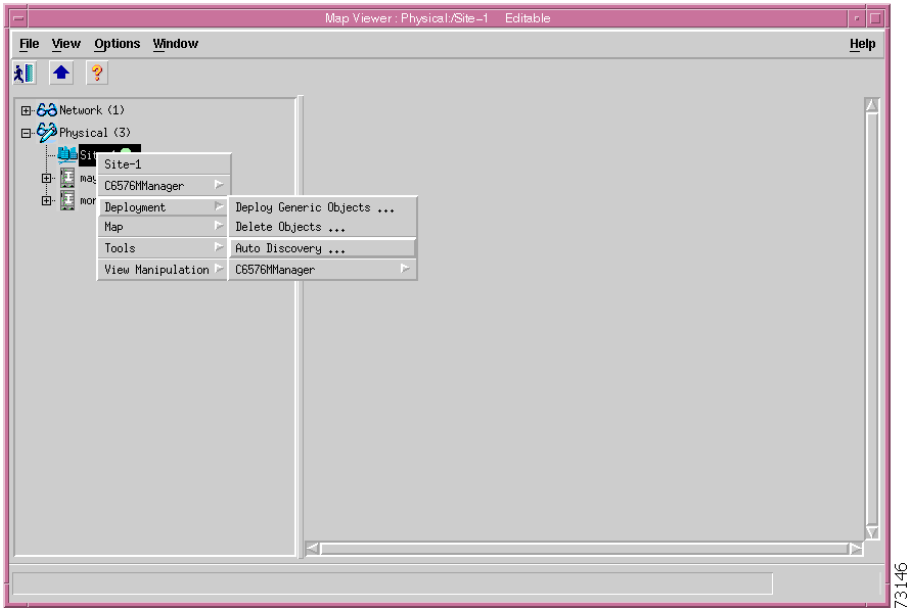
  - Network Element and Software
  - Chassis
  - Supervisor Modules
  - Ethernet Modules
  - Switch Fabric Modules
  - FlexWAN Modules
  - Port Adapters
  - OSM Modules

The remaining C65/76M objects are automatically discovered when the Network Element object is commissioned.

IP Auto Discovery

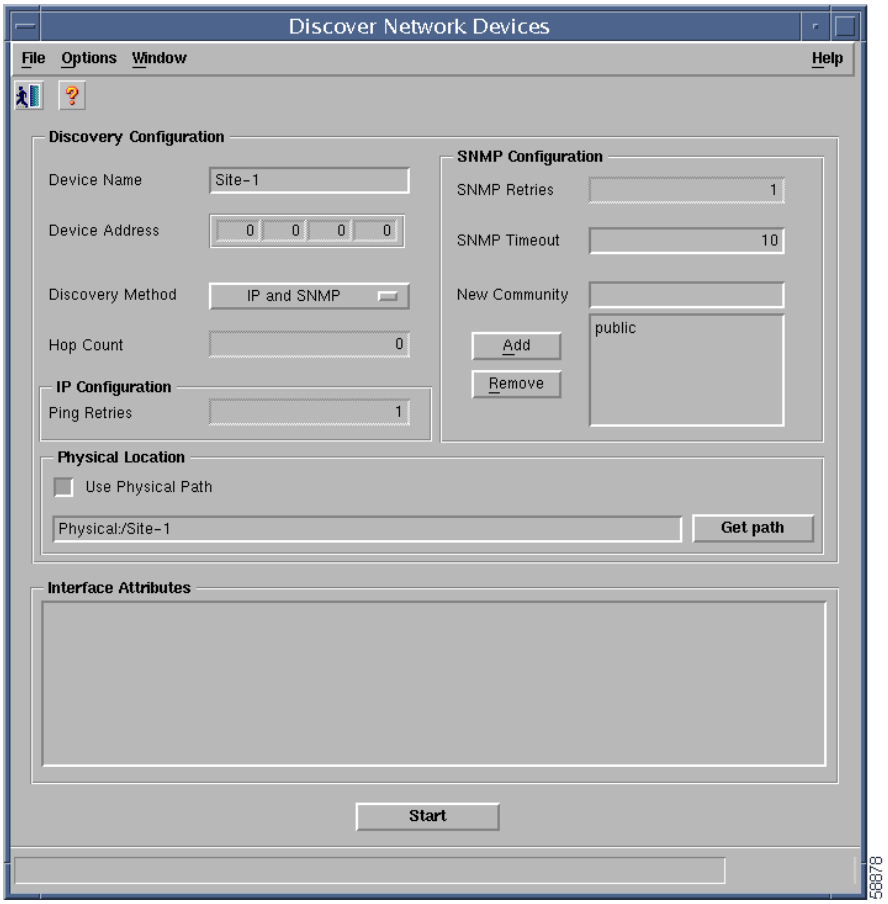
The CEMF Auto Discovery application is used to search an existing network. The network is examined for IP and SNMP devices. An object is created for each new device discovered. The IP discovery window can be launched from either the Discovery icon from the CEMF Launchpad (Figure 3-2) or from the **Deployment/Auto Discovery...** pop-up menu item on a selected object as shown in Figure 4-2.

Figure 4-2 Launching the IP Discovery Window from the Map Viewer



When first launched, the IP Discovery window will resemble Figure 4-3.

Figure 4-3 IP Discovery Window



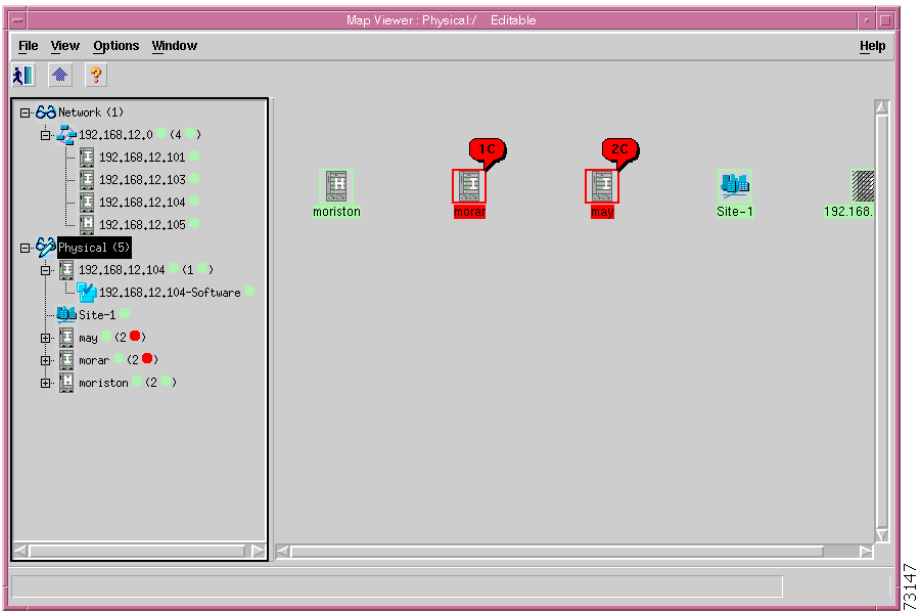
The contents of this window depend on how the window was launched. For example, if this window was launched from an object in the physical containment view, then the Physical Location parameter would be automatically set to the location from which the window was launched, as shown in Figure 4-3. For more information on the CEMF Auto Discovery process, refer to the "Auto Discovery" chapter of the *CEMF 3.1 Users Guide*.

Note When specifying the SNMP community string, use the read-write community string for the switch. If the read community string is used or appears first in the list of community strings, then that will be the SNMP community string used for both the read and read-write operations by the C65/76M. As a result, set operations will fail.

After the discovery process is complete, newly discovered objects will be automatically added to the Network containers and Physical containers. In the Network container, the object will be placed under the appropriate subnet. In the Physical container, discovered objects will be placed in the location based on the value of the Physical Location parameter.

If one of the discovered devices is a Catalyst 6000 family switch or a Cisco 7600 series Internet Router, then a C65/76M Network Element object will also be added into the Network containers, Physical containers, and the appropriate Manager Views. The Software object is also automatically added to the Manager View. In Figure 4-4, the Network Element object is labelled "192.168.12.105" and the Software object is labelled "192.168.12.105-Software."

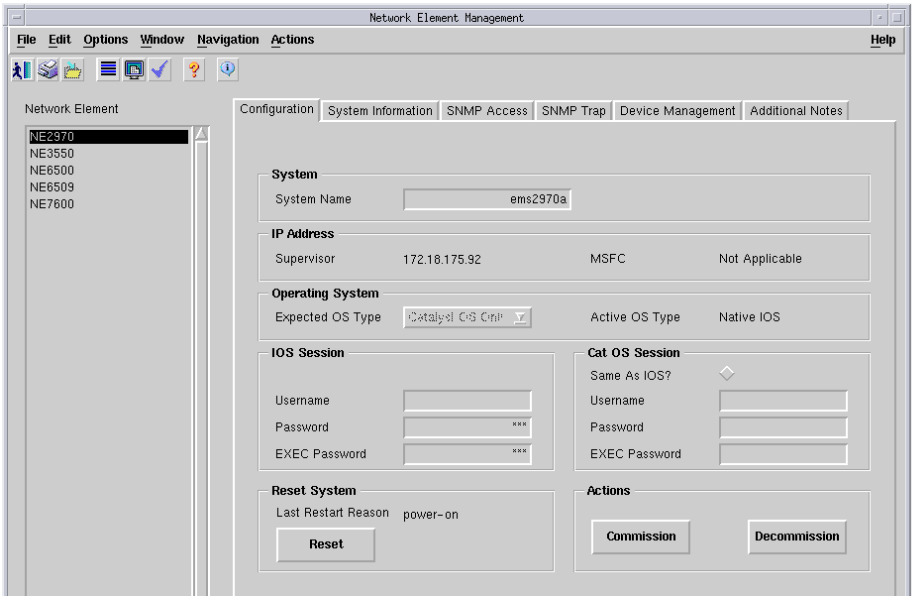
Figure 4-4 Map Viewer with a Newly Discovered Catalyst 6500 Switch



After the Network Element and Software objects have been created by the Auto Discovery process, their contents need to be determined. This determination is made by commissioning the Network Element object. When the Network Element object is commissioned, it executes a subchassis discovery process that communicates with the switch to automatically determine the contents of the switch.

However, before the Network Element object can be commissioned, additional parameters are required. Specifically, the Telnet and Enable passwords and the SNMP communities are required. To specify the passwords and SNMP communities, right-click on the Network Element object (192.168.12.105 in Figure 4-4) and choose **Open Network Element Dialog** from the pop-up menu, which will launch a window that resembles Figure 4-5.

Figure 4-5 Network Element Dialog Box

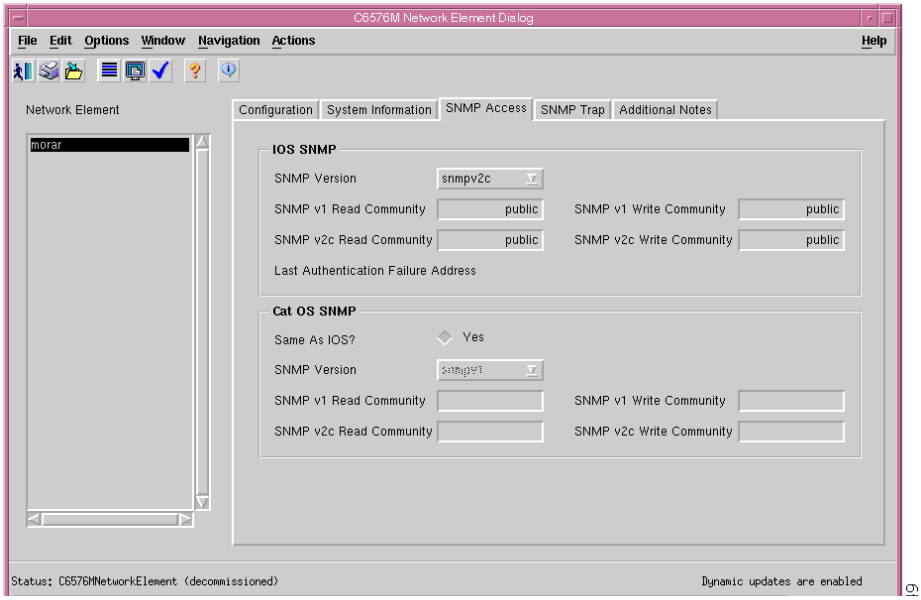


When the dialog box is displayed, select the **Configuration** tab. In the CLI Passwords section, specify the Telnet Password and Enable Password parameters. The Telnet Password is the password used to connect to the switch using the Telnet protocol. The Enable Password is the password used to enter the enable mode on the switch or router. All values entered in these text fields will be displayed as "*".

To specify the SNMP read and write community strings, select the **SNMP** tab and enter the correct SNMP read/write community strings.

Note The IP Discovery process only fills in the SNMP community strings based on the version of SNMP discovered on the switch or router. In Figure 4-6, the read and read-write community strings are specified as public and private, respectively, because "private" was specified in the IP Discovery window (see Figure 4-3). The community string used in the IP Discovery window should be the read-write SNMP community.

Figure 4-6 SNMP Tab in the Network Element Dialog Box

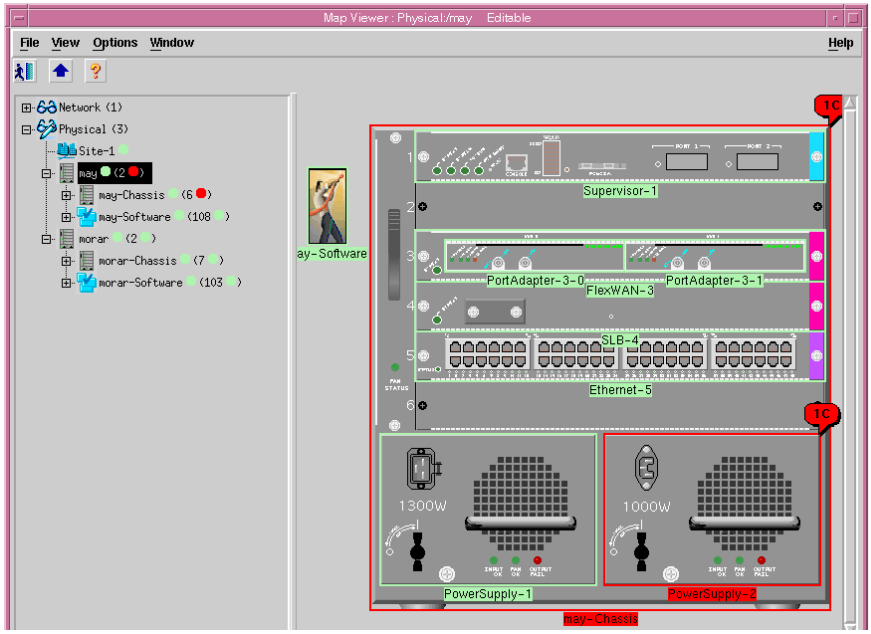


Click the **Commission** button from the Configuration tab (Figure 4-5) to start the subchassis discovery process, which allows the C65/76M to determine which modules are installed on the switch or the router and also allows CEMF to start monitoring the switch or the router.

Note Commissioning may take a few minutes.

After the Network Element object is commissioned, the Physical view will resemble Figure 4-7.

Figure 4-7 Fully IP-Discovered and Commissioned Catalyst 6513 Switch



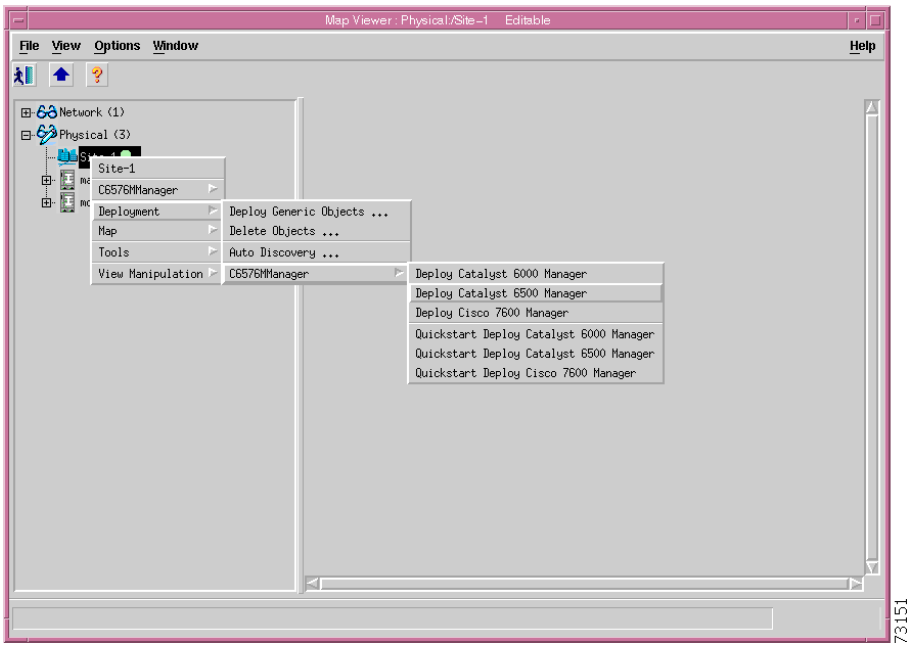
Manual Deployment

The manual deployment method is used when discovery of the entire network is not needed and the specific IP address and type of device that is connected to the network is known.

To manually deploy a Catalyst 6000 family switch or a Cisco 7600 series Internet Router, choose the pop-up menu item, **Deployment >Deploy Manager**, from the appropriate container. The following example describes how to manually deploy a Catalyst 6500 series switch. To manually deploy other devices, use the pop-up menu from the other manager containers.

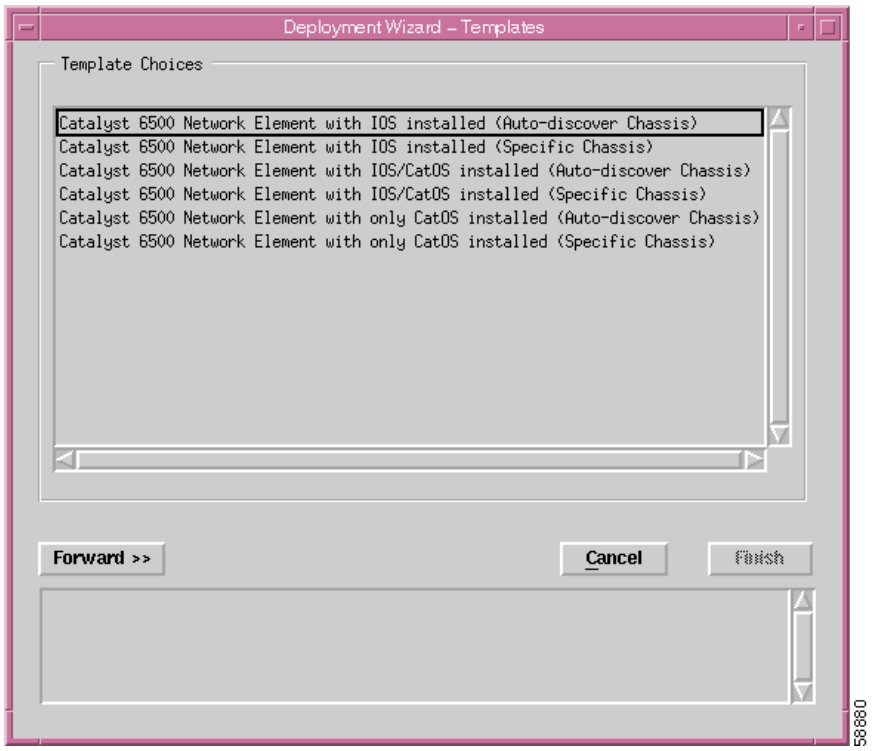
Choose **Deployment > Deploy Catalyst 6500 Manager** from the pop-up menu. This pop-up menu item, shown in Figure 4-8, is available from the Site level in the Physical container and at the top level of the Catalyst6500Manager container.

Figure 4-8 Pop-up Menu for Manually Deploying a C65/76M Switch Object



When you select this item, the Deployment Wizard window shown in Figure 4-9 is displayed.

Figure 4-9 Deployment Wizard—Templates

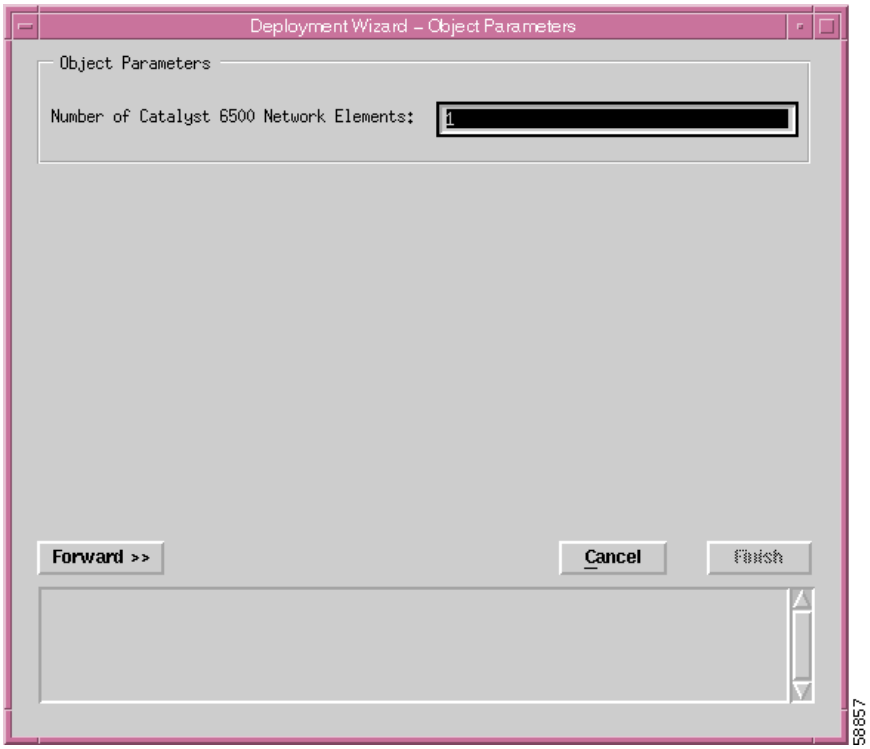


Property	Description
Catalyst 6500 Switch Network Element Only (Auto-discovered chassis)	This option deploys the Network Element and Software objects. Used when you want to perform a subchassis discovery to automatically populate the Network Element object.
Catalyst 6500 Switch Network Element and Chassis	This option deploys the Network Element, Chassis and Software objects. Used when you want to perform predeployment operations.

Choose the **Catalyst 6500 Switch Network Element Only** option and click the **Forward** button. The Object Parameters window, shown in Figure 4-10, is displayed.

Tip The **Catalyst 6500 Switch Network Element and Chassis** option is used for the predeployment processes (see the "Predeployment" section).

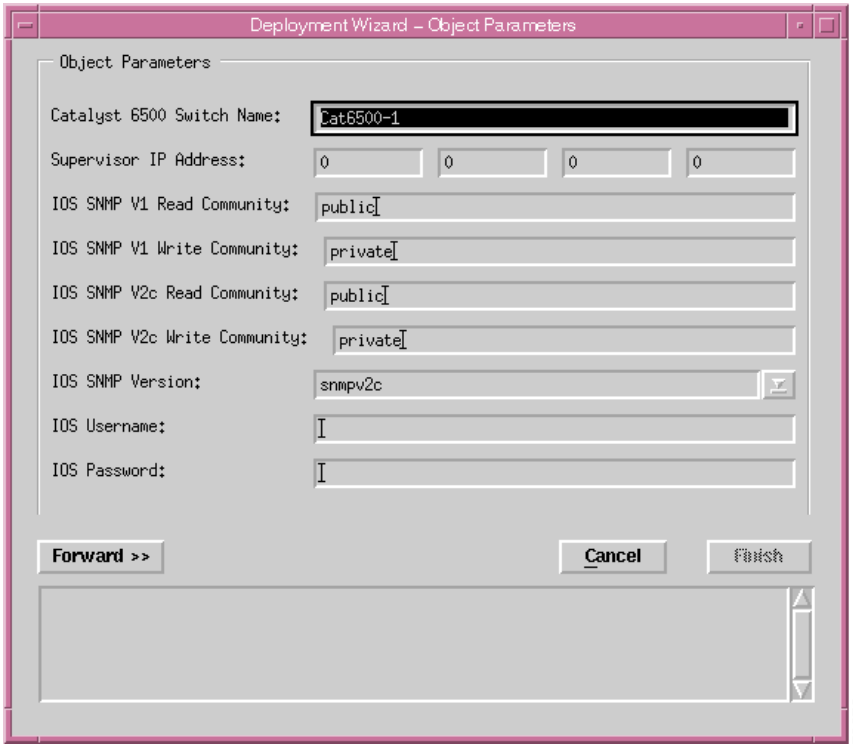
Figure 4-10 Deployment Wizard—Object Parameters



Property	Description
Number of Catalyst 6500 Switch elements	The number of switches or routers that you want to deploy at the same time.

Enter the number of Catalyst 6500 series switches or Cisco 7600 series Internet Routers that you want to deploy at the same time and click the **Forward** button. The remaining screens of this wizard are displayed for each switch or router to be deployed. The Object Parameters window, shown in Figure 4-11, is displayed.

Figure 4-11 Deployment Wizard—Object Parameters Details



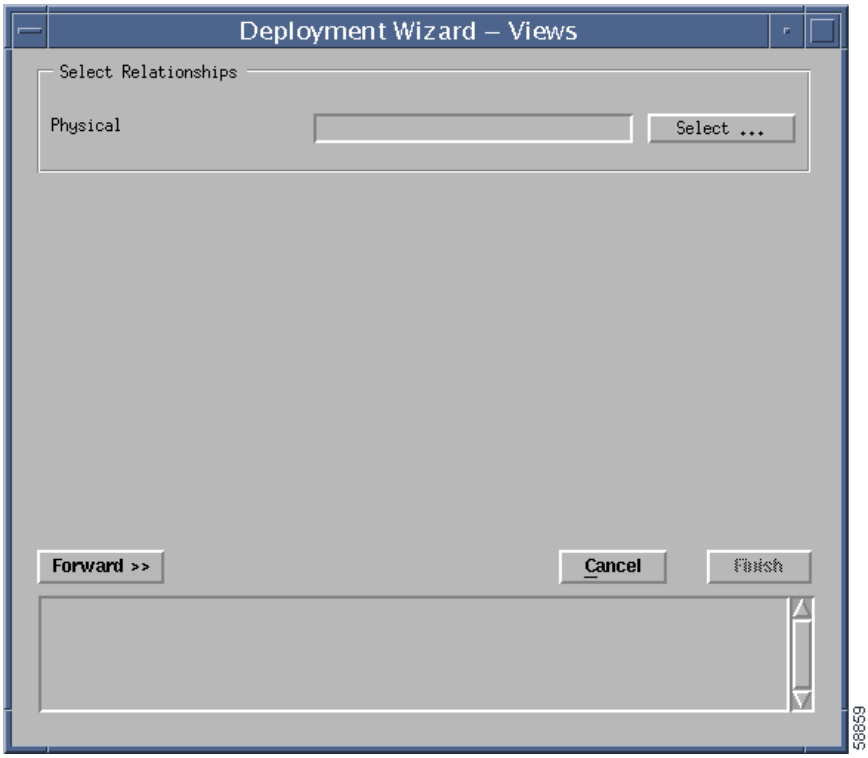
Property	Description
Catalyst 6500 Switch Name	Name of the Network Element object that is displayed in the Map Viewer application.
IP Address	IP address of the switch or router.
SNMP V1 Read Community	SNMP v1 read community used by the device.
SNMP V1 Write Community	SNMP v1 write community used by the device.
SNMP V2c Read Community	SNMP v2c read community used by the device.
SNMP V2c Write Community	SNMP v2c write community used by the device.

Property	Description
SNMP Version	The version of the SNMP agent running on the device. This is a drop-down menu containing: • SNMPv1 • SNMPv2c • SNMPv3 - not supported
IOS Telnet Password	The password used to allow the C65/76M to access the enable level of the Network Element using a Telnet connection. The value entered in this text box is not in plain text.
IOS Enable Password	The password used to allow the C65/76M to access the Network Element using a Telnet connection. The value entered in this text box is not in plain text.

Enter the details for this window and then click the **Forward** button. The Views window, shown in Figure 4-12, may be displayed if the system requires a selection of the "location" of the network element within the physical hierarchy.

Note The Network Element object can be deployed and commissioned without the IOS Telnet or enable passwords being set. However, some of the attributes will have the value of "ERROR" because those values are retrieved using IOS commands.

Figure 4-12 Deployment Wizard—Views



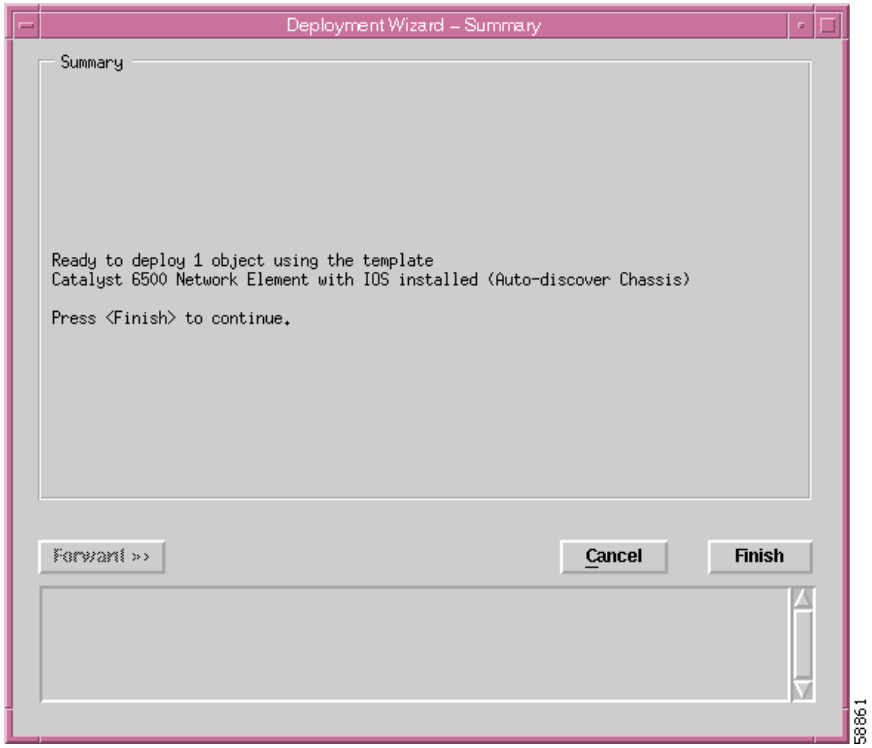
Property	Description
Physical	Location in the Physical containment view where the new object will be deployed.

If the wizard was launched from a Site object in the Physical containment view, this screen will not be displayed, and the Physical parameter is set automatically. If this wizard is launched from any other containment view, this screen is displayed and you must specify the appropriate location in the Physical containment where the new object should be added. You can use the **Select** button to specify the Physical containment (Figure 4-13). Click the **Forward** button when completed.

Figure 4-13 Physical Containment Selection

Choose the Physical containment view and then click **Apply** button. The Summary window, shown in Figure 4-14, is displayed.

Figure 4-14 Deployment Wizard—Summary

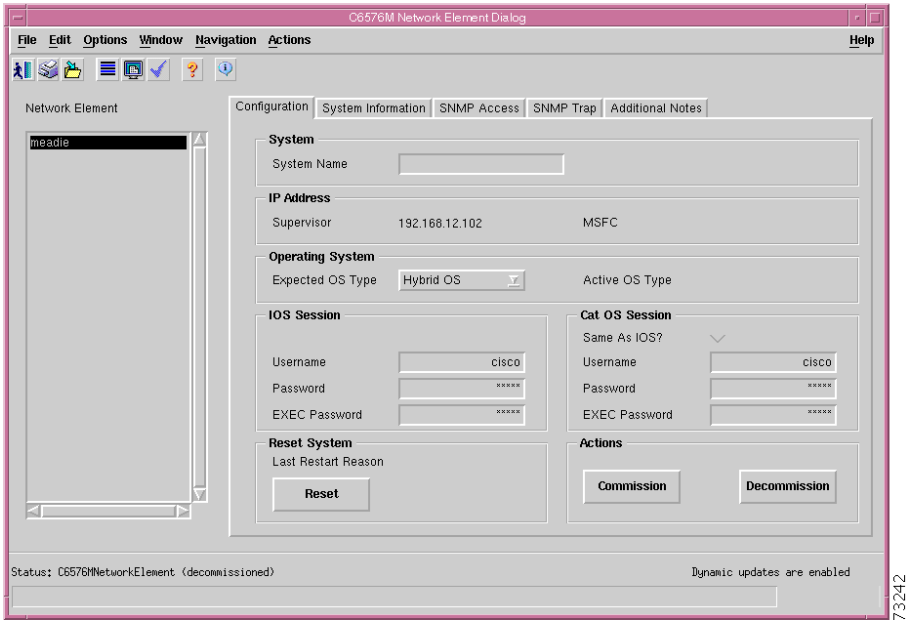


You can either cancel the operation by clicking **Cancel** or click **Finish** to create the object. If you click the **Finish** button, the Network Element and Software objects are added to the Map Viewer. The resulting Map Viewer resembles Figure 4-4.

After the Network Element and Software objects are created by the Deployment Wizard, the type of switch and its contents need to be determined. This determination is made by commissioning the Network Element object. When the Network Element object is commissioned, it executes a subchassis discovery process that communicates with the switch to automatically determine the contents of the switch.

To commission the Network Element object, right-click on the Network Element object and choose **Open Network Element Dialog** from the pop-up menu, which launches a window that resembles Figure 4-15.

Figure 4-15 Network Element Dialog Box

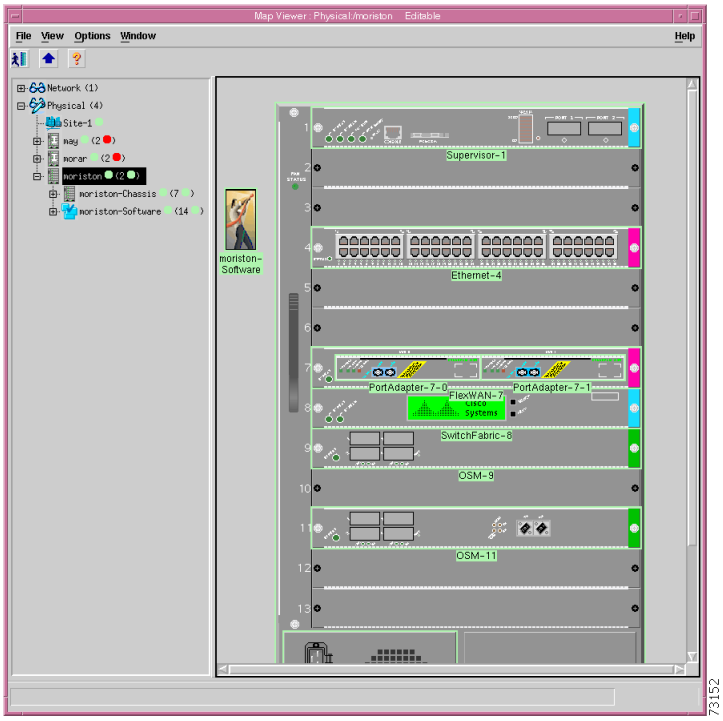


Click the **Commission** button from the **Configuration** tab to start the subchassis discovery, which allows the C65/76M to determine which modules are installed on the switch or router, and also allows CEMF to start monitoring the switch or router.

Note Commissioning may take a few minutes.

Unlike the Auto Discovery process (see the "IP Auto Discovery" section on page 4-5), no additional parameters need to be specified. These parameters were specified in the manual Deployment Wizard (Figure 4-11). After the object is commissioned, the Physical view will resemble Figure 4-16.

Figure 4-16 Manually Deployed and Commissioned Catalyst 6506 Switch



If an error is encountered when the object is commissioned, the Network Element object might go into the Mismatched or Lostcomms state and an alarm would be raised.

The Network Element is placed in the Mismatched state if the IP address specified during the deployment wizard does not correspond to the device type that was deployed. If this occurs, the Network Element object must be deleted from CEMF and redeployed with the correct IP address or type.

The Network Element is placed in the Lostcomms state if the SNMP read community string specified in during the deployment wizard is incorrect. If this occurs, open the Network Element dialog box, decommission the Network Element object, go to the SNMP tab (Figure 4-6) and enter the correct SNMP read community, and then recommission the Network Element object.

Predeployment

This deployment option is used to deploy the Catalyst 6000 family switch or Cisco 7600 series Internet Router into CEMF before it has been attached to the network. After an object has been predeployed, CEMF keeps the object in a decommissioned state until the device corresponding to the object is added to the network. After the switch is brought on-line, the predeployed object will be commissioned automatically. The following objects can be predeployed:

- Network Element, Software and Chassis
- Supervisor Modules
- Ethernet Modules
- Switch Fabric Modules
- FlexWAN Modules
- Port Adapter
- Content Switching Module
- EtherChannel Modules

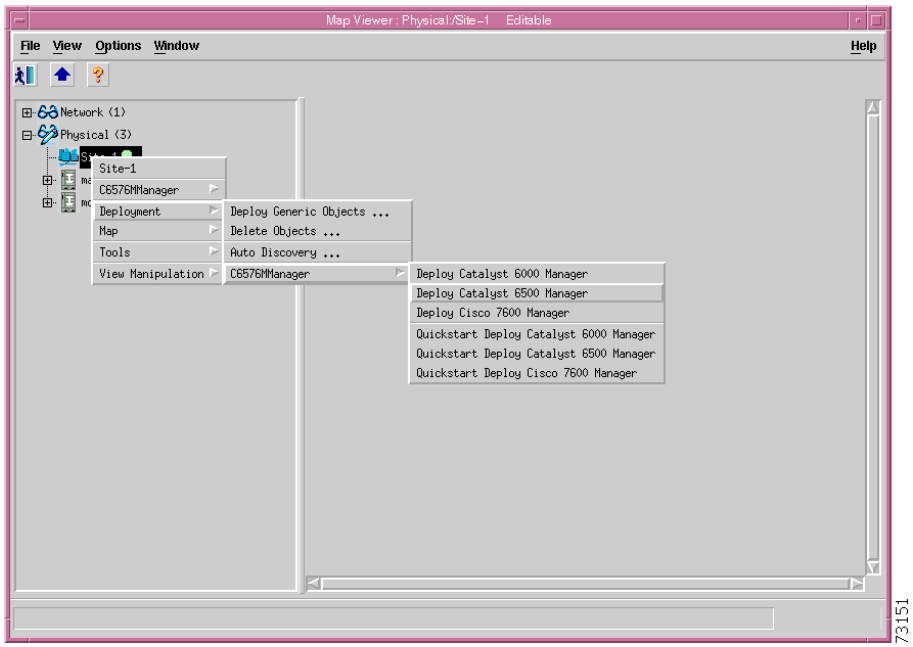
The remaining C65/76M objects are automatically discovered when the Network Element object is commissioned.

Network Element, Software, and Chassis Object Predeployment

To manually predeploy the Network Element, Software, and Chassis C65/76M objects, select the pop-up menu item, **Deployment > Deploy Manager**, from the appropriate container. The following example describes how to manually predeploy a Catalyst 6500 series switch. To manually predeploy other devices, use the pop-up menu from the other manager containers.

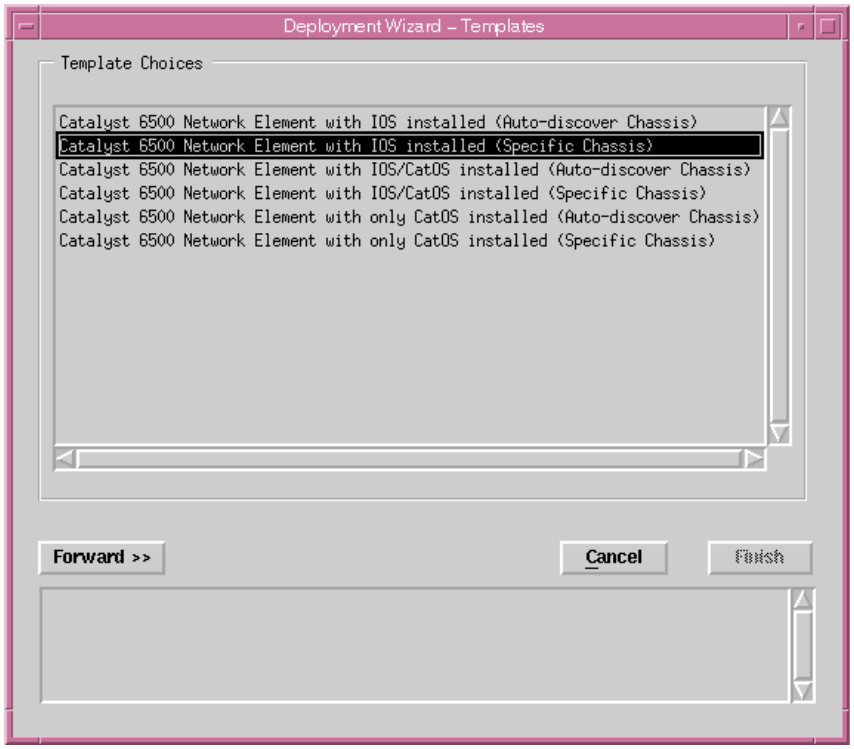
Choose **Deployment > Deploy Catalyst 6500 Manager** from the pop-up menu. This pop-up menu item, shown in Figure 4-17, is available from the Site level in the Physical container and at the top level of the Catalyst 6500 Manager container.

Figure 4-17 Manually Deploying a C65/76M Object



When you choose the **Deployment > Deploy Catalyst 6500 Manager** option, the Deployment Wizard—Templates window, shown in Figure 4-18, is displayed.

Figure 4-18 Deployment Wizard—Templates

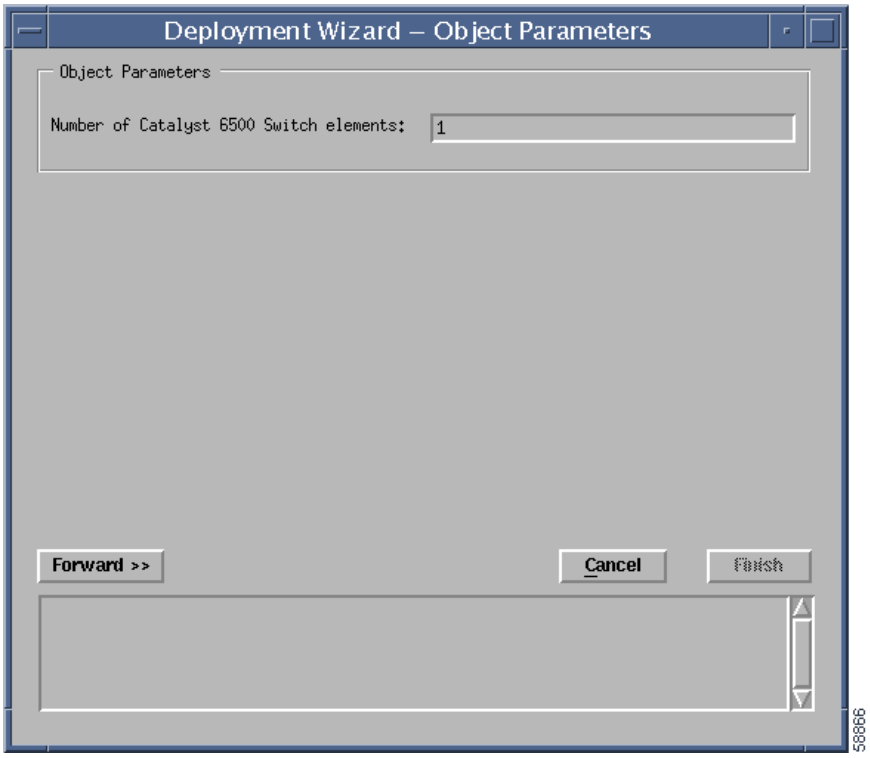


Property	Description
Catalyst 6500 Switch Network Element Only (Auto-discovered chassis)	This option deploys the Network Element and Software objects. Used when you want to perform a subchassis discovery to populate the Network Element object automatically.
Catalyst 6500 Switch Network Element and Chassis	This option deploys the Network Element, Chassis, and Software objects. Used when you want to perform predeployment operations.

Choose the **Catalyst 6500 Switch Network Element and Chassis** option and click the **Forward** button. The Object Parameters window, shown in Figure 4-19, is displayed.

Tip The Catalyst 6500 Switch Network Element Only option is used for the manual deployment process (see the "Manual Deployment" section).

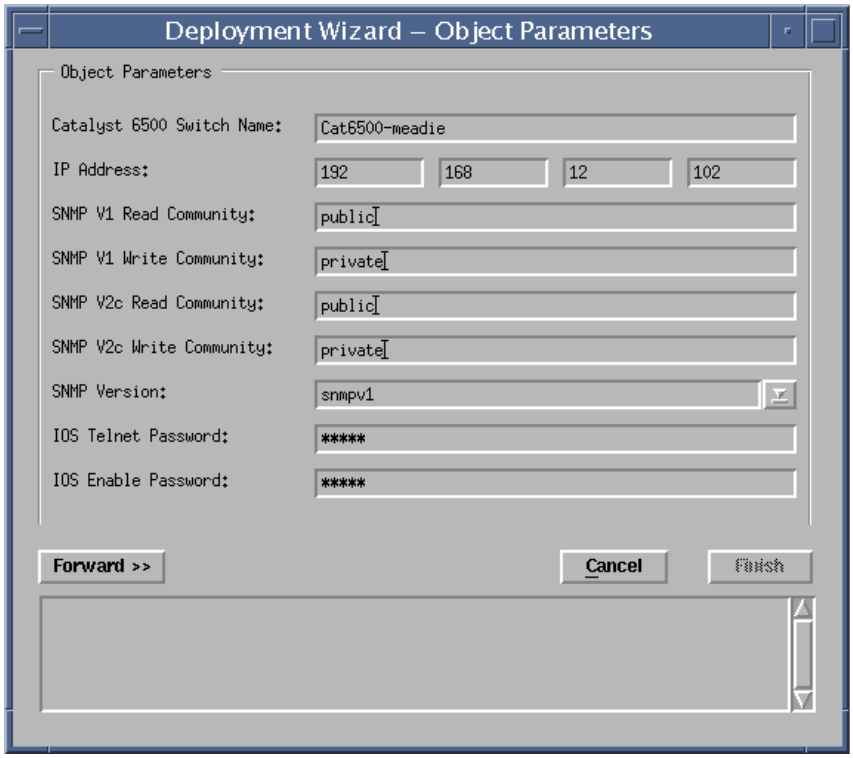
Figure 4-19 Deployment Wizard—Object Parameters



Property	Description
Number of Catalyst 6500 Switch elements	The number of switches or routers that you want to predeploy at the same time.

Enter the number of Catalyst 6500 series switches or Cisco 7600 series Internet Routers that you want to predeploy at the same time and click the **Forward** button. The detailed Object Parameters window, shown in Figure 4-20, is displayed. The remaining screens in this wizard will be displayed for each switch or router to be predeployed.

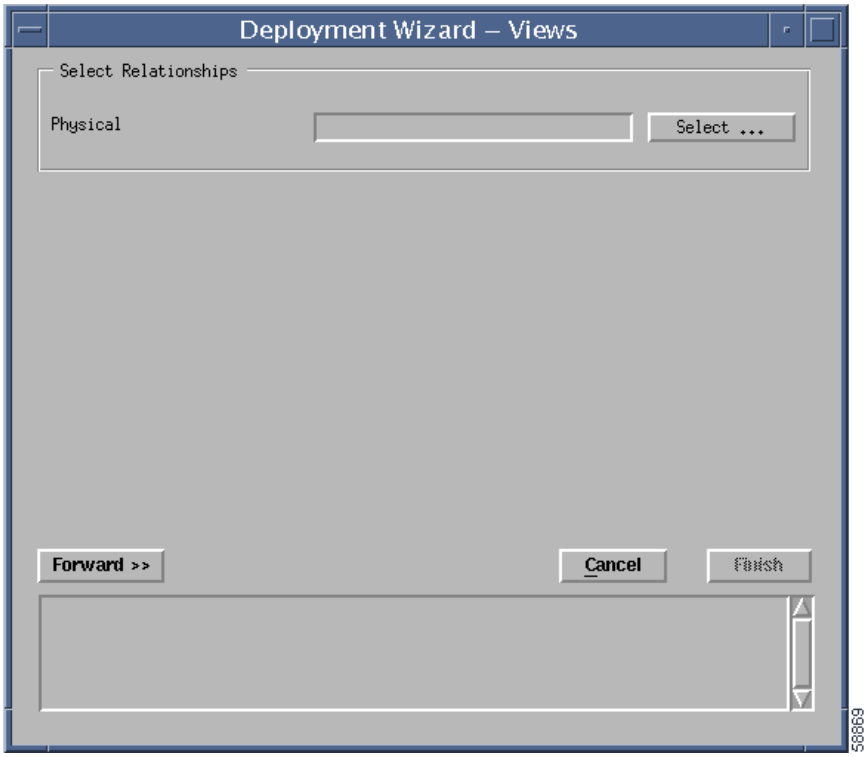
Figure 4-20 Deployment Wizard—Object Parameters Details



Property	Description
Catalyst 6500 Switch Name	Name of the Network Element object that is displayed in the Map Viewer application.
IP Address	IP address that is given to the switch or router when it is connected to the network.
SNMP V1 Read Community	SNMP v1 read community used by the device.
SNMP V1 Write Community	SNMP v1 write community used by the device.
SNMP V2c Read Community	SNMP v2c read community used by the device.
SNMP V2c Write Community	SNMP v2c write community used by the device.
SNMP Version	The version of the SNMP agent running on the device. This is a drop-down menu containing: • SNMPv1 • SNMPv2c • SNMPv3 - not supported
IOS Telnet Password	The password used to allow the C65/76M to access the Network Element using a Telnet connection. The value entered in this text box will not be in plain text.
IOS Enable Password	The password used to allow the C65/76M to access the enable level of the Network Element using a Telnet connection. The value entered in this text box will not be in plain text.

Enter the details for the switch and then click the **Forward** button. The Views window may be displayed if the system requires a selection of the “location” of the network element within the physical hierarchy (see Figure 4-21).

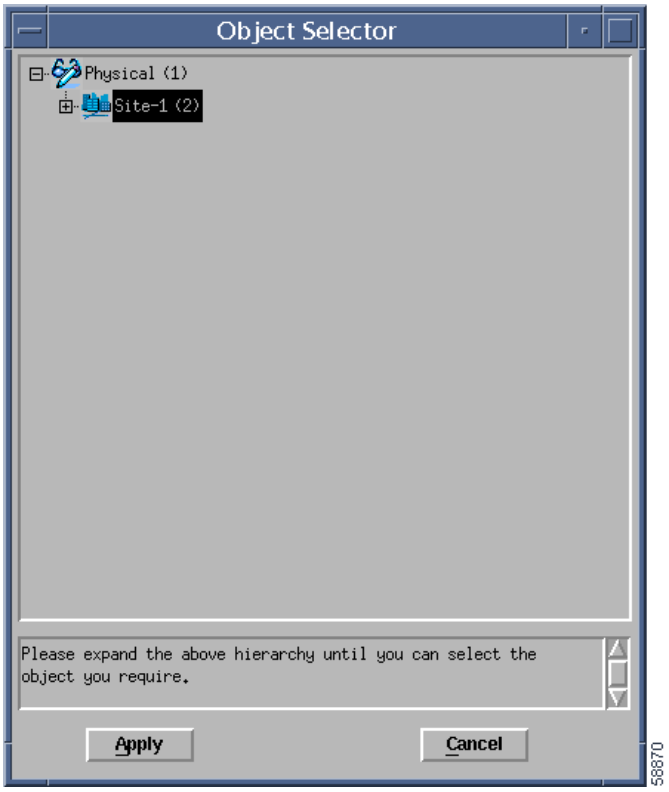
Figure 4-21 Deployment Wizard—Views



Property	Description
Physical	Location in the Physical containment view where the new object will be deployed.

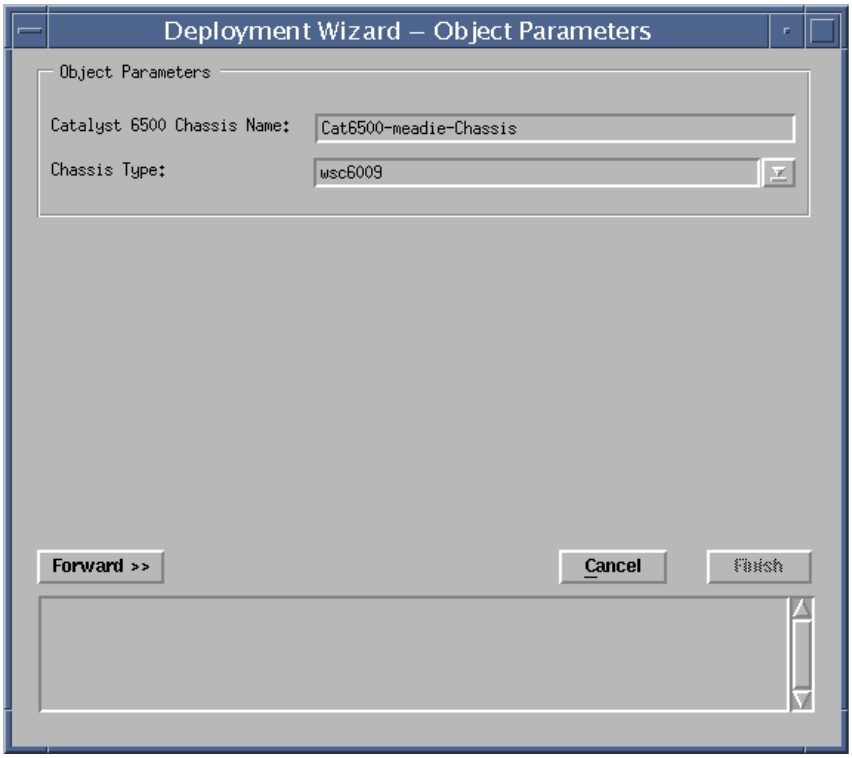
If this wizard was launched from a site in the Physical containment view, this screen will not be displayed. In this case, the Physical parameter is set automatically. If this wizard is launched from any other containment view, this screen is displayed and you must specify the appropriate location in the Physical containment view where the new object should be added. Click the **Select** button to select the Physical location parameter (see Figure 4-22). Click the Forward button when completed.

Figure 4-22 Physical Location Selection



Click the **Apply** button when the Physical containment has been selected. The Object Parameters window, shown in Figure 4-23, is displayed.

Figure 4-23 Deployment Wizard—Object Parameters



Property	Description
Catalyst 6500 Chassis Name	Label that is used for the Chassis object in the Map Viewer.
Chassis Type	This value specifies the type of chassis to deploy. It is a drop-down list containing the chassis types in the chassis series: • wsc6506 • wsc6509 • wsc6509NEB • wsc6513

Note If you are deploying a Catalyst 6000 series switch, the following chassis types will be displayed in the Chassis Type drop down menu.

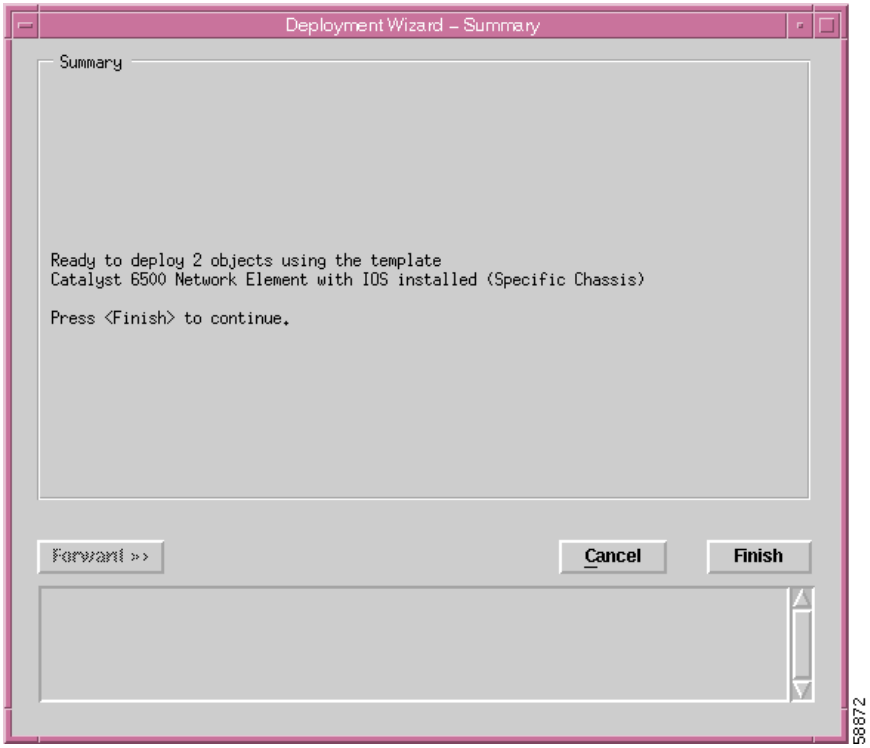
Property	Description
Catalyst 6000 Chassis Name	Label that is used for the Chassis object in the Map Viewer.
Chassis Type	This value specifies the type of chassis to deploy. It is a drop-down list containing the chassis types in the chassis series: • wsc6006 • wsc6009

Note If you are deploying a Cisco 7600 series Internet Router, the following chassis types will be displayed in the Chassis Type drop down menu.

Property	Description
Cisco 7600 Chassis Name	Label that is used for the Chassis object in the Map Viewer.
Chassis Type	This value specifies the type of chassis to deploy. It is a drop-down list containing the chassis types in the chassis series: • wsc7603 • wsc7606 • wsc7609

Specify the name of the Chassis object and the type of chassis to predeploy, and click the **Forward** button. The Summary window, shown in Figure 4-24, is displayed.

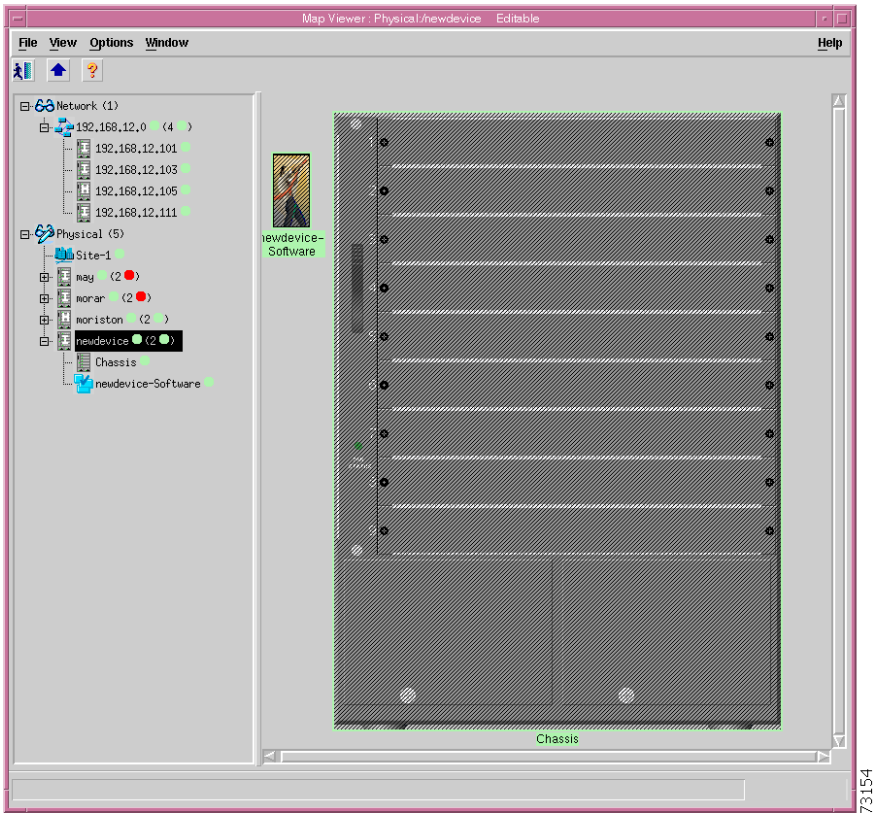
Figure 4-24 Deployment Wizard—Summary



You can either cancel the operation by clicking the **Cancel** button, or click the **Finish** button to create the object.

If you click the **Finish** button, the Network Element, Chassis, and Software objects are added to the Map Viewer. The chassis image that is displayed will depend on the value used for the Chassis Type. Figure 4-25 shows an example of a predeployed Catalyst 6509 chassis. Note that the chassis is empty and has cross hashes indicating that it is in the decommissioned state.

Figure 4-25 Predeployed Catalyst 6509 Chassis Object



Predeploying Subchassis Modules

The next step in predeploying a Catalyst 6000 family switch or a Cisco 7600 series Internet Router in CEMF is to deploy the modules within the chassis. The following subchassis objects can be predeployed:

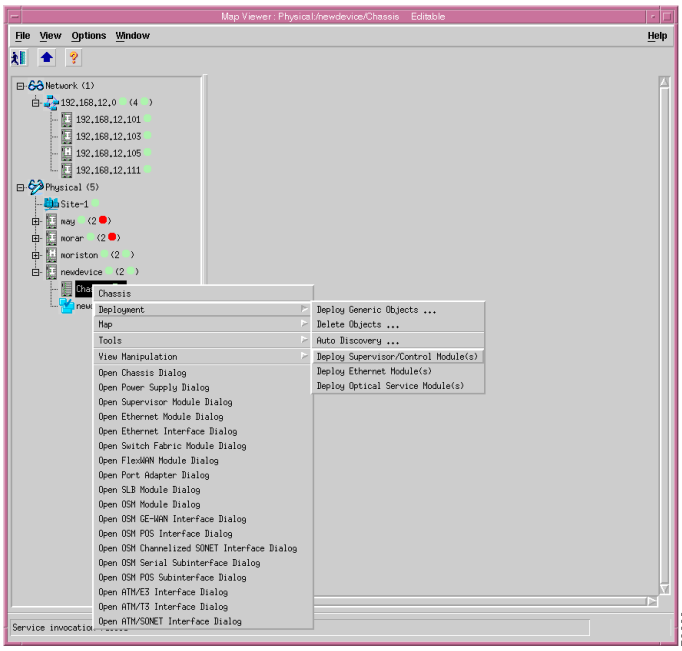
- Supervisor Modules
- Ethernet Modules
- Switch Fabric Modules
- FlexWAN Modules
- Port Adapters
- Optical Services Modules
- Content Switching Module

Tip Supporting modules, such as AC or DC power supplies, are automatically added through subchassis discovery. You cannot manually deploy these objects.

Supervisor Module

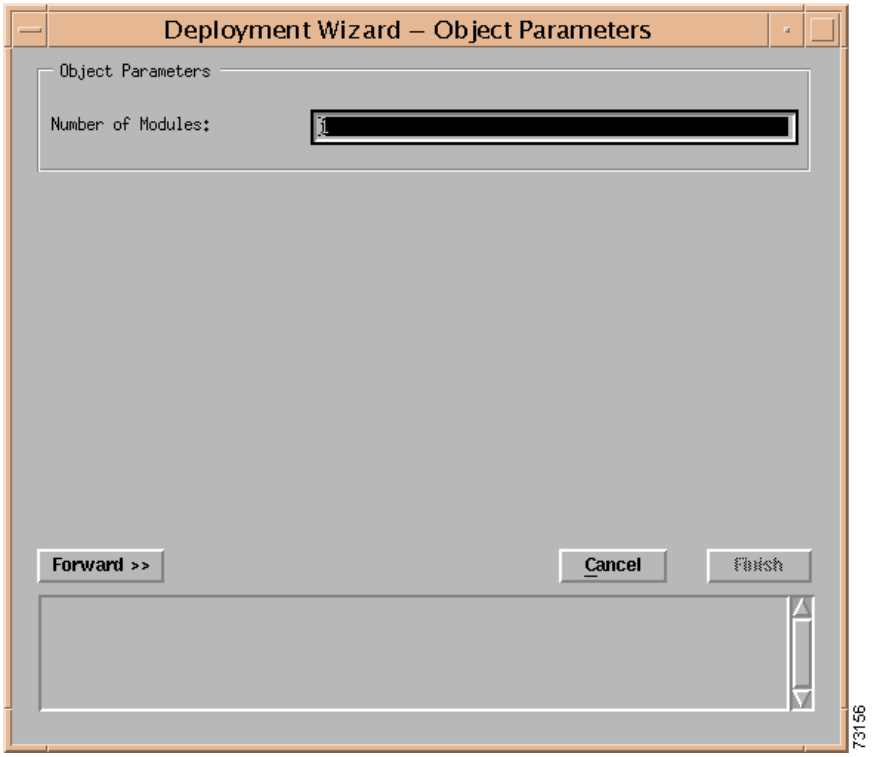
To predeploy a Supervisor Module, choose **Deployment > Deploy Supervisor/Control Modules(s)**from the pop-up menu of the Chassis object (see Figure 4-26).

Figure 4-26 Predeploying Supervisor Modules



The Supervisor Module Deployment Wizard—Object Parameters window, as shown in Figure 4-27, is displayed.

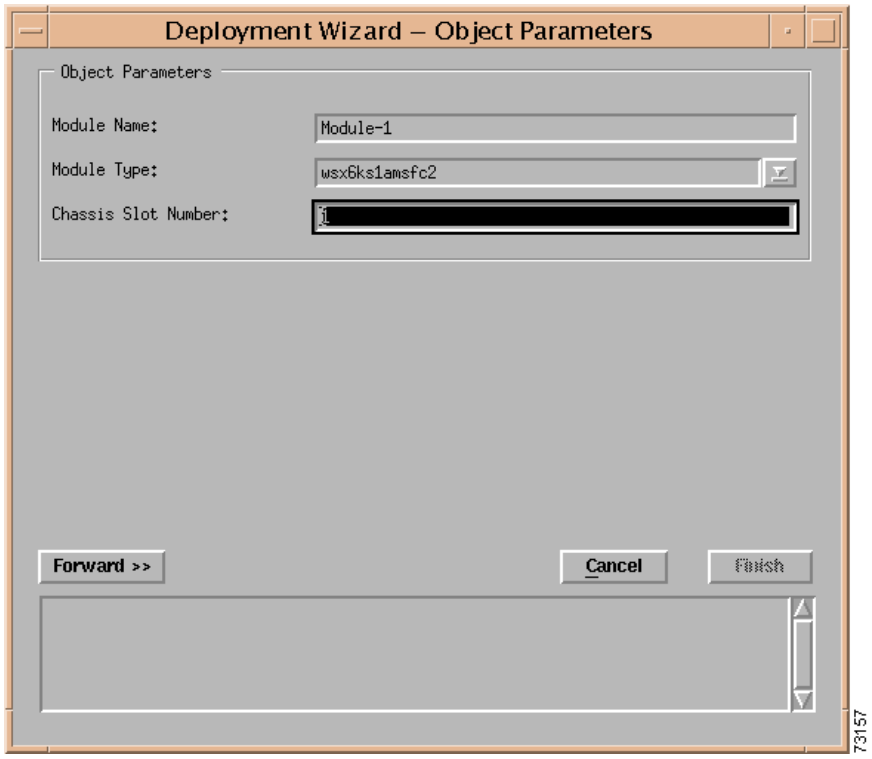
Figure 4-27 Supervisor Module Deployment Wizard—Object Parameters



Property	Description
Number of Modules	The number of supervisor modules to deploy.

Enter the number of supervisor modules to predeploy and click the **Forward** button. The Supervisor Module Deployment Wizard—Object Parameters Details window is displayed for each module to deploy (see Figure 4-28).

Figure 4-28 Supervisor Module Deployment Wizard—Object Parameters Details



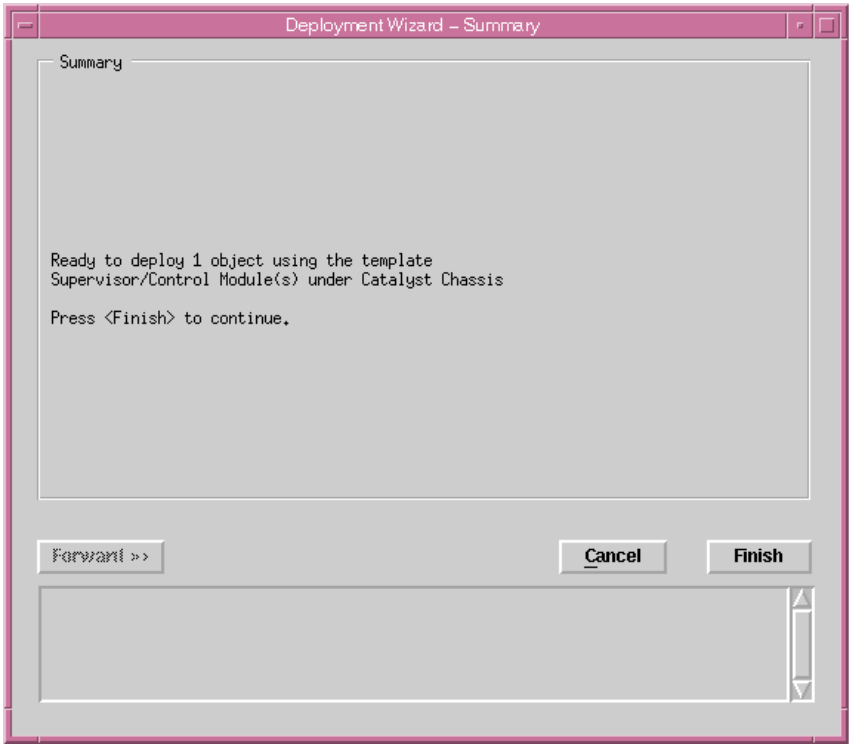
Property	Description
Module Name	The name given to the Supervisor Module object.
Module Type	The type of supervisor module to be deployed. The types are shown in a drop-down list with the following values: • ws-x6k-sup1a-msfc—Supervisor Engine 1A with MSFC • ws-x6k-s1a-msfc2—Supervisor Engine 1A with MSFC2 • ws-x6k-s2-msfc2—Supervisor Engine 2 with MSFC2
Chassis Slot Number	The slot in which the supervisor module is to be deployed.

Note Use ws-x6k-s1a-msfc2 to deploy both the Supervisor Engine 1A with MSFC or Supervisor Engine 1A with MSFC2.

Note Use ws-x6k-s2-msfc2 to deploy the Supervisor Engine 2 with 256 MB DRAM and MSFC2 (ws-x6k-s2u-msfc2).

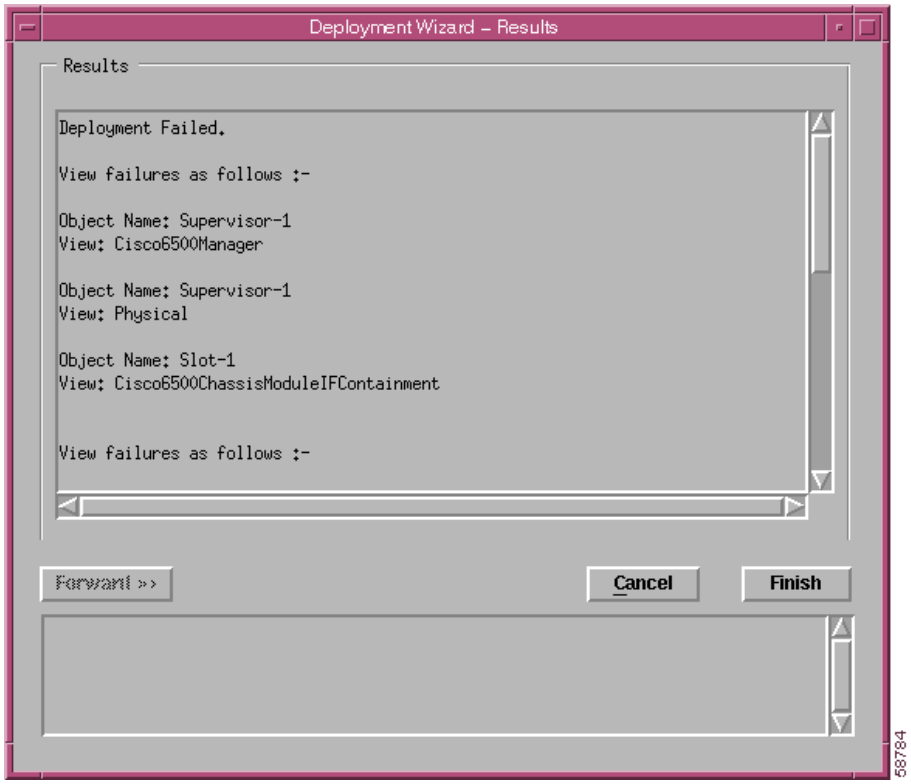
Enter the details for the Supervisor Module object and click the **Forward** button. The Supervisor Module Deployment Wizard—Summary window is displayed (see Figure 4-29).

Figure 4-29 Supervisor Module Deployment Wizard—Summary



You can either click the **Cancel** button to cancel the operation, or click the **Finish** button to create the object. If the Chassis Slot Number corresponds to an occupied slot, an error message will be displayed. The error message resembles the message shown in Figure 4-30.

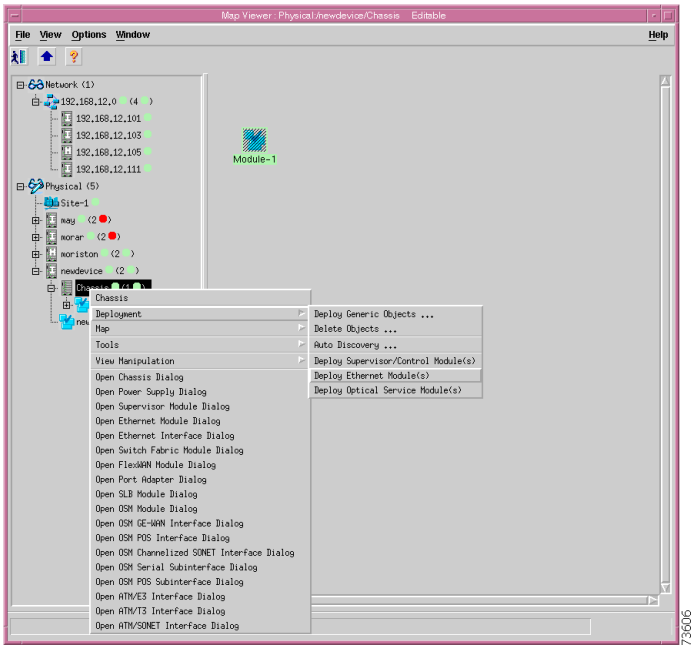
Figure 4-30 Predeployment Failure Due to an Occupied Slot



Ethernet Module

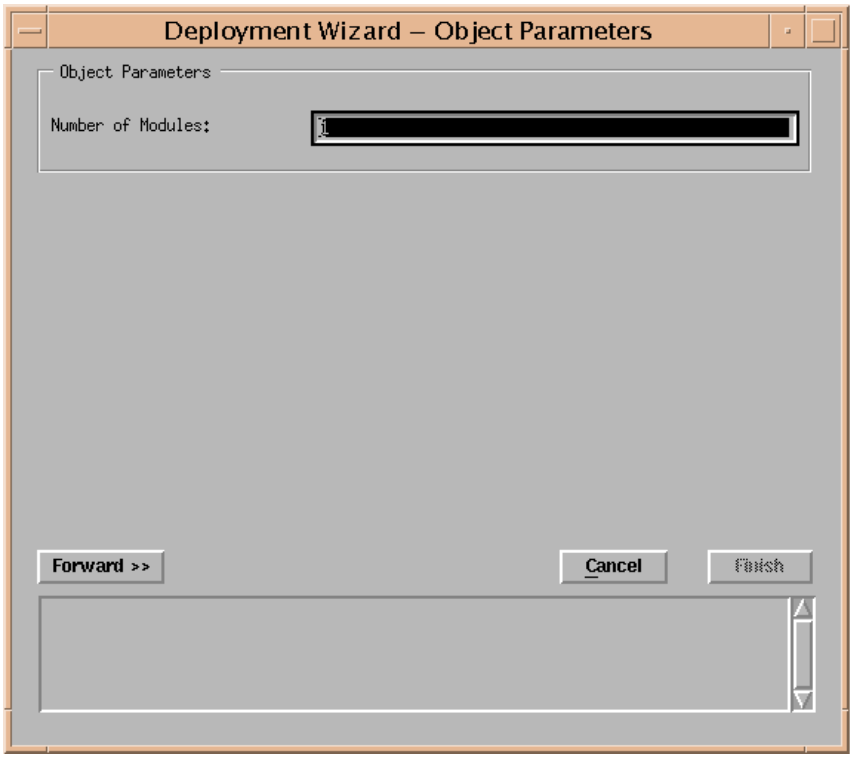
To predeploy an Ethernet module (standard Ethernet, Fast Ethernet, or Gigabit Ethernet), choose the **Deployment > Deploy Ethernet Module(s)** option from the pop-up menu of the Chassis object (see Figure 4-31).

Figure 4-31 Predeploying Ethernet Modules



After you choose the **Deploy Ethernet Module** option, the window shown in Figure 4-32 is displayed.

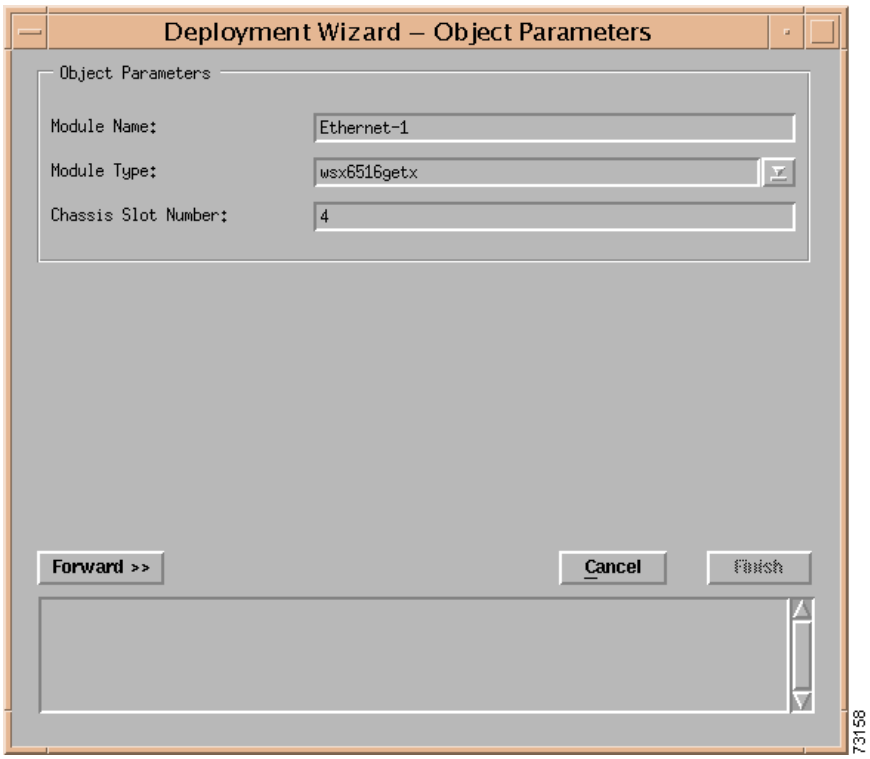
Figure 4-32 Ethernet Module Deployment Wizard—Object Parameters



Property	Description
Number of Modules	The number of Ethernet modules to deploy.

Enter the number of Ethernet module objects to be predeployed at the same time and click the **Forward** button. The window shown in Figure 4-33 is displayed.

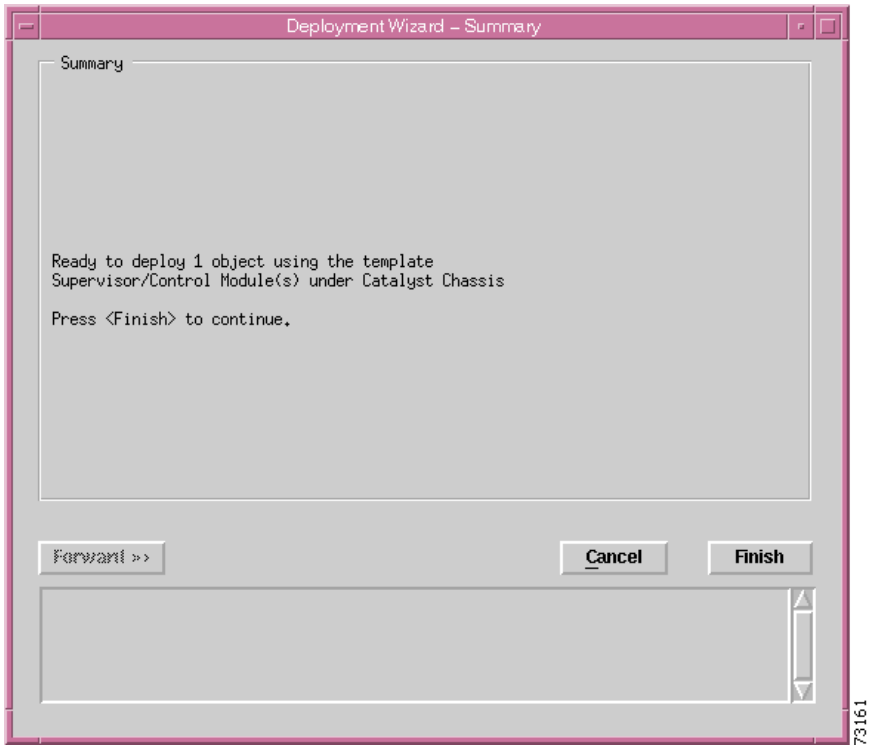
Figure 4-33 Ethernet Module Deployment Wizard—Object Parameters Details



Property	Description
Module Name	The name given to the Ethernet Module object.
Module Type	The type of Ethernet card to be deployed. This is a drop-down list with the following values: • wsx6224100fxmt—24-port 100FX • wsx6324100fxmm—24-port 100FX multimode with enhanced QoS • wsx6324100fxsm—24-port 100FX single-mode with enhanced QoS • wsx6248rj45—48-port 10/100TX with RJ-45 connectors • wsx6248tel—48-port 10/100TX with RJ-21 connectors
Module Type (continued)	• wsx6248atel—48-port 10/100TX with RJ-21 connectors and enhanced QoS • wsx6348rj45—48-port 10/100TX with RJ-45 connectors, enhanced QoS, and upgradeable voice card • wsx6348rj45v—48-port 10/100TX with RJ-45 connectors, enhanced QoS, and voice card • wsx6348rj21—48-port 10/100, RJ-21, upgradable to voice • wsx6524-100fxmm—Fabric-enabled 100FX Fast Ethernet Module, multimode fiber, MT-RJ • wsx6548rj21—Fabric-enabled 10/100 Fast Ethernet Modules, RJ-21 • wsx6548rj45—Fabric-enabled 10/100 Fast Ethernet Modules, RJ-45 • wsx6408gbic—8-port Gigabit Ethernet • wsx6408agbic—8-port Gigabit Ethernet with enhanced QoS • wsx6416gbic—16-port Gigabit Ethernet • wsx6416gemt—16-port Gigabit Ethernet with MT-RJ connectors • wsx6516gbic—16-port Gigabit Ethernet with switch fabric connection • wsx6816gbic—16-port Gigabit Ethernet with dual switch fabric connections • wsx6316getx—16-port Gigabit Ethernet with RJ-45 connectors • wsx6516-getx—16-port Gigabit Ethernet with RJ-45 connectors, x-bar • wsx6501-10gex4—One-port 10GBASE-EX4 metro extended reach 10 Gigabit Ethernet Module (single-mode fiber)
Chassis Slot Number	The slot in which the Ethernet Module is to be deployed.

Enter the details for the Ethernet Module object and click the **Forward** button. The Ethernet Module Deployment Wizard—Summary window is displayed (see Figure 4-34).

Figure 4-34 Ethernet Module Deployment Wizard—Summary

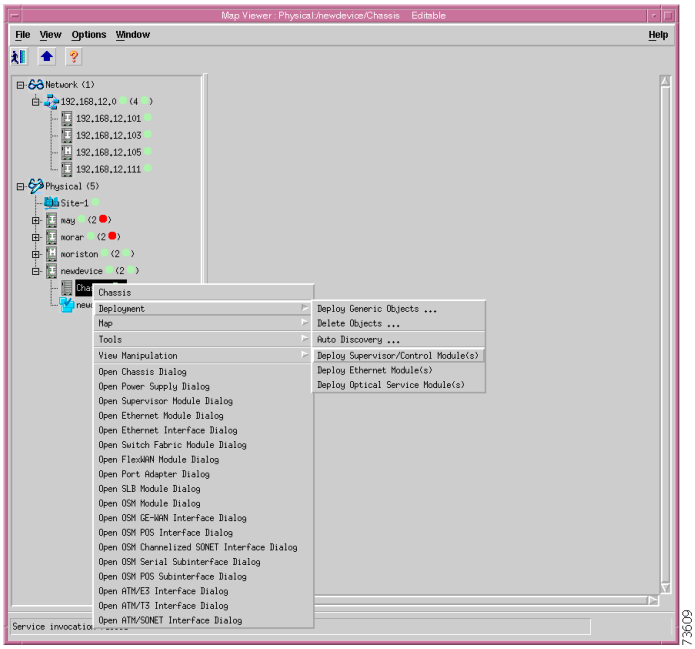


You can either click the **Cancel** button to cancel the operation or click the **Finish** button to create the object. If the Chassis Slot Number corresponds to an occupied slot, an error message is displayed. The error message resembles the message shown in Figure 4-30.

Switch Fabric Module

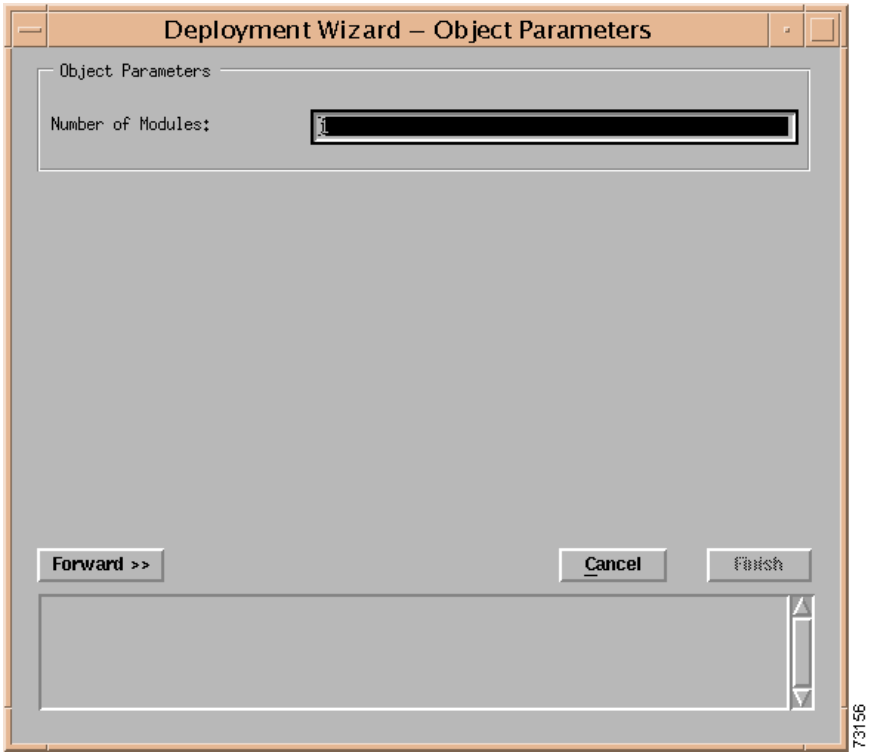
To predeploy a Switch Fabric Module, choose the **Deployment > Deploy Supervisor/Control Module(s)** option in the pop-up menu from the Chassis object (see Figure 4-35).

Figure 4-35 Predeploying Switch Fabric Modules



After you choose the **Deploy Switch Fabric Module(s)** option, the Switch Fabric Module Deployment Wizard—Object Parameters window is displayed (see Figure 4-36).

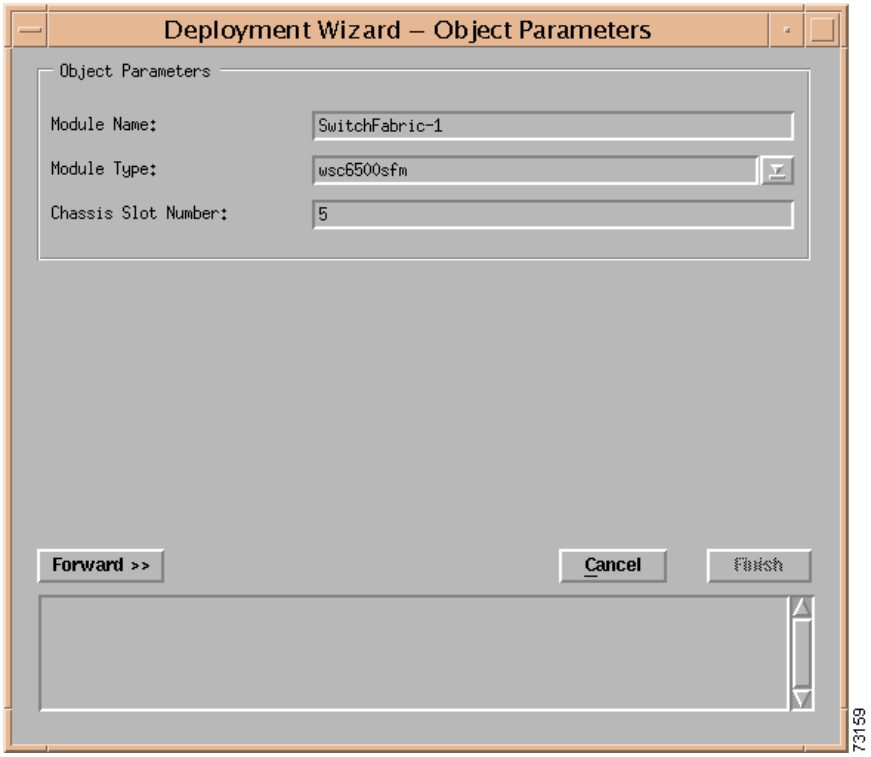
Figure 4-36 Switch Fabric Module Deployment Wizard—Object Parameters



Property	Description
Number of Modules	The number of Switch Fabric Modules to deploy at the same time.

Enter the number of Switch Fabric Modules to be deployed at the same time and click the **Forward** button. The Switch Fabric Module Deployment Wizard—Object Parameters Details window is displayed for each module to deploy (see Figure 4-37).

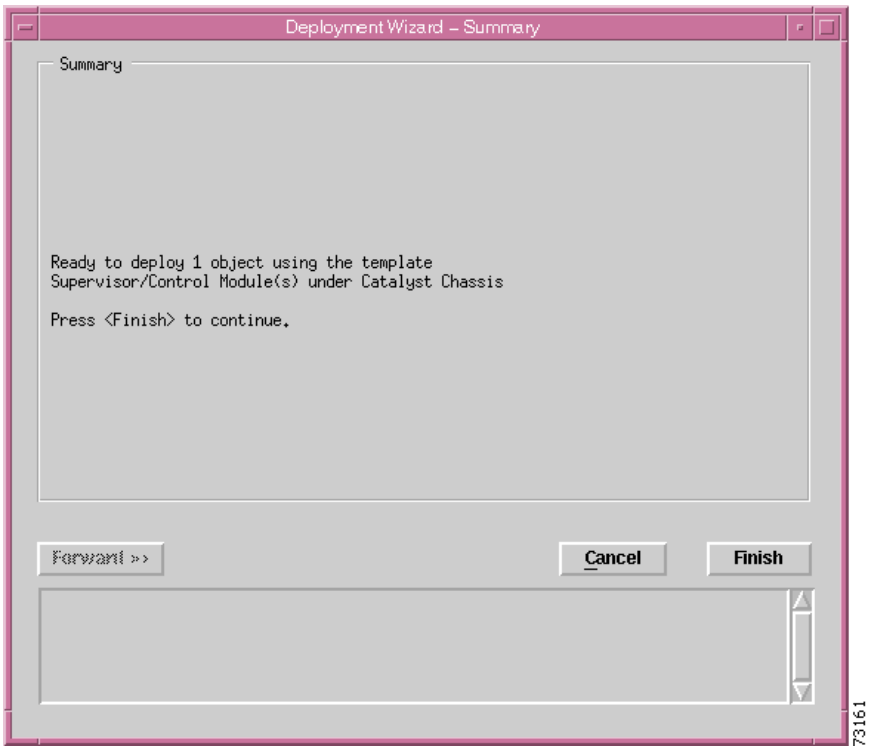
Figure 4-37 Switch Fabric Module Deployment Wizard—Object Parameters Details



Property	Description
Module Name	The name given to the Switch Fabric Module object.
Module Type	The type of Switch Fabric Module to be deployed. This is a drop-down list with the following values: • wsc6500sfm—Switch Fabric Module • wsc6500sfm2—Switch Fabric Module (for the Catalyst 6513 chassis)
Chassis Slot Number	The slot in which the Switch Fabric Module is to be deployed.

Enter the details for the Switch Fabric Module object and click the **Forward** button. The Switch Fabric Module Deployment Wizard—Summary window is displayed (see Figure 4-38).

Figure 4-38 Switch Fabric Module Deployment Wizard—Summary

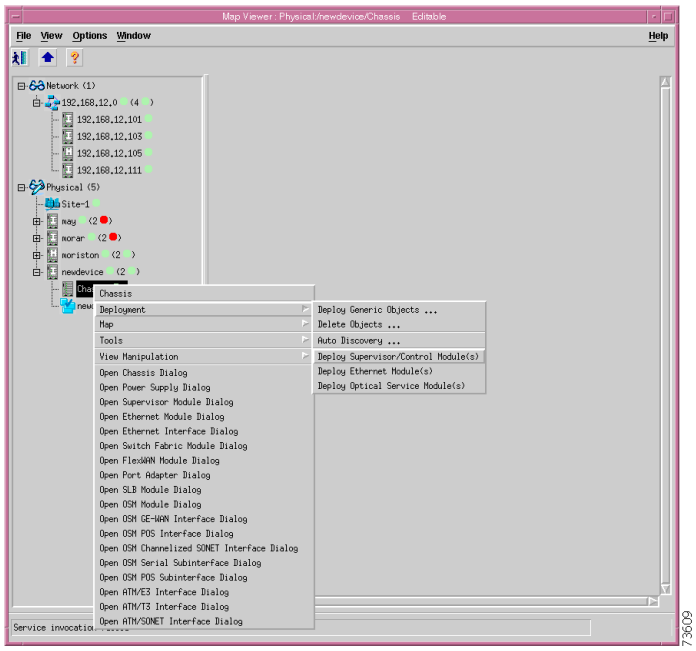


You can either click the **Cancel** button to cancel the operation or click the **Finish** button to create the object. If the Chassis Slot Number corresponds to an occupied slot, an error message is displayed. The error message resembles the message shown in Figure 4-30.

FlexWAN Module

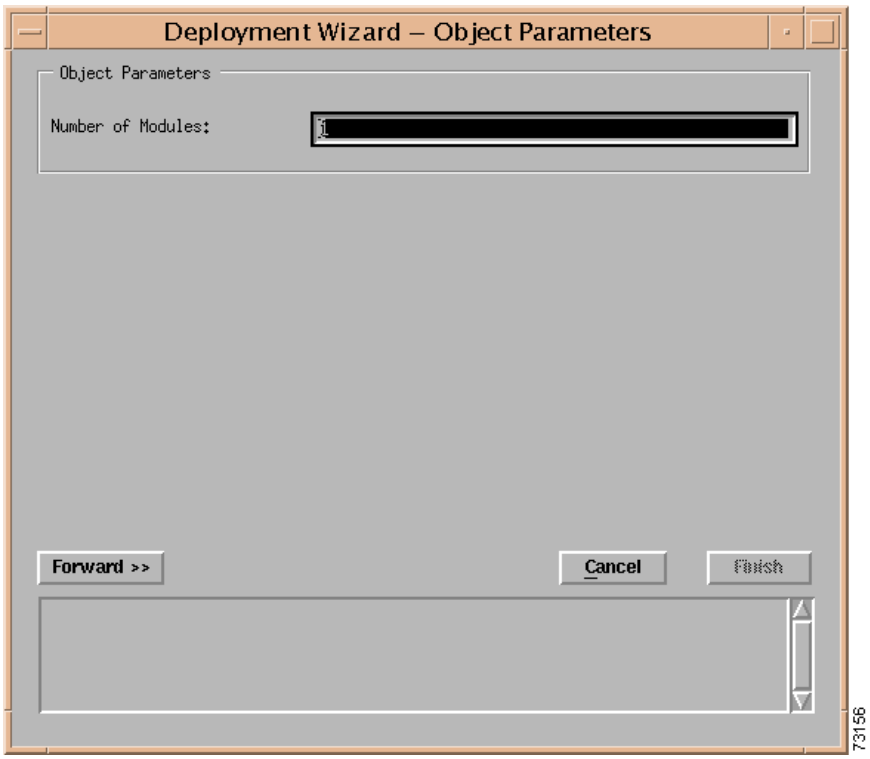
To predeploy a FlexWAN Module, choose the **Deployment > Deploy Supervisor/Control Module(s)** option in the pop-up menu from the Chassis object (see Figure 4-39).

Figure 4-39 Predeploying FlexWAN Modules



After you choose the **Deploy FlexWAN Module(s)** option, the FlexWAN Module Deployment Wizard—Object Parameters window is displayed (see Figure 4-40).

Figure 4-40 FlexWAN Module Deployment Wizard—Object Parameters

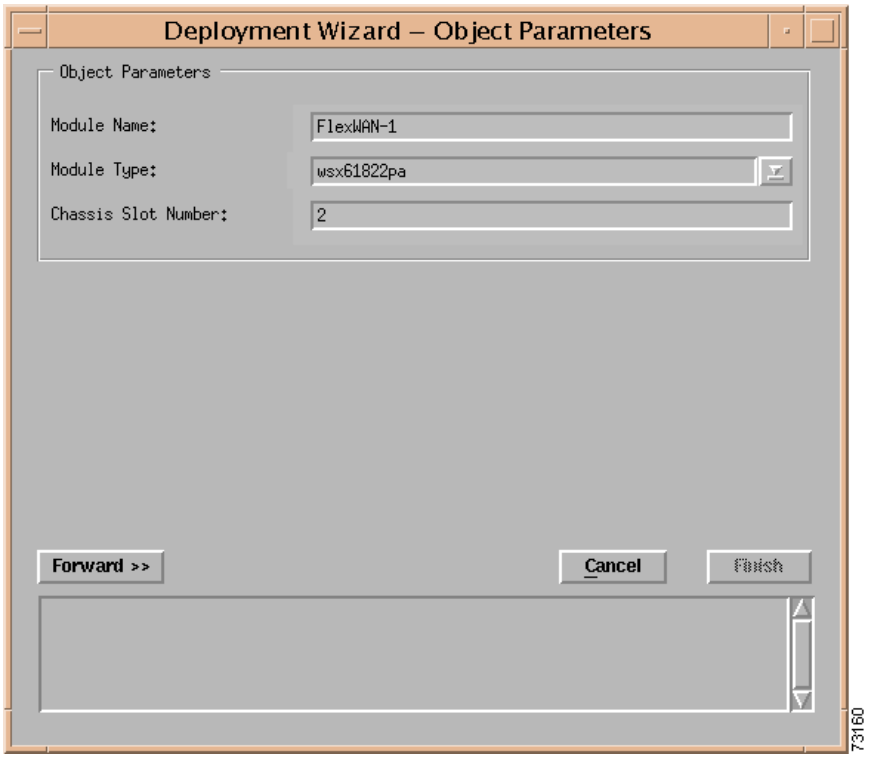


Property	Description
Number of Modules	The number of FlexWAN modules to be deployed at the same time. This value cannot be greater than 12.

Enter the number of FlexWAN modules to be deployed at the same time and click **Forward** button. The FlexWAN Module Deployment Wizard – Object Parameters Details window is displayed for each module to be deployed (see Figure 4-41).

Note This value cannot be greater than 12. If it is, an error message will be displayed and the **Forward** button will not work.

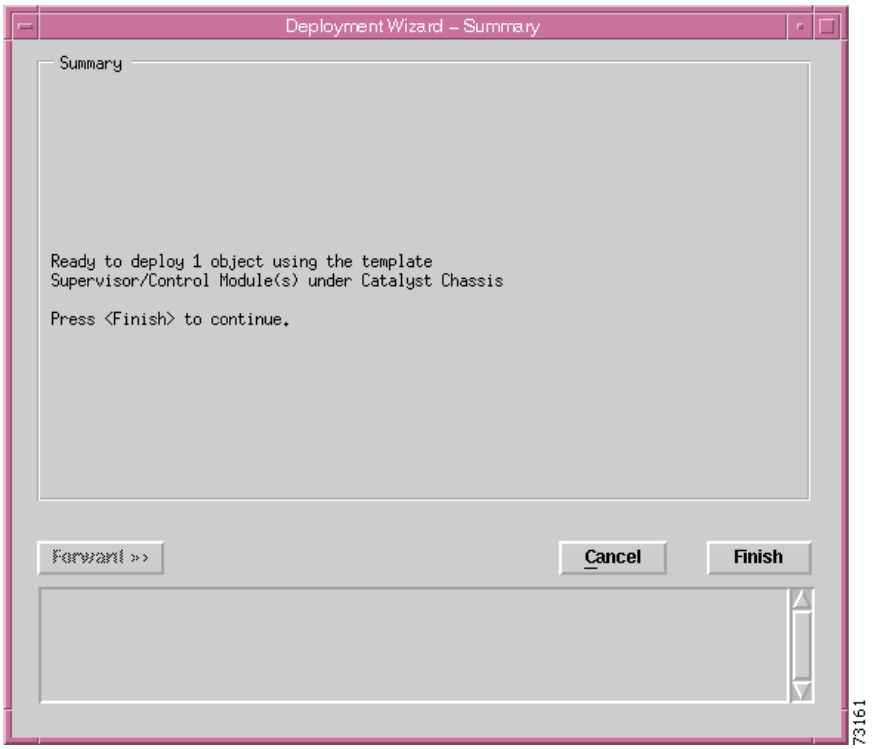
Figure 4-41 FlexWAN Module Deployment Wizard—Object Parameters Details



Property	Description
Module Name	The name given to the FlexWAN Module object.
Module Type	The type of FlexWAN Module to be deployed. This is a drop-down list with the following values: • wsx61822pa—FlexWAN Module
Chassis Slot Number	The slot in which the FlexWAN is to be deployed. The FlexWAN Modules can be deployed on slots 2 through 13.

Enter the details for the FlexWAN Module object and click the **Forward** button. The FlexWAN Module Deployment Wizard—Summary window is displayed (see Figure 4-42).

Figure 4-42 FlexWAN Module Deployment Wizard—Summary

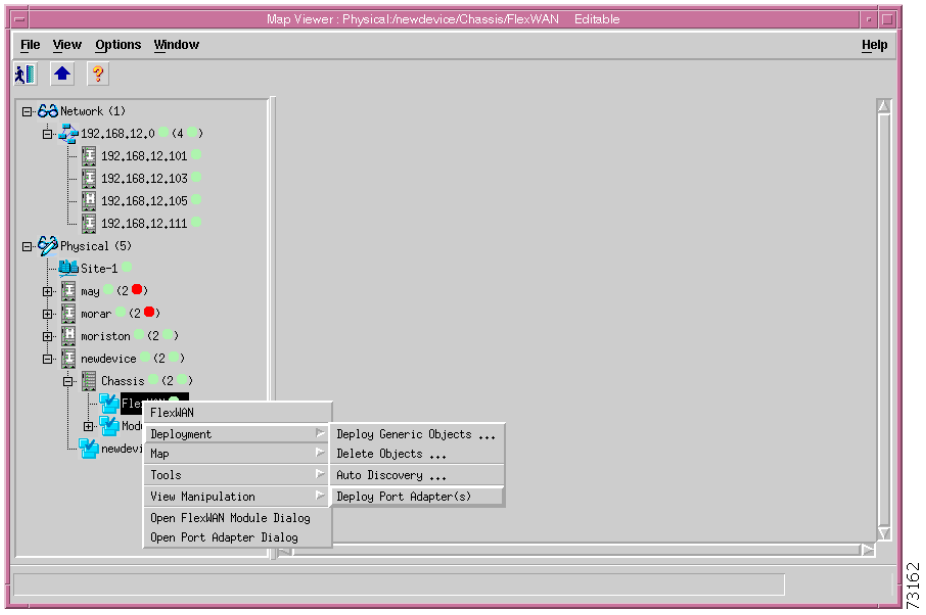


You can either click the **Cancel** button to cancel the operation or click the **Finish** button to create the object. If the Chassis slot number corresponds to an occupied slot, an error message is displayed. The message resembles the message shown in Figure 4-30.

Port Adapters

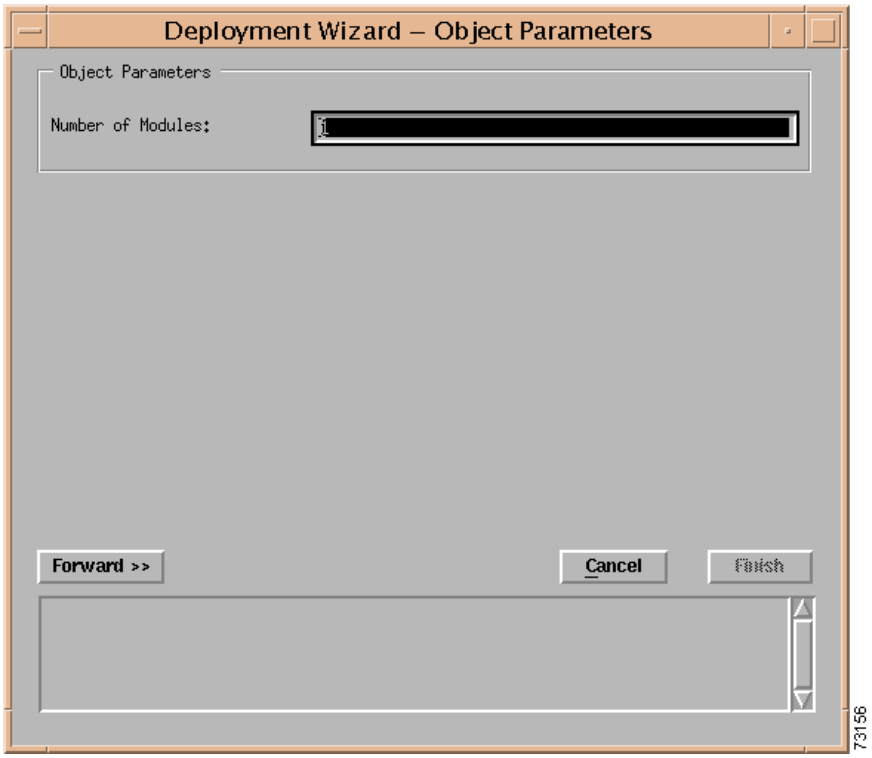
To predeploy a port adapter, the FlexWAN module must first be deployed (see the "FlexWAN Module" section on page 4-44). Choose the **Deployment > Deploy Port Adapter(s)** option in the pop-up menu from the FlexWAN object (see Figure 4-43).

Figure 4-43 Predeploying Port Adapters



The Port Adapter Deployment Wizard—Object Parameters window is displayed (see Figure 4-44).

Figure 4-44 Port Adapter Deployment Wizard—Object Parameters

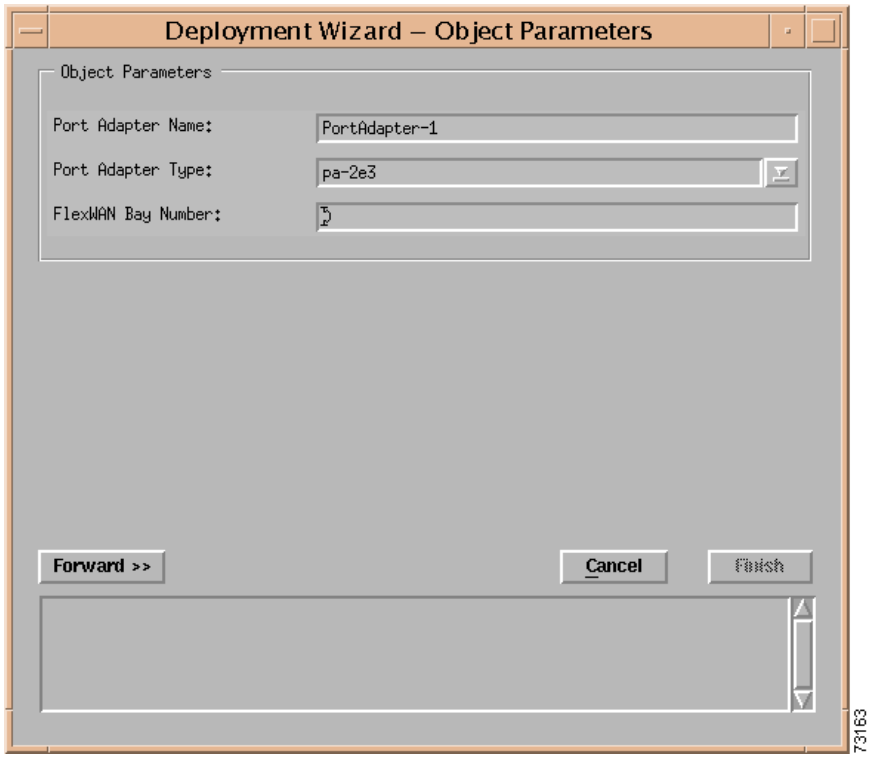


Property	Description
Number of Modules	The number of port adapters to be deployed at the same time.

Enter the number of port adapters to be deployed at the same time and click **Forward** button. The Port Adapter Deployment Wizard – Object Parameters Details window is displayed for each module to be deployed (see Figure 4-45).

Note This value cannot be greater than 2. If it is, an error message will be displayed and the **Forward** button will not work

Figure 4-45 Port Adapter Deployment Wizard—Object Parameters Details

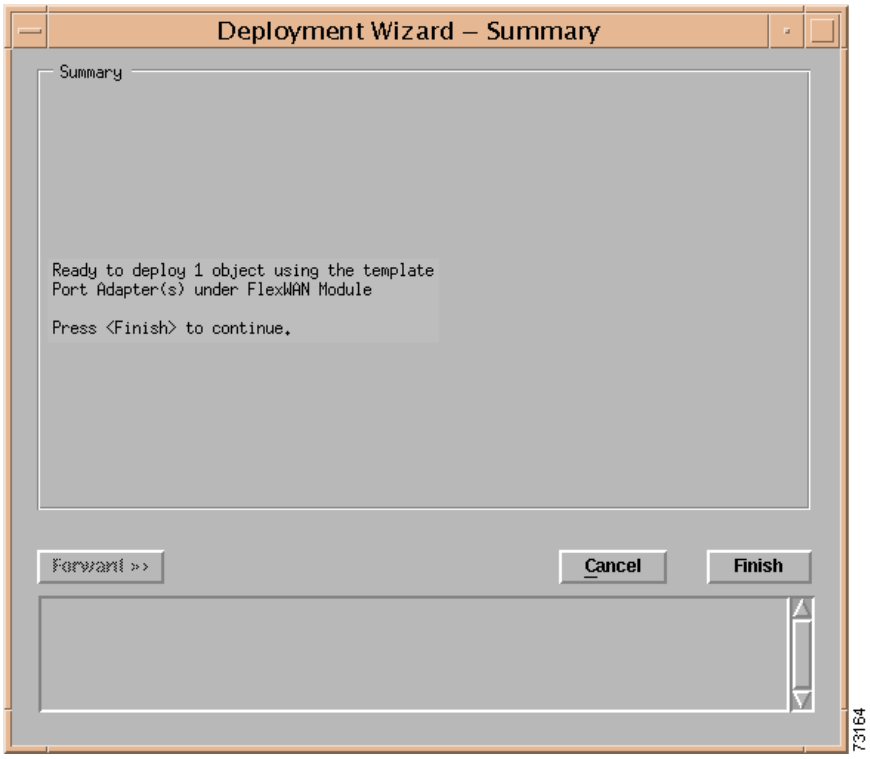


Property	Description
Port Adapter Name	The name given to the Port Adapter object.
Port Adapter Type	The type of port adapter to be deployed. This is a drop-down list with the following values: • pa-ah1t • pa-ah2t • pa-4t-plus • pa-a8t-v35 • pa-atmdx-ds3 • pa-atmdx-e3 • pa-atmdx-sml-oc3 • pa-atmdx-smi-oc3 • pa-atmdx-mm-oc3 • pa-a8t-x21 • pa-a8t-rs232 • pa-1e3 • pa-2e3 • pa-1t3 • pa-2t3 • pa-8ct1-csu • pa-8ce1 • pa-ce3 • pa-possw-sm • pa-possw-mm • pa-possw-lr
Port Adapter Type (continued)	• pa-1t3-plus • pa-2t3-plus • pa-mct3 • pa-mc2t3 • pa-san-fc1
FlexWAN Bay Number	The FlexWAN bay in which the port adapter is to be deployed. The port adapter can be deployed in bays 0 and/or 1.

Note Valid FlexWAN bay numbers are 0 or 1. If you enter any other number, an error message is displayed and the **Forward** button will not work.

Enter the details for the Port Adapter object and click the **Forward** button. The Port Adapter Deployment Wizard—Summary window is displayed (see Figure 4-46).

Figure 4-46 Port Adapter Deployment Wizard—Summary

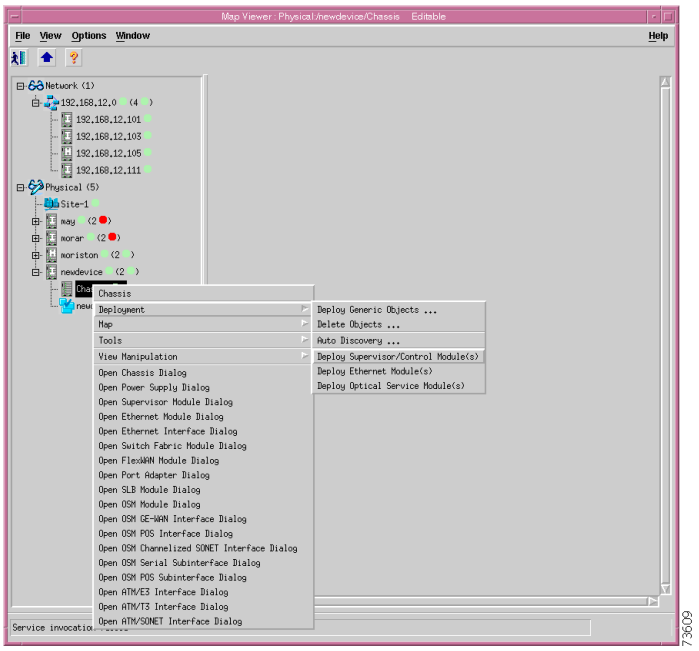


You can either click the **Cancel** button to cancel the operation or click the **Finish** button to create the object. If the Chassis slot number corresponds to an occupied slot, an error message is displayed. The message resembles the message shown in Figure 4-30.

Content Switching Module

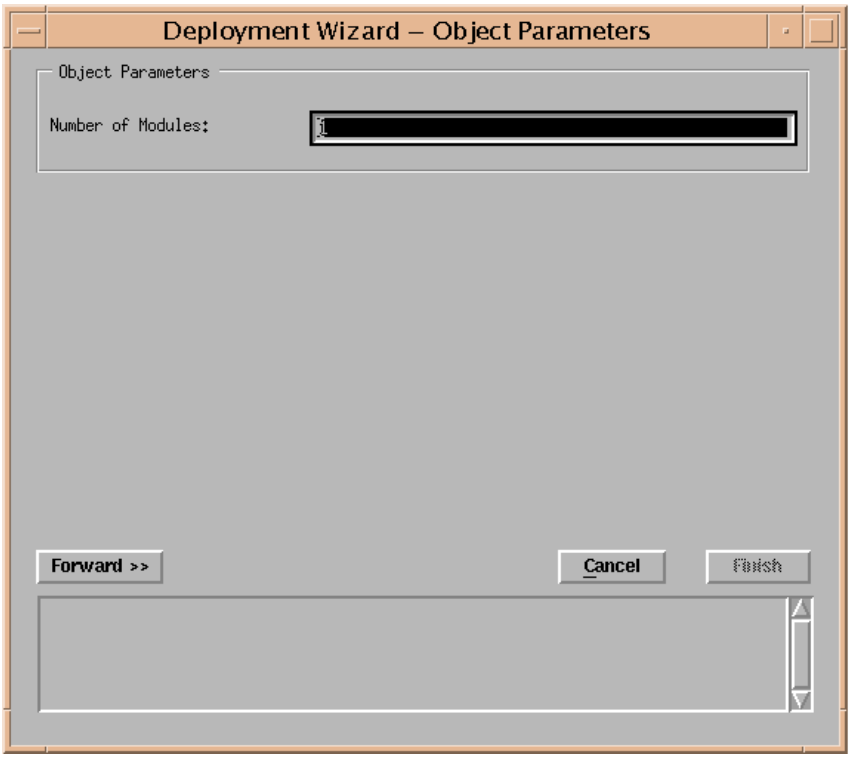
The Content Switching Module is a line card that provides server load balancing (SLB) of client traffic to server farms, firewalls, secure sockets layer (SSL) devices, or VPN termination devices. To predeploy a Content Switching Module (CSM), choose the **Deployment > Deploy Supervisor/Control Module(s)** option in the pop-up menu from the Chassis object (see Figure 4-47).

Figure 4-47 Predeploying Content Switching Modules



After you choose the **Deploy Supervisor/Control Module(s)** option, the Deployment Wizard—Object Parameters window is displayed (see Figure 4-48).

Figure 4-48 Deployment Wizard—Object Parameters



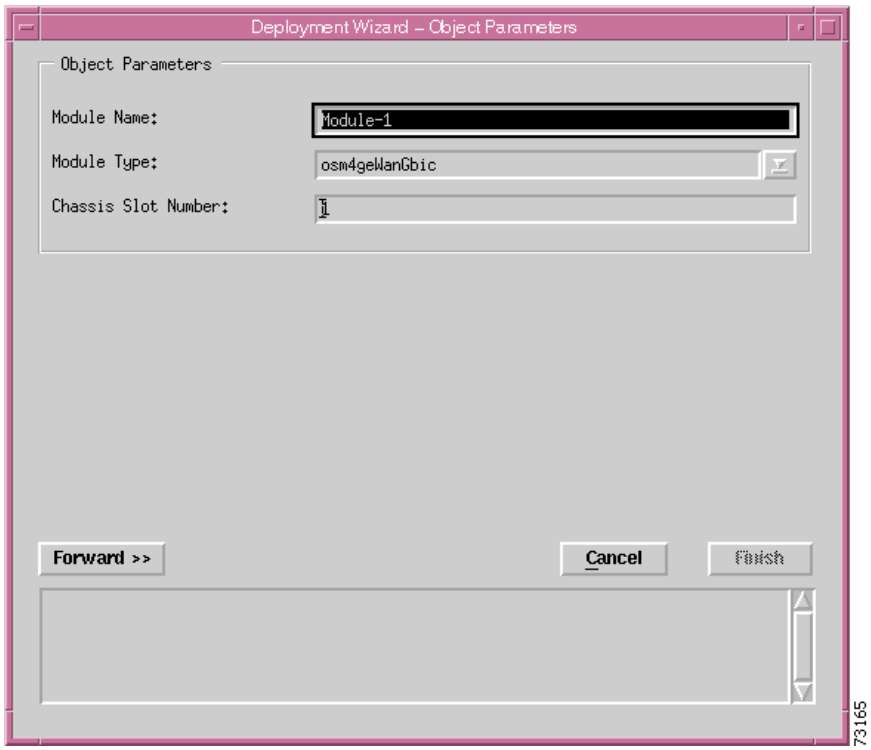
Property	Description
Number of Modules	The number of Content Switching Modules to be deployed at the same time. This value cannot be greater than 1 for IOS 12.1(8a)E3 and earlier, and no greater than 11 for IOS 12.1(8a)EX and later.

Enter the number of Content Switching Modules to be deployed at the same time and click **Forward** button. The Deployment Wizard—Object Parameters Details window is displayed for each module to be deployed (see Figure 4-49).

Note The C65/76M manager supports management and configuration of the CSM if only one CSM is deployed. If you choose to deploy more than one CSM in the chassis, inventory of the CSMs are supported, but the management and configuration of the CSMs are not supported.

Caution If multiple CSMs are deployed on a chassis, appropriate user access controls should be implemented in CEMF to prevent users from accidentally using the C65/76M manager to modify the CSM configurations. Refer to the *Cisco Element Manager Framework User Guide* for additional information about user access control.

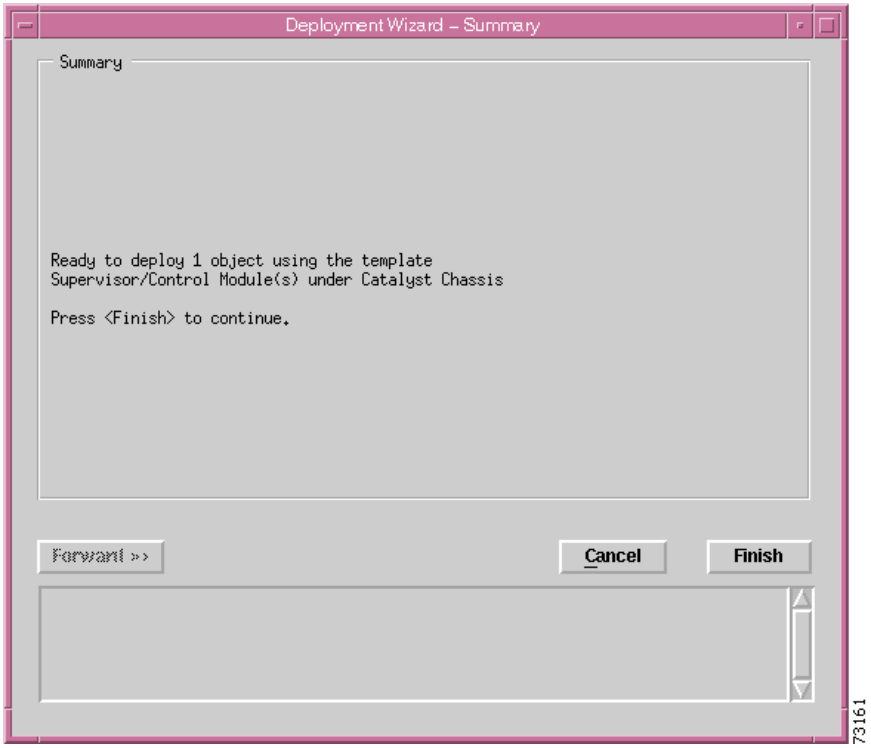
Figure 4-49 Deployment Wizard—Object Parameters Details



Property	Description
Module Name	The name given to the Content Switching Module object.
Module Type	The type of Content Switching Module to be deployed. This is a drop-down list with the following value: • ws-x6066-slb-apc—Content Switching Module
Chassis Slot Number	The slot in which the Content Switching Module is to be deployed. The Content Switching Modules can be deployed on slots 2 through 13.

Enter the details for the Content Switching Module object and click the **Forward** button. The Deployment Wizard—Summary window is displayed (see Figure 4-50).

Figure 4-50 Deployment Wizard—Summary

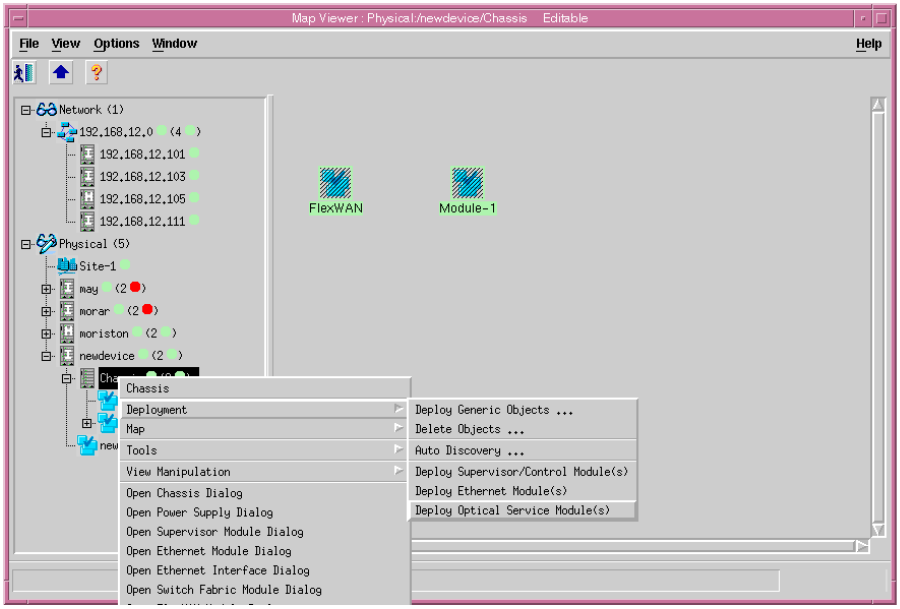


You can either click the **Cancel** button to cancel the operation or click the **Finish** button to create the object. If the Chassis slot number corresponds to an occupied slot, an error message is displayed. The message resembles the message shown in Figure 4-30.

Optical Services Module

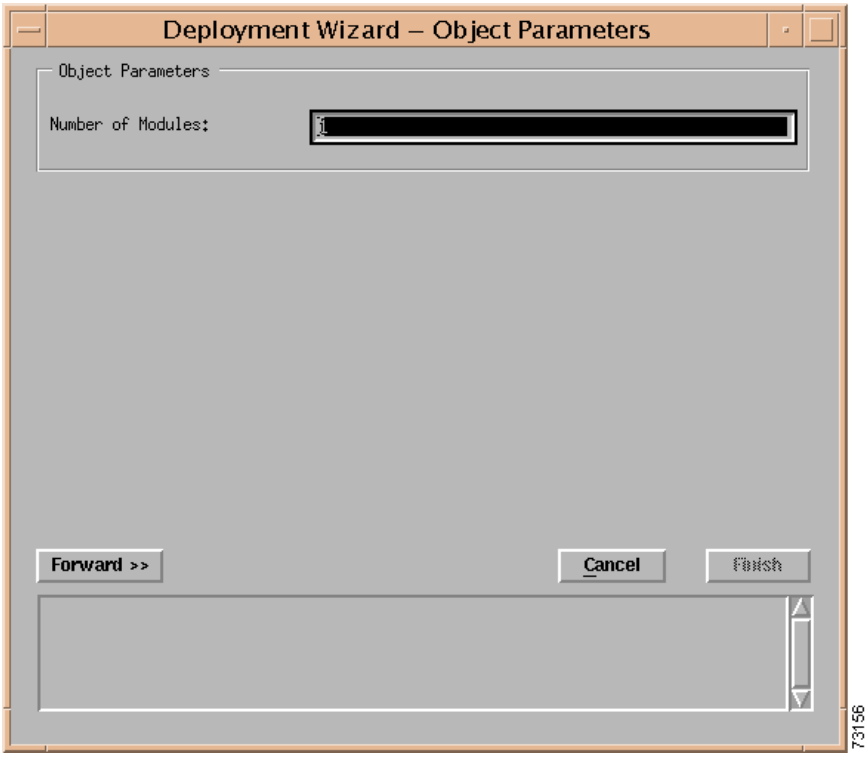
To predeploy an Optical Services Module (OSM), choose the **Deploy Module(s), Deploy OSM Module** option in the pop-up menu from the Chassis object (see Figure 4-51).

Figure 4-51 Predeploying OSM Modules



After you choose the **Deploy OSM Module(s)** option, the OSM Module Deployment Wizard—Object Parameters window is displayed (see Figure 4-52).

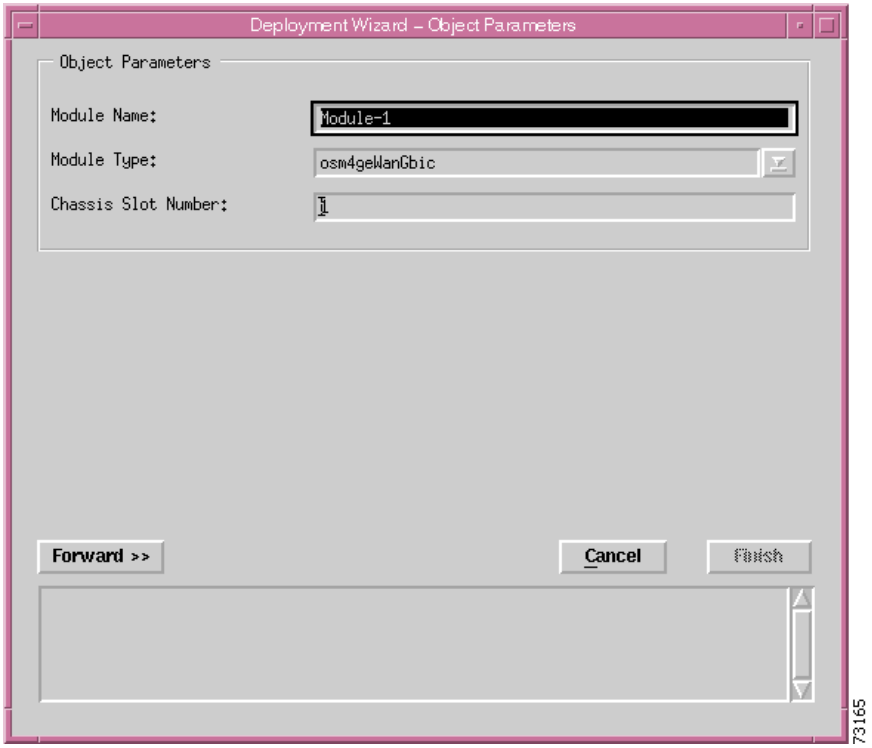
Figure 4-52 OSM Module Deployment Wizard—Object Parameters



Property	Description
Number of Modules	The number of OSMs to be deployed at the same time.

Enter the number of OSMs to be deployed at the same time and click **Forward** button. The Deployment Wizard—Object Parameters Details window is displayed for each module to be deployed (see Figure 4-53).

Figure 4-53 OSM Module Deployment Wizard—Object Parameters Details



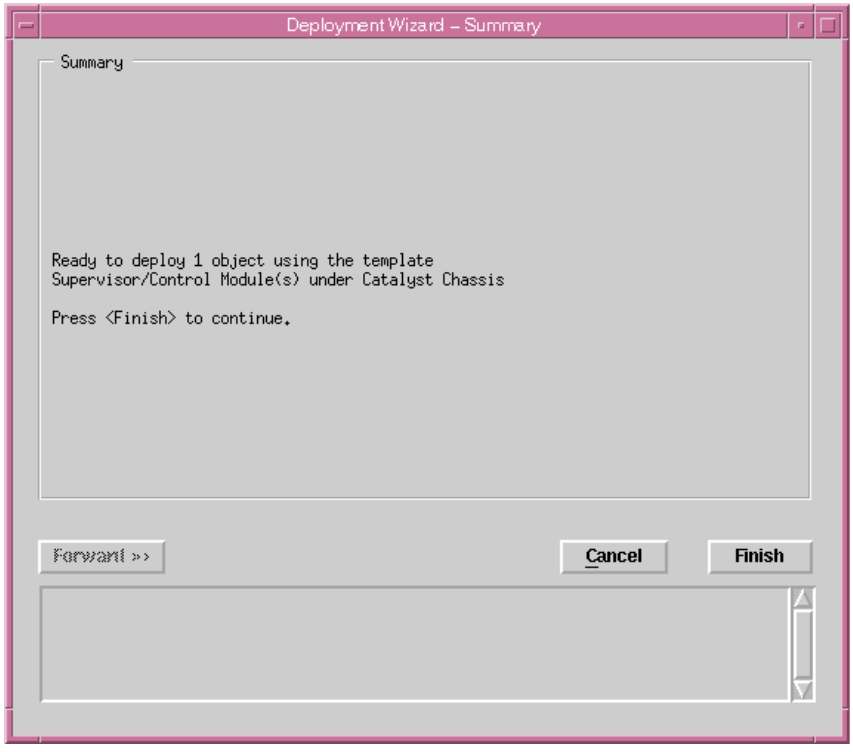
Property	Description
Module Name	The name given to the OSM object.
Module Type	The type of OSM to be deployed. This is a drop-down list with the following values: • osm-4ge-wan-gbic—4-port Gigabit Ethernet Optical Services Module, GBIC • osm-4oc12-pos-mm—4-port OC-12/STM-4 SONET/SDH OSM, MM, with 4 ports of Gigabit Ethernet • osm-4oc12-pos-si—4-port OC-12/STM-4 SONET/SDH OSM, SM-IR, with 4 ports of Gigabit Ethernet • osm-4oc12-pos-sl—4-port OC-12/STM-4 SONET/SDH OSM, SM-LR, with 4 ports of Gigabit Ethernet • osm-1oc48-pos-ss—1-port OC-48/STM-16 SONET/SDH OSM, SM-SR, with 4 ports of Gigabit Ethernet • osm-1oc48-pos-si—1-port OC-48/STM-16 SONET/SDH OSM, SM-IR, with 4 ports of Gigabit Ethernet • osm-1oc48-pos-sl—1-port OC-48/STM-16 SONET/SDH OSM, SM-LR, with 4 ports of Gigabit Ethernet • osm-16oc3-pos-mm—16-port OC-3/STM-1 SONET/SDH OSM, MM, with 4 ports of Gigabit Ethernet • osm-16oc3-pos-si—16-port OC-3/STM-1 SONET/SDH OSM, SM-IR, with 4 ports of Gigabit Ethernet

Property	Description
Module Type (continued)	• osm-16oc3-pos-sl—16-port OC-3/STM-1 SONET/SDH OSM, SM-LR, with 4 ports of Gigabit Ethernet • osm-2oc12-pos-mm—2-port OC-12/STM-4 SONET/SDH OSM, MM, with 4 ports of Gigabit Ethernet • osm-2oc12-pos-si—2-port OC-12/STM-4 SONET/SDH OSM, SM-IR, with 4 ports of Gigabit Ethernet • osm-2oc12-pos-sl—2-port OC-12/STM-4 SONET/SDH OSM, SM-LR, with 4 ports of Gigabit Ethernet • osm-8oc3-pos-mm—8-port OC-3/STM-1 SONET/SDH OSM, MM, with 4 ports of Gigabit Ethernet • osm-8oc3-pos-si—8-port OC-3/STM-1 SONET/SDH OSM, SM-IR, with 4 ports of Gigabit Ethernet • osm-8oc3-pos-sl—8-port OC-3/STM-1 SONET/SDH OSM, SM-LR, with 4 ports of Gigabit Ethernet • osm-1choc48/t3-ss—1-port short reach OC48 with 4 Gigabit Ethernet • osm-1choc48/t3-si—1-port channelized OC-48, SM-IR, with 4 ports of Gigabit Ethernet

Property	Description
Module Type (continued)	• osm-2choc48/t3-si—2-port channelized OC-48, SM-IR, with 4 ports of Gigabit Ethernet • osm-2choc48/t3-ss—2-port short reach OC48, with 4 ports of Gigabit Ethernet • osm-4choc12/t3-mm—4-port channelized OC-12, MM, with 4 ports of Gigabit Ethernet • osm-4choc12/t3-si—4-port channelized OC-12, SM-IR, with 4 ports of Gigabit Ethernet • osm-8choc12/t3-mm—8-port channelized OC-12, MM, with 4 ports of Gigabit Ethernet • osm-8choc12/t3-si—8-port channelized OC-12, SM-IR, with 4 ports of Gigabit Ethernet
Chassis Slot Number	The slot in which the OSM is to be deployed. The OSMs can be deployed on slots 2 through 13.

Enter the details for the OSM object and click the **Forward** button. The Deployment Wizard—Summary window is displayed (see Figure 4-54).

Figure 4-54 OSM Deployment Wizard—Summary



You can either click the **Cancel** button to cancel the operation or click the **Finish** button to create the object. If the Chassis slot number corresponds to an occupied slot, an error message is displayed. The message resembles the message shown in Figure 4-30.

Commissioning Predeployed Objects

A predeployed Network Element and subobjects are commissioned automatically when a coldStart SNMP trap that is issued from the switch or the router is received by the CEMF server.

Note For the automatic commissioning to work, the switch or router must be configured to send SNMP traps and the CEMF server host must be in the trap client list.

The subchassis discovery task is executed during commissioning. The discovery task does the following:

- Verifies the predeployed objects.
- If a mismatch between the predeployed object and the discovered object exists, then the predeployed object is placed in a Mismatched state. For example, if a Supervisor Engine 2 MSFC2 is predeployed but a Supervisor Engine 1A MSFC2 is discovered, the Supervisor Module object will be placed in a Mismatched state. If the wrong object was predeployed, delete the object and recommission the Network Element. If the wrong module was inserted in the switch or router, insert the correct module and recommission the object.
- Checks for switch or router components that were not predeployed. Any objects that are discovered will be created and commissioned automatically.
- Automatically creates and commissions the remaining C65/76M objects. These objects include the power supply and all of the logical objects.

If the coldStart trap is not received by the CEMF server when the switch is first brought on-line, then the predeployed Network Element object needs to be commissioned manually by opening the Network Element dialog box and selecting the Commission button (see Figure 4-15).