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CHAPTER 2

Installing Cisco Fabric Manager

Cisco Fabric Manager provides an alternative to the command-line interface (CLI) for most switch configuration tasks. Fabric Manager provides a graphical user interface (GUI) that displays a real-time views of your Fibre Channel fabrics, and lets you manage the configuration of Cisco and third-party SAN switches.

This chapter contains the following sections:

Information About Cisco Fabric Manager

Cisco Fabric Manager provides an alternative to the command-line interface (CLI) for many switch configuration commands. For information about using the CLI to configure Cisco Nexus 5000 Series switches, see the *Cisco Nexus 5000 Series CLI Configuration Guide*.

In addition to complete configuration and status monitoring capabilities, Fabric Manager provides powerful Fibre Channel troubleshooting tools such as Fibre Channel ping and traceroute.

The Cisco Fabric Manager includes these management applications:

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Fabric Manager Server

The Fabric Manager Server software must be installed before running Fabric Manager. On a Windows PC, the Fabric Manager Server is installed as a service and is administered using the Windows Services control panel. Fabric Manager Server is responsible for discovery of the physical and logical fabric, and for listening for SNMP traps, syslog messages, and Performance Manager threshold events. For more information, see Chapter 3, "Fabric Manager Server."

Fabric Manager Client

The Fabric Manager Client component displays a map of your Fibre Channel network fabrics, including Cisco switches, third-party switches, hosts, and storage devices. Fabric Manager Client provides multiple menus for accessing the features of Fabric Manager Server. For more information, see Chapter 5, "Fabric Manager Client."

Fabric Manager Server Proxy Services

Fabric Manager Client and Device Manager use SNMP to communicate with Fabric Manager Server. In typical configurations, the Fabric Manager Server may be installed behind a firewall. The SNMP proxy service available in Cisco Fabric Manager provides a TCP-based transport proxy for these SNMP requests. The SNMP proxy service allows you to block all UDP traffic at the firewall and configure Fabric Manager Client to communicate over a configured TCP port.

Fabric Manager uses the CLI for managing some features on the switches. These management tasks are used by Fabric Manager and do not use the proxy services. Your firewall must remain open for Fabric Manage to have access to the following CLI capabilities:

- External and internal loopback test
- Access to Flash files
- Creating CLI users
- **Show image version** command
- **Show tech** command
- Switch resident reports (syslog, accounting)
- Zone migration
- **Show cores** command

If you are using the SNMP proxy service and another application on your server is using port 9198, you need to modify your workstation settings.

Note The switch always checks the local SNMP users before remote AAA users, unlike the CLI.

To modify a Windows workstation to use the proxy service, perform this task:

Step 1 Open Internet Explorer and choose **Tools > Internet Options**.

You see the Internet Options dialog box.

Step 2 Click the **Connections** tab and then choose **LAN Settings**.

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You see the LAN Settings dialog box.

Step 3 Check the **Use a Proxy Server for your LAN** check box and click **Advanced**.

Step 4 Add your server IP Address or local host under the Exceptions section.

Step 5 Click **OK** to save your changes.

For additional information, see the "Running Fabric Manager Behind a Firewall" section on page 2-19.

Device Manager

Device Manager provides two views of the switch:

- Device View displays a graphic representation of the switch configuration and provides access to statistics and configuration information.
- Summary View displays a summary of xE ports (Inter-Switch Links), Fx ports (fabric ports), Nx ports (attached hosts and storage) and SAN port channels on the switch, as well as Fibre Channel and IP neighbor devices. Summary View also displays all operational virtual interfaces (Fibre Channel and Ethernet). Summary or detailed statistics can be charted, printed, or saved to a file in tab-delimited format. For additional information, see Chapter 6, "Device Manager."

Performance Manager

Performance Manager provides detailed traffic analysis by capturing data with SNMP. This data is compiled into various graphs and charts that can be viewed with any web browser. For additional information, see Chapter 29, "Performance Manager."

Fabric Manager Web Server

Fabric Manager Web Server allows operators to monitor and obtain reports for events, performance, and inventory from a remote location using a web browser.

Understanding Switch Management

Cisco Cisco Nexus 5000 Series switches are accessed and configured using standard management protocols. Table 2-1 lists the management protocols that Fabric Manager supports to access, monitor, and configure Cisco Cisco Nexus 5000 Series switches.

Table 2-1 Supported Management Protocols

Management Protocol	Purpose
Telnet/SSH	Provides remote access to the CLI for a Cisco Cisco Nexus 5000 Series switch.
FTP/SFTP/TFTP, SCP	Copies configuration and software images between devices.

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Table 2-1 Supported Management Protocols

Management Protocol	Purpose
SNMPv1, v2c, and v3	Includes over 80 distinct Management Information Bases (MIBs). Cisco Cisco Nexus 5000 Series switches support SNMP version 1, 2, and 3 and RMON V1 and V2. RMON provides advanced alarm and event management, including setting thresholds and sending notifications based on changes in device or network operation. By default, the Cisco Fabric Manager communicates with Cisco Cisco Nexus 5000 Series switches using SNMPv3, which provides secure authentication using encrypted user names and passwords. SNMPv3 also provides the option to encrypt all management traffic.
HTTP/HTTPS	Includes HTTP and HTTPS for web browsers to communicate with Fabric Manager Web Services and for the distribution and installation of the Cisco Fabric Manager software. HTTP is not used for communication between the Cisco Fabric Manager Server and Cisco Cisco Nexus 5000 Series switches.
XML/CIM over HTTP/HTTPS	Includes CIM server support for designing storage area network management applications to run on Cisco NX-OS.
ANSI T11 FC-GS-3	Provides Fibre Channel-Generic Services (FC-GS-3) in the defining management servers in the Fabric Configuration Server (FCS). Fabric Manager uses the information provided by FCS on top of the information contained in the Name Server database and in the Fibre Channel Shortest Path First (FSPF) topology database to build a detailed topology view and collect information for all the devices in the fabric.

Fabric Manager connects to switches using in-band or out-of-band management connections. These connection methods are described in the following sections:

- mgmt0, page 2-4
- IPFC, page 2-5

mgmt0

The out-of-band management connection is a 10/100 Mbps Ethernet interface on the supervisor module, which is labeled mgmt0. The mgmt0 interface can be connected to a management network to access the switch through IP over Ethernet. You must connect to at least one Cisco MDS 9000 Family or Cisco

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Nexus 5000 Series switch in the fabric through its Ethernet management port. You can then use this connection to manage the other switches using in-band (Fibre Channel) connectivity. Otherwise, you need to connect the mgmt0 port on each switch to your Ethernet network.

IPFC

You can also manage switches on a Fibre Channel network using an in-band IP connection. The Cisco MDS 9000 Family supports RFC 2625 IP over Fibre Channel, which defines an encapsulation method to transport IP over a Fibre Channel network.

IPFC encapsulates IP packets into Fibre Channel frames so that management information can cross the Fibre Channel network without requiring a dedicated Ethernet connection to each switch. This feature allows you to build a completely in-band management solution.

Note Fabric Manager requires an out-of-band (Ethernet) connection to at least one Cisco MDS 9000 Family or Cisco Nexus 5000 Series switch.

Installing the Management Software

This section describes how to install Fabric Manager and Device Manager. This section contains the following topics:

Before You Install

Before you can access the Cisco Fabric Manager, you must complete the following tasks:

Step 1 Configure the supervisor module with the following values using the setup routine or the CLI:

- IP address assigned to the mgmt0 interface
- SNMP credentials (v3 user name and password or v1/v2 communities), maintaining the same user name and password for all the switches in the fabric

Note Cisco Nexus 5000 Series switches support AAA authentication using RADIUS, TACACS, or local SNMP users.

Step 2 Obtain the Fabric Manager software, which is available as a download from Cisco.com at the following location:

http://cisco.com/cgi-bin/tablebuild.pl/mds-fm

Step 3 Shut down any instances of Fabric Manager and Device Manager.

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Note We recommend that you install the latest version of the Fabric Manager applications. Fabric Manager is backward compatible with the NX-OS software running on the Cisco Nexus 5000 Series switches. When upgrading the switch, upgrade the Fabric Manager software first, and then upgrade the Cisco NX-OS software on the switch.

Supported Software

Note For the latest information on supported software, refer to the *Cisco Cisco Nexus 5000 Series Release Notes for Cisco NX-OS Release 4.0*.

Cisco Fabric Manager supports the following software:

- Operating systems
  - Windows 2000 SP4, 2003 SP2, XP SP2
  - Redhat Linux (2.6 Kernel)
  - Solaris (SPARC) 8 and 10
  - VMWare Server 1.0
- Java
  - Sun JRE and JDK 1.5(x) is supported
  - Java Web Start 1.2, 1.0.1 and 1.5
- Browsers
  - Internet Explorer 6.x and 7.0

    Note Internet Explorer 7.0 is not supported on Windows 2000 SP4.

  - Firefox 1.5 and 2.0
- Databases
  - Oracle Database 10g Express
  - PostgreSQL 8.2 (Windows)
  - PostgreSQL 8.1 (Solaris and Linux)
- Security
  - Cisco ACS 3.1 and 4.0
  - PIX firewall
  - IP tables
  - SSH v2
  - Global Enforce SNMP Privacy Encryption
  - HTTPS

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Minimum Hardware Requirements

For a PC running Fabric Manager Server on large fabrics (1000 or more end devices), we recommend you use a Dual Core/Dual CPU high-speed system with 2 GB of RAM and 10 GB of free disk space.

Installing the Database

Fabric Manager requires an Oracle Database 10g Express or PostgreSQL database.

The Fabric Manager installation wizard provides an option to automatically install a PostgreSQL database. If you will not be selecting this option, you must install the database before you install Fabric Manager.

Note We recommend the Oracle Database 10g Express option for all users who are running Performance Manager on large fabrics (1000 or more end devices).

Installing Oracle

Note If you want to use Oracle Database 10g Express, you must install the database and create a user name and password before continuing with the Fabric Manager installation.

To install the Oracle database, perform this task:

Step 1 Go to the following location to install Oracle Database 10g Express:

http://www.oracle.com/technology/software/products/database/xe/index.html

Note If you have another instance of Oracle already installed on a PC, we recommend that you do not install the Oracle database on the same PC. In such cases, Fabric Manager can only use the PostgreSQL database.

Step 2 Run OracleXE.exe to install the Oracle database, and then set the password for the system user.

The database administrator uses the password to manage and administer Oracle Database 10g Express server, which is installed by the Oracle installer.

Step 3 Finish the installation and verify that both services (OracleServiceXE and OracleXETNSListener) are running from the Services window.

Step 4 Run the following script to change the default Oracle admin port and to create a database account:

```
C:\> cd c:\oraclexe\app\oracle\product\10.2.0\server\bin
C:\oraclexe\app\oracle\product\10.2.0\server\bin>sqlplus / as sysdba
SQL> exec dbms_xdb.sethttpport(8082);
SQL> GRANT CONNECT,RESOURCE,UNLIMITED TABLESPACE TO SCOTT IDENTIFIED BY
TIGER;
SQL> EXIT;
```

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Note The Oracle Database 10g Express option is only supported on Microsoft Windows. It is not supported on UNIX systems.

For information about backing up the Oracle database, go to the following location:

http://download.oracle.com/docs/cd/B25329_01/doc/admin.102/b25107/backrest.htm#i1004902

or use the exp/imp utility at:

http://download.oracle.com/docs/cd/B25329_01/doc/admin.102/b25107/impexp.htm#BCEEDCIB.

Note For information about backing up the PostgreSQL database, run the pg_dump utility. To run the utility, go to the following location: http://www.postgresql.org/docs/8.1/static/app-pgdump.html.

Installing Fabric Manager

You must install Fabric Manager from the CD-ROM or from Cisco.com.

Note Users installing Fabric Manager must have full administrator privileges to create user accounts and start services. Users should also have access to all ports. These are the ports used by Fabric Manager Server and the PostgreSQL database: 1098, 1099, 4444, 4445, 8009, 8083, 8090, 8092, 8093, 514, 5432.

To download the software from Cisco.com, go to the following web site:

http://cisco.com/cgi-bin/tablebuild.pl/mds-fm

To install Fabric Manager on Solaris, perform this task:

Step 1 Set Java 1.5 to the path that is to be used for installing Fabric Manager.

Step 2 Install the database that is to be used with Fabric Manager by following the instructions in the "Installing the Database" section on page 2-7.

Step 3 Copy the Fabric Manager jar file m9000-fm-3.3.0.*xx*.jar from the CD-ROM to a folder on the Solaris workstation.

Note The filename on the CD-ROM will contain a number where "*xx*" is shown in step 3. Use the same number for "*xx*" in the **java** command in step 4.

Step 4 Launch the installer using the following command:

```
java -Xmx256m -jar m9000-fm-3.3.0.xx.jar
```

Step 5 Follow the on-screen instructions provided in the Fabric Manager management software setup wizard.

When you connect to the server for the first time, Fabric Manager checks to see if you have the correct Sun Java Virtual Machine version installed on your workstation. Fabric Manager looks for version 1.5(x) during installation. If required, install the Sun Java Virtual Machine software.

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Note You can run CiscoWorks on the same PC as Fabric Manager, even though the Java requirements are different. When installing the later Java version for Fabric Manager, make sure it does not overwrite the earlier Java version required for CiscoWorks. Both versions of Java can coexist on your PC.

Note On Windows, Fabric Manager installations or upgrades should be done through the console using VNC and not a remote desktop.

To install Fabric Manager on Windows, perform this task:

Step 1 Click the **Install Management Software** link.

Step 2 Choose **Management Software > Cisco Fabric Manager**.

Step 3 Click the **Installing Fabric Manager** link.

Step 4 Click the **FM Installer** link.

You see the welcome to the management software setup wizard message in the Cisco Fabric Manager Installer window as shown in Figure 2-1.

Figure 2-1 Welcome to the Management Software Setup Wizard

Step 5 Click **Next** to begin the installation.

Step 6 Check the **I accept the terms of the License Agreement** check box and click **Next**.

You see the Install Options dialog box as shown in Figure 2-2.

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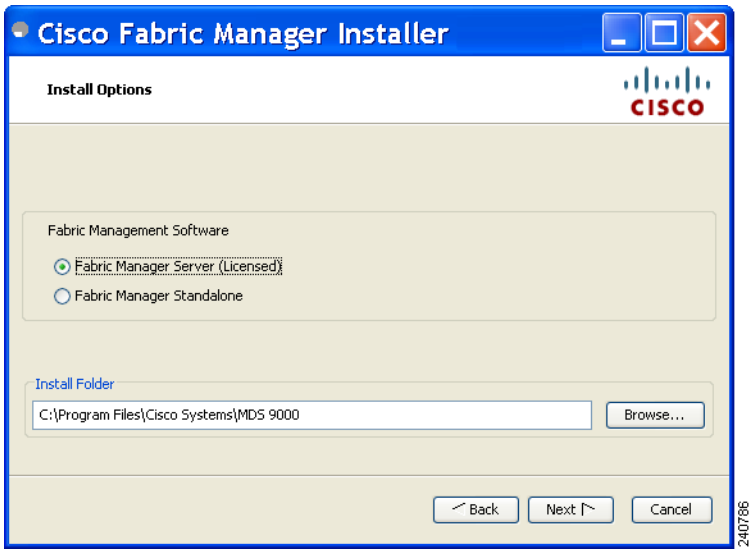
Figure 2-2 Install Options Dialog Box



Step 7 Click one of the radio buttons:

- Fabric Manager Server (Licensed) to install the server components for Fabric Manager Server.
- Fabric Manager Standalone to install the standalone version of Fabric Manager.

Note Fabric Manager Standalone is a single application containing Fabric Manager Client and a local version of Fabric Manager Server bundled together. Fabric Manager Standalone allows you to discover and monitor the immediate fabric.

Step 8 Select an installation folder on your workstation for Fabric Manager:

- On Windows, the default location is C:\Program Files\Cisco Systems\MDS 9000.
- On a UNIX (Solaris or Linux) machine, the installation path name is /usr/local/cisco_mds9000 or $HOME/cisco_mds9000, depending on the permissions of the user doing the installation.

Step 9 Click **Next**.

You see the Database Options dialog box as shown in Figure 2-3.

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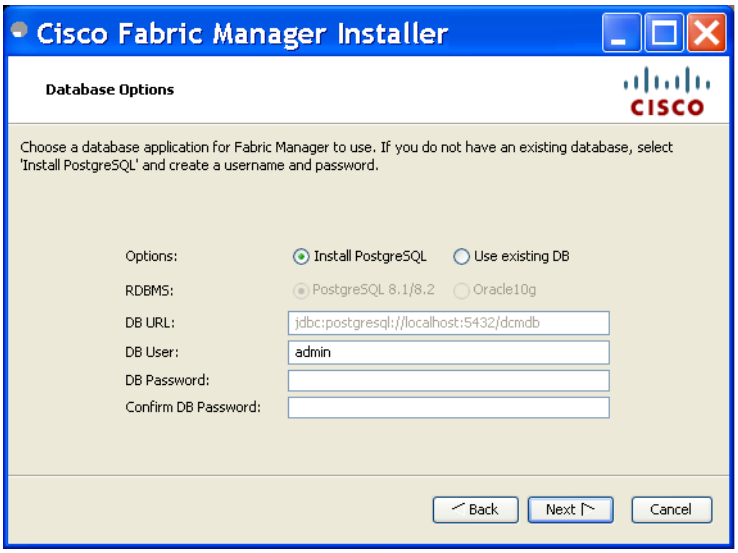
Figure 2-3 Database Options Dialog Box



Step 10 Click the **Install PostgreSQL** radio button to install Postgre SQL database. Click **Use existing DB** to specify which database you want to use.

If you choose Install PostgreSQL, accept the defaults and enter a password. The PostgreSQL database will be installed.

Note If you choose to install PostgreSQL, you must disable any security software you are running, because PostgreSQL may not install certain folders or users.

Note Before you install PostgreSQL, remove the **cygwin/bin** from your environment variable path if Cygwin is running on your system.

Step 11 If you choose **Use existing DB**, click the **PostgreSQL 8.1/8.2** radio button or the **Oracle10g** radio button.

Step 12 Click **Next** in the Database Options dialog box (figure Figure 2-3).

You see the User Options dialog box as shown in Figure 2-4.

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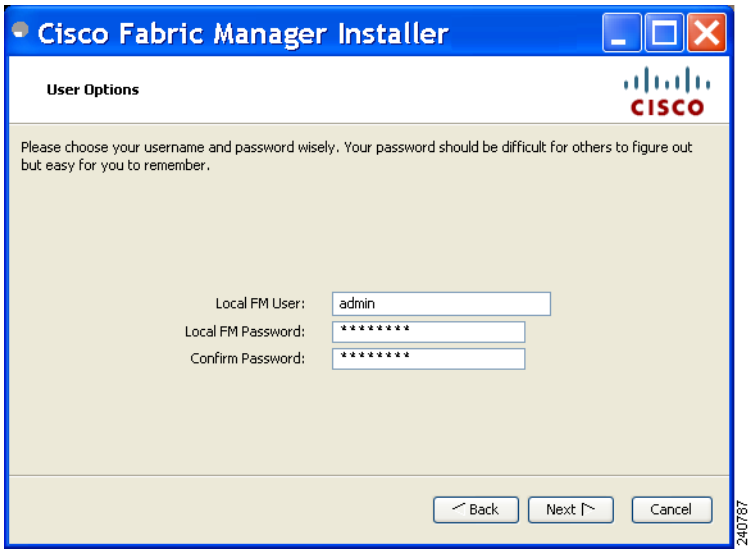
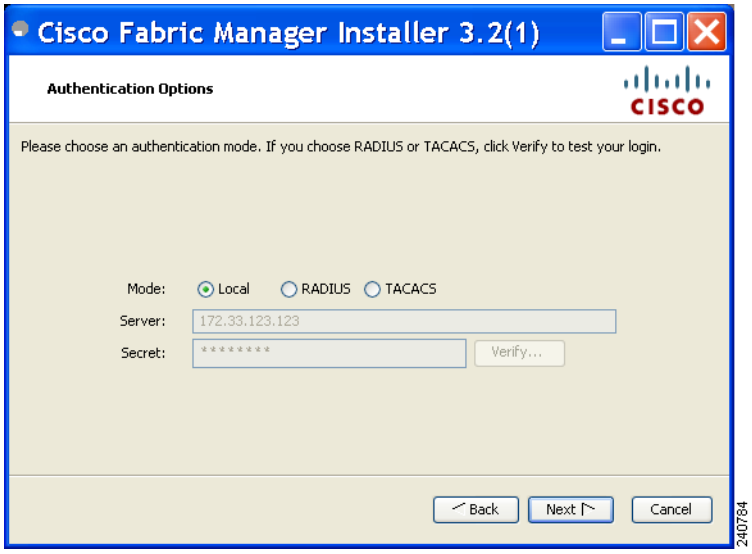
Figure 2-4 User Options Dialog Box



Step 13 Enter a user name and password and click **Next**.

You see the Authentication Options dialog box as shown in Figure 2-5.

Figure 2-5 Authentication Options Dialog Box



Step 14 Choose an authentication mode (Local, RADIUS, or TACACS) and click **Next**. Click **Verify** to test your login.

You see the Configuration Options dialog box for Fabric Manager Standalone as shown in Figure 2-6.

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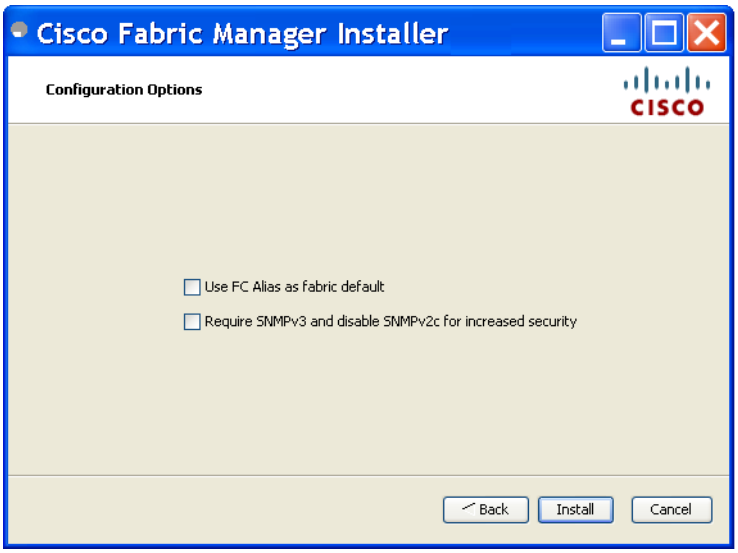
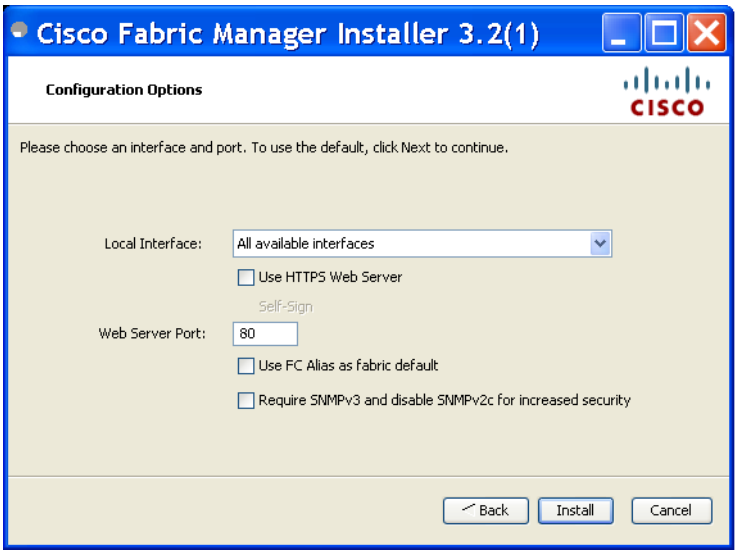
Figure 2-6 Configuration Options Dialog Box for Fabric Manager Standalone



Step 15 Check the **FC Alias** and **SNMPv3** check boxes as desired and click **Install** if you are installing Fabric Manager Standalone.

You see the Configuration Options dialog box for Fabric Manager Server as shown in Figure 2-7.

Figure 2-7 Configuration Options Dialog Box for Fabric Manager Server



Step 16 Choose the local interface and web server port or check the **FC Alias** and **SNMPv3** check boxes as desired and click **Install** if you are installing Fabric Manager Server.

Note If you check the **Use HTTPS Web Server** check box, the Web Server Port field is grayed out and the default port is 443.

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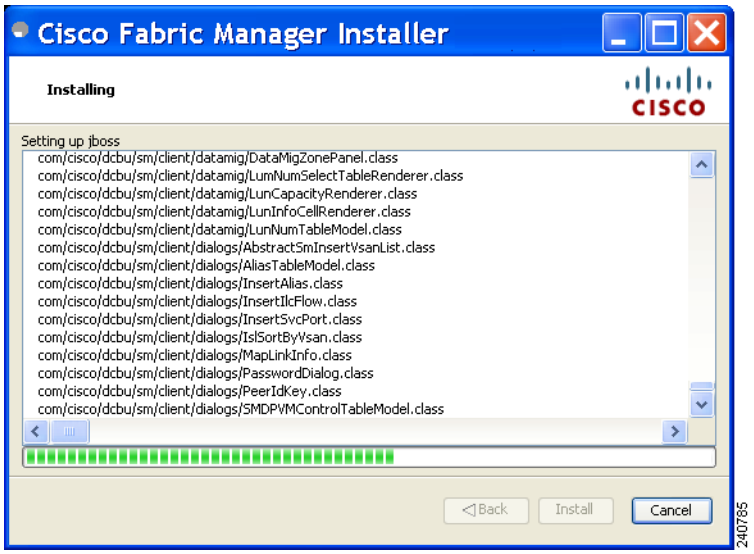
Note If you select a specific IP address during installation and change the server host IP address, you must modify the following two files, which are all located in the $INSTALL/conf directory: Change **server.bindaddrs** to the new IP address in the server.properties file and change **wrapper.app.parameter.4** to the new IP address in the FMServer.conf file.

Step 17 Click **Cancel** to stop the installation.

You see the installation progress in the Cisco Fabric Manager Installer window as shown in Figure 2-8.

Figure 2-8 Installation Progress



Once the installation is finished, you see an installation completed message in the Cisco Fabric Manager Installer window as shown in Figure 2-9.

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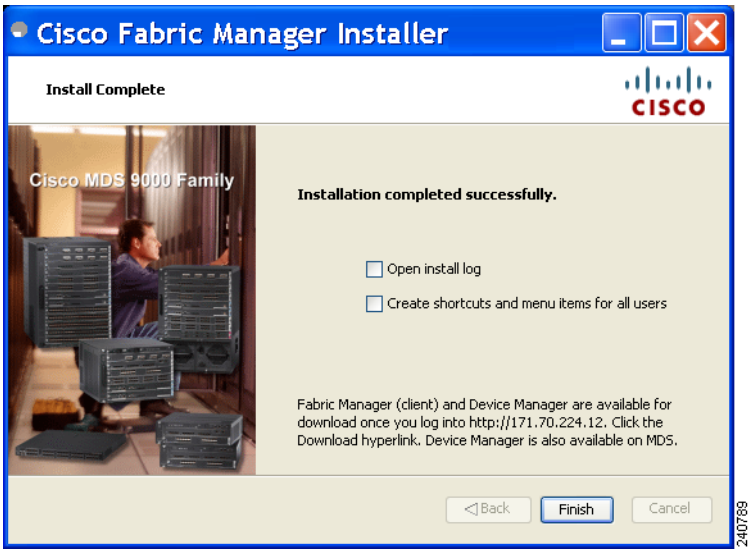
Figure 2-9 Installation Complete



Note If you installed Fabric Manager Standalone, you can choose to launch Fabric Manager or Device Manager by checking the **Launch Fabric Manager** or **Launch Device Manager** check boxes. Icons for Fabric Manager and Device Manager are automatically created on the desktop.

Step 18 Click **Finish** to close the Cisco Fabric Manager Installer window.

If you installed Fabric Manager Server, icons for Fabric Manager and Device Manager are not created on the desktop until you launch Fabric Manager Client. Follow the instructions in the "Launching Fabric Manager Client" section on page 5-2 to launch Fabric Manager Client.

If you checked the Create shortcuts check box, a Cisco MDS 9000 program group is created under **Start > Programs** on Windows. This program group contains shortcuts to batch files in the install directory. Three services are started: Fabric Manager Server, Database, and Web Server. The Performance Manager server is installed but the service is not started upon installation because certain setup steps must be completed first.

On a UNIX (Solaris or Linux) machine, shell scripts are created in the install directory. The shell scripts that run the programs equivalent to the Windows services are FMServer.sh, FMPersist.sh, PMCollector.sh, and FMWebClient.sh. All server-side data and Performance Manager data are stored in the install directory.

Fabric Manager Client cannot run without Fabric Manager Server. The server component is downloaded and installed when you download and install Fabric Manager. On a Windows machine, you install the Fabric Manager Server as a service. This service can then be administered using Services in the Microsoft Windows Control Panel. The default setting for the Fabric Manager Server service is that the server is automatically started when the machine is rebooted. You can change this setting by modifying the properties in Services.

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Installing Device Manager

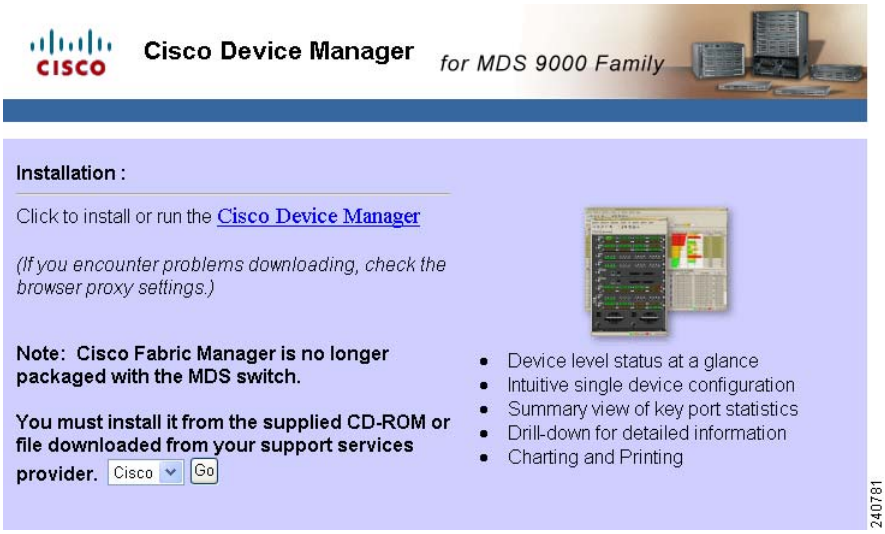
The Device Manager software executable file resides on the switch supervisor module. To install or upgrade the Device Manager software, access the supervisor module with a web browser and click the **Install** link on the web page that is displayed. The software running on your workstation is verified to make sure you are running the most current version of Device Manager. If it is not current, the most recent version is downloaded and installed on your workstation.

To install Device Manager on your workstation, perform this task:

Step 1 Enter the IP address of the switch in the Address field of your browser.

You see the Installation window for Device Manager as shown in Figure 2-10.

Figure 2-10 Device Manager Installation Window



Step 2 Click the **Cisco Device Manager** link.

You see the welcome to the management software setup wizard message in the Cisco Device Manager Installer window as shown in Figure 2-11.

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Figure 2-11 Welcome to the Management Software Setup Wizard Window

Step 3 Click **Next** to begin the installation.

Step 4 Check the **I accept the terms of the License Agreement** check box and click **Next**.

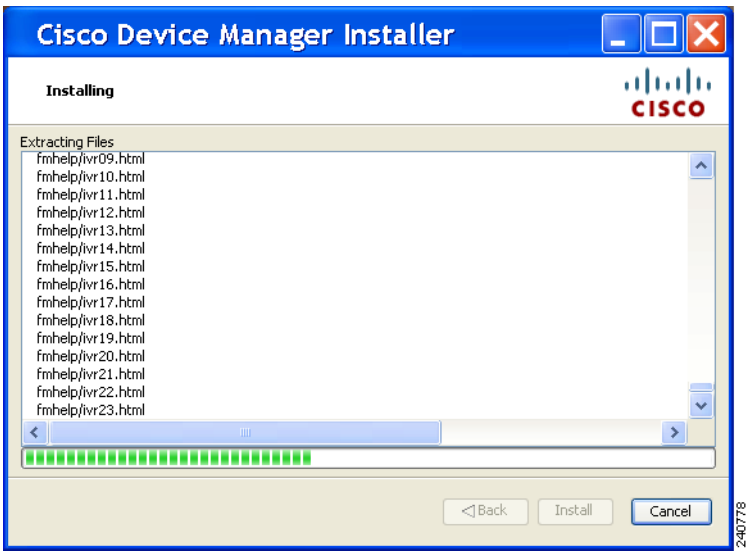
Step 5 Select an installation folder on your workstation for Device Manager.

- On Windows, the default location is C:\Program Files\Cisco Systems\MDS 9000.
- On a UNIX (Solaris or Linux) machine, the installation path name is /usr/local/cisco_mds9000 or $HOME/cisco_mds9000, depending on the permissions of the user doing the installation.

Step 6 Click **Install**.

You see the installation progress in the Cisco Device Manager Installer window as shown in Figure 2-12.

Figure 2-12 Installation Progress



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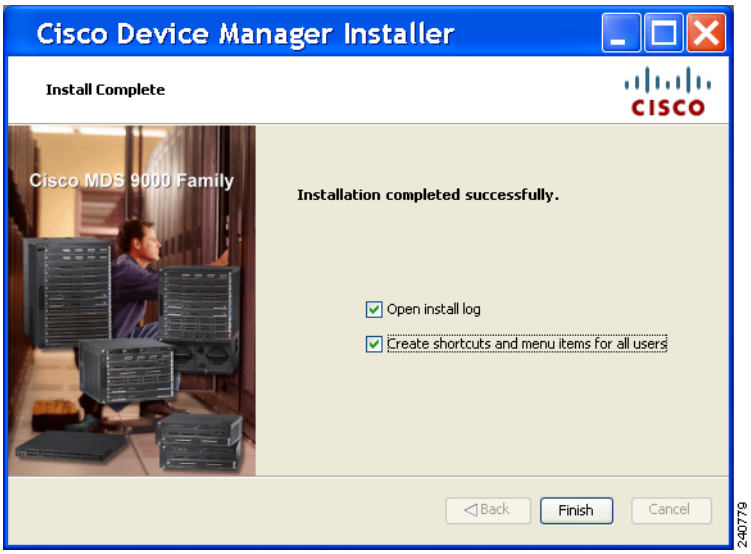
Once the installation is finished, you see an installation completed message in the Cisco Device Manager Installer window as shown in Figure 2-13.

Figure 2-13 Installation Complete



Step 7 Click **Finish** to close the Cisco Device Manager Installer window.

Upgrading the Management Software

If you log into a switch with Device Manager and that switch has a later version of the Device Manager software, you are prompted to install the later version. You can also upgrade Device Manager at any time by entering the IP address or host name of the supervisor module with the later version of software in the Address field of your browser.

Note Downgrades are not supported through the installer. To downgrade Device Manager to an earlier release, you need to manually uninstall first, and then reinstall the previous version of Device Manager.

To upgrade the Cisco Fabric Manager software, follow the instructions described in the "Installing the Management Software" section on page 2-5. The installer supports software upgrade of the Fabric Manager application.

Integrating Cisco Fabric Manager with Other Management Tools

You can use Fabric Manager, Device Manager, and Performance Manager with these management tools:

- Cisco Traffic Analyzer—Allows you to break down traffic by VSANs and protocols and to examine SCSI traffic at a logical unit number (LUN) level.

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- Cisco Protocol Analyzer—Enables you to examine actual sequences of Fibre Channel frames easily using the Fibre Channel and SCSI decoders Cisco developed for Ethereal.
- Cisco Port Analyzer Adapter 2—Encapsulates SPAN traffic (both Fibre Channel control and data plane traffic) in an Ethernet header for transport to a Windows PC or workstation for analysis. Both the Cisco Traffic Analyzer and Cisco Protocol Analyzer require the PAA to transport SPAN traffic to a Windows PC or workstation.

For more information on these tools and how they work together with the Cisco Fabric Manager management applications, see Chapter 31, "Troubleshooting Your Fabric.".

Running Fabric Manager Behind a Firewall

For Windows PCs running Fabric Manager, Device Manager, and Performance Manager behind a firewall, certain ports need to be available.

By default, Fabric Manager Client and Device Manager use the first available UDP port for sending and receiving SNMP responses. The UDP SNMP trap local ports are 1162 for Fabric Manager, and 1163 or 1164 for Device Manager. Fabric Manager Server also opens TCP RMI port 9099.

You can select the UDP port that Fabric Manager Client or Device Manager uses for SNMP responses by uncommenting the following statement:

- On a Windows desktop, uncomment the following in the FabricManager.bat or DeviceManager.bat file in the C:\Program Files\Cisco Systems\MDS9000\bin directory:

```
rem JVMARGS=%JVMARGS% -Dsnmp.localport=9001
```

- On a UNIX desktop, uncomment the following in the FabricManager.sh or DeviceManager.sh file in the $HOME/.cisco_mds9000/bin directory:

```
# JVMARGS=$JVMARGS -Dsnmp.localport=9001
```

Fabric Manager Server proxy services uses a configurable TCP port (9198 by default) for SNMP communications between the Fabric Manager Client or Device Manager and Fabric Manager Server.

The Fabric Manager Server component requires two predictable TCP ports to be opened on the firewall for an incoming connection:

- server.port = 9099
- server.data.port = 9100

As long as these two ports are open, Fabric Manager Client can connect to the server. Other TCP ports connected to Fabric Manager Client are initiated by the server, which is behind the firewall.

Table 2-2 lists all ports used by Fabric Manager applications.

Table 2-2 Fabric Manager Port Usage

Communication Type	Port(s) Used
Used by All Applications	
SSH	Port 22 (TCP)
Telnet	Port 23 (TCP)
HTTP	Port 80 (TCP)
TFTP	Port 69 (UDP)

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Table 2-2 Fabric Manager Port Usage

Communication Type	Port(s) Used
Syslog	Port 514 (UDP)
Used by Fabric Manager Server and Performance Manager	
SNMP_TRAP	Port 2162 (UDP)
SNMP	Chooses a random free local port (UDP) or 9198 (TCP) if SNMP proxy is enabled. The port can be changed in server.properties.
Java RMI	Ports 9099, 9100 (TCP)
Used by Fabric Manager Client	
SNMP	Chooses a random free local port (UDP) if SNMP proxy is enabled. The port can be changed with the client -Dsnmp.localport option.
Java RMI	Chooses a free local port between 19199 and 19399 (TCP). The port can be changed with the client -Dclient.portStart and -Dclient.portEnd options. For example, -Dclient.portStart = 19199 -Dclient.portEnd = 19399.
Used by Device Manager	
SNMP_TRAP	Chooses a free local port between 1163 and 1170 (UDP).
SNMP	Chooses a random free local port (UDP) or 9198 (TCP) if SNMP proxy is enabled. The port can be changed in server.properties.

Uninstalling the Management Software

To uninstall the Fabric Manager applications on a Windows PC, perform this task:

Step 1 Close all running instances of Fabric Manager and Device Manager.

Step 2 Choose **Start > Programs > Cisco MDS 9000 > Uninstall** to run the uninstall.bat script.

You can also run the batch file (located in the C:\Program Files\Cisco Systems\MDS 9000 folder by default) directly from the command line.

To uninstall the Fabric Manager applications on a UNIX machine, perform this task:

Step 1 Run the shell script **$HOME/cisco_mds9000/Uninstall.sh** or **/usr/local/cisco_mds9000/uninstall.sh**, depending on where Fabric Manager was installed.

Note Do not delete the MDS 9000 folder because this might prevent your installation from being upgraded in the future.