

# Lync

## **Configuring Location-Based Routing in Microsoft Lync Server 2013**

## **DISCLAIMER**

© 2014 Microsoft Corporation. All rights reserved.

Microsoft, Active Directory, Hyper-V, Internet Explorer, Lync, PowerPoint, Silverlight, SQL Server, Windows, Windows PowerShell, and Windows Server are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

THE CONTENTS OF THIS PACKAGE ARE FOR INFORMATIONAL AND TRAINING PURPOSES ONLY AND ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT.

No part of the text or software included in this training package may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or any information storage and retrieval system, without permission from Microsoft. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information presented after the date of publication. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

To obtain authorization for uses other than those specified above, please visit the Microsoft Copyright Permissions Web page at <http://www.microsoft.com/about/legal/permissions>

This content is proprietary and confidential, and is intended only for users described in the content provided in this document. This content and information is provided to you under a Non-Disclosure Agreement and cannot be distributed. Copying, disclosing all or any portion of the content and/or information included in this document is strictly prohibited.

## Table of Contents

Lab: Configuring Location-Based Routing in Microsoft Lync Server 2013 .....	1
Exercise 1: Showing Behavior with Least Cost Routing .....	2
Exercise 2: Configuring Location-Based Routing .....	5
Exercise 3: Experiencing Location-Based Routing .....	7



## Lab: Configuring Location-Based Routing in Microsoft Lync Server 2013

During this lab, you will deploy Location-Based Routing. Location-Based Routing is an enterprise voice feature of Lync Server 2013 with Cumulative Update 1, which controls how calls are routed by Lync Server. It enforces restrictions on whether calls can be routed to public branch exchange (PBX) or public switched telephone network (PSTN) destinations based on the Lync caller's location.

Estimated time to complete: **45 minutes**

### **What You Will Learn**

After completing the exercises, you will be able to:

- Configure Location-Based Routing.
- Verify Location-Based Routing has been applied.

### **Scenario**

In order to comply with regulatory requirements, some locations have the need for outgoing calls to be routed through the local telecommunication providers. In these locations, Least Cost Routing is not suitable, and Location-Based Routing should be used. The Hyderabad location for OnPrem is one location that must comply with these regulatory requirements and need Location-Based Routing deployed.

## Exercise 1: Showing Behavior with Least Cost Routing

In this exercise, you will see the behavior of calls routed to the PSTN emulator located on DC01. First, you will see Least Cost Routing in Rome and Redmond being applied. You will then see the behavior of a call to a Redmond number from a Hyderabad caller. Then you will configure Least Cost Routing for Hyderabad users and then see the new behavior with Least Cost Routing.

### Tasks

#### 1. Start the PSTN Emulator on DC01

- a. On DC01, on the Desktop, double click the Start PSTN Emulator shortcut.

#### 2. Make a call from the client in Rome to Redmond and show least cost routing applied.

- a. On Client02, open **Lync 2013** and, if necessary, sign in as **Nuno** with a password of **Password1**

If Lync 2013 is unable to sign in, close the client and open it again.

- b. Close any Microsoft Office Activation prompts.
- c. In Lync, dial **0014255551212**. The number should normalize to **+1 (425) 555-1212**
- d. On DC01, in the PSTN Emulator, notice the incoming call, and then disconnect the call on the clients.
- e. The gateway IP address shown in the emulator should indicate an IP of 10.0.0.254. [\(You may have to scroll the output to see this.\)](#) This is the Redmond gateway. This shows a user in Rome calling a Redmond number, and Lync routing the call over the WAN to use the Redmond PSTN gateway. This is the Least Cost Route for that call.

```
2013/12/18T16:38:53-566: Info: GetMediaAnswer: send SDP : v=0
o=- 1722427175 1722427175 IN IP4 10.0.0.254
s=session
c=IN IP4 10.0.0.254
```

Figure 1: The gateway IP address

#### 3. Make a call from Hyderabad to Redmond

- a. On Client03, open Lync 2013 and then, if necessary, sign in as **Francesca** with a password of **Password1**
- b. In Lync, dial **0014255551212**. The number should normalize to **+1 (425) 555-1212**

- c. Switch to DC01 and notice the call coming in on the emulator. The gateway should be the Hyderabad gateway: 30.0.0.254

```
2013/12/18T16:39:36-387: Info: GetMediaAnswer: send SDP : v=0
p=- 1722427603 1722427603 IN IP4 30.0.0.254
s=session
c=IN IP4 30.0.0.254
t=0 0
```

Figure 2: The Hyderabad gateway IP address

- d. Switch to Client03 and hang up the call.

**4. Configure a Least Cost Route to the Voice Policy for the Hyderabad Site.**

- a. On **LSFE01**, [from the taskbar](#), open the **Lync Server 2013 Control Panel**.
- b. In the **Select URL** dialog box, click **https://redpool.onprem.local/Cscp** and then click **OK**.
- c. Sign in as **administrator** with a password of **Lync!gnit3**
- d. In the Microsoft Lync Server 2013 Control Panel, click **Voice Routing**.
- e. Click the **Voice Policy** tab.
- f. Double-click the **Hyderabad International Policy**.
- g. In the Edit Voice Policy window, under Associated PSTN Usages, click **Select**.
- h. In the Select PSTN Usage Record window, select both the **Redmond Local** and **Rome Local** PSTN usage records, and then click **OK**. Use the Ctrl key to select multiple usage records.
- i. In the Edit Voice Policy window, under Associated PSTN Usages, use the up or down arrows to arrange the PSTN Usage order so that **Redmond Local** is at the top of the list, **Rome Local** is second, and **Hyderabad International** is last.

PSTN usage record	Associated routes
Redmond Local	Redmond Local Route, Redmond
Rome Local	Rome Local Route, Rome to Redn
Hyderabad International	Hyderabad International Route

Figure 3: PSTN Usage order list

- j. Click **OK**.
- k. Click **Commit**, click **Commit all**.
- l. In the **Uncommitted Voice Configuration Settings** message, click **OK**, and then **Close**.
- m. Switch to **LSFE05**.
- n. On the Desktop, move the pointer to the lower-left corner, and then click **Start**.

- o. On the Start screen, type **Event** and then click **Event Viewer**.
- p. Expand the **Applications and Services Logs**, and then click **Lync Server**.
- q. In the events list, locate and click Event ID **3013** associated with the **LS Replica Replicator Agent Service** source. This indicates that the change has been replicated to this front end server.

**5. Make a call from the client in Hyderabad to Redmond.**

- a. On **Client03**, in Lync 2013, signed in as Francesca, click the **Phone** icon.
- b. On the keypad, click **Redial** to call the 425-555-1212 number in Redmond.
- c. Switch to DC01 and the PSTN Emulator.
- d. Review the output of the incoming call. It may take a few minutes, but the gateway shown should be the Redmond gateway of 10.0.0.254.

```
2013/12/18T16:48:45-725: Info: GetMediaAnswer: send SDP : v=0
o=- 1722433097 1722433097 IN IP4 10.0.0.254
s=session
c=IN IP4 10.0.0.254
```

Figure 4: The Redmond gateway IP address

This is set so that when a Hyderabad user travels to another location, they can take advantage of Least Cost Routing.

- e. Switch to Client03 and hang up the call.



## Exercise 2: Configuring Location-Based Routing

In this exercise, you will set up Location-Based Routing for the Hyderabad site to force calls through the local PSTN and prevent toll bypass.

### Tasks

1. **Use the Lync Server 2013 Management Shell to enable Location-Based Routing for the Hyderabad site.**

- a. On LSFE01, on the Desktop, move the pointer to the lower-left corner, and then click **Start**.
- b. **On the Start screen, scroll to the right and then click Lync Server Management Shell.**
- c. To create a new Voice Routing Policy for the Hyderabad site run the following command and press Enter:

```
New-CsVoiceRoutingPolicy -Identity "Hyderabad_LBR" -  
PstnUsages "Hyderabad International"
```

- d. To set the Hyderabad Policy to prevent toll bypass, run the following command and press Enter:

```
Set-CsVoicePolicy -Identity "Hyderabad International Policy" -  
PreventPSTNTollBypass $true
```

- e. To enable Location-Based Routing for the Hyderabad network site, run the following command and press enter:

```
Set-CsNetworkSite -Identity Hyderabad -EnableLocationBasedRouting  
$true -VoiceRoutingPolicy "Hyderabad_LBR"
```

- f. To set the trunk configuration for the Hyderabad network site, run the following command and press enter:

```
Set-CsTrunkConfiguration -Identity PstnGateway:hydgw.onprem.local  
-EnableLocationRestriction $true -NetworkSiteID Hyderabad
```

**Note:** This command is primarily for inbound Location-Based Routing.

- g. To set the routing configuration, run the following command and press enter:

```
Set-CsRoutingConfiguration -EnableLocationBasedRouting $true
```

- h. Switch to LSFE05, and Refresh the events for Lync Server. You might have to click Refresh several times.
- i. In the Lync Server Events list, look for Event ID **3013** for the replication change.
- j. Notice the Event ID **46018**, indicating the change for Outbound Routing. This is the change for Location-Based Routing for the Hyderabad site.

## Exercise 3: Experiencing Location-Based Routing

In this exercise, you will make calls from various sites and see calls routed based on the user's location.

### Tasks

#### 1. Make a call from Hyderabad to Redmond

- a. Switch to **Client03**.
- b. In Lync 2013 signed in as Francesca, press **Redial** in the dial pad to dial the number in Redmond: 0014255551212.
- c. Switch to DC01 and the PSTN emulator.
- d. With Location-Based Routing enabled, this call should now go through the Hyderabad gateway.

```
2013/12/18T16/58/26-490: Info: GetMediaAnswer: send SDP : v=0  
o=- 1722438904 1722438904 IN IP4 30.0.0.254  
s=session  
c=IN IP4 30.0.0.254
```

Figure 5: The Hyderabad gateway IP address

It may take a few minutes for the changes to take effect. Repeat the process if needed.

- e. Switch to Client03 and hang up the call.
2. **Show Least Cost Routing for this user from another location.**

- a. Switch to **Client02**.
- b. Sign out of Lync 2013.
- c. Change the sign-in address to **Francesca@onprem123.lyncignite.biz** and then click **Sign In**.
- d. Place a call from this client in the Rome site to the Redmond local number of 0014255551212.
- e. On **DC01**, watch the emulator receive the call, and notice that the gateway is 10.0.0.254.

```
2013/12/18T17/01/03-227: Info: GetMediaAnswer: send SDP : v=0  
o=- 1722440471 1722440471 IN IP4 10.0.0.254  
s=session  
c=IN IP4 10.0.0.254
```

Figure 6: The Redmond gateway IP address

This configuration allows Hyderabad based users to take advantage of Least Cost Routing when traveling to other locations.

- f. Switch to Client02 and hang up the call.

3. **View Lync logs to show routing behaviour.**

- a. Switch to **Client03**.
- b. Open File Explorer.
- c. In the address box, type  
**C:\Users\LabAdmin\AppData\Local\Microsoft\Office\15.0\Lync\Tracing**  
**Note:** Appdata is a hidden folder. You can type the path in the address bar or change the view options to see hidden items.
- d. Open the file named **Lync-UccApi-0.UccApilog** using Notepad.
- e. Click **Edit**, then click **Find**.
- f. In the **Find what** box, type **ms-subnet** and click **Find Next** 10 times.
- g. In the text, notice the data similar to the screenshot below, indicating the Invite on the call to 14255551212 from the Hyderabad user Francesca, and the 30.0.0.0 network.

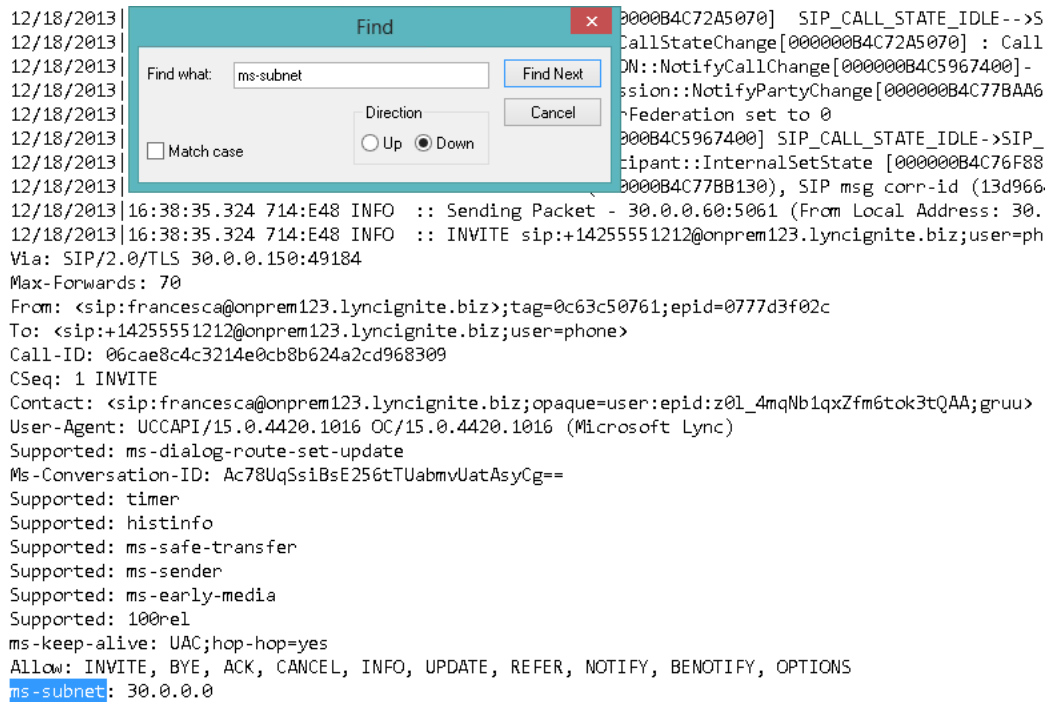


Figure 7: Sample ms-subnet data

- h. Close the Find dialog box, close Notepad, and close File Explorer.
- i. Switch to **LSFE05**.
- j. Open File Explorer, and go to to C:\Program Files\Microsoft Lync Server 2013\Debugging Tools
- k. Double-click **OCSLogger.exe**.

## Configuring Location-Based Routing in Microsoft Lync Server 2013

- l. In the Logging Options list, scroll down, click **Outbound Routing**, and then select the check box.
- m. Under Level, click **Verbose**.
- n. Click **Start Logging**.
- o. Switch to Client03 and redial the Redmond number 0014255551212
- p. On DC01, watch the call come in to the Emulator.
- q. On Client03, hang up the call.
- r. On LSFE05, in the Lync Server 2013 Logging Tool window, click **Stop Logging**.
- s. Click **View Log Files**.
- t. In the **View Log Files** dialog box, click **View**.
- u. In Notepad, click **Edit**, and then click **Find**.
- v. In the **Find what** box, type **phonerouteusage**, and then click **Find Next**.
- w. Review the log file entry and notice that even though there is a Redmond Local Route available to this user from this site, the selected usage for this call chooses the Hyderabad International gateway to prevent toll bypass.

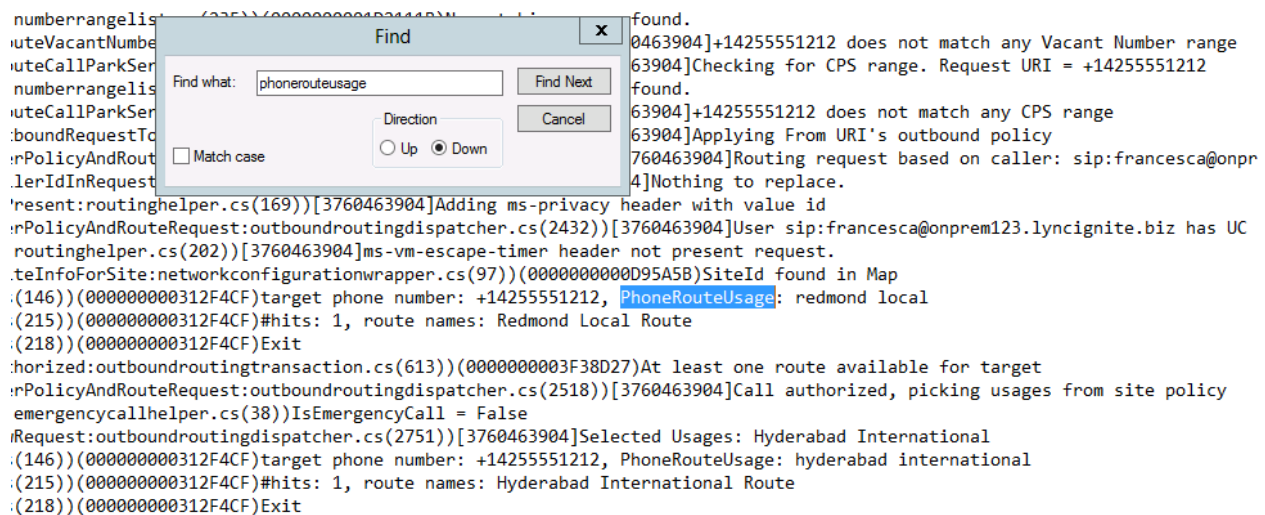


Figure 8: Log file entry

- x. Close the **Find** dialog box, and then close Notepad.
- y. Close the Lync Server 2013 Logging Tool and Event Viewer on LSFE05.