



CHAPTER 7

Fabric Manager Web Server

With Fabric Manager Web Server you can monitor Cisco MDS switch events, performance, and inventory from a remote location using a web browser.

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Fabric Manager Web Server Overview

Using Fabric Manager Web Server, you can monitor MDS switch events, performance, and inventory, and perform minor administrative tasks.

Fabric Manager Web Server provides the following features:

- **Summary and drill down reports**—The Performance Manager summary report provides a high-level view of your network performance. These reports list the average and peak throughput and provides hot-links to additional performance graphs and tables with additional statistics. Both tabular and graphical reports are available for all interconnections monitored by Performance Manager. Performance Manager also analyzes daily, weekly, monthly and yearly trends. These reports are only available if you create a collection using Performance Manager and start the collector.

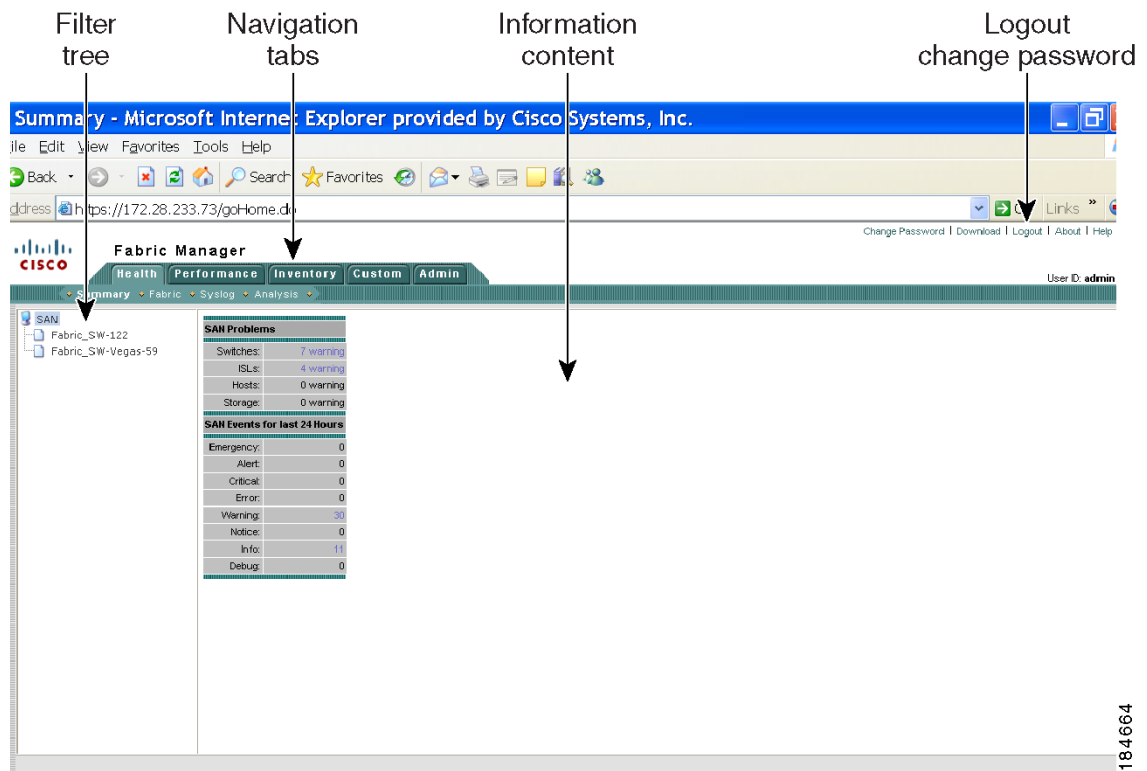
See the “[Historical Performance Monitoring](#)” section on page 60-4.

- **Zero maintenance database for statistics storage**—No maintenance is required to maintain Performance Manager’s round-robin database, because its size does not grow over time. At prescribed intervals the oldest samples are averaged (rolled-up) and saved. A full two days of raw samples are saved for maximum resolution. Gradually the resolution is reduced as groups of the oldest samples are rolled up together.

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You see Fabric Manager Web Server as shown in [Figure 7-1](#).

Figure 7-1 Fabric Manager Web Server



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Navigating Fabric Manager Web Server

With most screens, Fabric Manager Web Server has standardized on certain navigation conventions.

Navigation Tree

You can use the filter navigation tree on the left pane to access the areas you want. In general:

- Select **SAN** to view information for all fabrics and VSANs in the SAN. When you do this, a “Fabric” column is added as the first column of the tables.
- Click a fabric folder to view information for that specific fabric.
- Some screens have expandable fabric folders. You can expand the fabric folders (by clicking the + or - icons in front of the folders) to see a list of VSANs in that fabric. Select a VSAN to view information for that VSAN.

The features accessible from the tabs are limited to the areas you select in the filter tree.

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Table Filtering and Navigation

You can filter the display of some tables to view subsets of the information. At the top right of these tables are one or more drop-down lists. Select an item from these lists, and then click **Filter** to filter the table information on that item.

You can change the number of rows displayed per page by selecting a number from the **Rows per page** drop-down list at the lower left corner of the table. Once you select a number, the table is updated with the new number of rows—you do not have to click a button.

For tables with multiple pages of information, you can:

- Jump to the first or last page of the table by clicking the “first page” or “last page” icons (arrows with a bar in front of it)
- Jump to the next page or previous page by clicking the “next page” or “previous page” icons (arrows)
- Jump to a specific page by entering the page number in the **Go to page** field and clicking the **Go** button.

You can search certain columns in the tables for information if a table column has a black icon next to the column head. Click the icon to display a Search dialog box.

Printing

There is a **Print** icon in the lower right corner of some tables. Click this icon to view the table in a printer-friendly format. You can then print the page from the browser.

Exporting to a File

There is an **Export** icon in the lower right corner of some tables. Click this icon to export the data to a .CSV file that can be read by programs such as Microsoft Excel.

Sorting Columns

On some screens, you can click a column head to sort the information for that column.

Installing Fabric Manager Web Server

If you are installing the Fabric Manager Web Server software for the first time, or if you want to update or reinstall the software, you access the supervisor module of the switch using a web browser. Install Fabric Manager Web Server on the same workstation where you installed Fabric Manager Server.

You must install Fabric Manager Web Server to view Performance Manager reports through a web browser.

For switches running Cisco MDS 9000 FabricWare, you need to install the Fabric Manager Web Server software from the CD-ROM included with your switch, or download Fabric Manager from Cisco.com.

To install Fabric Manager Web Server from the CD-ROM, navigate to the Fabric Manager installation notes and follow the directions.

To download the software from Cisco.com (requires a valid user name and password), go to the following website:

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

To download and install the software on your workstation, follow these steps:

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- Step 1** Optionally, enter the IP address or host name of the supervisor module running Cisco MDS SAN-OS in the Location or Address field of your browser. You see the installation page displayed by the HTTP server of the supervisor module.

When you connect to the server for the first time, it checks to see if you have the correct Sun Java Virtual Machine version installed on your workstation. If you do not have the correct version installed, a link is provided to the appropriate web page on the Sun Microsystems website so you can install it.

- a. Click the **Sun Java Virtual Machine** software link (if required) to install the software.
- b. Using the instructions provided by the Sun Microsystems website, reconnect to the supervisor module by reentering the IP address or host name in the Location or Address field of your browser.



Note We recommend Java version 1.5(x). To use IPv6 addresses, you must have Java version 1.5. To change the Java Runtime Environment (JRE) version, start **Java Web Start** and set the Java preferences.

- Step 2** Click the **Fabric Manager Web Server** installation link. You see a prompt asking for permission to install the application on your workstation.

- Step 3** Click **Yes** to run the installer, which detects the installed version of the software, and prompts for upgrades or downgrades and other options if applicable.



Note If TCP port 80 is in use, Fabric Manager Web Server checks port 8080 next. If that port is also in use, Fabric Manager Web Server uses the next available port. You can set the TCP port that you want Fabric Manager Web Server to use during the installation process.

Unless you specify a different directory on a Windows PC, the software is installed in the default location of **C:\Program Files\Cisco Systems\MDS 9000**. A **Cisco MDS 9000** program group is created under Start > Programs. This program group contains shortcuts to Fabric Manager and Device manager.

On a UNIX (Solaris or Linux) machine, the installation path is `/usr/local/cisco_mds9000`. If this directory is not writable by the user, which is the case for non-root users, the default is set to `$HOME/cisco_mds9000`. Shell scripts are created in the bin directory.



Note On a Windows PC, you install Fabric Manager Web Server as a service. This service can then be administered using the Services Panel from the Windows Control Panel. By default, Fabric Manager Web Server automatically starts when the workstation is rebooted. You can change this behavior by modifying the properties in the Services Panel.



Caution In releases earlier than Cisco SAN-OS Release 3.1(2b), you must restart Fabric Manager Web Server if you restart Cisco MDS Database Server from the Services window.



Note You need to configure the Fabric Manager Server on the DNS server for remote logins unless the Fabric Manager Server is binding to a specific interface.

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Using Fabric Manager Web Server with SSL

Fabric Manager Web Server uses TCP port 80 by default. If you want to install SSL certificates and use Fabric Manager Web Server over HTTPS (using TCP port 443 or another custom port), you need a certificate for each external IP address that accepts secure connections. You can purchase these certificates from a well-known Certificate Authority (CA).

To enable SSL, users must set up the keystore to use either self-signed certificate or a certificate from a trusted third party company like Verisign.

To create a local certificate, follow these steps:

- Step 1** Set up a keystore to use self-signed certificate (local certificate). From the command line, issue the following command:

```
%JAVA_HOME%/bin/keytool -genkey -alias tomcat -keyalg RSA -keystore "C:\Program Files\Cisco Systems\MDS 9000\keystore"
```

- Step 2** Enter your name, organization, state, and country. Enter **changeit** when prompted for a keystore password. If you prefer to use your own password, don't forget to change the keystorepass attribute in the server.xml file. When prompted for a key password, press enter or use the same password as the keystore password.



Note You can now follow the steps in the next section for modifying Fabric Manager Web Server to use SSL.

To set up a keystore to use CA certificate, follow these steps:

Complete Steps 1 and 2 above and then Step 3.

- Step 3** In order to obtain a certificate from the Certificate Authority of your choice, you must create a Certificate Signing Request (CSR). The CSR is used by the certificate authority to create a certificate that identifies your website as secure.

To create a CSR, follow these steps:

- Step 1** Create a local certificate (as described in the previous section).



Note You must enter the domain of your website in the field first and last name in order to create a working certificate.

- Step 2** The CSR is then created with with this command:

```
keytool -certreq -keyalg RSA -alias tomcat -file certreq.csr -keystore "C:\Program Files\Cisco Systems\MDS 9000\keystore"
```

- Step 3** Now you have a file called certreq.csr. The file is encoded in PEM format. You can submit it to the certificate authority. You can find instructions for submitting the file on the Certificate Authority website. You will receive a certificate.

- Step 4** Once you have your certificate, you can import it into you local keystore. First, you must import a Chain Certificate or Root Certificate into your keystore. You can then import your certificate.

- Step 5** Download a Chain Certificate from the Certificate Authority where you obtained the certificate.

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Step 6 For Verisign.com commercial certificates, go to:

<http://www.verisign.com/support/install/intermediate.html>

Step 7 For Verisign.com trial certificates, go to:

http://www.verisign.com/support/verisign-intermediate-ca/Trial_Secure_Server_Root/index.html

Step 8 For Trustcenter.de, go to:

<http://www.trustcenter.de/certservices/cacerts/en/en.htm#server>

For Thawte.com, go to:

<http://www.thawte.com/certs/trustmap.html>

Step 9 Import the Chain Certificate into your keystore by issuing the following command:

```
keytool -import -alias root -keystore "C:\Program Files\Cisco Systems\MDS 9000\keystore"
-trustcacerts -file <filename_of_the_chain_certificate>
```

Step 10 Import the new certificate in X509 format:

```
keytool -import -alias tomcat -keystore "C:\Program Files\Cisco Systems\MDS 9000\keystore"
-trustcacerts -file <your_certificate_filename>
```

To modify Fabric Manager Web Server to use SSL, follow these steps:

Step 1 Stop Fabric Manager Web Server if you have already launched it. If you installed this on Windows, you can stop the service using Windows Services under Administrative Tools.

Step 2 Use a text editor to open `\jboss\server\default\deploy\jboss-web.deployer\server.xml` from the directory where Fabric Manager Web Server is installed. You see the following lines in the beginning after some copyright information:

```
<Connector className="org.apache.catalina.connector.http.HttpConnector"
    port="80" minProcessors="5" maxProcessors="75"
    enableLookups="false" redirectPort="8443"
    acceptCount="10" debug="0" connectionTimeout="60000"/>
<!-- Define an SSL HTTP/1.1 Connector on port 8443 -->
<!--
<Connector className="org.apache.catalina.connector.http.HttpConnector"
    port="8443" minProcessors="5" maxProcessors="75"
    enableLookups="true"
    acceptCount="10" debug="0" scheme="https" secure="true">
    <Factory className="org.apache.catalina.net.SSLServerSocketFactory"
        clientAuth="false" protocol="TLS"/>
</Connector>
-->
```

Step 3 Comment the first `<Connector>` element and uncomment the second one. Note that the port changes from 8443 to 443 and keystore and keypass are added. Your file should look like the following example:

```
<!--
<Connector className="org.apache.catalina.connector.http.HttpConnector"
    port="80" minProcessors="5" maxProcessors="75"
    enableLookups="false" redirectPort="8443"
    acceptCount="10" debug="0" connectionTimeout="60000"/>
-->
<!-- Define an SSL HTTP/1.1 Connector on port 8443 -->
<Connector className="org.apache.catalina.connector.http.HttpConnector"
```

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```
port="443" minProcessors="5" maxProcessors="75"
enableLookups="true"
acceptCount="10" debug="0" scheme="https" secure="true">
<Factory className="org.apache.catalina.net.SSLServerSocketFactory"
clientAuth="false" protocol="TLS"
keystoreFile="C:\Program Files\Cisco Systems\MDS 9000\keystore"
keystorePass="changeit"/>
</Connector>
```

- Step 4** Save this file.
- Step 5** Restart **Fabric Manager Web Server**.



Note

If you restart Fabric Manager Server with SSL enabled, you must restart Fabric Manager Web Server. If you want to stop and restart Fabric Manager Server with SSL disabled, then you must restart Fabric Manager Web Server.

Launching Fabric Manager Web Server

Before you can use Fabric Manager Web Server to monitor a switch, the service must be started on the server you are connecting through. The browser does not have to be on the same workstation where Fabric Manager Web Server is installed.

To launch Fabric Manager Web Server, follow these steps:

- Step 1** If you are on the same workstation where you installed Fabric Manager Web Server, then open your browser and in the Location field enter **http://localhost:PORT**. Enter your port number if you specified a different port during installation. You can omit the port number if you used port 80 by default.

If you are on a different workstation from where you installed Fabric Manager Web Server, then open your browser and in the Location field enter **http://<yourServerAddress>:PORT**, where <yourServerAddress> is the address where you installed Fabric Manager Web Server, and *PORT* is 80 by default. Enter your port number if you specified a different port during installation.



Tip

Choose **Start > Control Panel > Administrative Tools > Services** to verify that Fabric Manager Web Server has started. To start **Fabric Manager Web Server**, use a browser to go to the location of the service.

You can also view this information using the **Admin > Status** menu of the Fabric Manager Web Server client.

On a UNIX workstation, use the following command:

```
$ /usr/local/cisco_mds9000/bin/FMWebClient.sh status
```

You see the Fabric Manager Web Server dialog box shown in [Figure 7-2](#). The text field at the bottom shows the Message of the Day from the server you logged into.

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Figure 7-2 Fabric Manager Web Server Login Dialog Box



Step 2 Enter your user name and password.

Step 3 Click **Login**.



Note If you have a new installation of Fabric Manager, the default user ID and password is admin/password. We recommend you change your password the first time you use Fabric Manager Server. If you do not have a new installation, you can use any existing passwords.

After launching Fabric Manager Web Server, you see the initial screen, which you can also see by choosing **Health > Summary**. Fabric Manager Web Server polls the Fabric Manager Server database to display the managed devices in the left pane.

Health

The Health tab shows events and issues for the selected items, persistent across user sessions.

The Health tab contains the following subtabs:

- **Summary**—Shows a summary of events and problems for all SANs, or a selected SAN, fabric, or switch. You can click any of the blue links for more information about that item.
- **Fabric**—Shows a detailed list of events and hardware, or accounting. You can filter these events by severity, date, and type of event.
- **Syslog**—Shows a detailed list of system messages. You can filter these events by severity, date, and type of event.
- **Analysis**—Enables you to schedule or run analysis reports and compile results to analyze the Fabric Manager Server database statistics.

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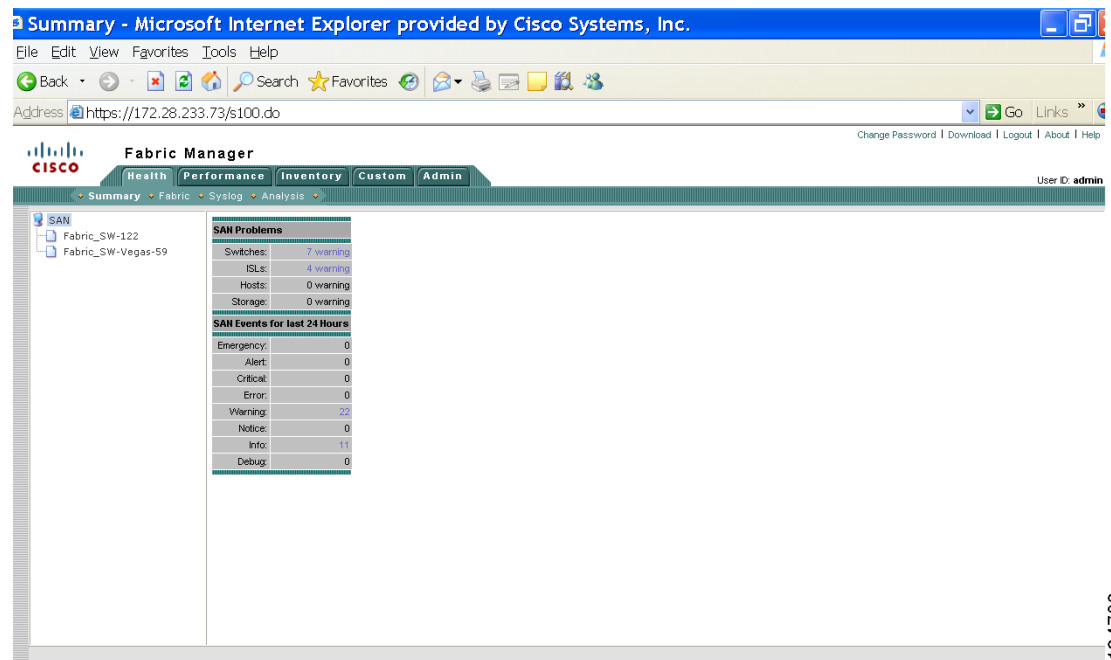
Viewing Summary Information

To view a summary of events and problems using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Health > Summary**.

You see the Summary tab. In the left navigation pane you see a list of the fabrics managed by Fabric Manager Server. In the right pane is a summary table of problems and events for the last 24 hours (see [Figure 7-3](#)).

Figure 7-3 Summary Tab



Step 2 Do one of the following:

- Click **SAN** to display summary information for all fabrics.
- Click one of the fabrics to display summary information for that fabric.

Step 3 Click the warnings next to Switches, ISLs, Hosts, or Storage (other than 0) to see an inventory of switches, ISLs, or end devices for that fabric.

Step 4 Click the number of events next to the event severity levels (Emergency, Alert, Critical, Error, Warning, Notice, Info, or Debug) to see a table of events and descriptions for that fabric.

Viewing Fabric Information

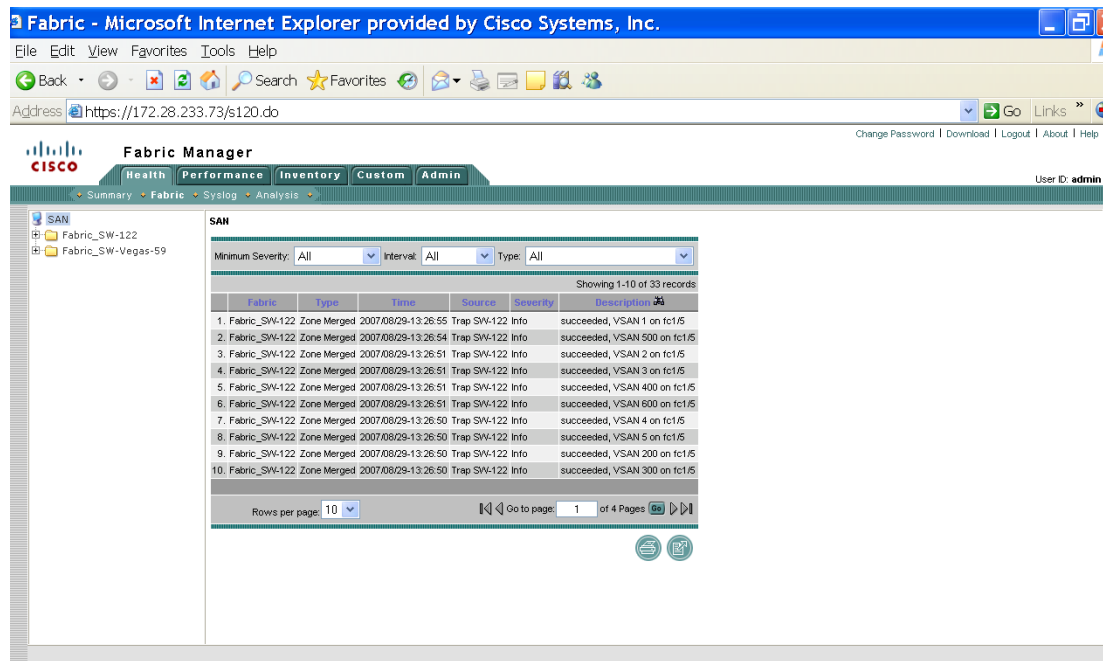
To view a detailed list of events and hardware, or accounting using Fabric Manager Web Server, follow these steps:

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Step 1 Choose **Health > Fabric**.

You see the Fabric tab shown in [Figure 7-4](#).

Figure 7-4 Fabric Tab



Step 2 Expand a fabric and click one of the switches to display event information for that switch.

Viewing Syslog Information

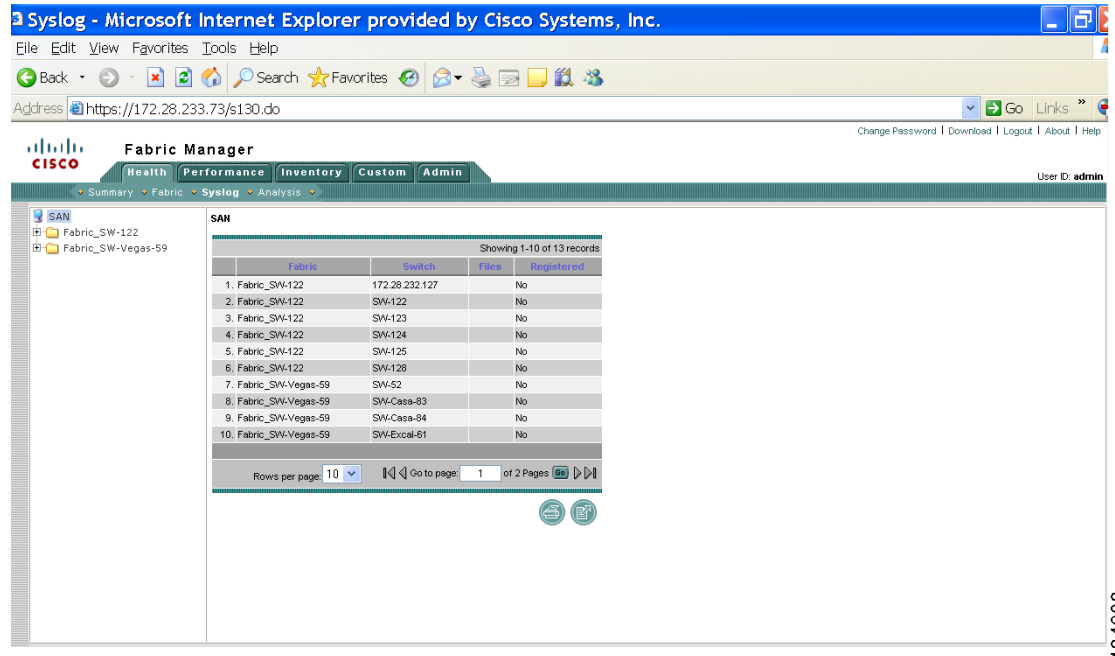
To view a detailed list of system messages using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Health > Syslog**.

You see the Syslog tab shown in [Figure 7-5](#).

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Figure 7-5 Syslog Tab



- Step 2** Select one of the fabrics to display a table of syslog information for that fabric.
- Step 3** Expand a fabric and select one of the switches to display syslog information for that switch.
- Step 4** If you have selected a fabric and one or more switches in that fabric have system messages, you see **Events**, **Hardware**, **Accounting**, and **Link Incidents** in the Files column. Click one of these message types to see system messages for the switches in that fabric filtered by the message type you clicked.



Note If you select a switch, choose an interval and a message type from the drop-down lists, and then click **Filter** to see system messages filtered by the message type you chose.

Viewing Analysis Reports

As of Cisco SAN-OS Release 3.2(1), you can run or schedule analysis reports to summarize the Fabric Manager Server database statistics. You can run or schedule the following analysis reports:

- **Connectivity** (Host to Storage or Storage to Host)—The connectivity report summarizes zoning for multiple hosts or storage devices. If you choose host to storage, the report shows all storage devices zoned as accessible by each host. If you choose storage to host, the report shows all hosts that can access a specific storage device.
- **Zoning Discrepancies**—The zoning discrepancies report identifies zoning issues that might impact connectivity or security.
- **Multi Path**—The multi path report determines the number of active and inactive paths between hosts and storage enclosures.
- **Switch Health**—The switch health report provides status information on all critical Cisco MDS 9000 system, module, port and Fibre Channel services.

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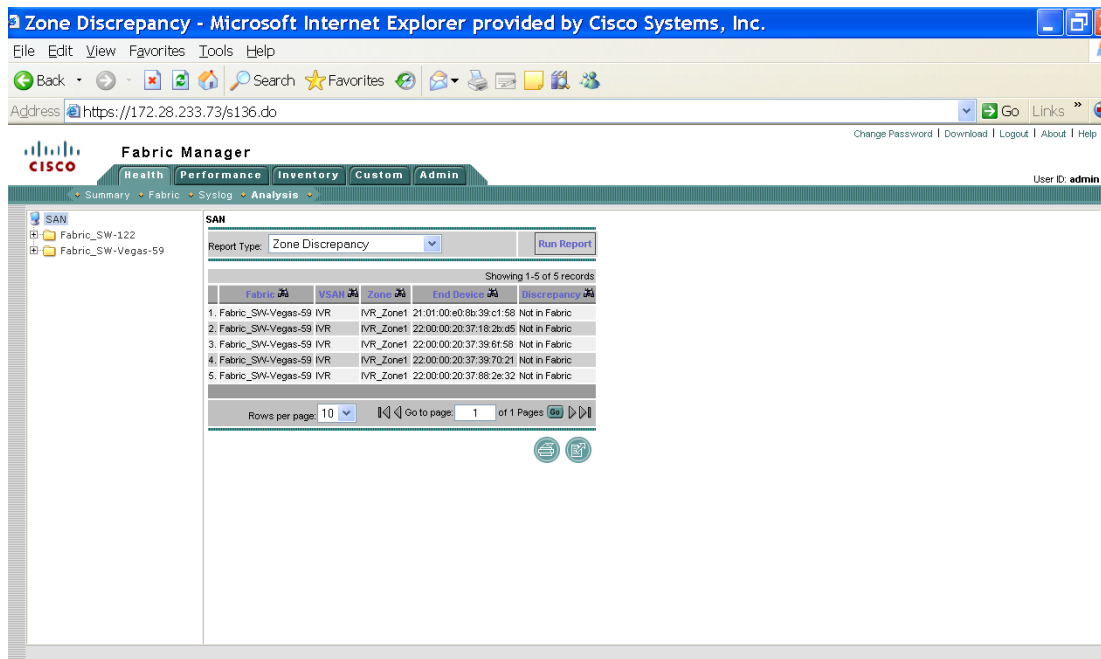
- **Fabric Configuration**—The fabric configuration analysis compares multiple switches to a specific switch or a saved configuration.

To run analysis reports using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Health > Analysis**.

You see the Analysis tab shown in [Figure 7-6](#).

Figure 7-6 Analysis Tab



Step 2 Select a report from the **Report Type** drop-down list.

Step 3 Click **Run Report** to run the report.

To schedule a report to run at a specified time, see “[Generating Custom Reports by Template](#)” section on [page 7-35](#).

Performance

The Performance tab shows an overview of the average throughput and link utilization of SAN components. You see pie charts for the throughput and utilization. You can click a pie chart to view a table of the data. In these tables, clicking a blue link displays a graph of that data, if applicable. The Filter drop-down list at the top right of the screen allows you to filter the data based on various periods of time.

The Performance tab contains the following subtabs:

- **Summary**—Shows the total utilization and throughput in summary form.
- **End Devices**—Shows a detailed list of end devices (host or storage), port traffic, and errors.
- **ISLs**—Shows a detailed list of ISL traffic and errors.

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- **NPV Links**— Shows a detailed list of traffic between NPV devices and ports.
- **Flows**—Shows a detailed list of host-to-storage traffic.
- **Ethernet**—Shows a detailed list of GigE ports.
- **Others**—Shows a detailed list of other statistics.
- **Traffic Analyzer**—Shows a summary of SPAN ports configured in the SAN and any traffic analyzers configured.
- **Prediction**—Displays a graph that predicts future performance to help determine when storage network connections will become overutilized.
- **Switch Bandwidth**—Shows total bandwidth for a switch.

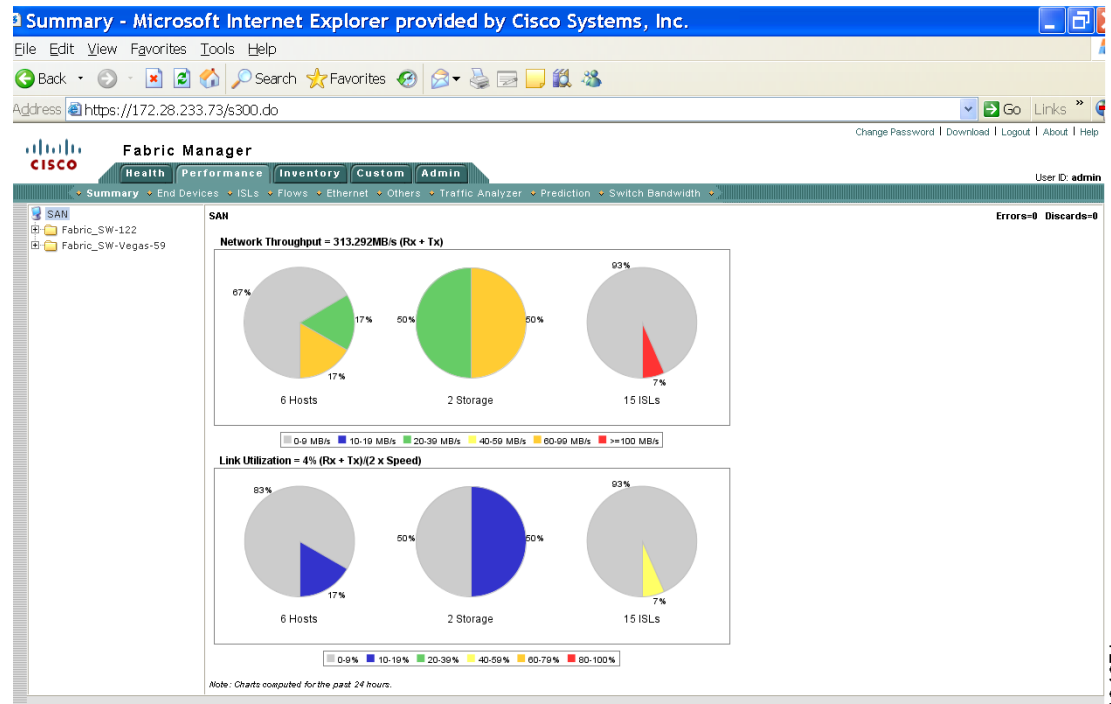
Viewing Performance Summary Information

To view total utilization and throughput in summary form using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > Summary**.

You see the Summary tab shown in [Figure 7-7](#).

Figure 7-7 Summary Tab



Step 2 Expand a fabric and select one of the VSANs to display network throughput and link utilization information for that VSAN.

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Note Click a pie chart (Hosts, Storage, or ISLs) to go to the appropriate performance table.

Viewing Performance Information for End Devices

To view host and storage port traffic and errors using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > End Devices**.

You see the End Devices tab shown in [Figure 7-8](#).

Figure 7-8 End Devices Tab

The screenshot shows the Fabric Manager Web Server interface. The top navigation bar includes tabs for Health, Performance, Inventory, Custom, and Admin. The Performance tab is active, and the End Devices sub-tab is selected. The main content area displays a table of SAN performance data. The table has columns for Fabric, VSANid, Name, I/F Speed, Avg. Rx/sec, (Rn Tx)/sec, Avg. Tx/sec, Peak Rx/sec, Peak Tx/sec, Errors, Discards, and Last Updated. The table shows 8 records of performance data for various fabrics and VSANs.

Fabric	VSANid	Name	I/F Speed	Avg. Rx/sec	(Rn Tx)/sec	Avg. Tx/sec	Peak Rx/sec	Peak Tx/sec	Errors	Discards	Last Updated
1. Fabric_SW-122	400	Seagate 10.00.00.04.cf.02.00.00	200.000MB	0B	74.555MB	74.555MB	0B	74.598MB	0	0	2007/08/29-15:29
2. Fabric_SW-122	1	Glogic 21.01.00.e0.8b.39.14.58	200.000MB	68.142MB	68.142MB	0B	74.570MB	0B	0	0	2007/08/29-15:29
3. Fabric_SW-122	400	Glogic 10.00.00.e0.8b.01.00.00	200.000MB	33.598MB	33.598MB	0B	74.737MB	0B	0	0	2007/08/29-15:29
4. Fabric_SW-122	500	Seagate 10.00.00.04.cf.04.00.00	200.000MB	0B	29.742MB	29.742MB	0B	29.760MB	0	0	2007/08/29-15:29
5. Fabric_SW-122	500	Glogic 10.00.00.e0.8b.03.00.00	200.000MB	2.559MB	2.559MB	0B	29.815MB	0B	0	0	2007/08/29-15:29
6. Fabric_SW-Vegas-59	1	21.00.00.e0.8b.19.94.57	200.000MB	0B	0B	0B	0B	0B	0	0	2007/08/29-15:29
7. Fabric_SW-Vegas-59	1	10.00.00.00.c9.43.01.98	200.000MB	0B	0B	0B	0B	0B	0	0	2007/08/29-15:29
8. Fabric_SW-Vegas-59	1	21.00.00.e0.8b.19.94.57	200.000MB	0B	0B	0B	0B	0B	0	0	2007/08/29-15:29

Note: Values computed and updated every hour by using the 5 minutes traffic average.
Note: Rx/Tx values retrieved from switch interface; Device HBA values would be transposed.

Step 2 Expand a fabric and select one of the VSANs to display performance information for the end devices in that VSAN.



Note There are variations to this procedure. In addition to these basic steps, you can also:

- Select the type of ports and the time range, and click **Filter** to filter the display of those criteria.
- Click the name of a device in the Name column to see a graph of the traffic on that device for the past 24 hours. You can change the time range for this graph by selecting it from the drop-down list in the upper right corner.

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- Select the Host Enclosures type filter and then click a link in the **Name** column to display the performance information for that host.

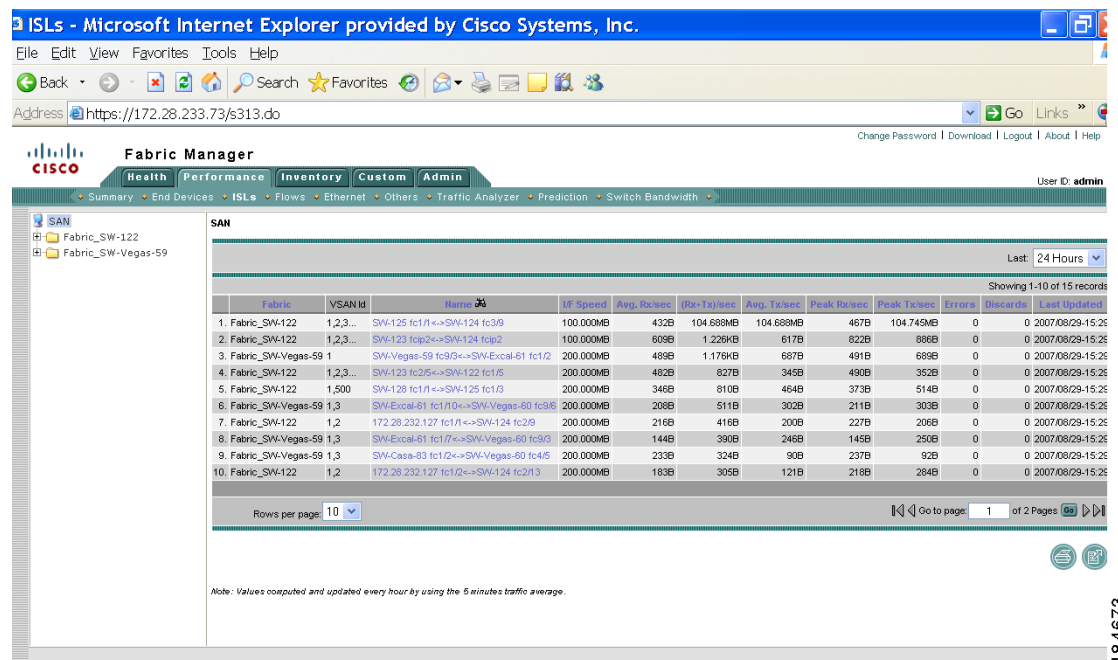
Viewing Performance Information for ISLs

To view ISL traffic and errors using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > ISLs**.

You see the ISLs tab shown in [Figure 7-9](#).

Figure 7-9 ISLs Tab



Step 2 Expand a fabric and select one of the VSANs to display performance information for the ISLs in that VSAN.



Note

There are variations to this procedure. In addition to the basic steps described above, you can also:

- Select the time range, and click **Filter** to filter the display.
- Click the name of an ISL from the Name column to see a graph of the traffic across that ISL for the past 24 hours. You can change the time range for this graph by selecting it from the drop-down list in the upper right corner.

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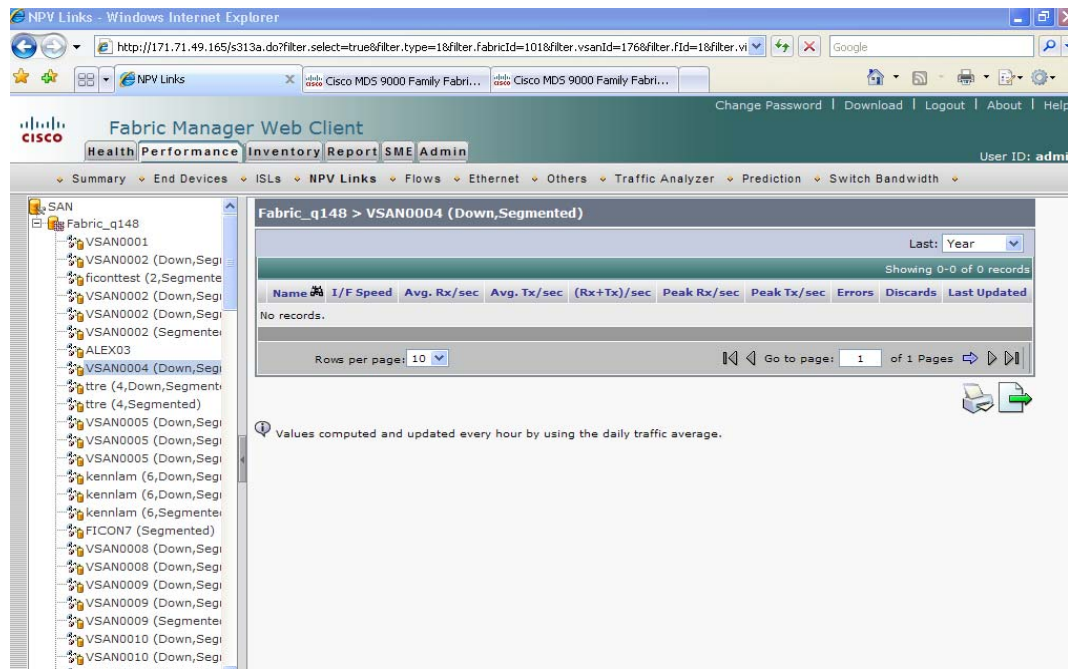
Viewing Performance Information for NPV Links

To view traffic between NPV devices and ports using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > NPV Links**.

You see the NPV Links tab shown in [Figure 7-10](#)

Figure 7-10 NPV Links Tab



Step 2 Expand a fabric and select one of the VSANs to display performance information for the NPV Links in that VSAN.



Note

There are variations to this procedure. In addition to the basic steps described above, you can also:

- Click the name of an NPV Link from the Name column to see a list of the traffic for the past 24 hours.
- You can change the time range for this information by selecting it from the drop-down list in the upper right corner.

Viewing Performance Information for Flows

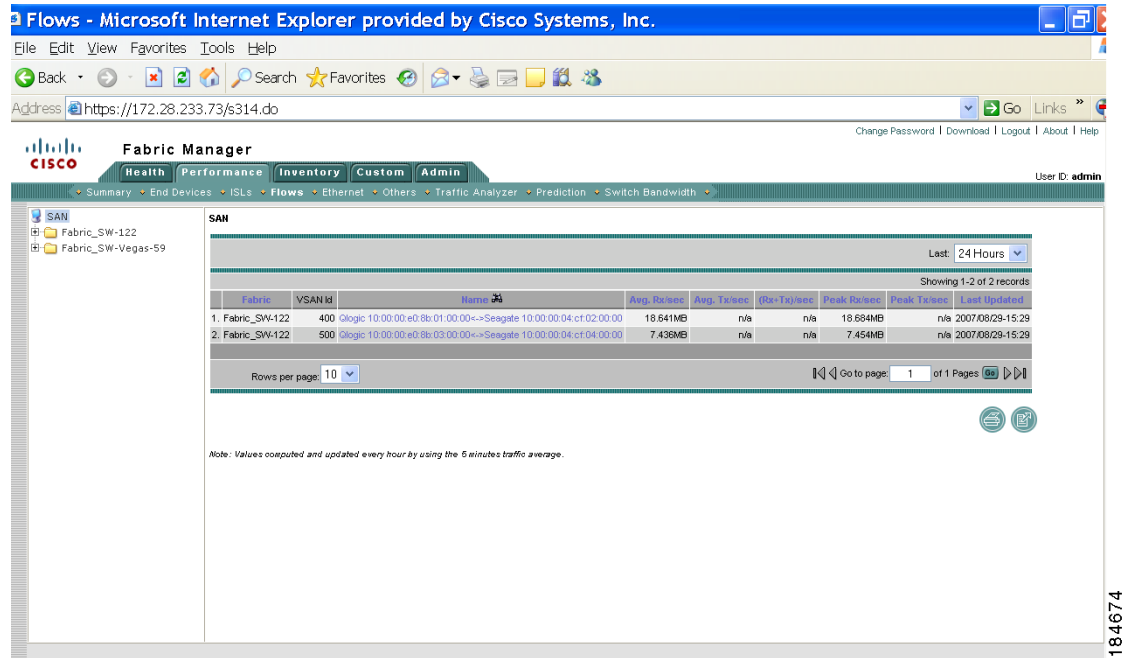
To view host and storage traffic using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > Flows**.

You see the Flows tab shown in [Figure 7-11](#).

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Figure 7-11 Flows Tab



Step 2 Expand a fabric and select one of the VSANs to display performance information for the flows in that VSAN.



Note

There are variations to this procedure. In addition to these basic steps, you can also:

- Select the time range, and click **Filter** to filter the display.
- Click the name of a flow from the Name column to see a graph of the traffic over that flow for the past 24 hours. You can change the time range for this graph by selecting it from the drop-down list in the upper right corner.

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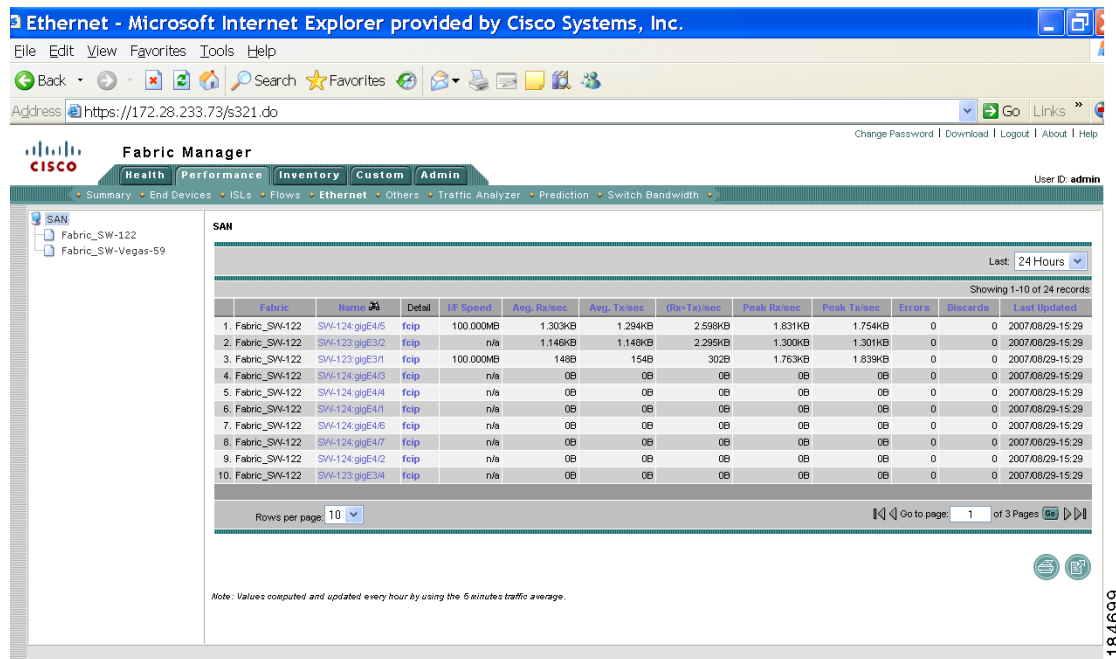
Viewing Performance Information for GigE Ports

To view GigE ports using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > Ethernet**.

You see the Ethernet tab shown in [Figure 7-12](#).

Figure 7-12 Ethernet Tab



Step 2 Expand a fabric and select one of the VSANs to display the GigE ports in that VSAN.



Note

There are variations to this procedure. In addition to the basic steps described above, you can also:

- Select the time range, and click **Filter** to filter the display.
- Click the name of a GigE port from the Name column to see a graph of the traffic across that GigE port for the past 24 hours. You can change the time range for this graph by selecting it from the drop-down list in the upper right corner.

Viewing Other Statistics

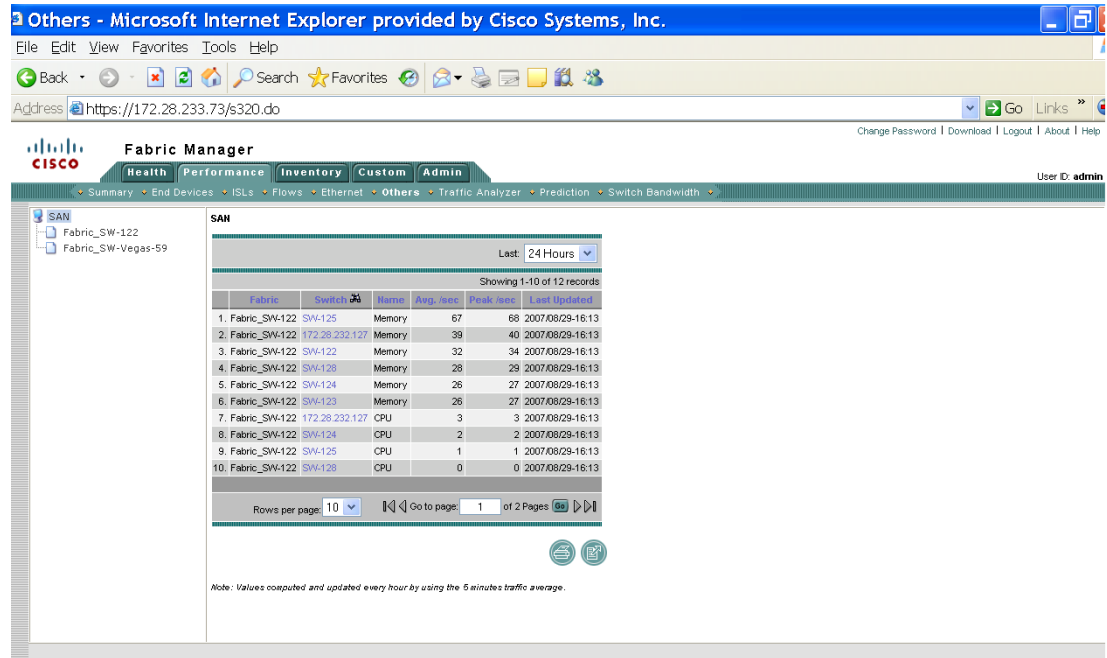
To view other statistics using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > Others**.

You see the Others tab shown in [Figure 7-13](#).

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Figure 7-13 Others Tab



Step 2 Expand a fabric and select one of the VSANs to display the other statistics in that VSAN.



Note

There are variations to this procedure. In addition to the basic steps described above, you can also:

- Select the time range, and click **Filter** to filter the display.
- Click the IP address of a switch from the Name column to see a graph of the traffic across that switch for the past 24 hours. You can change the time range for this graph by selecting it from the drop-down list in the upper right corner.

Viewing Detailed Traffic Information

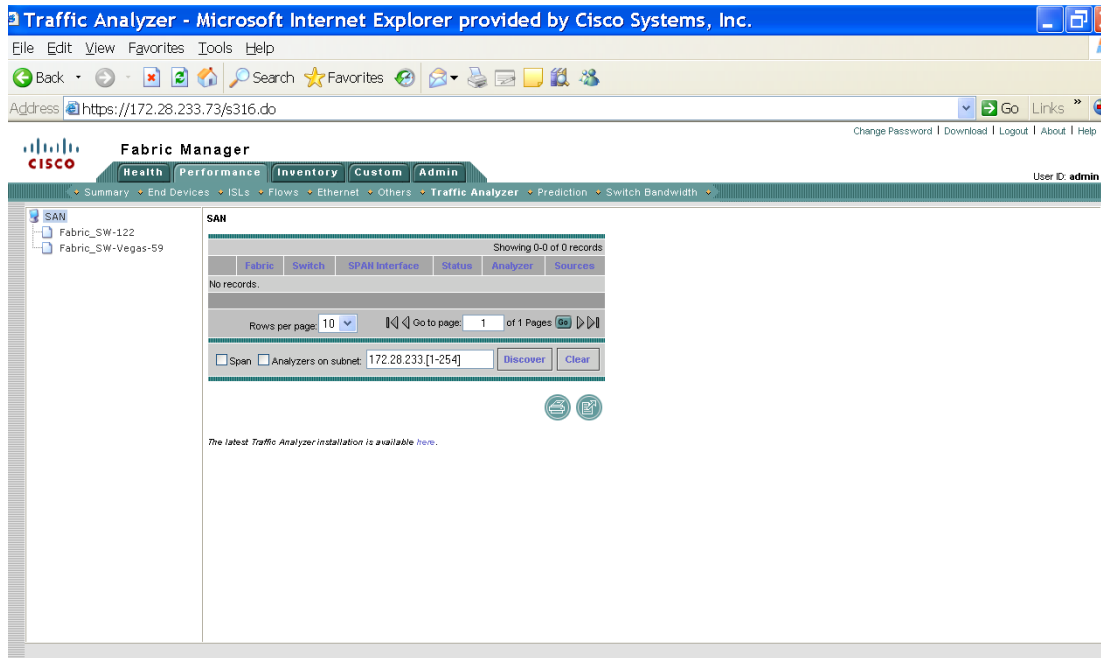
To view SPAN port detailed traffic using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > Traffic Analyzer**.

You see the Traffic Analyzer tab shown in [Figure 7-14](#).

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Figure 7-14 Traffic Analyzer Tab



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Step 2 Do one of the following:

- Select a **SAN** to display a list of SPAN ports for switches in all fabrics in the SAN.
- Select one of the fabrics to display a list of SPAN ports for switches in that fabric.

Viewing Predicted Future Performance

To plan storage network changes, it is necessary to determine when configuration changes (such as re-zoning) may be needed to meet growing performance demands. Fabric Manager Server provides a performance prediction report to enable you to more easily predict when storage network connections will become overutilized.

In general, to create a performance prediction report, do the following:

- Specify the period of time in the past that you want to use as a sample to predict the future performance.
- Specify the threshold values that you do not want to exceed.
- Specify the period of time in the future for which you want to view performance.

Fabric Manager Server extrapolates the performance and lists in chronological order which interfaces are expected to reach the threshold within the specified time period.

Using the Default Values

When you first view predicted future performance by selecting **Performance > Prediction**, you see a table showing the predicted performance for your entire SAN using the default values. The default values are:

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- Scope—entire SAN
- Past performance period—Month
- Future performance period—Month
- Threshold—80%
- SAN elements or links—ISLs
- Performance prediction type—Average

Click a link in the **Name** column to view a graph of that ISL's performance for the past 24 hours. To view the performance for the past week, month, year, or custom time, select an option from the drop-down list.

Using Your Own Values

To view a table of predicted future performance with your own values using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Performance > Prediction**.

You see the Prediction tab shown in [Figure 7-15](#).

Figure 7-15 Prediction Tab

The screenshot shows the Fabric Manager web interface. The main content area is titled 'SAN' and contains a prediction tool. The tool has two dropdown menus: 'Predict traffic utilization from past' (set to 'Week') and 'into future' (set to 'Week'). A 'Threshold' field is set to '80 % of Utilization'. Below these are radio buttons for 'For Top: 10' (selected), 'Host', 'Storage', and 'GigE'. A 'Show:' dropdown is set to 'Average', and a 'Using Peak Value of Every:' field is set to '10'. A 'Predict' button is visible. Below the form is a table with 10 rows of SAN elements. The table columns are: Fabric, VSAN id, Name, MT Speed, Future Bytes, Future Tasks, and Exceed Threshold. The table data is as follows:

Fabric	VSAN id	Name	MT Speed	Future Bytes	Future Tasks	Exceed Threshold
1. Fabric_SW-Vegas-59 1		SW-52 fc1/13<->SW-Excal-61 fc1/12	200.000MB	7B	6B	Never
2. Fabric_SW-Vegas-59 1,3		SW-Excal-61 fc1/17<->SW-Vegas-60 fc9/3	200.000MB	142B	246B	Never
3. Fabric_SW-Vegas-59 1,3		SW-Excal-61 fc1/10<->SW-Vegas-60 fc9/6	200.000MB	213B	306B	Never
4. Fabric_SW-Vegas-59 1		SW-Vegas-59 fc3/12<->SW-Paradise-63 fc1/4	200.000MB	106B	175B	Never
5. Fabric_SW-Vegas-59 1		SW-52 channel128<->SW-Excal-61 channel128	400.000MB	194B	91B	Never
6. Fabric_SW-Vegas-59 1		SW-Casa-83 fc1/1<->SW-Casa-84 fc1/1	200.000MB	8B	6B	Never
7. Fabric_SW-Vegas-59 1		SW-Casa-84 fc1/2<->SW-Vegas-60 fc4/9	200.000MB	195B	71B	Never
8. Fabric_SW-Vegas-59 1		SW-Vegas-59 fc9/3<->SW-Excal-61 fc1/2	200.000MB	492B	693B	Never
9. Fabric_SW-Vegas-59 1,3		SW-Casa-83 fc1/2<->SW-Vegas-60 fc4/5	200.000MB	235B	91B	Never
10. Fabric_SW-122	1,2,3...	SW-125 fc1/1<->SW-124 fc3/8	100.000MB	250B	109.335MB	Never

At the bottom of the table, there is a 'Rows per page' dropdown set to '10' and a 'Go to page: 1 of 1 Pages' indicator. A note at the bottom of the page states: 'Note: Values computed and updated every hour by using the 30 minutes traffic average.'

Step 2 Expand a fabric and select one of the VSANs to specify that the prediction report will be generated for that VSAN.

Step 3 Select the period of time (**Week, Month, 3 Months, 6 Months** or **Year**) to use to predict performance from the past drop-down list.

Step 4 Select the period of time (**Week, Month, 3 Months, 6 Months** or **Year**) for which to make the prediction from the future drop-down list.

Step 5 Enter the threshold percentage (1-100) of utilization that you do not want the traffic to exceed.

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- Step 6** Enter the number of ISLs, hosts, storage devices, or flows for which you want to make the prediction. The prediction will show the top **10**, top **20**, or top **50** with the most traffic.
- Step 7** Select the type of traffic prediction to show:
- **Average**—The average value of all the sample data is used.
 - **Peak**—The average value of all the peak values is used. The number of peak values is obtained by dividing the total number of records into groups based on the number you enter in the **Use Peak Value of Every xx Records** field. For example, if you have 1000 records and you enter 100 into the field, your records are divided into 10 groups and 10 peak values are used.
- Step 8** Click **Predict**.
- You see the prediction table with the new data. Click the links in the Name column to show performance charts based on the history data.

Viewing Switch Bandwidth

To view the total bandwidth for a switch using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Performance > Switch Bandwidth**.
- You see the Switch Bandwidth tab shown in [Figure 7-16](#).

Figure 7-16 Switch Bandwidth Tab

Fabric	Name	Avg. Rx/Sec	Avg. Tx/Sec	(Rx+Tx)/Sec	Peak Rx/Sec	Peak Tx/Sec	Errors	Discards	Last Updated
1.	Fabric_SW-122 SW-124	104.689MB	104.299MB	208.988MB	104.747MB	104.360MB	0	0	2007/08/29-15:29
2.	Fabric_SW-122 SW-122	68.142MB	482B	68.143MB	74.571MB	490B	0	0	2007/08/29-15:29
3.	Fabric_SW-Vegas-59 SW-Excal-61	1.137KB	1.237KB	2.375KB	1.144KB	1.246KB	0	0	2007/08/29-15:29
4.	Fabric_SW-122 SW-123	1.091KB	963B	2.054KB	1.312KB	1.239KB	0	0	2007/08/29-15:29
5.	Fabric_SW-Vegas-59 SW-Vegas-60	710B	780B	1.491KB	718B	790B	0	0	2007/08/29-15:29
6.	Fabric_SW-Vegas-59 SW-Vegas-59	594B	861B	1.456KB	598B	864B	0	0	2007/08/29-15:29
7.	Fabric_SW-122 SW-125	62.235MB	346B	62.235MB	810B	130.691MB	373B	0	2007/08/29-15:29
8.	Fabric_SW-122 SW-128	346B	464B	810B	810B	373B	514B	0	2007/08/29-15:29
9.	Fabric_SW-122 172.28.232.127	400B	321B	721B	445B	491B	0	0	2007/08/29-15:29
10.	Fabric_SW-Vegas-59 SW-Casa-83	242B	97B	339B	247B	100B	0	0	2007/08/29-15:29

- Step 2** Select the period of time (**24 Hours**, **Week**, **Month** or **Year**) for which you want to view bandwidth usage from the **Last** drop-down list.

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Inventory

The Inventory tab shows an inventory of the selected SAN, fabric, or switch. You can export this information to an ASCII file in comma-separated value format that can be read by applications such as Microsoft Excel. You can set the number of rows and columns per page.

The Inventory tab contains the following subtabs:

- **VSANs**—Shows details about VSANs.
- **Switches**—Shows details about switches.
- **Licenses**—Shows details about the licenses in use in the fabric.
- **Modules**—Shows details for MDS switching and services modules, fans, and power supplies.
- **End Devices**—Shows the host and storage ports.
- **ISLs**—Shows the Inter-Switch Links.
- **NPV Links**—Shows the links between NPV devices and ports.
- **Zones**—Shows the active zone members (including those in inter-VSAN zones).
- **Summary**—Shows VSANs, switches, ISLs, ports, and end devices.

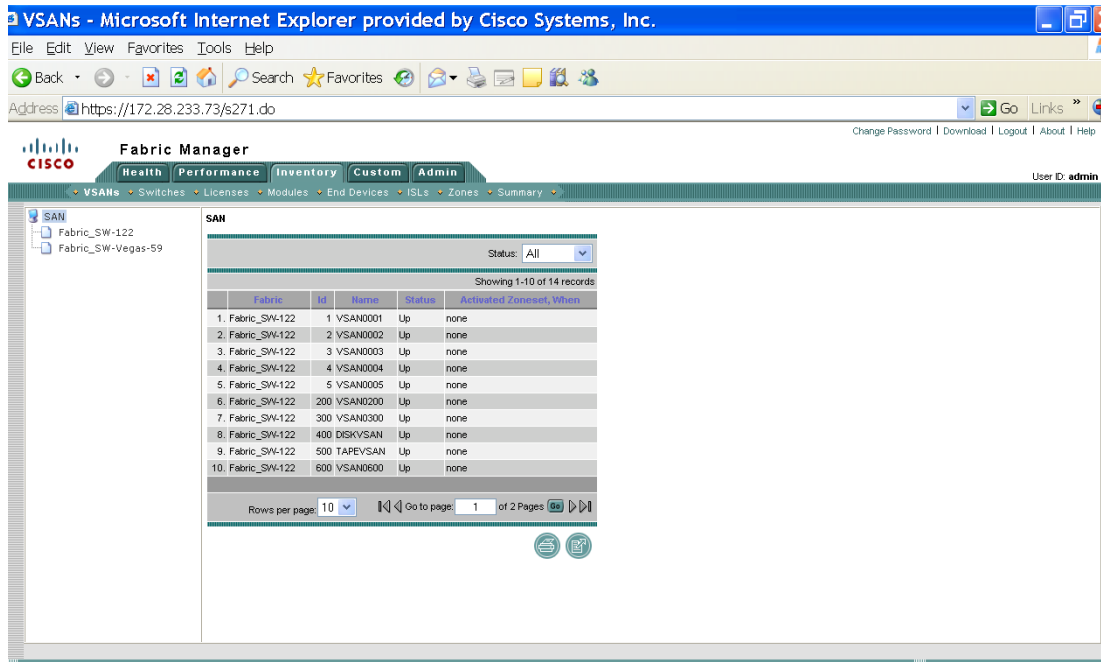
Viewing Detailed Information for VSANs

To view detailed inventory information about VSANs using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Inventory > VSANs**.
You see the VSANs tab shown in [Figure 7-17](#).

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Figure 7-17 VSANs Tab



Step 2 Select one of the fabrics to display VSAN inventory information for that fabric.



Note

There are variations to this procedure. In addition to these basic steps, you can also:

- Select the status level, then click **Filter** to filter the display to show all VSANs or just those with errors.

Viewing Detailed Information for Switches

To view detailed inventory information about switches using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > Switches**.

You see the Switches tab shown in [Figure 7-18](#).

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Figure 7-18 Switches Tab

The screenshot shows the Fabric Manager web interface with the Switches tab selected. The interface displays a table of switch inventory information for various fabrics and VSANs. The table includes columns for Fabric, Name, IP Address, VMM, #FC Ports, Status, Vendor, Model, Release, Location, Contact, and Up Time. The table shows 10 rows of data, including switches from Fabric_SW-122 and Fabric_SW-Vegas-59.

Fabric	Name	IP Address	VMM	#FC Ports	Status	Vendor	Model	Release	Location	Contact	Up Time
1. Fabric_SW-122	SW-122	172.28.232.127	20:00:00:0d:ec:2e:84:40	18	ok	Cisco	DS-C9216a	3.2(1)	San Jose	Rajesh Kalari	1 day, 21:00
2. Fabric_SW-122	SW-122	172.28.232.122	20:00:00:0d:ec:0e:1b:00	16	ok	Cisco	DS-C9216	3.1(2b)	San Jose	Rajesh Kalari	26 days, 00:00
3. Fabric_SW-122	SW-123	172.28.232.123	20:00:00:0d:ec:0d:16:00	32	No Hot Standby Module Warning	Cisco	DS-C9509	3.2(1)	San Jose	Rajesh Kalari	2 days, 00:00
4. Fabric_SW-122	SW-124	172.28.232.124	20:00:00:0d:ec:18:7a:40	48	Module Warning	Cisco	DS-C9506	3.2(1)	San Jose	Rajesh Kalari	1 day, 23:00
5. Fabric_SW-122	SW-125	172.28.232.125	20:00:00:0d:ec:2f:b4:40	24	Module Warning	Cisco	DS-C9124	3.1(3a)	San Jose	Rajesh Kalari	26 days, 00:00
6. Fabric_SW-122	SW-126	172.28.232.126	20:00:00:0d:ec:50:1d:80	34	Module Warning	Cisco	DS-C9134	3.2(0.166)	San Jose	Rajesh Kalari	n/a
7. Fabric_SW-Vegas-59	SW-52	172.28.232.205	20:00:00:0d:ec:50:1d:00	34	ok	Cisco	DS-C9134	3.2(0.183)		cindukum@cisco.com	5 days, 00:00
8. Fabric_SW-Vegas-59	SW-Casa-83	172.28.233.83	20:00:00:0d:ec:33:67:c0	40	ok	Cisco	DS-C9140	3.2(0.172)		cindukum@cisco.com	n/a
9. Fabric_SW-Vegas-59	SW-Casa-84	172.28.233.84	20:00:00:0d:ec:33:68:00	40	ok	Cisco	DS-C9140	3.1(3a)		cindukum@cisco.com	71 days, 00:00
10. Fabric_SW-Vegas-59	SW-Excal-61	172.28.233.61	20:00:00:0d:ec:0c:fe:40	16	Module Warning	Cisco	DS-C9216	3.2(0.172)		cindukum@cisco.com	n/a

Step 2 Do one of the following:

- Select a **SAN** to display switch inventory information for all fabrics in the SAN.
- Select one of the fabrics to display switch inventory information for that fabric.
- Expand a fabric and select one of the **VSANs** to display switch inventory information for that VSAN.

Viewing License Information

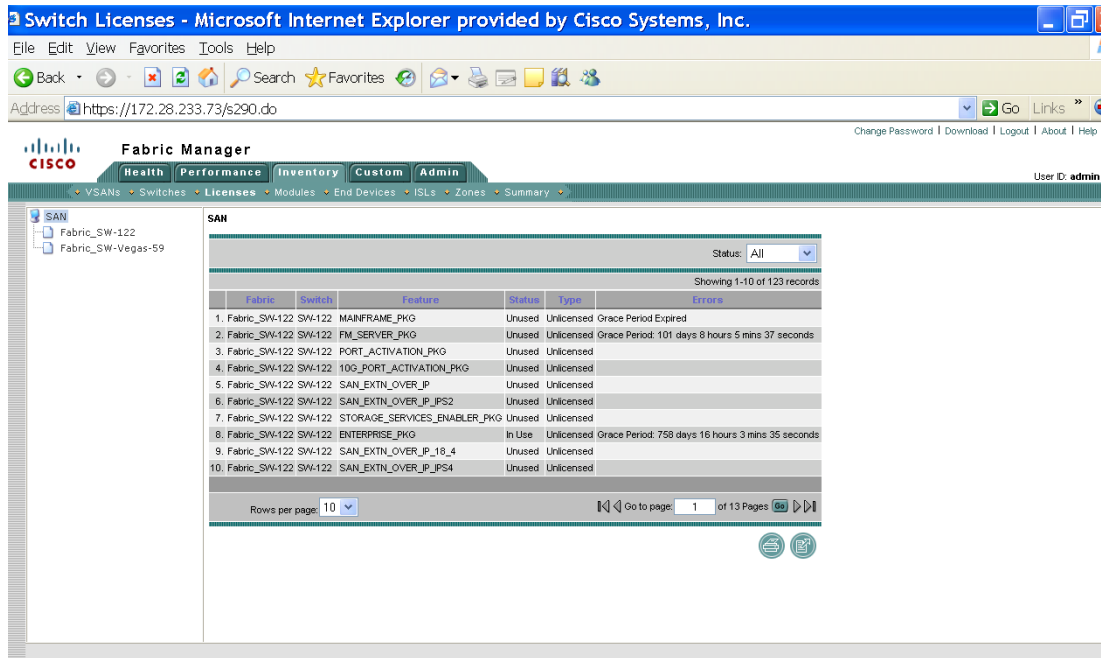
To view license information for switches using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > Licenses**.

You see the Switch Licenses tab shown in [Figure 7-19](#).

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Figure 7-19 Switch Licenses Tab



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Step 2 Select one of the fabrics to display license information for switches in that fabric.



Note

There are variations to this procedure. In addition to these basic steps, you can also:

- Select the status level, and click **Filter** to filter the display to show all licenses or just those with errors.

Viewing Detailed Information for Modules

To view detailed inventory information about modules using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > Modules**.

You see the Modules tab shown in [Figure 7-20](#).

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Figure 7-20 Modules Tab

Fabric	Switch	Name	ModelName	SerialNum	Type	Slot	Hardware Revision	Software Revision	AssetID	OperStatus
1. Fabric_SW-122	172.28.232.127	Fan Module-1	DS-2SLOT-FAN	MMK103101GJ	fan	N/A	2.0		73-8339-06	ok
2. Fabric_SW-122	172.28.232.127	MDS 2 Slot Chassis	DS-C9216A-K9	FOX10330AFV	chassis	N/A	2.0		73-8680-03	n/a
3. Fabric_SW-122	172.28.232.127	PowerSupply-2	DS-CAC-845W	QCS1047100F	powerSupply	N/A	1.2		341-0052-03	ok
4. Fabric_SW-122	172.28.232.127	4x1GE IPS, 18x1/24Gbps FCSup2	DS-X9223-K9	JAB111400B9	module	1	0.305	3.2(1)	73-11018-03	ok
5. Fabric_SW-122	SW-122	MDS 2 Slot Chassis	DS-C9216-K9	FOX0822040T	chassis	N/A	1.0		73-8294-02	n/a
6. Fabric_SW-122	SW-122	PowerSupply-1	DS-CAC-845W	QCS083310C7	powerSupply	N/A	1.0		341-0052-02	ok
7. Fabric_SW-122	SW-122	PowerSupply-2	DS-CAC-845W	QCS08331019	powerSupply	N/A	1.0		341-0052-02	ok
8. Fabric_SW-122	SW-122	1/2 Gbps FCSupervisor	DS-X9216-K9-SUP	JAB0838012L	module	1	5.2	3.1(2b)	73-8297-11	ok
9. Fabric_SW-122	SW-122	Fan Module-1			fan	N/A	0.0			ok
10. Fabric_SW-122	SW-123	MDS 9 Slot Chassis	DS-C9509	FOX080105NX	chassis	N/A	1.0		73-8014-03	n/a

Step 2 Do one of the following:

- Select a SAN to display module inventory information for all fabrics in the SAN.
- Select one of the fabrics to display module inventory information for that fabric.
- Expand a fabric and select one of the VSANs to display module inventory information for that VSAN.

Viewing Detailed Information for End Devices

To view detailed inventory information about end devices using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > End Devices**.

You see the End Devices tab shown in [Figure 7-21](#).

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Figure 7-21 End Devices Tab

The screenshot shows the Fabric Manager Web Server interface. The top navigation bar includes tabs for Health, Performance, Inventory, Custom, and Admin. The 'Inventory' tab is selected, and the 'End Devices' sub-tab is active. The main content area displays a table of end devices. The table has the following columns: Fabric, VSAN ID, Enclosure, Alias, Port WWN, Field, Switch Interface, IF Speed, and Link Status. The table contains 8 rows of data, each representing a different end device configuration. The interface also includes a search bar, a filter dropdown, and a pagination control at the bottom.

Fabric	VSAN ID	Enclosure	Alias	Port WWN	Field	Switch Interface	IF Speed	Link Status
1. Fabric_SW-122	1	GLLOGIC 21:01:00:E0:8B:39:14:58	Gllogic 21:01:00:e0:8b:39:14:58	21:01:00:e0:8b:39:14:58	0x070100	SW-122 fc1/12	2Gb	ok
2. Fabric_SW-122	500	SEAGATE 10:00:00:04:CF:04:00:00	Seagate 10:00:00:04:cf:04:00:00	10:00:00:04:cf:04:00:00	0x190101	SW-124 fc3/15	2Gb	ok
3. Fabric_SW-122	400	SEAGATE 10:00:00:04:CF:02:00:00	Seagate 10:00:00:04:cf:02:00:00	10:00:00:04:cf:02:00:00	0x090101	SW-124 fc3/14	2Gb	ok
4. Fabric_SW-122	500	GLLOGIC 10:00:00:E0:8B:03:00:00	Gllogic 10:00:00:e0:8b:03:00:00	10:00:00:e0:8b:03:00:00	0x030200	SW-125 fc1/7	2Gb	ok
5. Fabric_SW-122	400	GLLOGIC 10:00:00:E0:8B:01:00:00	Gllogic 10:00:00:e0:8b:01:00:00	10:00:00:e0:8b:01:00:00	0x240200	SW-125 fc1/8	2Gb	ok
6. Fabric_SW-Vegas-59	1	21:00:00:E0:8B:19:94:57	21:00:00:e0:8b:19:94:57	21:00:00:e0:8b:19:94:57	0x120100	SW-52 fc1/8	2Gb	ok
7. Fabric_SW-Vegas-59	1	21:00:00:E0:8B:19:5F:57	DA_test	21:00:00:e0:8b:19:5f:57	0x000100	SW-Casa-84 fc1/29	2Gb	ok
8. Fabric_SW-Vegas-59	1	10:00:00:00:C9:43:01:98	10:00:00:00:c9:43:01:98	10:00:00:00:c9:43:01:98	0x100000	SW-Paradise-63 fc1/5	2Gb	ok

Step 2 Expand a fabric and select one of the VSANs to display end device inventory information for that VSAN.



Note

If you filter by hosts or enclosures, you can click a host in the resulting table to see host enclosure performance, a list of hosts, a list of hosts to which your device is connected, and the connection paths. This allows you to see performance statistics for hosts and enclosures.

You can also filter by end devices or by port groups to view aggregate information for those port groups, such as peak and average usage.

Viewing Detailed Information for ISLs

To view detailed inventory information about ISLs using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > ISLs**.

You see the ISLs tab shown in [Figure 7-22](#).

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Figure 7-22 ISLs Tab

The screenshot shows the Fabric Manager web interface in Microsoft Internet Explorer. The browser address bar shows the URL <https://172.28.233.73/s240.do>. The interface has a navigation menu with tabs for Health, Performance, Inventory, Custom, and Admin. The 'Inventory' tab is selected, and the 'ISLs' sub-tab is active. The main content area displays a table of ISLs with the following data:

	Fabric	VSANs	From Switch	From Interface	To Switch	To Interface	Speed	Status
1.	Fabric_SW-122	1,2	172.28.232.127	fc1/1	SW-124	fc2/9	2Gb	Trunk Not Fully Active
2.	Fabric_SW-122	1,2	172.28.232.127	fc1/2	SW-124	fc2/13	2Gb	Trunk Not Fully Active
3.	Fabric_SW-122	1,2,3,4,5,200,300,400,500,600,999	SW-123	fc2/5	SW-122	fc1/5	2Gb	ok
4.	Fabric_SW-122	1,2,3,200,300,400,500,600	SW-123	fcip/2	SW-124	fcip/2	1Gb	ok
5.	Fabric_SW-122	1,2,3,400,500,600	SW-125	fc1/1	SW-124	fc3/9	1Gb	Trunk Not Fully Active
6.	Fabric_SW-122	1,500	SW-128	fc1/1	SW-125	fc1/3	2Gb	Trunk Not Fully Active
7.	Fabric_SW-Vegas-59	1	SW-52	fc1/13	SW-Excal-61	fc1/12	2Gb	Trunk Not Fully Active
8.	Fabric_SW-Vegas-59	1	SW-52	channel128	SW-Excal-61	channel128	4Gb	Trunk Not Fully Active
9.	Fabric_SW-Vegas-59	1	SW-Casa-83	fc1/1	SW-Casa-84	fc1/1	2Gb	ok
10.	Fabric_SW-Vegas-59	1,3	SW-Casa-83	fc1/2	SW-Vegas-60	fc4/5	2Gb	ok

Step 2 Expand a fabric and select one of the VSANs to display ISL inventory information for that VSAN.



Note

There are variations to this procedure. In addition to these basic steps, you can also:

- Select the status level, and click **Filter** to filter the display to show all ISLs or just those with errors.

Viewing Detailed Information for NPV Links

To view detailed inventory information about NPV Links using Fabric Manager Web Server, follow these steps:

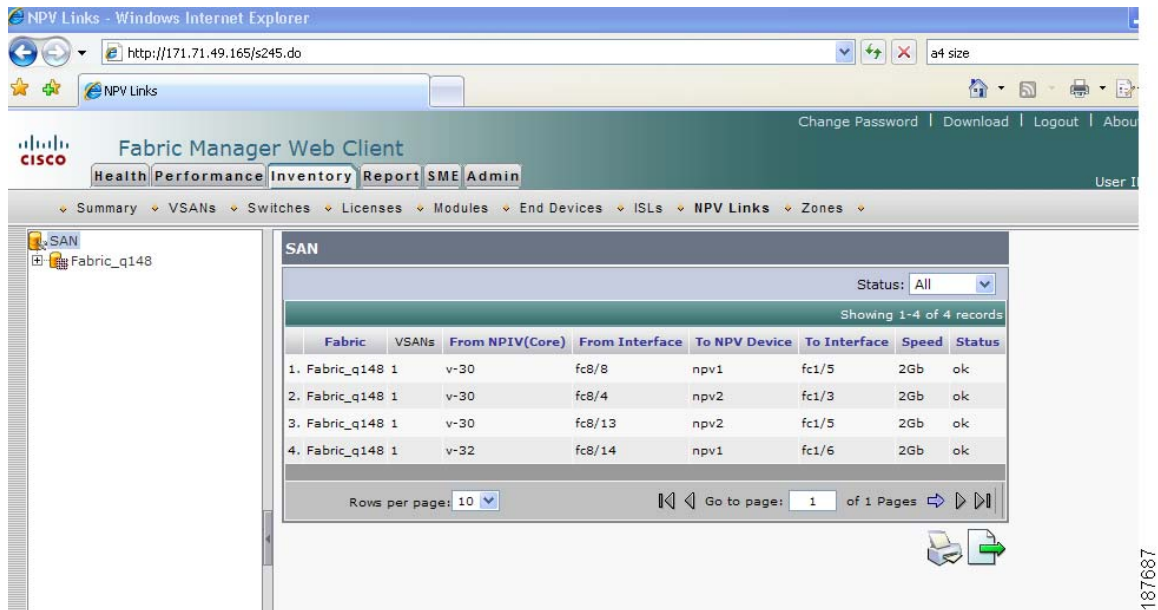
Step 1 Choose **Inventory > NPV Links**.

You see the NPV Links tab as shown in [Figure 7-23](#).

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Figure 7-23 NPV Links



Step 2 Expand a fabric and select one of the VSANs to display NPV Links information for that VSAN

Viewing Detailed Information for Zones

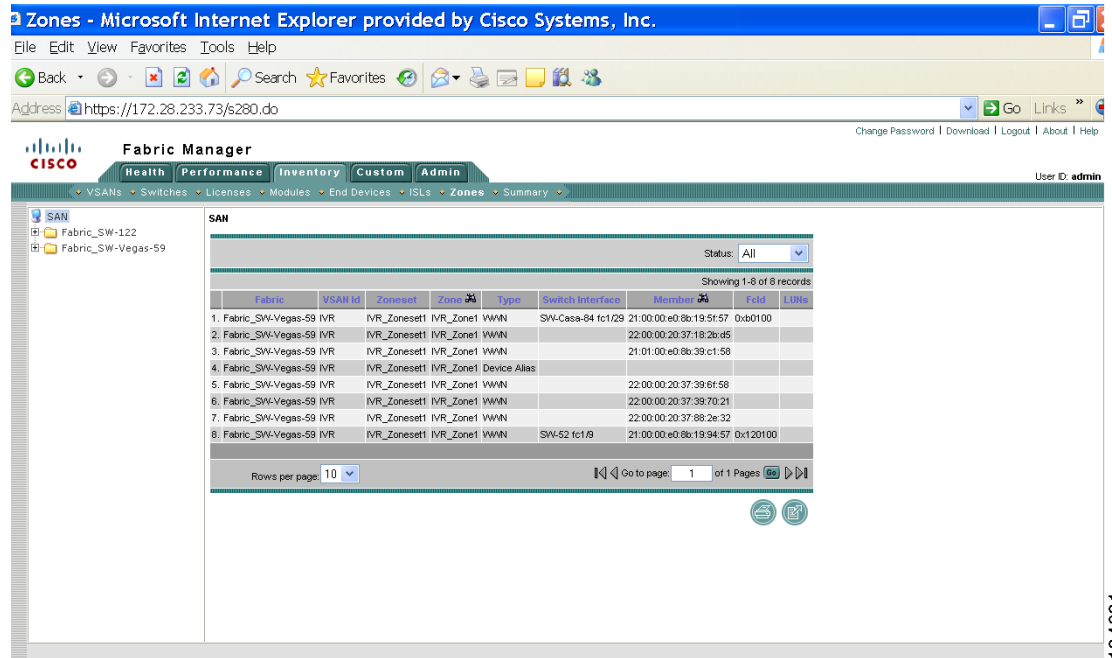
To view detailed inventory information about zones using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > Zones**.

You see the Zones tab shown in [Figure 7-24](#).

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Figure 7-24 Zones Tab



Step 2 Expand a fabric and select one of the VSANs to display zone inventory information for that VSAN.



Note

There are variations to this procedure. In addition to these basic steps, you can also:

- Select the status level, and click **Filter** to filter the display to show all zones or just those with errors.

Viewing Summary Inventory Information

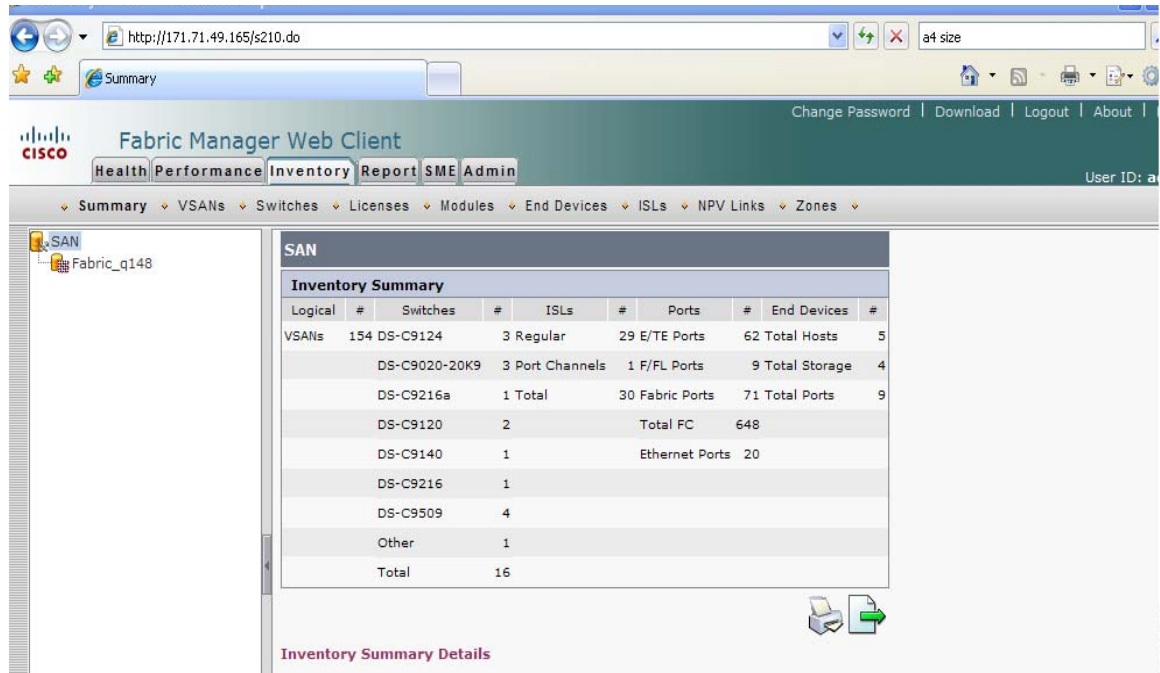
To view a summary of VSANs, switches, ISLs, ports, and end devices using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > Summary**.

You see the Summary tab shown in [Figure 7-25](#).

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Figure 7-25 Summary Tab



Step 2 Do one of the following:

- Select a **SAN** to display a summary of inventory information for all fabrics in the SAN.
- Select one of the fabrics to display a summary of inventory information for that fabric.

Viewing Detailed Summary Inventory Information

Detailed summary includes a number of key summary statistics like port usage and any statistics information, license use summary, environmental status and switch states, monitoring and alerting status that is useful for creating comprehensive SAN health reports.

To view a detailed summary using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Inventory > Summary**.

Step 2 Click **Inventory Summary Details** at the bottom of the page.

You see the Inventory Summary Details as shown in [Figure 7-26](#).

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Figure 7-26 Detailed Summary Information

The screenshot shows a web browser window titled 'Summary Details - Windows Internet Explorer' with the URL 'http://171.71.49.165/s211.do?filter.fabricId=-1'. The main content is an 'Inventory Detail Summary Report' for Fabric q148. The report is divided into several sections:

- Device Count:** A table showing 1 Cisco device with a count of 15.
- Port Usage:** A table showing port usage for Fabric q148, including Disk, Tape, Unknown Device, Host, ISL, NPV, Free, Total, Host:Disk, Port:ISL, Device:ISL, DWDM, 10G SFP, SFP, GBIC, and OTHER. Totals are 4 Disk, 0 Tape, 0 Unknown Device, 4 Host, 62 ISL, 0 NPV, -70 Free, 0 Total, 1.0:1 Host:Disk, -1.0:1 Port:ISL, 0.12:1 Device:ISL, 0 DWDM, 0 10G SFP, 78 SFP, 0 GBIC, and 5 OTHER.
- Health Status And Monitoring:** A table showing switch state (WARN, OK, FAILED, OFF, ON) and fan status (FAN WARN, DOWN, UP) for Fabric q148. Totals are 12 WARN, 4 OK, 0 FAILED, 8 OFF, 13 ON, 0 FAN WARN, 0 DOWN, 5 UP, and 22 total.
- Permanent License Summary:** A table showing license counts for Fabric q148 across categories: 10G_PORT, DMM, ENTERPRISE, FM_SERVER, MAINFRAME, PORT, SAN_EXTN, SME, and SSE. Totals are 0 10G_PORT, 0 DMM, 1 ENTERPRISE, 0 FM_SERVER, 0 MAINFRAME, 0 PORT, 3 SAN_EXTN, 0 SME, and 0 SSE.
- Trial License Summary:** A table showing trial license counts for Fabric q148 across categories: 10G_PORT, DMM, ENTERPRISE, FM_SERVER, MAINFRAME, PORT, SAN_EXTN, SME, and SSE. Totals are 0 10G_PORT, 1 DMM, 11 ENTERPRISE, 12 FM_SERVER, 7 MAINFRAME, 0 PORT, 5 SAN_EXTN, 0 SME, and 1 SSE.

The page number 187692 is visible in the bottom right corner of the screenshot.

Report

The Report tab allows you to create customized reports based on historical performance, events, and inventory information gathered by the Fabric Manager Server. You can create aggregate reports with summary and detailed views. You can also view previously saved reports.

The Report tab contains the following subtabs:

- View—Displays previously saved reports.
- Generate—Generates a custom report based on the selected report template.
- Edit—Edits an existing report template.
- Create—Creates a report template, allowing you to select any combination of events, performance categories, and inventory.
- Scheduled Jobs—Displays scheduled jobs based on the selected report template.

Creating a Custom Report Template

You can create custom reports from all or any subset of information gathered by Fabric Manager Server. You create a report template by selecting events, performance, and inventory statistics that you want in your report and set the desired SAN, fabric or VSAN to limit the scope of the template. You can generate

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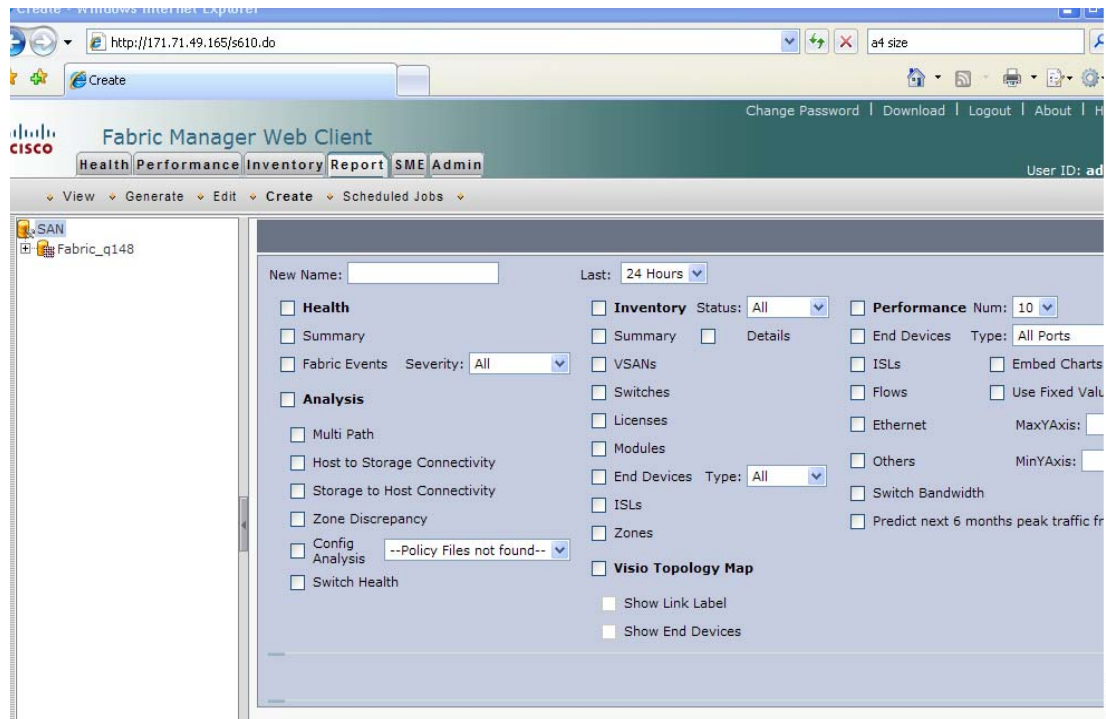
and schedule a report of your fabric based on this template immediately or at a later time. Fabric Manager Web Server saves each report based on the report template used and the time you generate the report.

To create a custom report template using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Report > Create**.

You see the Create Report tab as shown in [Figure 7-27](#).

Figure 7-27 Create Report Tab



Step 2 Provide a new name for the report.

Step 3 Indicate the information you want in the report by checking the **Events**, **Performance**, and **Inventory** check boxes.

Step 4 Optional - Select Severity for events, Status for inventory information, or Type of end devices for performance information and inventory information.

Step 5 Click **Save** to save this report template.

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Viewing Custom Reports by Template

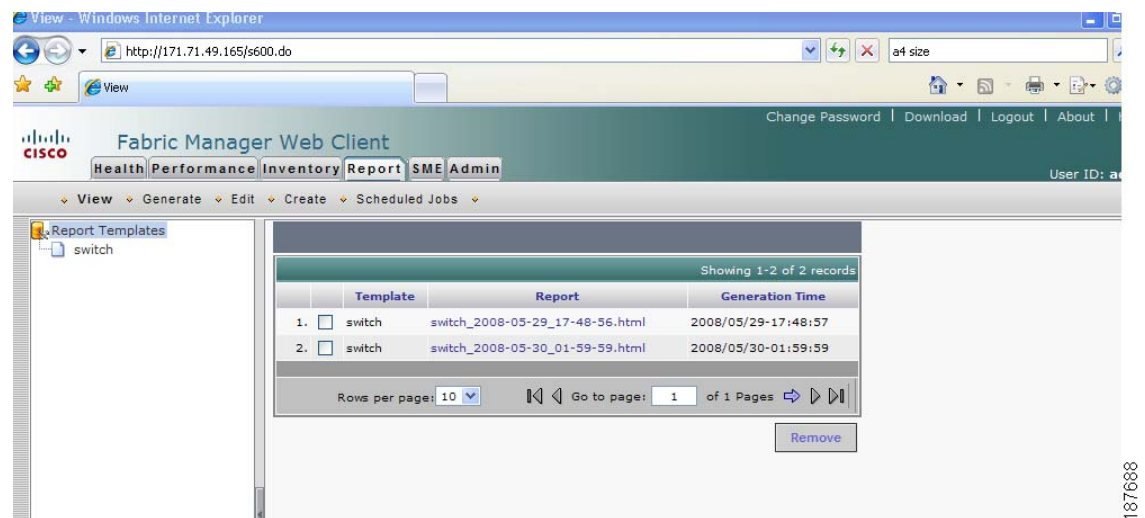
Reports you generate are saved by Fabric Manager Server and are viewable by choosing **Custom > View**.

To view a custom report using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Report > View**.

You see the View Report table shown in [Figure 7-28](#).

Figure 7-28 View Report Table



Step 2 Select the report that you want to view from the Navigation pane. You can view the report in the main screen or you can view the report in a new browser window if you click the report in the report table.

Generating Custom Reports by Template

You can generate reports based on a selected template or you can schedule the report to run at a specified time.

To generate a report or to schedule a report using Fabric Manager Web Server, follow these steps:

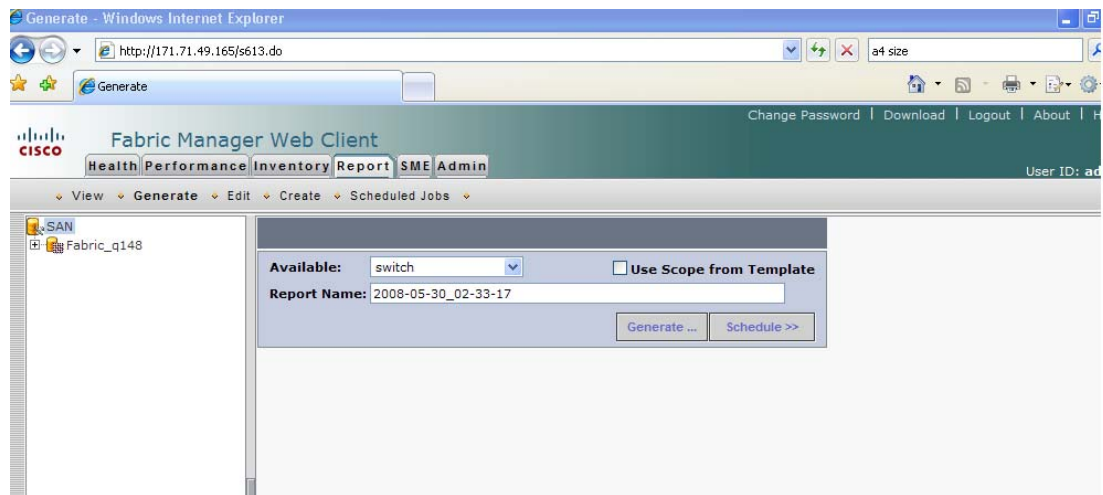
Step 1 Select a SAN, fabric, or VSAN on which to base the report.

Step 2 Choose **Report > Generate**.

You see the Generate Custom Report tab shown in [Figure 7-29](#).

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Figure 7-29 Generate Custom Report Tab



- Step 3** Choose a report template from the **Available** drop-down list.
- Step 4** Optional - Change the name of the report. By default, report names are based on the date and time generated.
- Step 5** Optional - Deselect the **Use Scope from Template** check box to override the scope defined by the filter type.
- Step 6** Click **Generate** to generate a report based on this template.
You see the report results in a new browser window. Alternatively, you can view the report by choosing **Report > View** and selecting the report name from the report template you used in the navigation pane.
- Step 7** Click **Schedule** to schedule a report based on this template. You see the schedule panel.
- Step 8** In the schedule panel, specify the scheduled run time and how often you want the report to run.
- Step 9** Enter a name for the report in the **Job Name** field and click **Create Job** to save the report.
You can view the scheduled jobs on the Scheduled Jobs page but once the scheduled jobs have started running, they are removed from the Scheduled Job table.

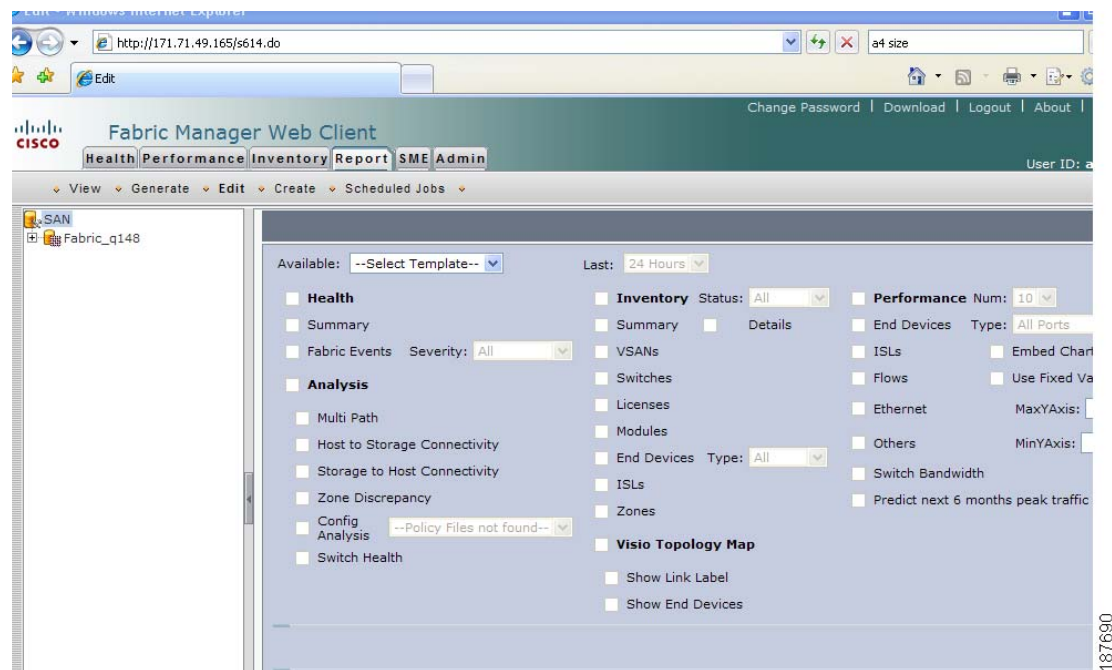
Modifying a Custom Report Template

To edit a custom report template using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Report > Edit**.
You see the Edit Report dialog box
- Step 2** Choose a report template from the **Available** drop-down list and click **Open**.
You see the current information that this report gathers as shown in [Figure 7-30](#).

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Figure 7-30 Report



- Step 3** Indicate the information you want to gather in the report by checking the **Health**, **Analysis**, **Performance**, or **Inventory** check boxes.
- Step 4** Optional - Select a severity level for events, status for inventory information, or type of end device for performance information and inventory information.
- Step 5** Click **Save** to save this report template.



Note You cannot change the SAN, fabric or VSAN the report is based on. Generate a new report for a new SAN, fabric or VSAN.

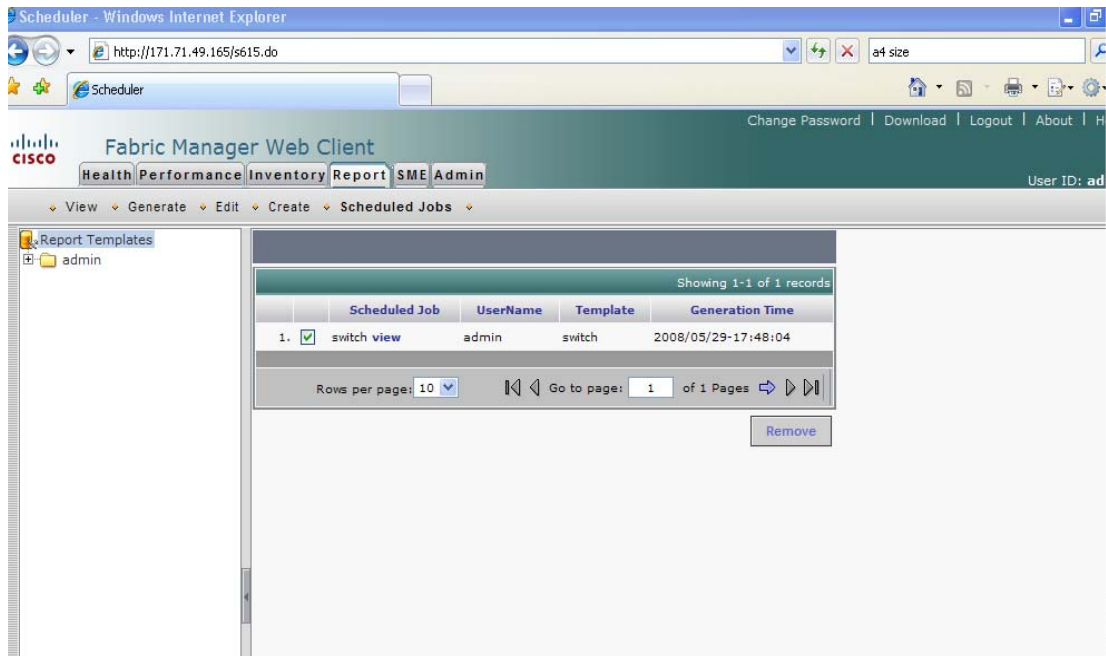
Viewing Scheduled Jobs by Report Template

To view scheduled jobs by report template using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Report > Scheduled Jobs**.
You see the Scheduled Jobs table shown in [Figure 7-31](#).

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Figure 7-31 Scheduled Jobs Table



Step 2 Click a report template in the left navigation pane to view the scheduled jobs based on the selected template.

Admin



Note

Only network administrators can access the Fabric Manager Web Server Admin tab. Network operators cannot view the Admin tab.

The Admin tab allows you to perform minor administrative and configuration tasks on the Fabric Manager Server sending data to your web client.

The Admin tab contains the following subtabs:

- **Status**—Displays the status of, and allows you to start and stop, the Database Server, Fabric Manager Server, and Performance Collector services on your server. You should only need to restart services if something is not working properly, or if too large a percentage of system resources are being consumed.
- **Configure**—Allows you to configure various parameters for Fabric Manager Server.
- **Logs**—Allows you to view all the logs from the various services running on the Fabric Manager Server.



Note

If you see a database file lock error in the database log, you can fix it by shutting down and restarting the database server using the web client.

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Recovering a Web Server Password

Fabric Manager Web Server user passwords are encrypted and stored locally on the workstation where you installed Web Server. If you forget a password, you can create a new network-admin user locally on the workstation where you installed Web Server and then log in and delete the old user account under the Admin tab.

To create a user on the workstation where you installed Web Server and delete the old user, follow these steps:

-
- Step 1** Go to the Web Server installation directory and **cd** to the bin directory.
 - Step 2** Enter the following line to create a user:

```
addUser. {sh, bat} <userName> <dbpassword>
```
 - Step 3** Choose **Admin > Configure > Web Users > Local Database**.
You see the list of users in the local database.
 - Step 4** Select the user that you want to delete and click **Delete** to remove the old user.
-

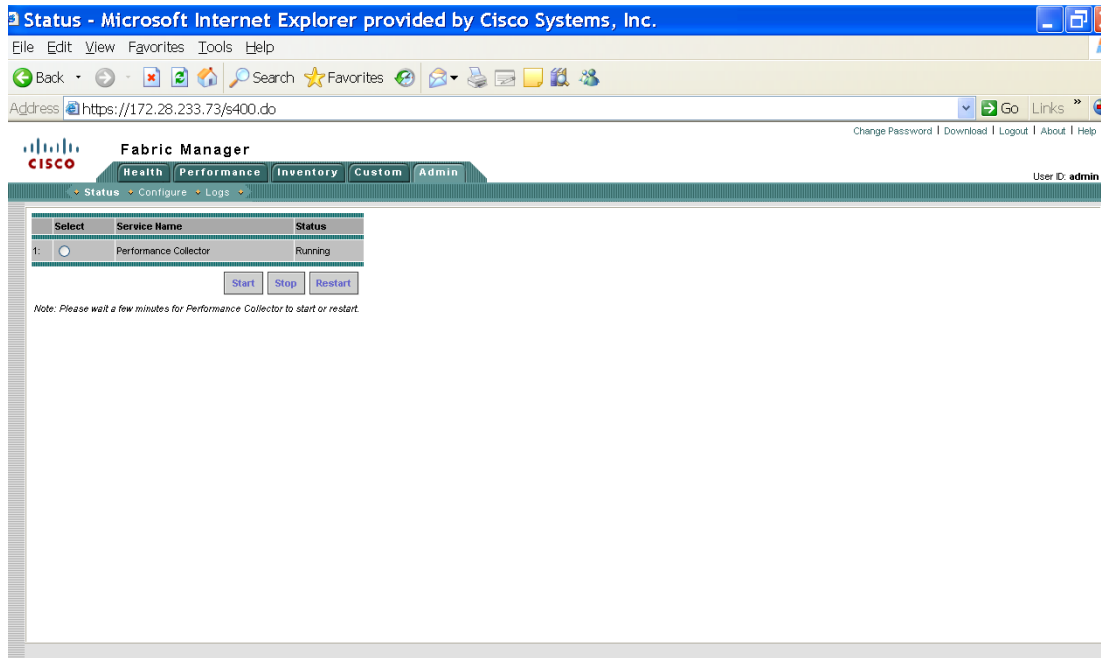
Starting, Restarting, and Stopping Services

To start, restart, or stop services using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Admin > Status**.
You see a table of services and the status of each as shown in [Figure 7-32](#).

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Figure 7-32 Fabric Manager Services Status



Step 2 Select the service(s) you want to start, restart, or stop.

Step 3 Click **Start**, **Stop**, or **Restart**.

The selected services are started, restarted, or stopped.



Note If the word “more” is in the Status column, you can click it to view a detailed status of the service.

Adding, Editing, and Removing Managed Fabrics

Fabric Manager Web Server reports information gathered by Fabric Manager Server on any fabric known to the Fabric Manager Server.

To start managing a fabric from Fabric Manager Server using Fabric Manager Web Server, follow these steps:

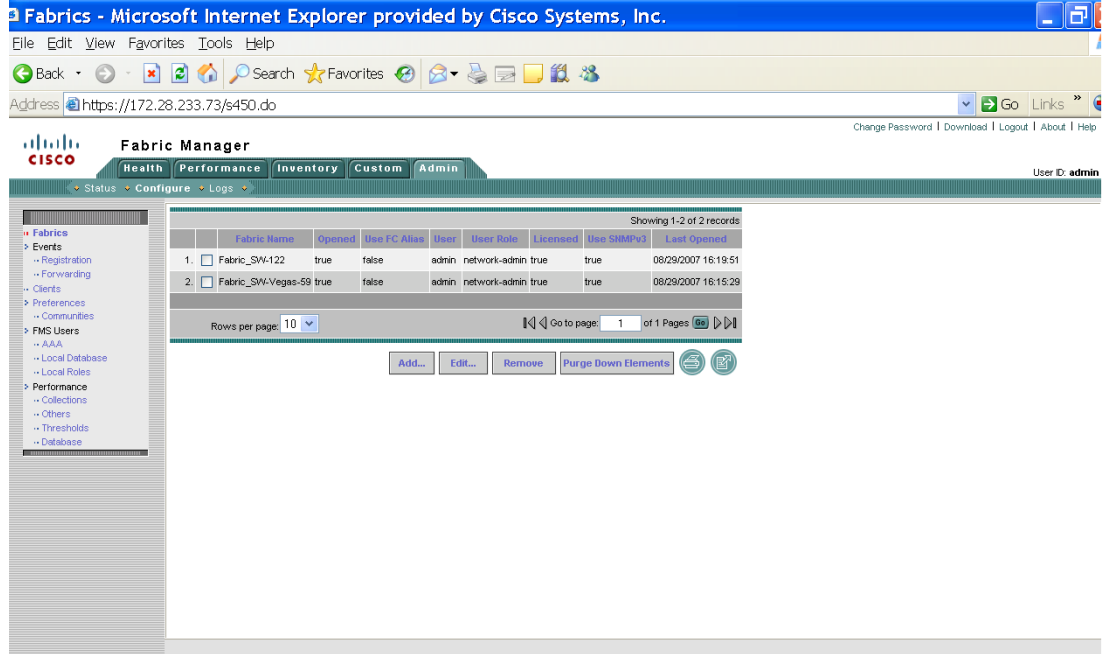
Step 1 Choose **Admin > Configure**.

Step 2 Click **Fabrics** in the left navigation pane.

You see the list of fabrics (if any) managed by Fabric Manager Server in the Opened column (see [Figure 7-33](#)).

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Figure 7-33 List of Fabrics Managed by Fabric Manager Server



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Step 3 Click **Add**.

You see the Add Fabric dialog box shown in Figure 7-34.

Figure 7-34 Add Fabric Dialog Box



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Step 4 Enter the seed switch IP address, read community and write community for this fabric.

Step 5 Optional - Check the SNMPV3 check box. If you check SNMPV3, the fields Read Community and Write Community change to User Name and Password. You must enter your user name and password.

Step 6 Click **Add** to begin managing this fabric.

To stop managing a fabric from Fabric Manager Server using Fabric Manager Web Server, follow these steps:

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-
- Step 1** Choose **Admin > Configure**.
 - Step 2** Click **Fabrics** in the left navigation pane.
 - Step 3** Check the check box next to the fabric that you want to remove and click **Remove** to discontinue data collection for that fabric.
-

To edit a fabric from Fabric Manager Server using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Admin > Configure**.
 - Step 2** Click **Fabrics** in the left navigation pane.
 - Step 3** Check the check box next to the fabric that you want to edit and click **Edit**.
You see the Edit Fabric dialog box shown in [Figure 7-35](#).

Figure 7-35 Edit Fabric Dialog Box



- Step 4** Enter a new fabric name, user name and password and specify how you want Fabric Manager Server to manage the fabric by selecting an option from the drop-down list.
 - Step 5** Click **Modify** to save the changes.
-

Viewing Trap and Syslog Registration Information

To view trap and syslog registration information from Fabric Manager Server using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Admin > Configure**.
 - Step 2** Click **Registration** in the left navigation pane.
 - Step 3** Select a fabric to display registration information for that fabric.

You see the Registration screen showing the registration information for the selected fabric (see [Figure 7-36](#)).

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Figure 7-36 Registration Screen

The screenshot shows the Fabric Manager web interface in Microsoft Internet Explorer. The browser address bar shows the URL: <https://172.28.233.73/s140.do?filter.event.select=true&filter.event.type=1&filter.event.fabricId=1018&filter.event.seedSwitchAddress=172.28.233.73>. The interface title is "Fabric Manager" and the user is logged in as "admin".

The main content area displays the configuration for "Fabric_SW-122". It shows the following information:

- SNMP Trap Address: 172.28.233.73:2162(15622 received, 15480 dropped, 142 processed)
- Syslog Server Address: 172.28.233.73:514(0 received, 0 dropped, 0 processed)
- Last updated at: 2007/06/29-16:21:35

Below this information is a table showing the registration status for various switches:

Switch	Registered For Traps	Registered For Syslog
1. sw-122.cisco.com	No	No
2. sw-124.cisco.com	No	No
3. sw-123.cisco.com	No	No
4. sw-127.cisco.com	No	No
5. sw-128.cisco.com	No	No
6. sw-125.cisco.com	No	No

The table indicates that all listed switches are not registered for traps or syslog. The interface also includes a "Purge All Events" button and a "Showing 1-6 of 6 records" indicator.

Step 4 Optional - Click the **Print** icon or the **Export Report** icon for a copy of the information.

Configuring Forwarding of Notifications for Events

You can use Fabric Manager Web Server to add and remove notification forwards for system messages.



Note

Fabric Manager Web Server forwards fabric events via email or SNMPv1 traps.

To add a notification forward using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Admin > Configure**.
- Step 2** Click **Forwarding** in the left navigation pane.
- Step 3** Click **Add**.

You see the Add Notification dialog box shown in [Figure 7-37](#).

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Figure 7-37 Add Notification Dialog Box

- Step 4** Choose a notification type, either **E-Mail** or **SNMP Trap**. If you choose **SNMP Trap**, a Port field is added to the dialog box.
- Step 5** Choose the fabric for notification from the Fabric drop-down list.
- Step 6** Either check the **VSAN Scope** check box to receive notifications for all VSANs, or enter the VSAN IDs in the **ID List** field to limit the VSANs for which you want to receive notifications.
- Step 7** Enter the e-mail address for notifications in the **Address** field.
- Step 8** Select the severity level of the messages to receive from the **Minimum Severity** drop-down list.
- Step 9** Click **Add** to add the notification.



Note

The traps sent by Fabric Manager Server correspond to the severity type followed by a text description:

```
trap type(s) = 40990 (emergency) 40991 (alert) 40992 (critical) 40993 (error) 40994
(warning) 40995 (notice) 40996 (info) 40997 (debug)textDescriptionOid = 1, 3, 6, 1, 4, 1,
9, 9, 40999, 1, 1, 3, 0
```

To remove a notification forward using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Admin > Configure**.
- Step 2** Click **Forwarding** in the left navigation pane.
- Step 3** Check the check box in front of the notification you want to remove.
- Step 4** Click **Remove**.

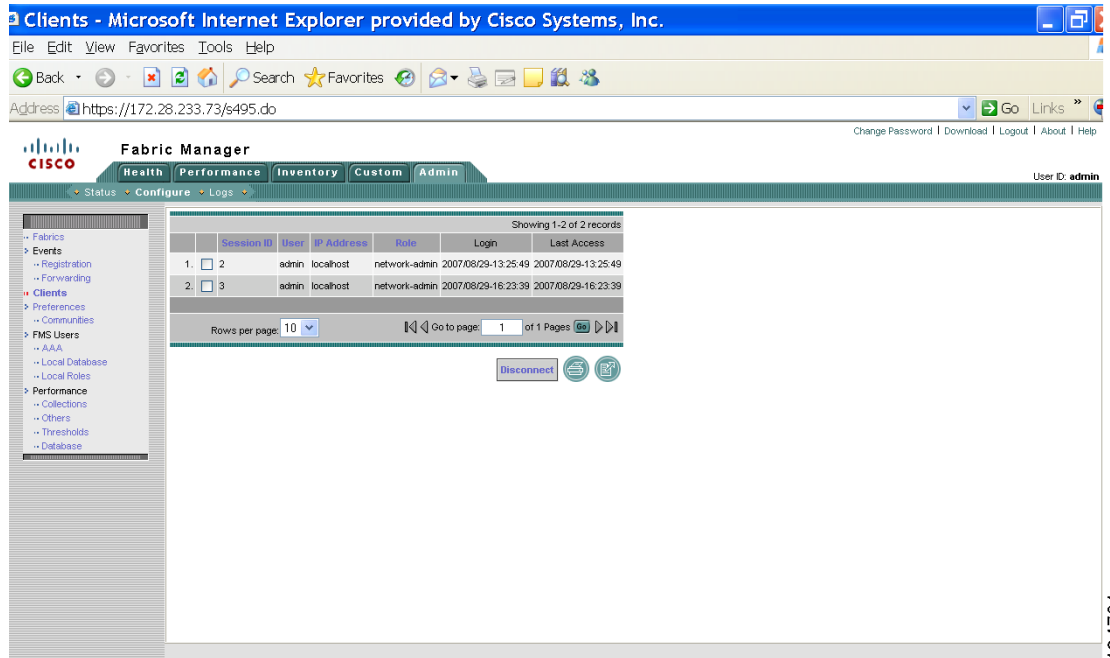
Viewing and Disconnecting Clients

To view or disconnect clients from the Fabric Manager Server using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Admin > Configure**.
 - Step 2** Click **Clients** in the left navigation pane.
- You see the Clients page shown in [Figure 7-38](#).

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Figure 7-38 List of Clients



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- Step 3** Check the check box next to the client you want to disconnect.
- Step 4** Click **Disconnect**.

Configuring Fabric Manager Server Preferences

To configure Fabric Manager Server preferences, choose **Admin > Configure** and click **Preferences** in the left navigation pane. Follow the onscreen instructions.

Adding and Removing Communities

You can use Fabric Manager Web Server to add and remove communities.

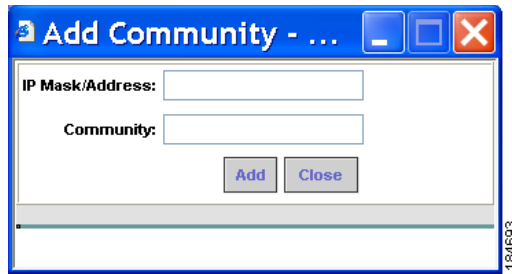
To add a community fabric using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Admin > Configure**.
- Step 2** Click **Communities** in the left navigation pane.
- Step 3** Click **Add**.

You see the Add Community dialog box shown in [Figure 7-39](#).

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Figure 7-39 Add Community Dialog Box



Step 4 Enter the IP mask or address of the community in the **IP Mask/Address** field.



Note The IP mask can contain wildcards (0s) you can use to assign communities to subnets.

Step 5 Enter the name of the community in the Community field.

Step 6 Click **Add** to add the community.

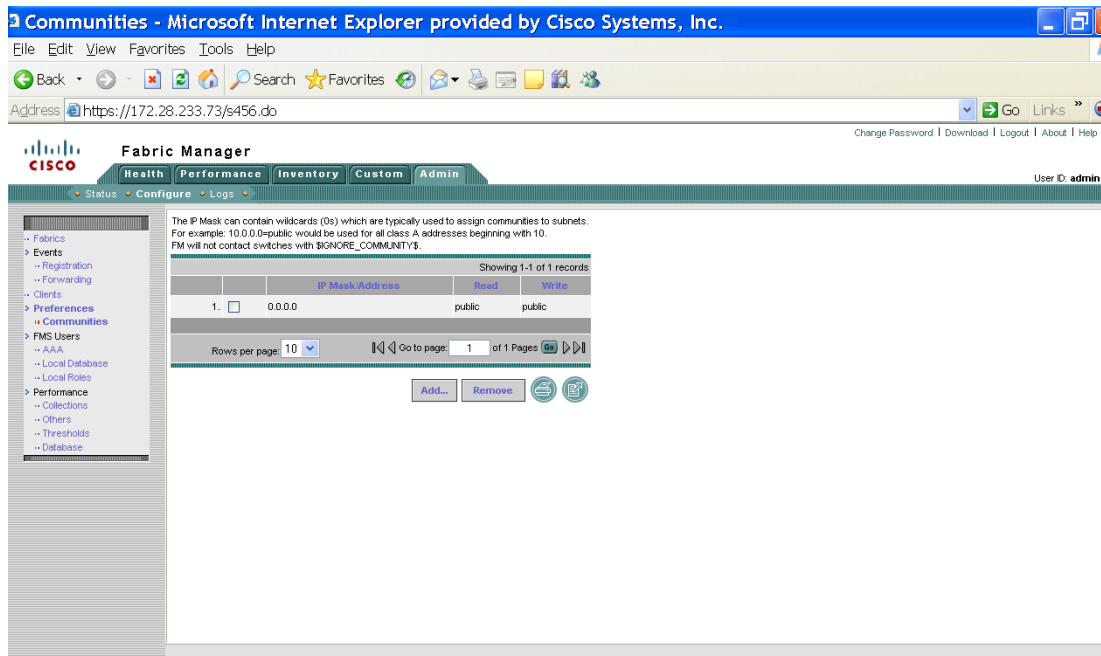
To remove a community using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Admin > Configure**.

Step 2 Click **Communities** in the left navigation pane.

You see the Communities page shown in [Figure 7-40](#).

Figure 7-40 Communities Page



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Step 3 Check the check box next to the community you want to remove and click **Remove**.



Note

Cisco Fabric Manager 3.0(1) does not require you to make changes to the communities.properties file even if you are using a Cisco MDS 9020 switch or any third party devices.

Configuring AAA Information

To configure Fabric Manager Server preferences, click **Admin > Configure > FMS Users > AAA** and follow the instructions on the screen.

Adding and Removing Users

You can use Fabric Manager Web Server to add and remove Web Server users.

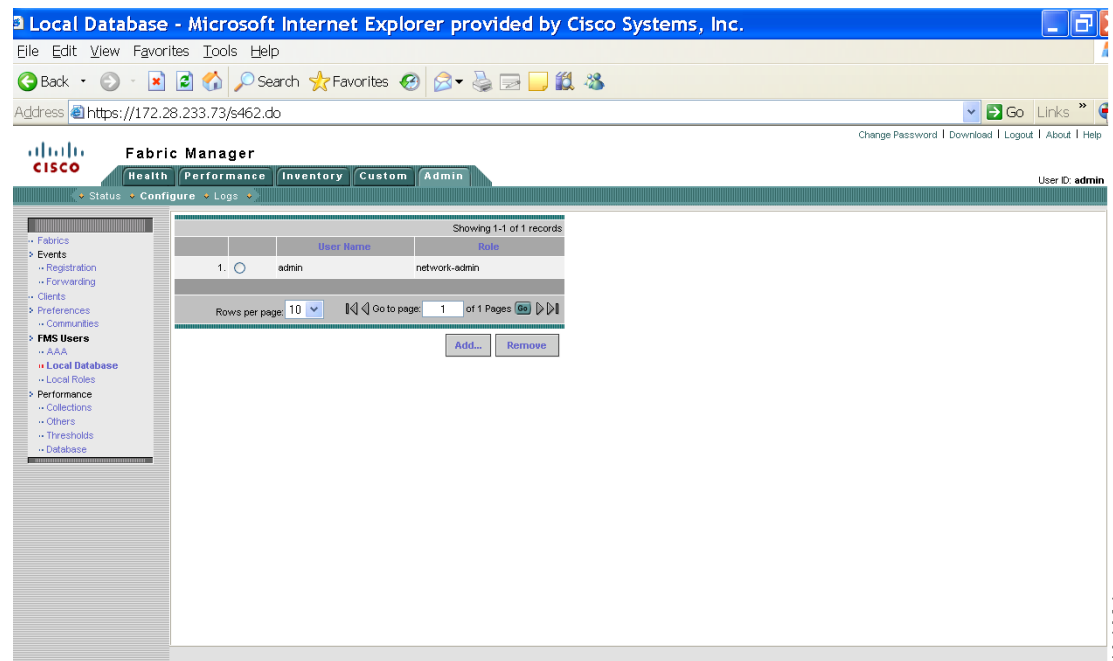
To add a user using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Admin > Configure**.

Step 2 Click **Local Database** in the left navigation pane.

You see the Local Database page shown in [Figure 7-41](#).

Figure 7-41 Local Database Page

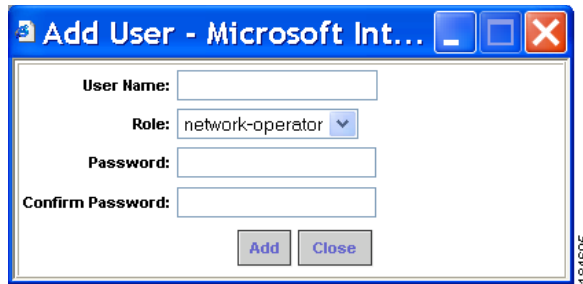


Step 3 Click **Add**.

You see the **Add User** dialog box shown in [Figure 7-42](#).

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Figure 7-42 Add User Dialog Box



Step 4 Enter the user name in the **User Name** field.



Note The user name **guest** is a reserved name (case insensitive). The guest user can only view reports. The guest user cannot change the guest password, nor can the guest user access the Admin tab in Fabric Manager Web Server.

Step 5 Select a role for the user from the **Role** drop-down list.

Step 6 Enter the password in the **Password** field.

Step 7 Enter the password again in the **Confirm Password** field.

Step 8 Click **Add** to add the user to the database.

Step 9 Repeat Steps 3 through 7 to continue adding users.

To remove a user using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Admin > Configure**.

Step 2 Click **Local Database** in the left navigation pane.

Step 3 Click the radio button next to the user you want to remove and click **Remove**.

Adding and Removing Roles

You can use Fabric Manager Web Server to add and remove Web Server roles.

To add a role using Fabric Manager Web Server, follow these steps:

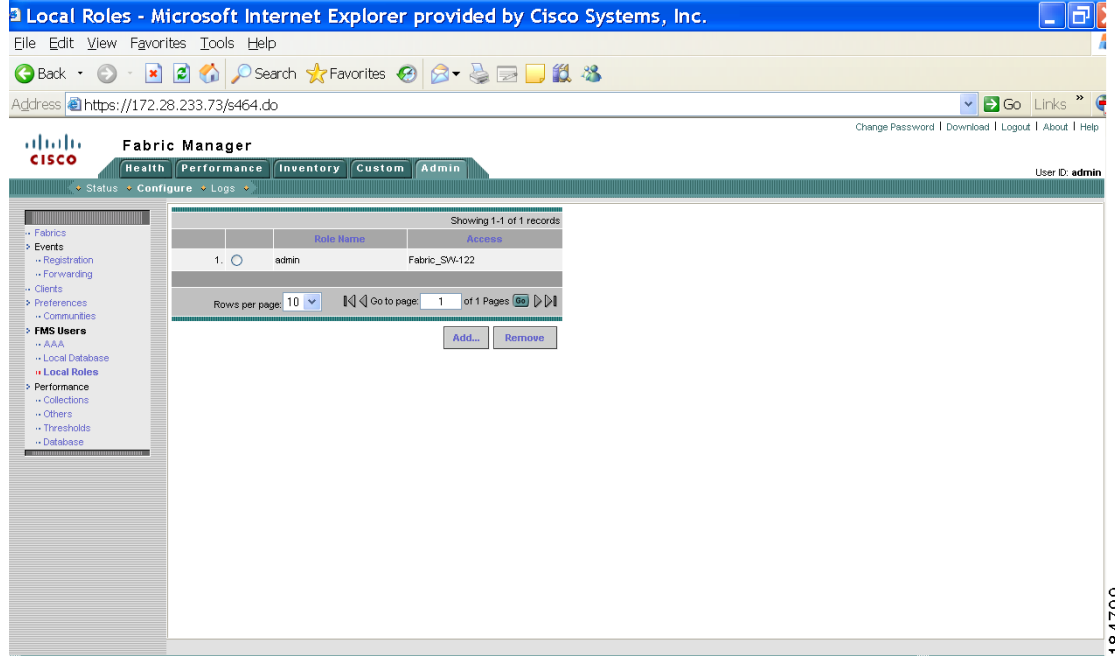
Step 1 Choose **Admin > Configure**.

Step 2 Click **Local Roles** in the left navigation pane.

You see the Local Roles page as shown in [Figure 7-43](#).

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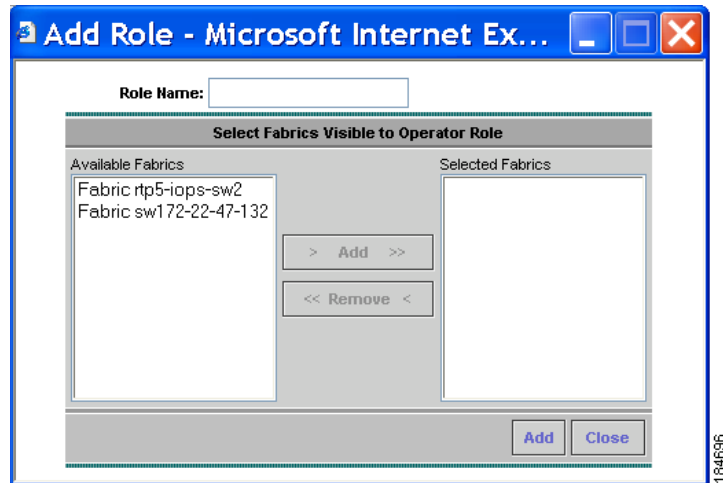
Figure 7-43 Local Roles Page



Step 3 Click **Add**.

You see the **Add Role** dialog box shown in [Figure 7-44](#).

Figure 7-44 Add Role Dialog Box



Step 4 Enter the role name in the **Role Name** field.

Step 5 Select fabrics that the role can access from the Available Fabrics column and add them to the Selected Fabrics column.

Step 6 Click **Add** to add the role to the database.

Step 7 Repeat Steps 3 through 5 to add additional roles.

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To remove a role using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Admin > Configure**.
 - Step 2** Click **Local Roles** in the left navigation pane.
 - Step 3** Click the radio button next to the role you want to remove and click **Remove**.
-

Creating Performance Collections

If you are managing your fabrics with Performance Manager, you need to set up an initial set of flows and collections on the fabric. You can use Fabric Manager Web Server to add and remove performance collections.



Note

You cannot manage performance collections for multiple devices through a single port interface. Since only one set of statistics exists per interface, Fabric Manager Web Server can manage performance collections for only one visible FL or iSCSI device through an interface.

To add a collection using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Admin > Configure**.
 - Step 2** Click **Collections** in the left navigation pane.
- You see the Collections page as shown in [Figure 7-45](#).

Figure 7-45 Collections Page

The screenshot displays the 'Collections' page in the Fabric Manager web interface. The browser window title is 'Collections - Microsoft Internet Explorer provided by Cisco Systems, Inc.' and the address bar shows 'https://172.28.233.73/s/420.do'. The interface includes a navigation menu on the left with 'Performance' > 'Collections' selected. The main content area shows a table with columns: Fabric, VSAN Scope, ISLs, Hosts, Storage, Flows, Ethernet, Others, Traffic Threshold, and Event Threshold. Two records are displayed: Fabric_SNA-122 and Fabric_SNA-Vegas-59. Below the table are 'Add...' and 'Remove' buttons.

	Fabric	VSAN Scope	ISLs	Hosts	Storage	Flows	Ethernet	Others	Traffic Threshold	Event Threshold
1.	<input type="checkbox"/> Fabric_SNA-122	all	true	true	true	true	true	true	true	true
2.	<input type="checkbox"/> Fabric_SNA-Vegas-59	all	true	true	true	true	true	true	true	true

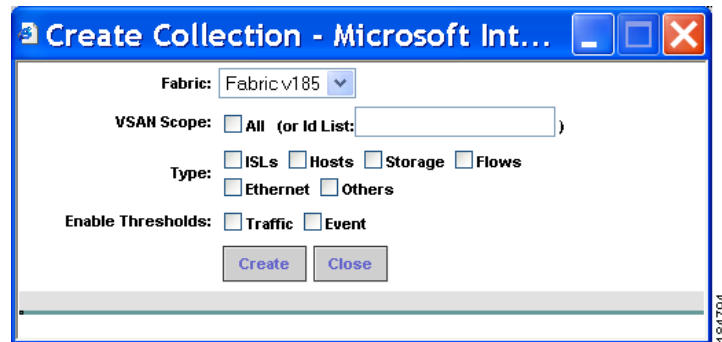
184702

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Step 3 Click **Add**.

You see the Create Collection dialog box shown in [Figure 7-46](#).

Figure 7-46 Create Collection Dialog Box



Step 4 Select a fabric for which to collect performance data from the **Fabric** drop-down list.

Step 5 Either check the **VSAN Scope** check box to receive notifications for all VSANs, or enter the VSAN IDs in the **ID List** field to limit the VSANs for which you want to collect performance data.

Step 6 Check the check boxes for the type(s) of entities for which you want to collect performance data.

Step 7 Check the check boxes for the type(s) of thresholds you want to enable.

Step 8 Click **Create** to add the collection and add it to the table.

Step 9 Repeat Steps 3 through 8 to continue adding roles.



Note

Performance Manager shows statistics for fabrics that you have configured collections for using the Collection Wizard.

To remove a collection using Fabric Manager Web Server, follow these steps:

Step 1 Choose **Admin > Configure**.

Step 2 Click **Collections** in the left navigation pane.

Step 3 Check the check box next to the collection you want to remove and click **Remove**.

Configuring Other Statistics

To configure other statistics using Fabric Manager Web Server, follow these steps:

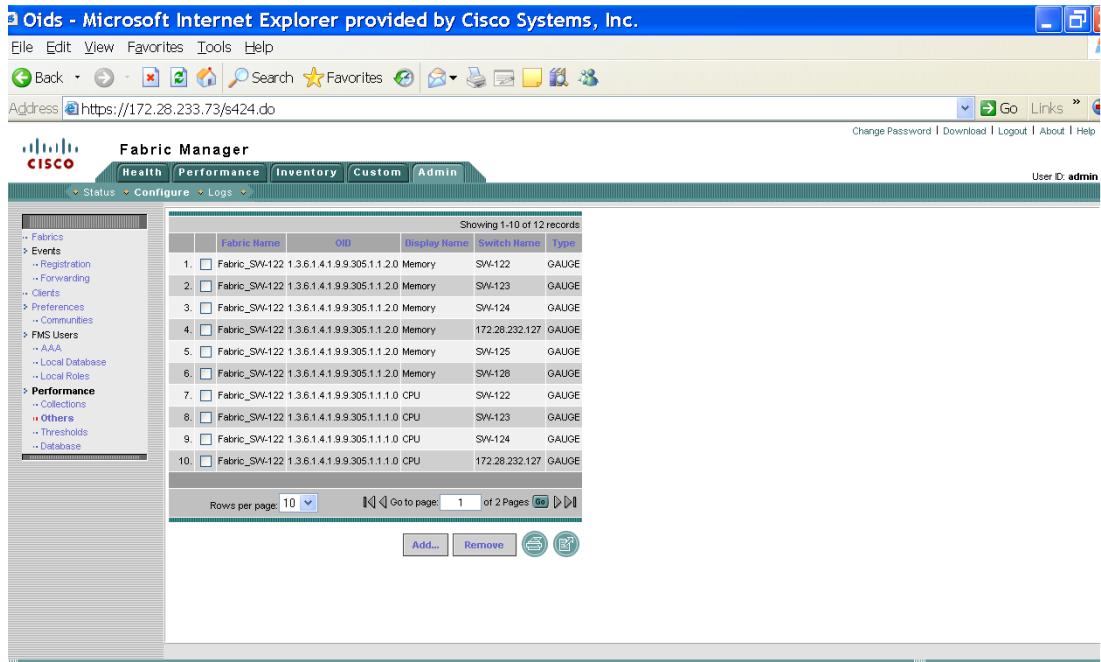
Step 1 Choose **Admin > Configure**.

Step 2 Click **Others** in the left navigation pane.

You see the Others page as shown in [Figure 7-47](#).

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Figure 7-47 Others Page

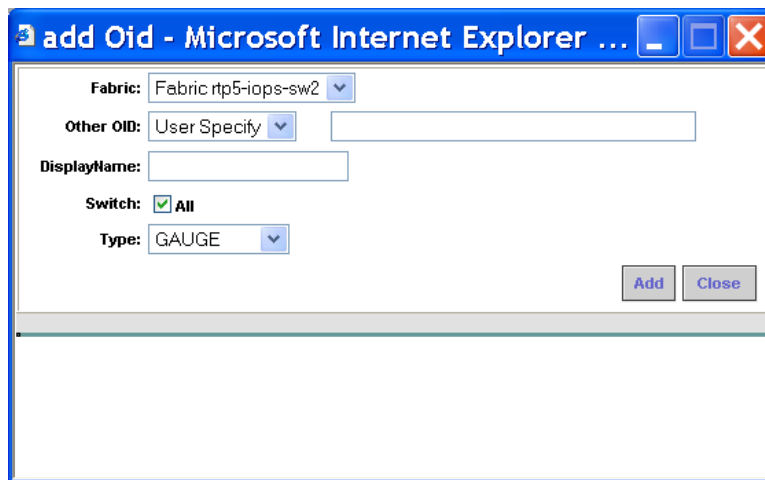


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Step 3 Click **Add**.

You see the Add Oid dialog box shown in [Figure 7-48](#).

Figure 7-48 Add Oid Dialog Box



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Step 4 Select a fabric for which you want to add other statistics.

Step 5 Select the statistic that you want to add from the drop-down list and specify a name for the statistic in the Display Name field.

Step 6 Click **Add** to add this statistic.

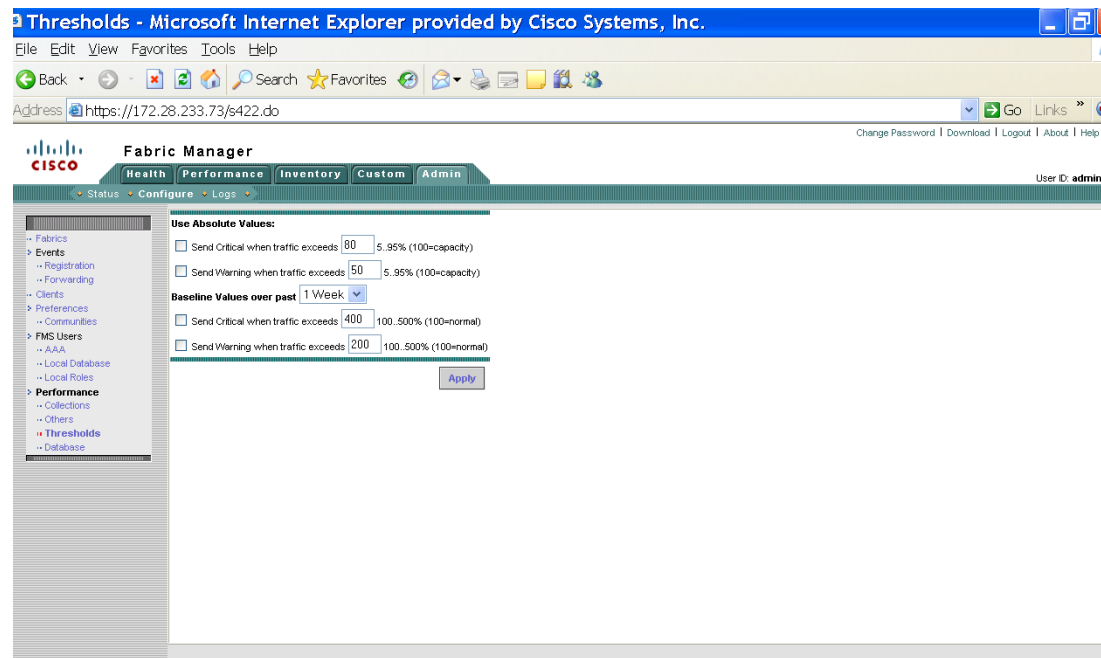
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Configuring Collection Thresholds

To configure collection thresholds using Fabric Manager Web Server, follow these steps:

- Step 1** Choose **Admin > Configure**.
- Step 2** Click **Thresholds** in the left navigation pane.
You see the Thresholds page shown in [Figure 7-49](#).

Figure 7-49 Thresholds Page



- Step 3** If you are using absolute values, follow these steps. Otherwise skip to Step 3.
- To configure conditions for sending Critical notifications, check the **Send Critical** check box. In the "...when traffic exceeds" field, enter a number (from 5 to 95) to indicate the percentage at which the Critical notification is sent. For example, entering **10** causes a notification to be sent when traffic at any given time exceeds 10% of capacity.
 - To configure conditions for sending Warning notifications, check the **Send Warning** check box. In the "...when traffic exceeds" field, enter a number (from 5 to 95) to indicate the percentage at which the Warning notification is sent. For example, entering **9** causes a notification to be sent when traffic at any given time exceeds 9% of capacity.
- Step 4** Select the time period for the collection (**1 Week**, **1 Month**, or **1 Year**) from the Baseline Values over past drop-down list. The baseline value represents the sum of the absolute values.
- To configure conditions for sending Critical notifications, check the **Send Critical** check box. In the "...when traffic exceeds" field, enter a number to indicate the percentage at which the Critical notification is sent. For example, entering **300** causes a notification to be sent when traffic for the selected period exceeds 300% of capacity.

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- b. To configure conditions for sending Warning notifications, check the **Send Warning** check box. In the "...when traffic exceeds" field, enter a number to indicate the percentage at which the Warning notification is sent. For example, entering **150** causes a notification to be sent when traffic for the selected period exceeds 150% of capacity.

Step 5 Click **Apply**.

Importing the RRD Statistics Index

To manually import the RRD statistics index, follow these steps:

-
- Step 1** Stop Fabric Manager Server.
 - Step 2** Copy the original RRD file into \$INSTALLDIR/pm/db.
 - Step 3** Run "\$INSTALLDIR/bin/pm.bat s"
 - Step 4** Restart the Fabric Manager Server and add the fabric.
-

Configuring the RRD Database

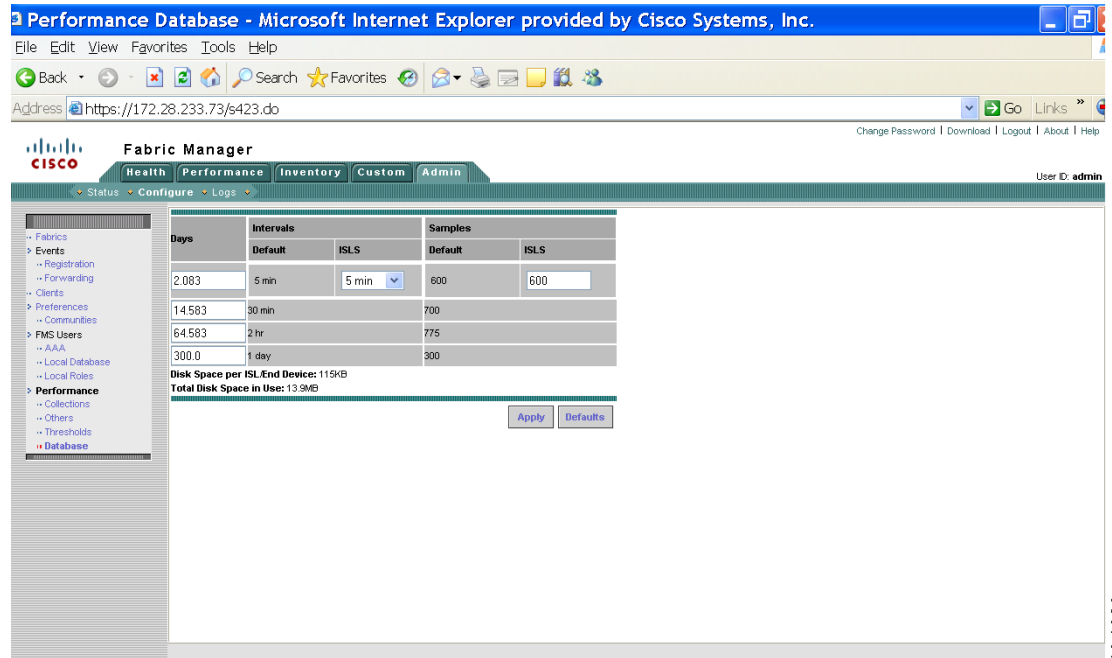
Configuring the RRD database allows you to set the intervals at which data samples are collected. After applying the configuration, the database storage format is converted to a new format at those intervals. Since database formats are incompatible with each other, you must copy the old data (before the conversion) to the \$INSTALLDIR/pm directory. See "[Importing the RRD Statistics Index](#)".

To configure the RRD database using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Admin > Configure**.
 - Step 2** Click **Database** in the left navigation pane.
You see the Performance Database (collection interval) page as shown in [Figure 7-50](#).

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Figure 7-50 Performance Database Page



- Step 3** Enter the number of days to collect samples at 5-minute intervals in the top row of the **Days** column.
- Step 4** Enter the number of days to collect samples at 30-minute intervals in the second row of the **Days** column.
- Step 5** Enter the number of days to collect samples at 2-hour intervals in the third row of the **Days** column.
- Step 6** Enter the number of days to collect samples at 1-day intervals in the bottom row of the **Days** column.



Note As of Cisco SAN-OS Release 3.1(1) and later, you can configure the sampling interval for ISLs. Select a sampling interval from the ISLs drop-down list.

- Step 7** Click **Apply** to apply your changes, or click **Defaults** to reset the file sizes to the default values.

If you are applying new values, or if the current values are not the default values, you see a message indicating that conversion of the RRD files will take a certain amount of time and that the database will be unavailable until then. The time it takes depends on the difference between the old and new values.



Note The system allows you to convert data, one process at a time. When you start converting the data, the Apply and Default buttons change to Refresh and Cancel so that another process cannot be inadvertently started. The display is the same for all browsers accessing the server during this time. Click **Refresh** to view the latest progress. Click **Cancel** to cancel the process of converting the data. If the job is successfully canceled, you see the Apply and Default buttons again. If the cancel job is not successful, you see a message indicating that the cancellation has failed.

If you want to perform this procedure, it is best to perform it before collecting a lot of data. Otherwise, converting the data can take a long time.

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Viewing Log Information

You may occasionally want to view logs such as the Fabric Manager Server log. These processes have no corresponding GUI to allow you to view information about these log files. If you see errors, preserve these two files for viewing.

To view log information using Fabric Manager Web Server, follow these steps:

-
- Step 1** Choose **Admin > Logs**.
You see a list of viewable logs in the left column.
- Step 2** Click a log file to view it.
-

Download

Downloading Fabric Manager Client

You must use Fabric Manager Web Server to launch Fabric Manager Client. See the “[Launching Fabric Manager Client in Cisco SAN-OS Release 3.2\(1\) and Later](#)” section on page 5-2 for information on launching Fabric Manager Client.