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CHAPTER 62

Configuring Call Home

Call Home provides e-mail-based notification of critical system events. A versatile range of message formats are available for optimal compatibility with pager services, standard e-mail, or XML-based automated parsing applications. Common uses of this feature may include direct paging of a network support engineer, e-mail notification to a Network Operations Center, and utilization of Cisco AutoNotify services for direct case generation with the Technical Assistance Center.

The Call Home feature provides message throttling capabilities. Periodic inventory messages, port syslog messages, and RMON alert messages are added to the list of deliverable Call Home messages. If required you can also use the Cisco Fabric Services application to distribute the Call Home configuration to all other switches in the fabric.

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Call Home Features

The Call Home functionality is available directly through the Cisco MDS 9000 Family. It provides multiple Call Home profiles (also referred to as *Call Home destination profiles*), each with separate potential destinations. You can define your own destination profiles in addition to predefined profiles.

The Call Home function can even leverage support from Cisco Systems or another support partner. Flexible message delivery and format options make it easy to integrate specific support requirements.

The Call Home feature offers the following advantages:

- Fixed set of predefined alerts and trigger events on the switch.
- Automatic execution and attachment of relevant command output.
- Multiple message format options:
  - Short Text—Suitable for pagers or printed reports.
  - Plain Text—Full formatted message information suitable for human reading.
  - XML—Matching readable format using Extensible Markup Language (XML) and document type definitions (DTDs) named Messaging Markup Language (MML). The MML DTD is published on the Cisco.com website at http://www.cisco.com/. The XML format enables communication with the Cisco Systems Technical Assistance Center.
- Multiple concurrent message destinations. You can configure up to 50 e-mail destination addresses for each destination profile.
- Multiple message categories including system, environment, switching module hardware, supervisor module, hardware, inventory, syslog, RMON, and test.

Cisco AutoNotify

For those who have service contracts directly with Cisco Systems, automatic case generation with the Technical Assistance Center is possible by registering with the AutoNotify service. AutoNotify provides fast time to resolution of system problems by providing a direct notification path to Cisco customer support.

The AutoNotify feature requires several Call Home parameters to be configured, including certain contact information, e-mail server, and an XML destination profile as specified in the Service Activation document found on the Cisco.com web site at:
http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/3_3/service/serv332/ccmsrvs/sssrvact.htm

To configure a Cisco MDS 9000 Family switch to use the AutoNotify service, an XML destination profile must be configured to send messages to Cisco. Specific setup, activation, and e-mail address information is found on the Cisco.com web site at:
http://www.cisco.com/en/US/partner/products/hw/ps4159/ps4358/products_configuration_example09186a0080108e72.shtml

To register, the following items are required:

- The SMARTnet contract number covering your Cisco MDS 9000 Family switch.
- Your name, company address, your e-mail address, and your Cisco.com ID.

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- The exact product number of your Cisco MDS 9000 Family switch. For example, valid product numbers include DS-C6509 and DS-C9216-K9.
- The serial number of your Cisco MDS 9000 Family switch. This can be obtained by looking at the serial number label on the back of the switch (next to the power supply).

The ContractID, CustomerID, SiteID, and SwitchPriority parameters are not required by the AutoNotify feature. They are only intended to be used as additional information by Cisco customers and service partners.

Call Home Configuration Process

The actual configuration of Call Home depends on how you intend to use the feature. Some points to consider include:

- An e-mail server and at least one destination profile (predefined or user-defined) must be configured. The destination profile(s) used depends on whether the receiving entity is a pager, e-mail, or automated service such as Cisco AutoNotify.
- Switches can forward events (SNMP traps/informs) up to 10 destinations.
- The contact name (SNMP server contact), phone, and street address information must be configured before Call Home is enabled. This is required to determine the origin of messages received.
- The Cisco MDS 9000 switch must have IP connectivity to an e-mail server.
- If Cisco AutoNotify is used, an active service contract must cover the device being configured.

To configure Call Home, follow these steps:

Step 1 Assign contact information.

Step 2 Configure destination profiles.

Step 3 Associate one or more alert groups to each profile as required by your network. Customize the alert groups, if desired.

Step 4 Configure e-mail options.

Step 5 Enable or disable Call Home.

Step 6 Test Call Home messages.

Contact Information

It is mandatory for each switch to include e-mail, phone, and street address information. It is optional to include the contract ID, customer ID, site ID, and switch priority information.

To assign the contact information using Fabric Manager, follow these steps:

Step 1 In the Fabric Manager Physical Attributes pane, expand **Switches,** expand **Events** and select **Call Home**.

You see the Call Home tabs in the Information pane (see Figure 62-1).

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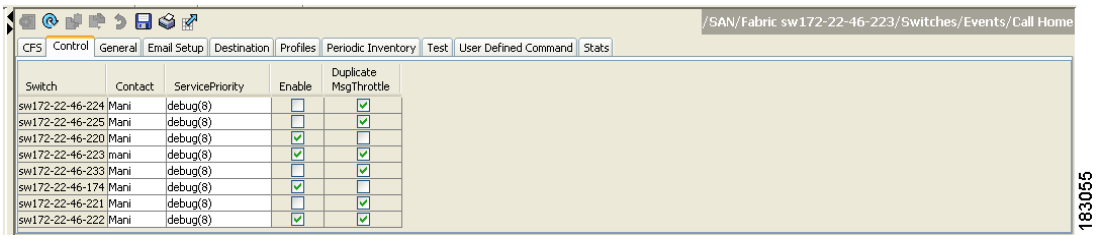
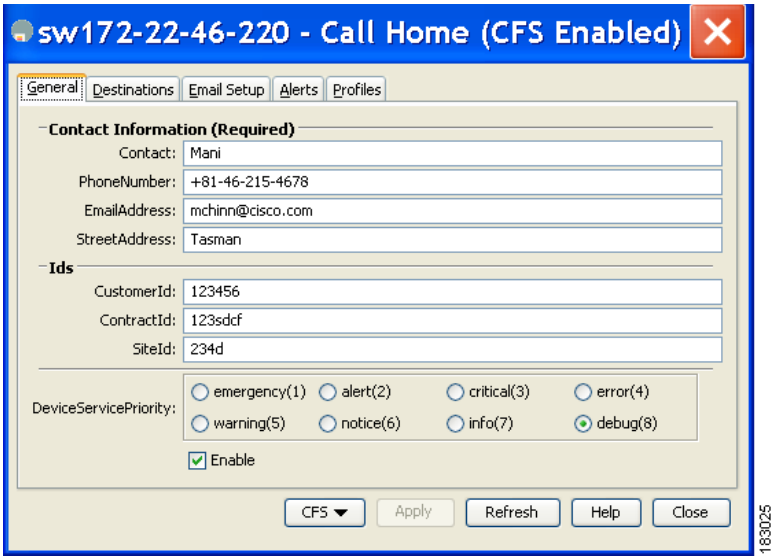
Figure 62-1 Call Home in Fabric Manager



Step 2 In Device Manager, click **Admin > Events > Call Home**. See Figure 62-2.

Figure 62-2 Call Home in Device Manager



Step 3 Click the **General** tab, then assign contact information and enable the Call Home feature. Call Home is not enabled by default. You must enter an e-mail address that identifies the source of Call Home notifications.

Step 4 Click the **Destination(s)** tab to configure the destination e-mail addresses for Call Home notifications. You can identify one or more e-mail addresses that will receive Call Home notifications.

Note Switches can forward events (SNMP traps/informs) up to 10 destinations.

Step 5 Click the **Email Setup** tab to identify the SMTP server. Identify a message server to which your switch has access. This message server will forward the Call Home notifications to the destinations.

Step 6 In Fabric Manager, click the **Apply Changes** icon. In Device Manager, click **Apply**.

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Destination Profiles

A destination profile contains the required delivery information for an alert notification. Destination profiles are typically configured by the network administrator. At least one destination profile is required. You can configure multiple destination profiles of one or more types.

You can use one of the predefined destination profiles or define a desired profile. If you define a new profile, you must assign a profile name.

Note If you use the Cisco AutoNotify service, the XML destination profile is required (see http://www.cisco.com/en/US/partner/products/hw/ps4159/ps4358/products_configuration_example09186a0080108e72.shtml).

You can configure the following attributes for a destination profile:

- Profile name—A string that uniquely identifies each user-defined destination profile and is limited to 32 alphanumeric characters. The format options for a user-defined destination profile are full-txt, short-txt, or XML (default).
- Destination address—The actual address, pertinent to the transport mechanism, to which the alert should be sent.
- Message formatting—The message format used for sending the alert (full text, short text, or XML).

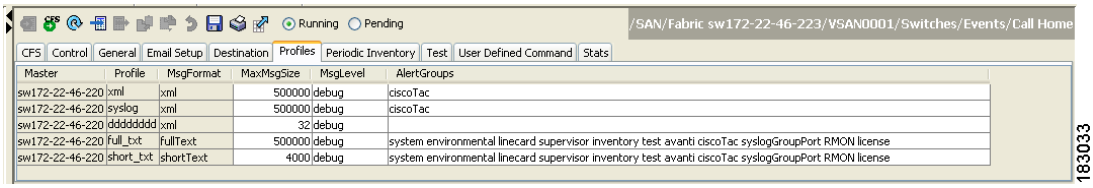
To configure predefined destination profile messaging options using Fabric Manager, follow these steps:

Step 1 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

Step 2 Click the **Profiles** tab in the Information pane.

You see the Call Home profiles for multiple switches shown in Figure 62-3.

Figure 62-3 Call Home Profiles for Multiple Switches



Step 3 Set the profile name, message format, message size, and severity level.

Step 4 Click in the Alert Groups column and select or remove an alert group.

Step 5 Click the **Apply Changes** icon to create this profile on the selected switches.

To configure a new destination-profile (and related parameters) using Fabric Manager, follow these steps:

Step 1 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

Step 2 Click the **Profiles** tab in the Information pane.

You see Call Home profiles for multiple switches.

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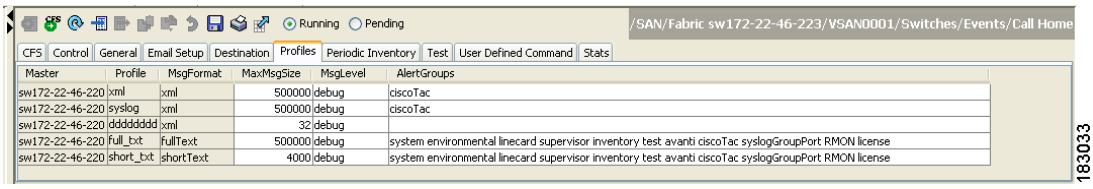
Figure 62-4 Call Home Profiles for Multiple Switches



Step 3 Click the **Create Row** icon to add a new profile.

Step 4 Set the profile name, message format, size, and severity level.

Step 5 Click an alert group and select each group from the drop-down list that you want sent in this profile.

Step 6 Click the **Apply Changes** icon to create this profile on the selected switches.

Alert Groups

An alert group is a predefined subset of Call Home alerts supported in all switches in the Cisco MDS 9000 Family. Different types of Call Home alerts are grouped into different alert groups depending on their type. You can associate one or more alert groups to each profile as required by your network.

The alert group feature allows you to select the set of Call Home alerts to be received by a destination profile (either predefined or user-defined). You can associate multiple alert groups with a destination profile.

Note A Call Home alert is sent to e-mail destinations in a destination profile only if that Call Home alert belongs to one of the alert groups associated with that destination profile.

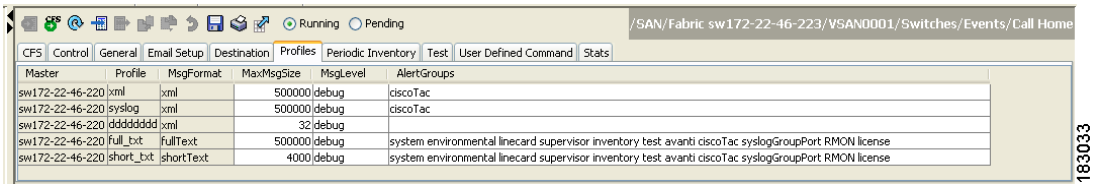
To associate an alert group with a destination profile using Fabric Manager, follow these steps:

Step 1 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

Step 2 Click the **Profiles** tab in the Information pane.

You see the Call Home profiles for multiple switches shown in Figure 62-5.

Figure 62-5 Call Home Profiles for Multiple Switches



Step 3 Click the **Alert Groups** column in the row for the profile you want to associate.

You see the alert groups drop-down menu shown in Figure 62-6.

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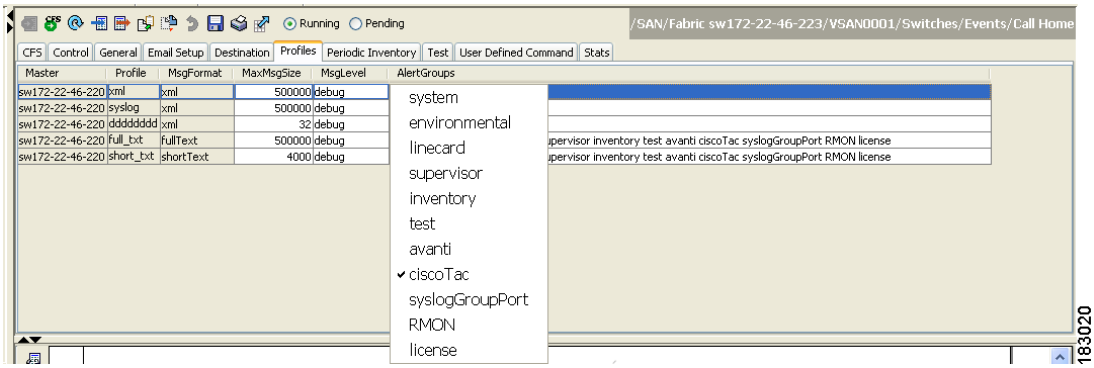
Figure 62-6 Alert Groups Drop-down Menu



Step 4 Click an alert group to select it for association.

Step 5 You see a check next to that alert group. To deselect it and remove the check, click it again.

Step 6 Click the **Apply Changes** icon.

Customized Alert Group Messages

The predefined Call Home alert groups generate notification messages when certain events occur on the switch. You can customize predefined alert groups to execute additional valid **show** commands when specific events occur. The output from these additional **show** commands is included in the notification message along with that of the predefined **show** commands.

Note You can assign a maximum of five user-defined **show** commands to an alert group. Only **show** commands can be assigned to an alert group.

Note Customized show commands are only supported for full text and XML alert groups. Short text alert groups (short-txt-destination) do not support customized **show** commands because they only allow 128 bytes of text.

To assign **show** commands to be executed when an alert is sent, you must associate the commands with the alert group. When an alert is sent, Call Home associates the alert group with an alert type and attaches the output of the **show** commands to the alert message.

Note Make sure the destination profiles for a non-Cisco-TAC alert group, with a predefined **show** command, and the Cisco-TAC alert group are not the same.

To customize Call Home alert group messages using Fabric Manager, follow these steps:

Step 1 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

Step 2 Click the **User Defined Command** tab in the Information pane.

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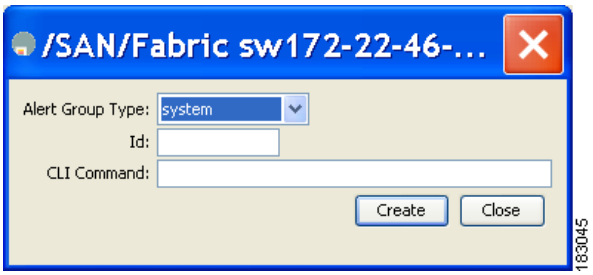
You see the User Defined Command information shown in Figure 62-7.

Figure 62-7 User Defined Command Dialog Box



Step 3 Click the **Create Row** icon.

Step 4 Check the check boxes in front of the switches from which you want to receive alerts.

Step 5 Select the alert group type from the Alert Group Type drop-down list.

Step 6 Select the ID (1-5) of the CLI command. The ID is used to keep track of the messages.

Step 7 Enter the CLI **show** command in the **CLI Command** field.

Step 8 Click **Create**.

Step 9 Repeat Steps 3-7 for each command you want to associate with the profile.

Step 10 Click **Close** to close the dialog box.

Call Home Message Level Feature

The Call Home message level feature allows you to filter messages based on their level of urgency. Each destination profile (predefined and user-defined) is associated with a Call Home message level threshold. Any message with a value lower that the urgency threshold is not sent. The urgency level ranges from 0 (lowest level of urgency) to 9 (highest level of urgency), and the default is 0 (all messages are sent).

Note Call Home severity levels are not the same as system message logging severity levels.

To set the message level for each destination profile for Call Home using Fabric Manager, follow these steps:

Step 1 In Fabric Manager, expand the **Switches** folder in the Physical Attributes pane, expand **Events** then select **Call Home**.

You see the Call Home information in the Information pane.

In Device Manager, choose **Admin > Events > Call Home**.

Step 2 Click the **Profiles** tab in the Information Pane.

You see the Call Home profiles shown in Figure 62-8.

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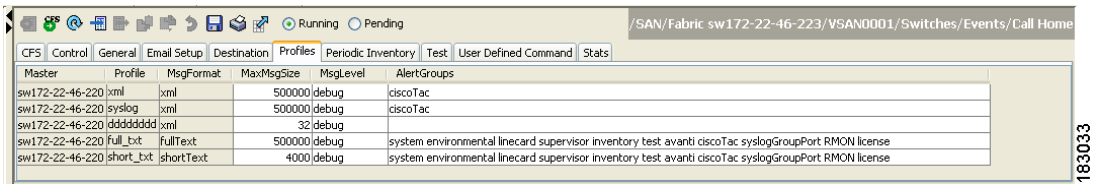
Figure 62-8 Call Home Profiles



Step 3 Set a message level for each switch using the drop-down menu in the MsgLevel column.

Step 4 Click the **Apply Changes** icon to save your changes.

Syslog-Based Alerts

You can configure the switch to send certain syslog messages as Call Home messages. The syslog-group-port alert group selects syslog messages for the port facility. The Call Home application maps the syslog severity level to the corresponding Call Home severity level (see the "Call Home Message Levels" section on page 62-22). For example, if you select level 5 for the Call Home message level, syslog messages at levels 0, 1, and 2 are included in the Call Home log.

Whenever a syslog message is generated, the Call Home application sends a Call Home message depending on the mapping between the destination profile and the alert group mapping and based on the severity level of the generated syslog message. To receive a syslog-based Call Home alert, you must associate a destination profile with the syslog alert groups (currently there is only one syslog alert group—syslog-group-port) and configure the appropriate message level (see the "Call Home Message Level Feature" section on page 62-8).

Note Call Home does not change the syslog message level in the message text. The syslog message texts in the Call Home log appear as they are described in the *Cisco MDS 9000 Family System Messages Guide.*

To configure the syslog-group-port alert group using Fabric Manager, follow these steps:

Step 1 Select a switch in the Fabric pane.

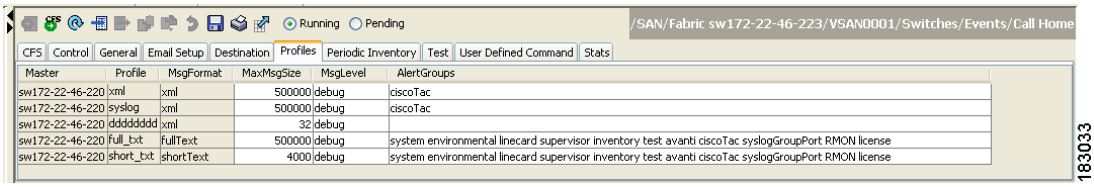
Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

Step 3 Click the **Profiles** tab.

You see the Call Home profiles shown in Figure 62-9.

Figure 62-9 Call Home Profiles



Step 4 Click the **Create Row** icon.

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You see the Create Call Home Profile dialog box.

Step 5 Select the switches for which you want to send alerts.

Step 6 Enter the name of the profile in the Name field.

Step 7 Choose the message format, message size, and message severity level.

Step 8 Check the **syslogGroupPort** check box in the AlertGroups section.

Step 9 Click **Create** to create the profile for the syslog-based alerts.

Step 10 Close the dialog box.

RMON-Based Alerts

You can configure the switch to send Call Home notifications corresponding to RMON alert triggers. All RMON-based Call Home messages have their message level set to NOTIFY (2). The RMON alert group is defined for all RMON-based Call Home alerts. To receive an RMON-based Call Home alert, you must associate a destination profile with the RMON alert group.

To configure RMON alert groups using Fabric Manager, follow these steps:

Step 1 Select a switch in the Fabric pane.

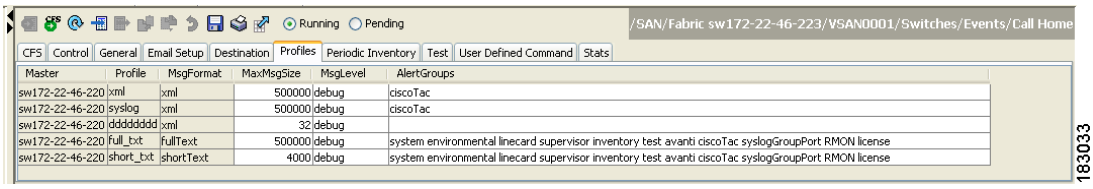
Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

Step 3 Click the **Profiles** tab.

You see the Call Home profiles shown in Figure 62-10.

Figure 62-10 Call Home Profiles



Step 4 Select the **Create Row** icon.

You see the Create Call Home Profile dialog box.

Step 5 Select switches for which to send alerts.

Step 6 Enter the name of the profile.

Step 7 Select the message format, message size, and message severity level.

Step 8 Check the **RMON** check box in the AlertGroups section.

Step 9 Click **Create** to create the profile for the RMON-based alerts.

Step 10 Close the dialog box.

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E-Mail Options

You can configure the from, reply-to, and return-receipt e-mail addresses. While most e-mail address configurations are optional, you must configure the SMTP server address for the Call Home functionality to work.

Configuring General E-Mail Options

To configure general e-mail options using Fabric Manager, follow these steps:

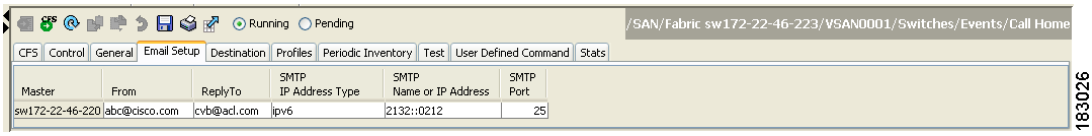
Step 1 Select a switch in the Fabric pane.

Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

Step 3 Click the **Email Setup** tab.

Figure 62-11 Call Home Email Setup Tab



Step 4 Select a switch in the Information pane.

Step 5 Enter the general e-mail information.

Step 6 Enter the SMTP server IP address type, IP address or name, and port.

Step 7 Click the **Apply Changes** icon to update the e-mail options.

Periodic Inventory Notification

You can configure the switch to periodically send a message with an inventory of all the software services currently enabled and running on the switch along with hardware inventory information. The inventory is modified each time the switch is restarted nondisruptively.

By default, this feature is disabled in all switches in the Cisco MDS 9000 Family. When you enable this feature without configuring an interval value, the Call Home message is sent every 7 days. This value ranges from 1 to 30 days.

To enable periodic inventory notification in a Cisco MDS 9000 Family switch using Fabric Manager, follow these steps:

Step 1 Select a switch in the Fabric pane.

Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

Step 3 Click the **Periodic Inventory** tab.

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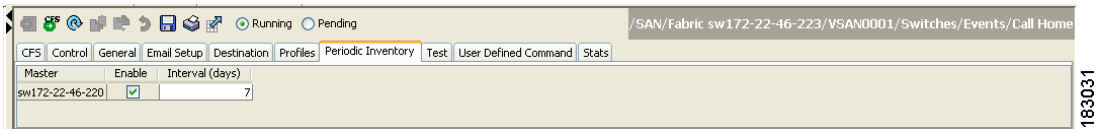
You see the Call Home periodic inventory information shown in Figure 62-12.

Figure 62-12 Call Home Periodic Inventory Tab



Step 4 Select a switch in the Information pane.

Step 5 Check the **Enable** check box.

Step 6 Enter the number of days for which you want the inventory checked.

Step 7 Click the **Apply Changes** icon.

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Duplicate Message Throttle

You can configure a throttling mechanism to limit the number of Call Home messages received for the same event. If the same message is sent multiple times from the switch within a short period of time, you may be swamped with a large number of duplicate messages.

By default, this feature is enabled in all switches in the Cisco MDS 9000 Family. When enabled, if the number of messages sent exceeds the maximum limit of 30 messages within the 2-hour time frame, then further messages for that alert type are discarded within that time frame. You cannot modify the time frame or the message counter limit.

If 2 hours have elapsed since the first such message was sent and a new message has to be sent, then the new message is sent and the time frame is reset to the time when the new message was sent and the count is reset to 1.

To enable message throttling in a Cisco MDS 9000 Family switch using Fabric Manager, follow these steps:

Step 1 Select a switch in the Fabric pane.

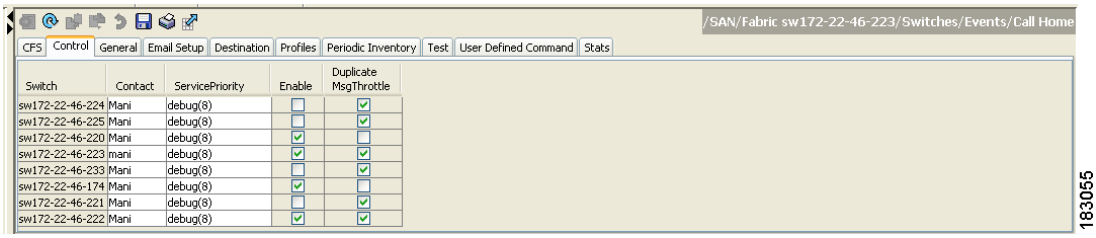
Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

Step 3 Click the **Control** tab.

You see the information shown in Figure 62-13.

Figure 62-13 Call Home Control Tab



Step 4 Select a switch in the Information pane.

Step 5 Check the **Duplicate Message Throttle** check box.

Step 6 Click the **Apply Changes** icon.

Call Home Enable Function

Once you have configured the contact information, you must enable the Call Home function.

To enable the Call Home function using Fabric Manager, follow these steps:

Step 1 Select a switch in the Fabric pane.

Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

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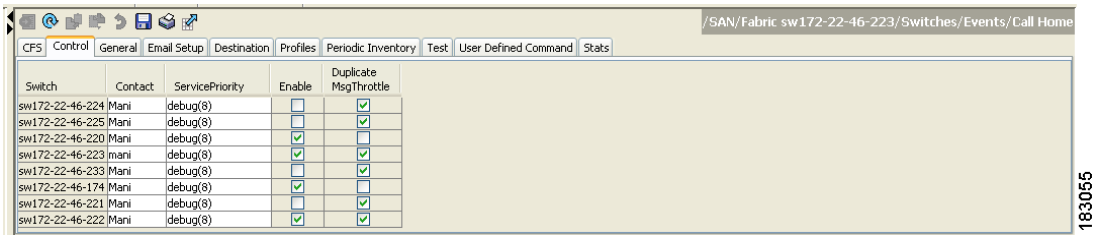
Step 3 Click the **Control** tab.

You see the information shown in Figure 62-14.

Figure 62-14 Call Home Control Tab



Step 4 Select a switch in the Information pane.

Step 5 Check the **Enable** check box.

Step 6 Click the **Apply Changes** icon.

Call Home Configuration Distribution

You can enable fabric distribution for all Cisco MDS switches in the fabric. When you perform Call Home configurations, and distribution is enabled, that configuration is distributed to all the switches in the fabric.

You automatically acquire a fabric-wide lock when you perform the first configuration operation after you enabled distribution in a switch. The Call Home application uses the effective and pending database model to store or commit the configuration changes. When you commit the configuration changes, the effective database is overwritten by the configuration changes in the pending database and all the switches in the fabric receive the same configuration. After making the configuration changes, you can choose to discard the changes by aborting the changes instead of committing them. In either case, the lock is released. See Chapter 13, "Using the CFS Infrastructure" for more information on the CFS application.

Note The Switch priority and the Syscontact name are not distributed.

To enable Call Home fabric distribution using Fabric Manager, follow these steps:

Step 1 Select a switch in the Fabric pane.

Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

Step 3 Click the **CFS** tab.

You see the CFS information for Call Home shown in Figure 62-15.

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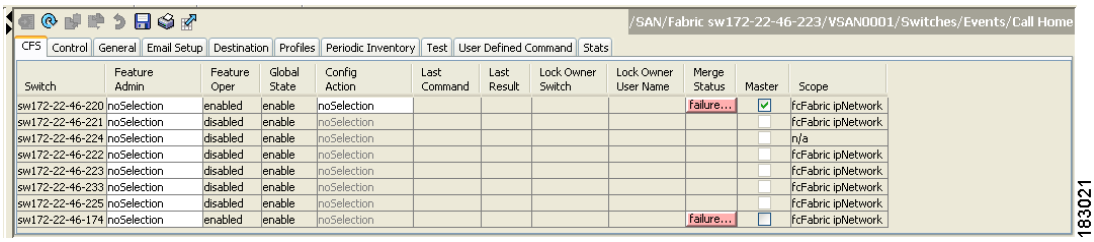
Figure 62-15 Call Home CFS Tab



Step 4 Select a switch in the Information pane.

Step 5 Select **Enable** from the drop-down list in the Admin column in the row for that switch.

Step 6 Click the **Apply Changes** icon to commit the changes.

Fabric Lock Override

If you have performed a Call Home task and have forgotten to release the lock by either committing or discarding the changes, an administrator can release the lock from any switch in the fabric. If the administrator performs this task, your changes to the pending database are discarded and the fabric lock is released.

Tip The changes are only available in the volatile directory and are subject to being discarded if the switch is restarted.

Database Merge Guidelines

See the "CFS Merge Support" section on page 13-9 for detailed concepts.

When merging two Call Home databases, follow these guidelines:

- Be aware that the merged database contains the following information:
  - A superset of all the destination profiles from the dominant and subordinate switches take part in the merge protocol.
  - The e-mail addresses and alert groups for the destination profiles.
  - Other configuration information (for example, message throttling, periodic inventory) from the switch that existed in the dominant switch before the merge.
- Verify that two destination profiles do not have the same name (even if they have different configuration information) on the subordinate and dominant switches. If they do contain the same name, the merge operation will fail. You must then modify or delete the conflicting destination profile on the required switch.

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Call Home Communications Test

To test the Call Home function and simulate a message generation using Fabric Manager, follow these steps:

Step 1 Select a switch in the Fabric pane.

Step 2 Expand **Switches**, expand **Events**, and select **Call Home** in the Physical Attributes pane.

You see the Call Home information in the Information pane.

Step 3 Click the **Test** tab.

You see the configured tests for the switch and the status of the last testing.

Step 4 Select a switch in the Information pane.

Step 5 Select **test or testWithInventory** from the TestAction drop-down list in the row for that switch.

Step 6 Click the **Apply Changes** icon to run the test.

Configuring EMC Call Home

This feature is configured using Fabric Manager Web Server or by editing the server.properties file. The documentation for configuring EMC Call Home using Fabric Manager Web Server is contained in the Web Server **Admin > Configure > Preferences** web page.

EMC Call Home enables notification of hardware and software failures only. If this option is disabled, then the system sends notifications of all port failures, link failures, reboots, and shutdowns.

The EMC Call Home feature requires the following:

- EMC Call Home must be enabled in the server.properties file.
- You must specify an SMTP mail server and a reply-to email address in the server.properties file.
- Fabric Manager must be monitoring the fabric and is able to receive traps from the fabric.

Note Switches can forward events (SNMP traps/informs) up to 10 destinations.

Table 62-1 includes all the traps for EMC Call Home.

Table 62-1 EMC Call Home Traps

SNMP Trap	Send EMC Call Home When
connUnitStatusChange	operStatus == failed(5)
cefcModuleStatusChange	operStatus != {ok(2), boot(5), selfTest(6), poweredUp(16), syncInProgress(21)}
cefcPowerStatusChange	operStatus = {offDenied(4), offEnvPower(5),offEnvTemp(6),offEnvFan(7),failed(8)}
cefcFRURemoved	all
cefcFanTrayStatusChange	all

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Table 62-1 EMC Call Home Traps

SNMP Trap	Send EMC Call Home When
linkDown	operStatusReason != {linkFailure, adminDown, portGracefulShutdown}
cefcFRUInserted	all
entSensorThresholdNotification	value >= threshold

Note The documentation for configuring EMC Call Home by editing the server.properties file is contained within the server.properties file.

Sample Syslog Alert Notification in Full-txt Format

```
source:MDS9000
Switch Priority:7
Device Id:DS-C9506@C@FG@07120011
Customer Id:basu
Contract Id:123
Site Id:San Jose
Server Id:DS-C9506@C@FG@07120011
Time of Event:2004-10-08T11:10:44
Message Name:SYSLOG_ALERT
Message Type:Syslog
Severity Level:2
System Name:10.76.100.177
Contact Name:Basavaraj B
Contact Email:admin@yourcompany.com
Contact Phone:+91-80-310-1718
Street Address:#71 , Miller's Road
Event Description:2004 Oct  8 11:10:44 10.76.100.177 %PORT-5-IF_TRUNK_UP: %$VSAN 1%$
Interface fc2/5, vsan 1 is up

syslog_facility:PORT
start chassis information:
Affected Chassis:DS-C9506
Affected Chassis Serial Number:FG@07120011
Affected Chassis Hardware Version:0.104
Affected Chassis Software Version:3.1(1)
Affected Chassis Part No:73-8607-01
end chassis information:
```

Sample Syslog Alert Notification in XML Format

```
X-Mozilla-Status2: 02000000
Return-Path: <tester@cisco.com>
...

<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE mml SYSTEM "mml10.dtd">
<!--
Alert:SYSLOG_ALERT
-->
```

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```
<mml>
<header>
<time>2004-09-30T06:12:36</time>
<name>SYSLOG_ALERT</name>
<type>Syslog</type>
<level>2</level>
<source>MDS9000</source>
<priority>7</priority>
<deviceId>DS-C9506@C@FOX0712S00H</deviceId>
<custId>911</custId>
<contractId>33445</contractId>
<siteId>91111</siteId>
<serverId>DS-C9506@C@FOX0712S00H</serverId>
</header>
<body>
<msgDesc>2004 Sep 30 06:12:36 switch186 %PORT-5-IF_UP: %$VSAN 2000%$ Interface fc1/10 is
up in mode FL
</msgDesc>
<sysName>switch186</sysName>
<sysContact>USA</sysContact>
<sysContactEmail>admin@yourcompany.com</sysContactEmail>
<sysContactPhoneNumber>+91-080-8888888</sysContactPhoneNumber>
<sysStreetAddress>91</sysStreetAddress>
<chassis>
<name>DS-C9506</name>
<serialNo>FOX0712S00H</serialNo>
<partNo>73-8697-01</partNo>
<hwVersion>0.104</hwVersion>
<swVersion>3.1(1)</swVersion>
</chassis>
<nvp>
<name>syslog_facility</name>
<value>PORT</value>
</nvp>
</body>
</mml>
```

Sample RMON Notification in XML Format

```
Return-Path: <tester@cisco.com>
...
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<!DOCTYPE mml SYSTEM "mml10.dtd">
<!--
Alert:RMON_ALERT
-->
<mml>
<header>
<time>2004-10-12T04:59:13</time>
<name>RMON_ALERT</name>
<type>RMON</type>
<level>2</level>
<source>MDS9000</source>
<priority>3</priority>
<deviceId>DS-C9506@C@FOX0712S00H</deviceId>
<custId>0</custId>
<contractId>u</contractId>
<siteId>&amp;amp;</siteId>
<serverId>DS-C9506@C@FOX0712S00H</serverId>
</header>
<body>
```

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```
<msgDesc>rlaxmina-w2k07</msgDesc>
<sysName>switch186</sysName>
<sysContact>USA</sysContact>
<sysContactEmail>admin@yourcompany.com</sysContactEmail>
<sysContactPhoneNumber>+91-080-000000</sysContactPhoneNumber>
<sysStreetAddress>91</sysStreetAddress>
<chassis>
<name>DS-C9506</name>
<serialNo>FOX0712S00H</serialNo>
<partNo>73-8697-01</partNo>
<hwVersion>0.104</hwVersion>
<swVersion>3.1(1)</swVersion>
</chassis>
<nvp>
<name>ThresholdType</name>
<value>RisingThreshold</value>
</nvp>
<nvp>
<name>ThresholdValue</name>
<value>0</value>
</nvp>
<nvp>
<name>AlarmValue</name>
<value>0</value>
</nvp>
</body>
</mml>
```

Default Settings

Table 62-2 lists the default Call Home settings.

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Event Triggers

Table 62-2 Default Call Home Settings

Parameters	Default
Destination message size for a message sent in full text format.	500,000.
Destination message size for a message sent in XML format.	500,000.
Destination message size for a message sent in short text format.	4000.
DNS or IP address of the SMTP server to reach the server if no port is specified.	25.
Alert group association with profile.	All.
Format type.	XML.
Call Home message level.	0 (zero).

This section discusses Call Home trigger events. Trigger events are divided into categories, with each category assigned CLI commands to execute when the event occurs. The command output is included in the transmitted message. Table 62-3 lists the trigger events.

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Table 62-3 Event Triggers

Event	Alert Group	Event Name	Description	Call Home Message Level
Call Home	System and CISCO_TAC	SW_CRASH	A software process has crashed with a stateless restart, indicating an interruption of a service.	5
	System and CISCO_TAC	SW_SYSTEM_INCONSISTENT	Inconsistency detected in software or file system.	5
	Environmental and CISCO_TAC	TEMPERATURE_ALARM	Thermal sensor indicates temperature reached operating threshold.	6
		POWER_SUPPLY_FAILURE	Power supply failed.	6
		FAN_FAILURE	Cooling fan has failed.	5
	Switching module and CISCO_TAC	LINECARD_FAILURE	Switching module operation failed.	7
		POWER_UP_DIAGNOSTICS_FAILURE	Switching module failed power-up diagnostics.	7
	Line Card Hardware and CISCO_TAC	PORT_FAILURE	Hardware failure of interface port(s).	6
	Line Card Hardware, Supervisor Hardware, and CISCO_TAC	BOOTFLASH_FAILURE	Failure of boot compact Flash card.	6
	Supervisor module and CISCO_TAC	SUP_FAILURE	Supervisor module operation failed.	7
		POWER_UP_DIAGNOSTICS_FAILURE	Supervisor module failed power-up diagnostics.	7
	Supervisor Hardware and CISCO_TAC	INBAND_FAILURE	Failure of in-band communications path.	7
	Supervisor Hardware and CISCO_TAC	EOBC_FAILURE	Ethernet out-of-band channel communications failure.	6
	Supervisor Hardware and CISCO_TAC	MGMT_PORT_FAILURE	Hardware failure of management Ethernet port.	5
	License	LICENSE_VIOLATION	Feature in use is not licensed, and are turned off after grace period expiration.	6
Inventory	Inventory and CISCO_TAC	COLD_BOOT	Switch is powered up and reset to a cold boot sequence.	2
		HARDWARE_INSERTION	New piece of hardware inserted into the chassis.	2
		HARDWARE_REMOVAL	Hardware removed from the chassis.	2
Test	Test and CISCO_TAC	TEST	User generated test.	2

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Table 62-3 Event Triggers (continued)

Event	Alert Group	Event Name	Description	Call Home Message Level
Port syslog	Syslog-group-port	SYSLOG_ALERT	Syslog messages corresponding to the port facility.	2
RMON	RMON	RMON_ALERT	RMON alert trigger messages.	2

Table 62-4 lists event categories and command outputs.

Table 62-4 Event Categories and Executed Commands

Event Category	Description	Executed Commands
System	Events generated by failure of a software system that is critical to unit operation.	**show tech-support** **show system redundancy status**
Environmental	Events related to power, fan, and environment sensing elements such as temperature alarms.	**show module** **show environment**
Switching module hardware	Events related to standard or intelligent switching modules.	**show tech-support**
Supervisor hardware	Events related to supervisor modules.	**show tech-support**
Inventory	Inventory status is provided whenever a unit is cold booted, or when FRUs are inserted or removed. This is considered a noncritical event, and the information is used for status and entitlement.	**show version**
Test	User generated test message.	**show version**

Call Home Message Levels

Call Home messages (sent for syslog alert groups) have the syslog severity level mapped to the Call Home message level (see the "Syslog-Based Alerts" section on page 62-9).

This section discusses the severity levels for a Call Home message when using one or more switches in the Cisco MDS 9000 Family. Call Home message levels are preassigned per event type.

Severity levels range from 0 to 9, with 9 having the highest urgency. Each syslog level has keywords and a corresponding syslog level as listed in Table 62-5.

Note Call Home does not change the syslog message level in the message text. The syslog message texts in the Call Home log appear as they are described in the *Cisco MDS 9000 Family System Messages Guide.*

Note Call Home severity levels are not the same as system message logging severity levels (see Chapter 61, "Configuring System Message Logging" and the *Cisco MDS 9000 Family System Messages Guide*).

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Table 62-5 Severity and Syslog Level Mapping

Call Home Level	Keyword Used	Syslog Level	Description
Catastrophic (9)	**Catastrophic**	N/A	Network wide catastrophic failure.
Disaster (8)	**Disaster**	N/A	Significant network impact.
Fatal (7)	**Fatal**	Emergency (0)	System is unusable.
Critical (6)	**Critical**	Alert (1)	Critical conditions, immediate attention needed.
Major (5)	**Major**	Critical (2)	Major conditions.
Minor (4)	**Minor**	Error (3)	Minor conditions.
Warning (3)	**Warning**	Warning (4)	Warning conditions.
Notify (2)	**Notification**	Notice (5)	Basic notification and informational messages. Possibly independently insignificant.
Normal (1)	**Normal**	Information (6)	Normal event signifying return to normal state.
Debug (0)	**Debugging**	Debug (7)	Debugging messages.

Message Contents

The following contact information can be configured on the switch:

- Name of the contact person
- Phone number of the contact person
- E-mail address of the contact person
- Mailing address to which replacement parts must be shipped, if required
- Site ID of the network where the site is deployed
- Contract ID to identify the service contract of the customer with the service provider

Table 62-6 describes the short text formatting option for all message typesFigure 62-15.

Table 62-6 Short Text Messages

Data Item	Description
Device identification	Configured device name
Date/time stamp	Time stamp of the triggering event
Error isolation message	Plain English description of triggering event
Alarm urgency level	Error level such as that applied to system message

Table 62-7, Table 62-8, and Table 62-9 display the information contained in plain text and XML messages.

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Table 62-7 Reactive Event Message Format

Data Item (Plain text and XML)	Description (Plain text and XML)	XML Tag (XML only)
Time stamp	Date and time stamp of event in ISO time notation: *YYYY-MM-DDTHH:MM:SS*. **Note** The time zone or daylight savings time (DST) offset from UTC has already been added or subtracted. T is the hardcoded limiter for the time.	/mml/header/time
Message name	Name of message. Specific event names are listed in the "Event Triggers" section on page 62-20.	/mml/header/name
Message type	Specifically "Call Home."	/mml/header/type
Message group	Specifically "reactive."	/mml/header/group
Severity level	Severity level of message (see Table 62-5).	/mml/header/level
Source ID	Product type for routing.	/mml/header/source
Device ID	Unique device identifier (UDI) for end device generating message. This field should empty if the message is non-specific to a fabric switch. Format: *type@Sid@serial*, where • *type* is the product model number from backplane SEEPROM. • @ is a separator character. • *Sid* is "C," identifying the serial ID as a chassis serial number· • *serial* is the number identified by the Sid field. Example: DS-C9509@C@12345678	/mml/ header/deviceId
Customer ID	Optional user-configurable field used for contract info or other ID by any support service.	/mml/ header/customerID
Contract ID	Optional user-configurable field used for contract info or other ID by any support service.	/mml/ header /contractId
Site ID	Optional user-configurable field used for Cisco-supplied site ID or other data meaningful to alternate support service.	/mml/ header/siteId
Server ID	If the message is generated from the fabric switch, it is the unique device identifier (UDI) of the switch. Format: *type@Sid@serial*, where • *type* is the product model number from backplane SEEPROM. • @ is a separator character. • *Sid* is "C" identifying the serial ID as a chassis serial number· • *serial* is the number identified by the Sid field. Example: "DS-C9509@C@12345678	/mml/header/serverId
Message description	Short text describing the error.	/mml/body/msgDesc
Device name	Node that experienced the event. This is the host name of the device.	/mml/body/sysName
Contact name	Name of person to contact for issues associated with the node experiencing the event.	/mml/body/sysContact
Contact e-mail	E-mail address of person identified as contact for this unit.	/mml/body/sysContactEmail

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Table 62-7 Reactive Event Message Format (continued)

Data Item (Plain text and XML)	Description (Plain text and XML)	XML Tag (XML only)
Contact phone number	Phone number of the person identified as the contact for this unit.	/mml/body/sysContactPhone Number
Street address	Optional field containing street address for RMA part shipments associated with this unit.	/mml/body/sysStreetAddress
Model name	Model name of the switch. This is the specific model as part of a product family name.	/mml/body/chassis/name
Serial number	Chassis serial number of the unit.	/mml/body/chassis/serialNo
Chassis part number	Top assembly number of the chassis.	/mml/body/chassis/partNo
Chassis hardware version	Hardware version of chassis.	/mml/body/chassis/hwVersion
Supervisor module software version	Top level software version.	/mml/body/chassis/swVersion
Affected FRU name	Name of the affected FRU generating the event message.	/mml/body/fru/name
Affected FRU serial number	Serial number of affected FRU.	/mml/body/fru/serialNo
Affected FRU part number	Part number of affected FRU.	/mml/body/fru/partNo
FRU slot	Slot number of FRU generating the event message.	/mml/body/fru/slot
FRU hardware version	Hardware version of affected FRU.	/mml/body/fru/hwVersion
FRU software version	Software version(s) running on affected FRU.	/mml/body/fru/swVersion
Command output name	The exact name of the issued command.	/mml/attachments/attachment/ name
Attachment type	Specifically command output.	/mml/attachments/attachment/ type
MIME type	Normally text or plain or encoding type.	/mml/attachments/attachment/ mime
Command output text	Output of command automatically executed (see Table 62-4).	/mml/attachments/attachment/ atdata

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Table 62-8 Inventory Event Message Format

Data Item (Plain text and XML)	Description (Plain text and XML)	XML Tag (XML only)
Time stamp	Date and time stamp of event in ISO time notation: *YYYY-MM-DDTHH:MM:SS*. **Note** The time zone or daylight savings time (DST) offset from UTC has already been added or subtracted. T is the hardcoded limiter for the time.	/mml/header/time
Message name	Name of message. Specifically "Inventory Update" Specific event names are listed in the "Event Triggers" section on page 62-20.	/mml/header/name
Message type	Specifically "Inventory Update".	/mml/header/type
Message group	Specifically "proactive".	/mml/header/group
Severity level	Severity level of inventory event is level 2 (see Table 62-5).	/mml/header/level
Source ID	Product type for routing at Cisco. Specifically "MDS 9000"	/mml/header/source
Device ID	Unique Device Identifier (UDI) for end device generating message. This field should empty if the message is non-specific to a fabric switch. Format: *type*@*Sid*@*serial*, where • *type* is the product model number from backplane SEEPROM. • @ is a separator character. • *Sid* is "C" identifying the serial ID as a chassis serial number· • *serial* is the number identified by the Sid field. Example: DS-C9509@C@12345678	/mml/ header /deviceId
Customer ID	Optional user-configurable field used for contact info or other ID by any support service.	/mml/ header /customerID
Contract ID	Optional user-configurable field used for contact info or other ID by any support service.	/mml/ header /contractId
Site ID	Optional user-configurable field, can be used for Cisco-supplied site ID or other data meaningful to alternate support service.	/mml/ header /siteId
Server ID	If the message is generated from the fabric switch, it is the Unique device identifier (UDI) of the switch. Format: *type*@*Sid*@*serial*, where • *type* is the product model number from backplane SEEPROM. • @ is a separator character. • *Sid* is "C" identifying the serial ID as a chassis serial number· • *serial* is the number identified by the Sid field. Example: "DS-C9509@C@12345678	/mml/header/serverId
Message description	Short text describing the error.	/mml/body/msgDesc
Device name	Node that experienced the event.	/mml/body/sysName
Contact name	Name of person to contact for issues associated with the node experiencing the event.	/mml/body/sysContact
Contact e-mail	E-mail address of person identified as contact for this unit.	/mml/body/sysContactEmail

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Table 62-8 Inventory Event Message Format (continued)

Data Item (Plain text and XML)	Description (Plain text and XML)	XML Tag (XML only)
Contact phone number	Phone number of the person identified as the contact for this unit.	/mml/body/sysContactPhone Number
Street address	Optional field containing street address for RMA part shipments associated with this unit.	/mml/body/sysStreetAddress
Model name	Model name of the unit. This is the specific model as part of a product family name.	/mml/body/chassis/name
Serial number	Chassis serial number of the unit.	/mml/body/chassis/serialNo
Chassis part number	Top assembly number of the chassis.	/mml/body/chassis/partNo
Chassis hardware version	Hardware version of chassis.	/mml/body/chassis/hwVersion
Supervisor module software version	Top level software version.	/mml/body/chassis/swVersion
FRU name	Name of the affected FRU generating the event message.	/mml/body/fru/name
FRU s/n	Serial number of FRU.	/mml/body/fru/serialNo
FRU part number	Part number of FRU.	/mml/body/fru/partNo
FRU slot	Slot number of FRU.	/mml/body/fru/slot
FRU hardware version	Hardware version of FRU.	/mml/body/fru/hwVersion
FRU software version	Software version(s) running on FRU.	/mml/body/fru/swVersion
Command output name	The exact name of the issued command.	/mml/attachments/attachment /name
Attachment type	Specifically command output.	/mml/attachments/attachment /type
MIME type	Normally text or plain or encoding type.	/mml/attachments/attachment /mime
Command output text	Output of command automatically executed after event categories (see "Event Triggers" section on page 62-20).	/mml/attachments/attachment /atdata

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Table 62-9 User-Generated Test Message Format

Data Item (Plain text and XML)	Description (Plain text and XML)	XML Tag (XML only)
Time stamp	Date and time stamp of event in ISO time notation: *YYYY-MM-DDTHH:MM:SS*. **Note** The time zone or daylight savings time (DST) offset from UTC has already been added or subtracted. T is the hardcoded limiter for the time.	/mml/header/time
Message name	Name of message. Specifically test message for test type message. Specific event names listed in the "Event Triggers" section on page 62-20).	/mml/header/name
Message type	Specifically "Test Call Home".	/mml/header/type
Message group	This field should be ignored by the receiving Call Home processing application, but may be populated with either "proactive" or "reactive".	/mml/header/group
Severity level	Severity level of message, test Call Home message (see Table 62-5).	/mml/header/level
Source ID	Product type for routing.	/mml/header/source
Device ID	Unique device identifier (UDI) for end device generating message. This field should empty if the message is non-specific to a fabric switch. Format: *type@Sid@serial*, where • *type* is the product model number from backplane SEEPROM. • @ is a separator character. • *Sid* is "C" identifying the serial ID as a chassis serial number· • *serial* is the number identified by the Sid field. Example: DS-C9509@C@12345678	/mml/ header /deviceId
Customer ID	Optional user-configurable field used for contract info or other ID by any support service.	/mml/ header /customerId
Contract ID	Optional user-configurable field used for contract info or other ID by any support service.	/mml/ header /contractId
Site ID	Optional user-configurable field used for Cisco-supplied site ID or other data meaningful to alternate support service.	/mml/ header /siteId
Server ID	If the message is generated from the fabric switch, it is the Unique device identifier (UDI) of the switch. Format: *type@Sid@serial*, where • *type* is the product model number from backplane SEEPROM. • @ is a separator character. • *Sid* is "C" identifying the serial ID as a chassis serial number· • *serial* is the number identified by the Sid field. Example: "DS-C9509@C@12345678	/mml/header/serverId
Message description	Short text describing the error.	/mml/body/msgDesc
Device name	Switch that experienced the event.	/mml/body/sysName

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Table 62-9 User-Generated Test Message Format (continued)

Data Item (Plain text and XML)	Description (Plain text and XML)	XML Tag (XML only)
Contact name	Name of person to contact for issues associated with the node experiencing the event.	/mml/body/sysContact
Contact Email	E-mail address of person identified as contact for this unit.	/mml/body/sysContactEmail
Contact phone number	Phone number of the person identified as the contact for this unit.	/mml/body/sysContactPhone Number
Street address	Optional field containing street address for RMA part shipments associated with this unit.	/mml/body/sysStreetAddress
Model name	Model name of the switch. This is the specific model as part of a product family name.	/mml/body/chassis/name
Serial number	Chassis serial number of the unit.	/mml/body/chassis/serialNo
Chassis part number	Top assembly number of the chassis. For example, 800-xxx-xxxx.	/mml/body/chassis/partNo
Command output text	Output of command automatically executed after event categories listed in Table 62-4.	/mml/attachments/attachment/atdata
MIME type	Normally text or plain or encoding type.	/mml/attachments/attachment/mime
Attachment type	Specifically command output.	/mml/attachments/attachment/type
Command output name	The exact name of the issued command.	/mml/attachments/attachment/name

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