



Synthetic Transaction Configuration

Synthetic transactions are tests that you configure to run periodically. They use voice applications as other devices (phones) normally would, and analyze the behavior of the system. VHM can monitor the information returned from synthetic transactions and generate events based on the results.

The following topics are covered:

- [Synthetic Transaction Overview, page 6-1](#)
- [Configuring Synthetic Transactions, page 6-3](#)
- [Configuring Applications to Support Synthetic Tests, page 6-3](#)
- [Maintaining Synthetic Transactions in VHM, page 6-7](#)

Synthetic Transaction Overview

Synthetic transactions can be used to determine the status of voice applications. For example, you can use synthetic transactions to verify that phones can register with a Cisco CallManager.

If a synthetic transaction fails, VHM generates a critical event. Such events are displayed in both the Real-Time Dashboard and on the alarm log in the Monitoring Console.



Note

Throughout VHM, the terms Application Monitoring Appliance (AMA) and Synthetic Transaction (ST) are used interchangeably.

The following are the synthetic transactions and the results that each test must produce to pass:

- **Phone Registration**—Opens a connection with the Cisco CallManager and registers a simulated IP phone.

The expected result is the successful registration of the phone.

- **Off Hook**—Simulates an off-hook state to the Cisco CallManager and monitors the message stream.

The expected result is the receipt of a dial tone signal from the Cisco CallManager.

- **End to End Call (with optional Incoming Call)**—Initiates a call to a second simulated or real IP phone.

The expected results are:

- Register, go off-hook, and place the call
- Ring indication
- Incoming call goes off-hook to accept the call



Note Do not use phone numbers that consist of more than twelve digits.

- **TFTP Receive Test**—Performs a TFTP get-file operation on the TFTP server.

The expected result is the successful download of a configuration file from the TFTP server.

- **Conference Create and Test (with optional Conference Connect and Test)**—Creates a conference (meeting) in the Conference Center and connects to the meeting.

The expected results are:

- Conference created with the specified meeting ID
- Call initiation results
- First person and second person (if configured) successfully connect to the conference

Configuring Synthetic Transactions

To configure synthetic transactions:

-
- Step 1** Configure the phones that you will use to run synthetic transactions following the recommendations in the [“Configuring Applications to Support Synthetic Tests” section on page 6-3](#).
- Step 2** Configure the transactions following the instructions in the [“Maintaining Synthetic Transactions in VHM” section on page 6-7](#).
-

Configuring Applications to Support Synthetic Tests

You can configure synthetic transactions for each Cisco CallManager in your network. For each synthetic transaction, you must configure one or more phones in the related Cisco CallManager.



Caution

Only Cisco 7960 IP phones are supported for synthetic transactions.

When configuring phones:

- Create one phone number and one MAC address for each test and use it for that test *only*.
- Make sure that the combination of the phone number and the MAC address used in a test is unique across the voice cluster.



Caution

Failure to follow these recommendations may result in synthetic transaction failures.

Before you configure phones, work through the [“Determining How Many Phones You Need” section on page 6-4](#) to estimate how many phones you will need based on the tests you want to run.

As you configure phones on each Cisco CallManager, use the worksheet in the [“Configuring Phones” section on page 6-4](#) to simplify data entry into VHM.

Determining How Many Phones You Need

The number of phone you must create in a Cisco CallManager for use in synthetic transactions depends on:

- The number of synthetic transactions you want to configure
- The type of tests you want to run

[Table 6-1](#) provides a worksheet for determining how many phones you need.

Table 6-1 Phones Required per Synthetic Transaction

Number of Test	Type of Test	Phones Needed for Test	Total Phones Needed
	Phone Registration	1	
	Off Hook	1	
	End to End Call	1	
	End to End Call—with Incoming Call	2	
	TFTP Receive Test	0	
	Conference Create and Test (without Conference Connect and Test)	1	
	Conference Create and Test (with Conference Connect and Test)	2	

Configuring Phones

When you configure phones in a Cisco CallManager, you must consider the requirements listed in the [“Meeting the Requirements for Target Phones”](#) section on page 6-5 and record the phones as you enter them. A sample worksheet is provided in the [“Recording Phone Numbers on a Worksheet”](#) section on page 6-5.

Meeting the Requirements for Target Phones

For end-to-end calls, it is recommended that the target phone number be configured in the Cisco CallManager as an incoming call.

Recording Phone Numbers on a Worksheet

As you configure phones in a Cisco CallManager, record them in a worksheet similar to [Table 6-2](#) through [Table 6-3](#). Use the worksheet that is appropriate for the synthetic transaction you are configuring. The design of the worksheet reflects the design of the Synthetic Transaction Configuration window.

Use a copy of the worksheets to record:

- **Cisco CallManager**—You can obtain a list of Cisco CallManagers from the Synthetic Transaction window. See the [“Maintaining Synthetic Transactions in VHM”](#) section on page 6-7 for instructions on opening the Synthetic CallManager window.
- **Ethernet phone port for the Cisco CallManager**—This defaults to 2000, but can be configured on the Cisco CallManager. You can verify the Ethernet phone port used by a Cisco CallManager on its Administrative pages. See the [“Opening Administration Pages for Monitored Applications”](#) section on page 6-8.
- **Phone numbers and MAC addresses**—Record the phone numbers and MAC addresses you plan to use.

Table 6-2 Cisco CallManager Worksheet for VHM Synthetic Configuration

Cisco CallManager:	Ethernet Phone Port:			
	MAC Address	Target Phone Number	Target Cisco CallManager Port	MAC Address for Incoming Call
Synthetic Transaction				
Phone Registration		—	—	—
Off Hook		—	—	—
End to End Call—source phone			—	—
End to End Call—destination phone				
Phone Registration		—	—	—

Table 6-2 Cisco CallManager Worksheet for VHM Synthetic Configuration (continued)

Cisco CallManager:	Ethernet Phone Port:			
Synthetic Transaction	MAC Address	Target Phone Number	Target Cisco CallManager Port	MAC Address for Incoming Call
Off Hook		—	—	—
End to End Call—source phone			—	—
End to End Call—destination phone				
Phone Registration		—	—	—
Off Hook		—	—	—
End to End Call—source phone			—	—
End to End Call—destination phone				

Recording Cisco IP Conference Connection Information

The username, password, and access number are required for the Conference Create and Test synthetic transaction.

Table 6-3 Cisco IP Conference Connection Worksheet for VHM Synthetic Configuration

Parameter	Name or Number
Conference Create and Test	
User name	
Password	
Meeting ID	
Access Number	
Source Cisco CallManager	
Ethernet Phone Port	
MAC Address	
Optional Conference Connect and Test	
Connect Cisco CallManager	

Table 6-3 Cisco IP Conference Connection Worksheet for VHM Synthetic Configuration (continued)

Parameter	Name or Number
Conference Create and Test	
User name	
Password	
Meeting ID	
Access Number	
Source Cisco CallManager	
Ethernet Phone Port	
Port	
MAC Address	

Maintaining Synthetic Transactions in VHM

The VHM Synthetic Transaction window lists all the monitored applications known to VHM and any synthetic transactions that are configured for them. The window displays:

- **Monitored Applications**—The applications known to VHM that support synthetic transactions:
 - Cisco CallManager
 - Cisco TFTP Server
 - Cisco Conference Connection

When any of these applications are installed in the network, they are displayed in this window, ready to configure. When an application is deleted from the network, any synthetic transactions configured for that application are deleted from VHM and the application is no longer displayed.

- **Application Instance**—The IP address of the server where the application is located.
- **Configured Transactions**—The synthetic transactions that have been configured.

For more information about what you can do from the Synthetic Transaction window, see:

- [Opening Administration Pages for Monitored Applications, page 6-8](#)
- [Adding Synthetic Transactions, page 6-8](#)
- [Modifying Synthetic Transactions, page 6-14](#)
- [Deleting Synthetic Transactions, page 6-15](#)
- [Migrating Synthetic Transactions from VHM 1.0 to VHM 1.1, page 6-16](#)

Opening Administration Pages for Monitored Applications

The Administration pages for a monitored application can be opened from the Synthetic Transaction window.

To open the Administration pages for a monitored application:

-
- Step 1** In the **Voice Health Monitor** drawer, click **Administration > Synthetic Transaction > Transaction Configuration**. The Synthetic Transaction window opens.
- Step 2** Under the Application Instance column, click the IP address for the application. The Administration page for the application opens.



Note To view the Administration page for a monitored application, you must be authorized to access the application.

Adding Synthetic Transactions

Before adding synthetic transactions, you must configure phones, following the recommendations in the [“Configuring Applications to Support Synthetic Tests” section on page 6-3](#). When you add synthetic transactions, use the worksheet recommended in the [“Configuring Phones” section on page 6-4](#) to assist you in entering the correct data.

The following sections describe the steps for adding synthetic transactions:

- [Adding Phone Registrations or Off Hook Synthetic Transactions, page 6-9](#)
- [Adding an End To End Call Synthetic Transaction, page 6-10](#)
- [Adding a TFTP Receive Test Synthetic Transaction, page 6-11](#)
- [Adding a Conference Create and Test Synthetic Transaction, page 6-12](#)

Adding Phone Registrations or Off Hook Synthetic Transactions

To add a Phone Registration or Off Hook Synthetic Transaction:

-
- Step 1** In the **Voice Health Monitor** drawer, click **Administration > Synthetic Transaction > Transaction Configuration**. The Synthetic Transaction window opens.
 - Step 2** Click the Configure icon to the right of the Cisco CallManager. The Synthetic Transactions Configuration window opens.
 - Step 3** Select the **Add Test** radio button.
 - Step 4** From the Synthetic Test drop-down menu, select either **PhoneRegistration** or **OFFHook**.
 - Step 5** Enter the correct Ethernet phone port for the Cisco CallManager. The default value is 2000.



Note The Ethernet port must be the same for all Cisco CallManager synthetic transactions.

- Step 6** Enter the MAC address for the phone. Use the format 12-12-12-12-12-12 or 121212121212.



Note VHM verifies only that the MAC addresses entered in the Synthetic Transaction Configuration window are syntactically valid. It is your responsibility to make sure the correct numbers are entered, as configured in the Cisco CallManager.

- Step 7** From the Interval drop-down list, select an interval.

- Step 8** To save the existing transaction data, click the **Add** button. A cleared Synthetic Transactions Configuration window appears.
- If you want to add an additional transaction for this Cisco CallManager, repeat the procedure, starting with [Step 3](#).
- Step 9** When you are done adding Synthetic Transactions, click **OK**.
- Step 10** Click **OK** in the confirmation message box.
-

Adding an End To End Call Synthetic Transaction

To add an End To End Call Synthetic Transaction:

- Step 1** In the **Voice Health Monitor** drawer, click **Administration > Synthetic Transaction > Transaction Configuration**. The Synthetic Transaction window opens.
- Step 2** Click the Configure icon to the right of the Cisco CallManager. The Synthetic Transactions Configuration window opens.
- Step 3** Select the **Add Test** radio button.
- Step 4** From the Synthetic Test drop-down menu, select **EndToEndCall**.
- Step 5** Enter the correct Ethernet Phone Port for the Cisco CallManager. The default value is 2000.



Note The Ethernet port must be the same for all Cisco CallManager synthetic transactions.

- Step 6** Enter the MAC address for the target phone. Use the format 12-12-12-12-12-12 or 121212121212.

Step 7 Enter the target phone number.



Note VHM verifies only that the MAC addresses and phone number entered in the Synthetic Transaction Configuration window are syntactically valid. It is your responsibility to make sure the correct numbers are entered, as configured in the Cisco CallManager.

Step 8 If you want the target phone to be a simulated phone, select the Incoming Call check box.

If not, go to [Step 11](#).

Step 9 From the Target CCM drop-down list, select the target Cisco CallManager.

The Ethernet phone port for the target CCM field will be populated with the current or default value. If required, you can enter a new Ethernet phone port number.

Step 10 Enter the Target phone's MAC address.

Step 11 Select an interval from the Interval drop-down list.

Step 12 To save existing transaction data, click the **Add** button. A cleared Synthetic Transactions Configuration window appears.

If you want to add an additional transaction for this Cisco CallManager, repeat the procedure, starting with [Step 3](#).

Step 13 When you are done adding Synthetic Transactions, click **OK**.

Step 14 Click **OK** in the confirmation message box.

Adding a TFTP Receive Test Synthetic Transaction

To add a TFTP Receive Test Synthetic Transaction:

Step 1 In the **Voice Health Monitor** drawer, click **Administration > Synthetic Transaction > Transaction Configuration**. The Synthetic Transaction window opens.

Step 2 Click the Configure icon to the right of the TFTP Server.
The Synthetic Transactions Configuration window opens.

- Step 3 Select the **Add Test** radio button.
 - Step 4 Select **TFTPReceiveTest** from the Synthetic Test drop-down menu.
 - Step 5 From the Interval drop-down list, select an interval.
 - Step 6 To save existing transaction data, click the **Add** button. A cleared Synthetic Transactions Configuration window appears.
 - Step 7 When you are done adding Synthetic Transactions, click **OK**.
 - Step 8 Click **OK** in the confirmation message box.
-

Adding a Conference Create and Test Synthetic Transaction

To add a Conference Create and Test Synthetic Transaction:

- Step 1 In the **Voice Health Monitor** drawer, click **Administration > Synthetic Transaction > Transaction Configuration**. The Synthetic Transaction window opens.
- Step 2 Click the Configure icon to the right of Cisco Conference Connection. The Synthetic Transactions Configuration window opens.
- Step 3 Select the **Add Test** radio button.
- Step 4 From the Synthetic Test drop-down menu, select **ConferenceCreateAndTest**.
- Step 5 Enter the username.
- Step 6 Enter the password.
- Step 7 Enter the meeting ID.
- Step 8 Enter the access number.
- Step 9 From the Source CCM drop-down list, select the source Cisco CallManager.
- Step 10 The Ethernet phone port for the source Cisco CallManager is populated with the current or default value (2000). If required, you can enter a new Ethernet phone port number.



Note The Ethernet port must be the same for all Cisco CallManager synthetic transactions.

- Step 11** Enter the MAC address for the target phone. Use the format 12-12-12-12-12-12 or 121212121212.



Note VHM verifies only that the MAC address number entered in the Synthetic Transaction Configuration window is syntactically valid. It is your responsibility to make sure the correct numbers are entered, as configured in the Cisco CallManager.

- Step 12** If you also want to add the Conference Connect and Test Synthetic Transaction, select the Conference Connect and Test check box.
- If you do not want to add the Conference Connect and Test Synthetic Transaction, go to [Step 16](#).
- Step 13** From the Connect CCM drop-down list, select the Cisco CallManager to connect to.
- Step 14** The Ethernet phone port for the connect Cisco CallManager is populated with the current or default value. If required, you can enter a new Ethernet phone port number.
- Step 15** Enter the phone's MAC address.
- Step 16** Select an interval from the Interval drop-down list.
- Step 17** To save existing transaction data, click the **Add** button. A cleared Synthetic Transactions Configuration window appears.
- If you want to add an additional transaction for this Cisco Conference Connection, repeat the procedure, starting with [Step 3](#).
- Step 18** When you are done adding Synthetic Transactions, click **OK**.
- Step 19** Click **OK** in the confirmation message box.
-

Modifying Synthetic Transactions

**Note**

Every time you create or modify a transaction that requires a phone number and a MAC address, you should edit them as a pair. Do not modify one independently of the other.

To modify synthetic transactions:

-
- Step 1** In the **Voice Health Monitor** drawer, click **Administration > Synthetic Transaction > Transaction Configuration**. The Synthetic Transaction window opens.
 - Step 2** Click the Configure icon to the right of the Synthetic Transaction you want to modify.
The Synthetic Transactions Configuration window appears.
 - Step 3** Select the **Modify Test** radio button.
 - Step 4** From the Synthetic Test drop-down menu, select the configured test that you want to modify.
 - Step 5** Enter the desired information.
 - Step 6** To preserve the existing transaction data, click the **Modify** button.
A cleared Synthetic Transactions Configuration window appears.
If you want to modify additional transactions, repeat the procedure, starting with [Step 3](#).
 - Step 7** When you are done modifying synthetic transactions, click **OK**.
-

Deleting Synthetic Transactions

You can delete synthetic transactions from the Synthetic Transaction window.

To delete synthetic transactions:

-
- Step 1** In the **Voice Health Monitor** drawer, click **Administration > Synthetic Transaction > Transaction Configuration**. The Synthetic Transaction window opens.
 - Step 2** Click the Configure icon to the right of the Synthetic Transaction you want to delete.
The Synthetic Transactions Configuration window appears.
 - Step 3** Select the **Delete Test** radio button.
 - Step 4** From the Synthetic Test drop-down list, select the configured test that you want to delete.



Note If you select the Delete All option from the drop-down list, all transactions in the list will be deleted.

- Step 5** Click **OK** in the confirmation box.
- Step 6** Click **OK** in the Synthetic Transactions Configuration window.



Note If you click Cancel before clicking OK, the Synthetic Transactions will not be deleted.

- Step 7** A dialog box opens, showing the tests that you have deleted. Click **OK**.
-

Migrating Synthetic Transactions from VHM 1.0 to VHM 1.1

When upgrading to VHM 1.1, your synthetic transactions are not automatically migrated. If you want to migrate your VHM 1.0 synthetic transactions into VHM 1.1, you can use either the Synthetic Transaction Migration graphical user interface (GUI) or the `migrateTransaction.bat` command line interface (CLI).



Note

The Synthetic Transactions that were supported in VHM 1.0, but are not supported in VHM 1.1, will not migrate.



Note

Before you migrate your synthetic transactions, all the applications relating to the synthetic transactions should already be discovered by VHM. VHM 1.1 supports Cisco 7960 IP Phones only; if other IP phones were used in VHM 1.0, they must be changed to Cisco 7960 IP Phones after upgrading.

To migrate your synthetic transactions using the `migrateTransaction.bat` CLI:

- Step 1** Upgrade VHM. (For upgrading details, refer to *Installing and Setting Up Voice Health Monitor on Windows 2000*).
- Step 2** After the upgrade is complete, restart the computer and open a DOS command prompt.
- Step 3** Go to the `NMSROOT\objects\vhm\bin` directory.
- Step 4** Enter the **MigrateTransaction** command.
The tool migrates your synthetic transactions.
- Step 5** Close the DOS command prompt when finished.



Note

When running the `MigrateTransaction` command, both the ST Server and the VHMSTIntegrator processes should be running.

To migrate your synthetic transactions using the GUI:

Step 1 After upgrading to VHM 1.1, the first time you launch the Synthetic Transactions window, the Synthetic Transactions Migration window opens automatically. Click **Yes** to migrate your synthetic transactions.

If you click **No**, the Synthetic Transaction Migration window will open every time you launch the Synthetic Transactions window, until the synthetic transactions are migrated.

If you click **Never**, the synthetic transactions will never migrate.
