

Accessing Voice Mail in Multiple Unity Server Environments

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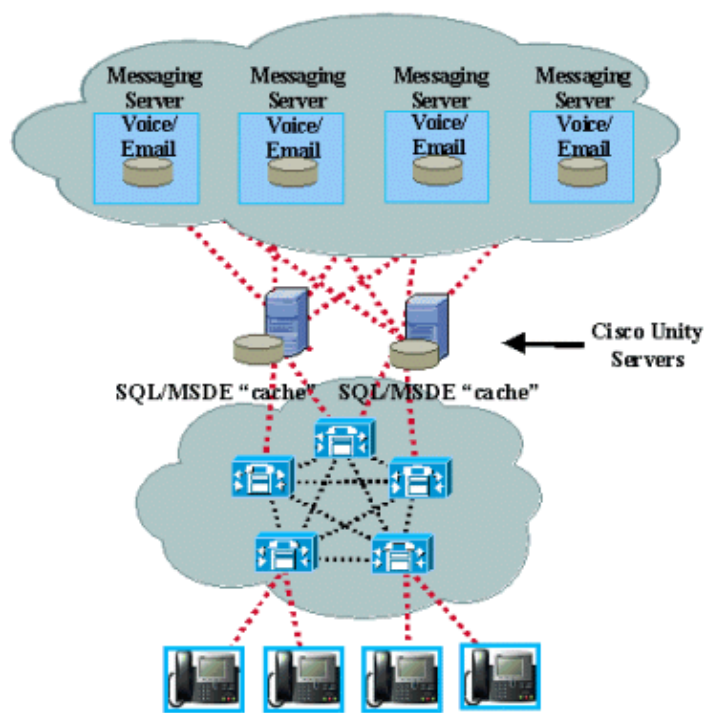
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Introduction

This document discusses two techniques to allow voice mail users spread over multiple Cisco Unity servers to check voice mail without needing to know their specific voice mail server's directory number. Network administrators can transparently expand the voice mail user base by adding new Cisco Unity servers without disrupting or retraining current users. This document assumes all Unity servers are registered to the same Cisco CallManager cluster.

The following diagram is an example topology. There are two Cisco Unity servers registered to one Cisco CallManager cluster. In this diagram, the message store is off–box, separate from the Unity servers.



Cisco CallManager 3.0 and 3.1 can be configured with only one value for the voice mail service parameter. This is the directory number dialed when a user presses the Messages button on an IP phone. This prevents a user homed to a secondary voice mail server from receiving Unity's Sign-in prompt when pressing the Messages button. In fact, the user is dialing into a Cisco Unity server that has no knowledge of the user's voice mailbox. This document outlines two different methods of rectifying this issue.

- Cisco CallManager-centric configuration Partitions and translation patterns redirect the single voice mail directory number to the proper Cisco Unity server.
- Cisco Unity-centric configuration Call handlers, routing rules and computer telephony integration (CTI) route points shuffle the subscriber to the proper voice mail server.

The network administrator should decide which approach best suits a particular environment and management style. The Cisco CallManager-centric configuration may be more desirable if partitions are already heavily utilized. The administrator, however, must keep track of which users are in which partitions and align the location and administration of those mailboxes on the proper voice mail servers. Otherwise, the Cisco Unity-centric configuration may be preferred.

Registering Multiple Unity Servers with a Single Cisco CallManager Cluster

The total number of voice mail ports configured on the Cisco CallManager is equal to the total number of voice mail ports available to all of your Unity servers. If you have a 16-port system at your central site and a four-port system at your remote site, then you can configure up to 20 ports on CallManager. However, only four ports on the CallManager can be allotted for the four-port system; for with any Unity server with n ports, you can only configure up to n ports on CallManager for that Unity server.

If your four-port Cisco Unity server is registering with two CallManager clusters, you cannot configure four ports with one cluster and n ports with the other. You must configure either one port with one cluster and three with the other or two ports with each cluster.

Essentially, the number of voice mail ports afforded by Cisco Unity is a finite resource, while Cisco CallManager is not limited to the number of ports it can make available to registering Unity servers. Each Unity server must have a unique device name prefix configured in the Cisco Unity-CM TSP (referred to in versions prior to 3.1(1) as AV-Cisco TSP), and CallManager's voice port names must match that prefix. This is how CallManager determines which voice mail ports correspond to which Unity server. Before configuring the voice mail ports on CallManager, verify the Cisco Unity-CM TSP configurations.

1. On each Unity server, open the Windows Control Panel, and select the **Phone and Modem Options**.
2. Select the **Advanced** tab.
3. Select **Av-Cisco Service Provider**, and click **Configure**.
4. Verify that the IP address(s) in the Selected CallManagers box correspond to the CallManagers that the Unity server registers with.
5. Click **Settings**.
6. The Device Name Prefix field configured here should match what is configured on the CallManager.

Note: The Device Name Prefix field is limited to 12 characters. CallManager's Port Name field, where you insert the device name prefix, is limited to 50 characters.

The following example configurations are from two Cisco Unity-CM TSPs that will register with the same Cisco CallManager cluster. The device name prefixes are the only difference between the two.

Av-Cisco Service Provider Settings

General

Primary CallManager IP address: 10.123.22.14

Number of voice ports: 2

Device name prefix: North-VI

MWI Extensions

MessageWaitingOnDN: 1499

MessageWaitingOffDN: 1498

CallManager Failover IP Addresses

Add IP Address ->

<- Remove IP Address

Automatically reconnect to the Primary CCM on failover:

CallManager Device List

North-VI1
North-VI2

OK

Av-Cisco Service Provider Settings

General

Primary CallManager IP address: 10.123.22.14

Number of voice ports: 2

Device name prefix: South-VI

MWI Extensions

MessageWaitingOnDN: 1499

MessageWaitingOffDN: 1498

CallManager Failover IP Addresses

Add IP Address ->

<- Remove IP Address

Automatically reconnect to the Primary CCM on failover:

CallManager Device List

South-VI1
South-VI2

OK

The easiest way to configure voice mail ports on CallManager is to use the Cisco Voice Mail Port Wizard from the Device list in the CallManager Administration web interface. This wizard should be run for each Cisco Unity server registering with the CallManager cluster.

The CallManager Voice Mail Port Configuration page has two sets of voice mail ports configured in the following example: two ports for the North Unity server and two ports for the South Unity server.

System Route Plan Service Feature Device User Application Help

Cisco CallManager Administration
For Cisco IP Telephony Solutions

CISCO SYSTEMS

Cisco Voice Mail Port Configuration

[Cisco Voice Mail Port Wizard](#)

Cisco Voice Mail Ports

<Add a New Port>

- North-VI1
- North-VI2
- South-VI1
- South-VI2

Cisco Voice Mail Port: North-VI1 (Cisco Voice Mail Port)

Registration: Unknown
IP Address:
Status: Ready

Copy Update Delete Cancel Changes

Device Information

Port Name* North-VI1

Description Cisco Voice Mail Port

Device Pool* Default (View details)

Calling Search Space <None >

Location <None >

Directory Number Information

Directory Number* 1494

Partition <None >

Calling Search Space <None >

Display Voicemail

Call Forwarding Information

Cisco CallManager–centric Configuration

This section of this document guides you in setting up a Cisco CallManager–centric configuration. The steps follow an example case of a North Building and a South Building and how the CallManager–centric configuration would be implemented to suit their needs.

Call Flow

1. A user presses the Messages button on the phone.
2. The phone dials the voice mail directory number handed to it by the Cisco CallManager in the phone configuration.
3. The 1500 translation pattern for the phone's partition is matched against first. Depending on the partition/building the user is in, the translation pattern points to the pilot number of the corresponding Cisco Unity server.
4. The translation pattern rings the pilot number.
5. The phone connects.
6. The user checks the voice mail.

In this example, the user is in the North Building and the user's phone is in the North Partition. When the Messages button is pressed, the phone dials 1500. Phones in the South Building dial the same directory number. The 1500 translation pattern for the user's partition intercepts the digits and transforms them into 1494, the pilot number of the North Unity server. Phones in the South Building have their 1500 translation pattern point to 1496, the pilot number of the South Unity server. When the call connects, the user receives the Sign–in prompt on the proper Unity server.

Configure the Cisco CallManager

Configuring the Service Parameters

The voice mail service parameter is the directory number an IP phone dials when the Messages button is pressed. The MessageWaitingOffDN service parameter toggles the Message Waiting Indicator (MWI) lamp on the IP phone to off. The MessageWaitingOnDN service parameter toggles the MWI lamp to on. These are not cluster-wide settings. You must go to each Cisco CallManager server in the cluster and set these by hand.

Note: In single Cisco Unity per cluster installs, the voice mail directory number will match the voice mail pilot number (the first voice mail port's directory number). In this case, the voice mail directory number should be *different* than the pilot number.

1. Open the CallManager Administration page.
2. Select **Service Parameters** from the Service list.
3. Select the CallManager server you want to configure from the Server list.
4. When the page loads, select the **Cisco CallManager** from the Service list.
5. When the page loads, scroll down to the MessageWaitingOffDN field and enter a unique directory number for toggling off the MWI lamp. This example uses 1498.
6. The next service parameter on the page is the MessageWaitingOnDN field. Enter a unique directory number for toggling on the MWI lamp. This example uses 1499.
7. Scroll down to the Voice Mail field. Enter a unique directory number for the IP phone's Messages button to dial. This example uses 1500.
8. Scroll back to the top of the page and click **Update**.

Configuring the Partitions

Users must be assigned to partitions that correspond with the Unity server they have mailboxes on. If a user is in the North Building and has an account on the North Unity server, then that user must be placed in the North Partition. If the user is in the South Building and has an account on the South Unity server, then that user must be placed in the South Partition. The voice mail ports don't have to be placed in the same partitions. In fact, the user doesn't even need to be able to dial the voice mail ports directly.

Note: The voice mail ports must still be able to dial each other. Verify the Forward Busy and Forward No Answer Calling Search Space settings on the voice mail ports include the voice mail partition.

1. At the top of the CallManager Administration page, click the Route Plan list.
2. Select **Partition**.
3. Click **Add a New Partition** in the upper right side of the page.
4. Multiple partitions can be added at once in the text box. Enter partition names on separate lines, and click **Insert**. This example uses North Partition and South Partition
5. Click **Back to Find/List Partitions** in the upper right side of the page.
6. Click **Find** and verify that the partitions just created do indeed show up.

Configuring the Calling Search Spaces

Once the partitions are created, the next step is to create calling search spaces to allow the phones to call each other. This can be a little tricky if care isn't taken when deciding which partition is searched first for each calling search space. For phones in the North Building assigned to the North Partition, they're calling search space is North Partition and then South Partition. For phones in the South Building assigned to the South Partition, do the opposite order for the calling search space. For phones in the North Building, this guarantees that the phone will look in the North Partition for any directory numbers matching the voice mail directory number (1500 in this case) and vice versa for the South Building. Otherwise, if a phone in the North Partition searches the South Partition for a match to 1500, it will call the wrong Cisco Unity server.

1. At the top of the CallManager Administration page, click the Route Plan list.
2. Select **Calling Search Space**.
3. Click **Add a New Calling Search Space** in the upper right side of the page.
4. Following the example used in this document, in the Calling Search Space Name field, enter NorthCSS.
5. For the selected partitions, add however many partitions are needed, but verify that the partition that corresponds with this calling search space is at the top of the list. Partitions can be added by clicking the down arrow between the Available Partitions text box and the Selected Partitions text box.
6. Click **Insert**. Repeat for each Unity server.
7. When finished configuring calling search spaces, click **Back to Find/List Calling Search Spaces** in the upper right side of the page.
8. Click **Find** and verify that the calling search spaces just created do indeed show up.

Note: The voice mail ports must also have a calling search space that allows them to call devices in other partitions. They don't need to be in a partition themselves as the <None> partition is appended to all calling search spaces by default. If they are placed in the <None> partition, then any device in the network can call the voice mail ports.

Configuring the Translation Patterns

A separate translation pattern must be configured for each partition to translate the voice mail directory number (1500) into the pilot number for the proper Cisco Unity server. While the phones don't need to dial the voice mail ports directly, the translation pattern must have that capability.

1. At the top of the CallManager Administration page, click the Route Plan list.
2. Select **Translation Pattern**.
3. Click **Add a New Translation Pattern** in the upper right side of the page.
4. Enter 1500 in the Translation Pattern field.
5. Set the Partition field to North Partition.
6. Set the Calling Search Space field to something that can directly dial the voice mail ports.
7. Uncheck the **Provide Outside Dial Tone** check box.
8. Scroll down and enter the pilot number of the North Building Unity server, 1494 in this case, in the Called Party Transform Mask.
9. Click **Insert**. Repeat for each partition.
10. When finished configuring calling search spaces, click **Back to Find/List Translation Pattern** in the upper right side of the page.
11. Click **Find** and verify that the translation patterns just created do indeed show up.

Configuring the Phones

All that's left to do is configure the partitions, calling search spaces, and forwarding numbers on the phone lines.

1. At the top of the CallManager Administration page, click the Device list.
2. Select **Phone**.
3. Click **Find** to produce a list of phones.
4. Click on a phone in the North Building.
5. When the phone's configuration page loads, click the extension on the left side that is configured for that user in Unity.
6. Change the Partition list to NorthPartion and the Calling Search Space list to NorthCSS.
7. Enter the voice mail directory number, 1500, into the Forward Busy and Forward No Answer Destination fields.
8. Change the Forward Busy and Forward No Answer Calling Search Space lists to NorthCSS as well.
9. Click **Update**.

10. When the page reloads, click **Restart Devices**.
11. Click **OK** in both dialog boxes.
12. Repeat this for all of the North Building phones. For the South Building phones, simply substitute South Partition and SouthCSS for the Partition and Calling Search Space fields respectively.
13. Configuring the CallManager is completed after resetting all the phones.

Cisco Unity–centric Configuration

This section of this document guides you in setting up a Cisco Unity–centric configuration. The steps continue the example case of the North Building and the South Building and describe how the Cisco Unity–centric configuration would be implemented to suit their needs.

Call Flow

1. A user calls into the main AutoAttendant located on the North Server by either dialing the number directly or pressing the Messages button on the IP phone.
 2. At the opening greeting, the user presses * to sign in, and hears another prompt asking which building (North, South, East, West) the user is located in.
 3. The user can press 1 for the North Building, 2 for the South Building, 3 for the East Building, or 4 for the West Building.
 - ◆ If the user presses 1, they are immediately directed to the Sign–in prompt. From here, the user logs into the mailbox on the North Server and checks voice mail. The call never leaves the server
- Note:** If the mailbox is on the North Server and Cisco Unity is accessed from the user's phone, the user will be dropped directly to the Sign–in prompt without having to pick a location.
- ◆ If the user presses 2, they are redirected to a bogus subscriber that has been configured on the North Server that does nothing but transfer the call to a CTI route point held by the Cisco CallManager. This CTI route point does a ForwardAll transfer to the South Server's main number. A routing rule on the South Server watches for incoming calls forwarded to it by the bogus subscriber's/CTI route point's directory number. When it gets the user's call, the South Server immediately sends the user to its Sign–in prompt. From here they log into the South Server and check voice mail.

The above call routing scenario will apply to the other Cisco Unity servers. The key is the bogus subscriber. This example creates one on the North Server for each of the other Unity servers. This lets the other Unity servers watch for calls being transferred from only one directory number instead of all of the North Server's voice mail port directory numbers. This also allows us to change the North Server's voice mail port directory numbers in CallManager without breaking this configuration. If the other Unity servers' directory numbers must be changed, then the directory number the CTI route points use to forward all transfer calls must be changed as well.

Configure the North Server (Main Auto Attendant)

Configuring a Bogus Subscriber

For each server that will rely on the North Server, a bogus subscriber must be configured solely for the purpose of forwarding calls. The North Server will forward the call to the CTI route point that will be configured on the CallManager, and the CTI route point will forward the call to its designated Unity server. The extension of the subscriber should match the directory number assigned to the CTI route point to keep things less confusing.

Note: A bogus subscriber is created to avoid CSCdv66602 (registered customers only) , details of which are available to registered users in the Bug Toolkit available on Cisco TAC Tools for Voice, Telephony and Messaging Technologies.

1. Right click the **Unity System Tray** icon, and select **Launch System Admin**.
2. In the left pane, under Subscribers, click **Subscribers**.
3. On the right side of the top pane are a series of five icons. Click the blue plus sign icon to add a new Subscriber.
4. In the new dialog box, make sure the **New Subscriber** radio button is selected. Set the Extension field to a unique directory number. This example uses 71477 and this number will be assigned to the CTI route point that will be configured on the CallManager.
5. The remaining fields can have arbitrary values. Click **Add**.
6. The browser will reload at the new subscriber's Profile page. Uncheck the **Set subscriber for self-enrollment at next login** check box.
7. Click the first blue icon, a computer floppy disk, on the right side of the top pane. This saves the changes.
8. In the left pane, click **Call Transfer**.
9. Under Transfer Incoming Calls to Subscriber's Phone?, click the **Yes, ring subscriber's extension** radio button.
10. Click the blue floppy disk icon to save the changes.
11. In the left pane, click the blue arrow next to **Subscribers**.

Configuring Routing Call Handler

This new call handler will prompt the user to press a key that corresponds with their location. For each server, an option must be added; for example 1 to go to the main server, 2 to go to the second server, 3 to go to the third, and so forth. This call handler will then transfer the user to the associated bogus subscriber. Since the bogus subscriber's mailbox is configured to ring his extension, the call is forwarded to Cisco CallManager for call routing.

1. In the left pane, under Call Management, select **Call Handlers**.
2. On the right side of the top pane are a series of five icons. Click the blue plus sign icon to add a new Call Handler.
3. In the new dialog box, enter a name for the new Call Handler, for example "North or South Prompt," click the **New Handler** radio button, and click **Add**.
4. In the left pane, click **Greetings**.

By default, the only greeting that will be enabled is the Standard greeting.

5. Under Source, click the **Recording** radio button and record a prompt, for example "Press 1 to log into the North Server. Press 2 to log into the South Server."
6. Click the blue floppy disk icon to save the changes.
7. In the left pane, click **Caller Input**.
8. Using the keypad, click the number you want to use to push the subscriber to login to the North Server. This example uses 1.
9. Click the **Lock this key to the action** check box.
10. Under Action, click the **Send Caller To** radio button and select **Sign-in** from the list.
11. Click the blue floppy disk icon to save the changes.
12. Using the keypad, click the number you want to use to push the subscriber to login to the South Server. This example uses 2.
13. Click the **Lock this key to the action** check box.
14. Under Action, click the **Send Caller To** radio button, select **Subscriber** from the list, and click the **Select Subscriber** button.
15. When the new dialog box opens up, search and select the bogus subscriber created earlier and change the Conversation list to **Attempt transfer for**. Click **Select**.

16. Click the blue floppy disk icon to save the changes.

Altering the Opening Greeting

The * key in the opening greeting is normally associated with Sign-in. This example is going to remap it to the new routing call handler. When a user presses the Messages button on the IP phone, if the user is located in the North Building, they are dropped directly to the Sign-in prompt without having to pick a location. If the user is located in any other building, they hear another prompt asking for their building (North, South, East, West) location.

1. Click the blue magnifying glass icon on the right side of the top pane.
2. Search for and select **Opening Greeting**. Select **View**.
3. Select **Caller Input**.
4. Select the * key.
5. Change the Send Caller To list to **Call Handler** and click the **Select Call Handler** button.
6. When the new dialog box opens up, search and select the "North or South Prompt." Leave the Conversation list set to **Send to greeting for**.
7. Click the blue floppy disk icon to save the changes.

Configuring the North Server is now complete.

Configure South Server

These are the configuration steps for each subsequent server. The directory number assigned to the bogus subscriber and CTI route point is what is going to be matching against in the call routing rule that is configured.

1. Right click on the **Unity System Tray** icon and select **Launch System Admin**.
2. In the left pane, under Call Management, click **Call Routing**.
3. In the left pane, under Call Routing, click **Forwarded Calls**.
4. On the right side of the top pane are a series of five icons. Click the blue plus sign icon to add a new Call Routing Rule.
5. In the new dialog box, enter a name for the new routing rule, for example "Received from 71477," and click **Add**.
6. When the new routing rule opens up in the browser, make sure the Status is set to **Enabled**, Call Type is set to **Both**, and Schedule is set to **Always**.
7. Set the Forwarding Station field to 71477. This will match the directory number of the CTI route point the North Server is going to hand the transferred call to.
8. Change the Send Call To list to **Sign-in**.
9. Click the blue floppy disk icon to save the changes.
10. Verify the new routing rule is the first one listed in the Routing Table: Forwarded Calls Table at the bottom of the screen. By default, it should be in this first position. Configuring the South Server is now complete.

Configure the Cisco CallManager

Configuration of the CTI route point is fairly straight forward. It matches up the directory number of the bogus subscriber with the directory number the route point forwards all to.

1. Open the CallManager Administration page, and click the Device list.
2. Select **CTI Route Point**.
3. When the page loads, select **Add a New CTI Route Point**.
4. Set the Device Name to whatever makes sense, for example "Fwd_2nd_unity" (there's only enough

- space for 15 characters).
5. Set the Device Pool, Calling Search Space, and Location fields identical to the voice mail ports' device pool.
 6. Select **Insert**.
 7. A dialog box will appear asking if you want to add a directory number for line 1 of the CTI route point. Click **OK**.
 8. Set the Directory Number to 71477. This Directory Number will match what has been configured to be the forwarding number on the North Server and the Call Routing Rule number on the South Server.
 9. Set the Partition and Calling Search Space fields under the Directory Number and Directory Number Settings headers identical to the voice mail ports' Partition and Calling Search Space fields.
 10. Set the Forward All field to 80000 (the directory number of the first voice mail port assigned to the South Server) and the Calling Search Space field to match what's configured above.
 11. Select **Insert**.

This completes the configuration.

Tools Information

For additional resources, refer to Cisco TAC Tools for Voice, Telephony and Messaging Technologies.

Related Information

- [Voice Technology](#)
 - [Voice and Unified Communications Product Support](#)
 - [Troubleshooting Cisco IP Telephony](#)
 - [Technical Support & Documentation – Cisco Systems](#)
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