Remote Call Control with Microsoft Lync Server for IM and Presence Service, Release 12.5(1)

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CHAPTER 1

Introduction

This chapter describes the configuration steps to integrate the IM and Presence Service with Microsoft Lync Server for Remote Call Control.

About Microsoft Lync Server

Microsoft Lync Server is designed for use in small and medium organization deployments. The server acts as both a SIP registrar and SIP proxy in a single system. The server functionality provides voice capabilities for Remote Call Control to gateways such as the IM and Presence Service and Cisco Unified Communications Manager platforms.

Microsoft Lync Server 2010 Standard Edition installs the Microsoft SQL Server 2008 Express database on the same server to provide data storage for users and configuration system data. Microsoft Lync Server 2010 Enterprise Edition installs the Microsoft SQL Server 2008 Express database on a different server. Commands that are entered from the Lync Server Management Shell are loaded into the SQL database.

Note IM and Presence Service supports integration with Microsoft Lync Server Standard Edition or Enterprise Edition 2010 and 2013.

Get More Information

IM and Presence Service

For additional IM and Presence Service documentation, see the following URL:

http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

Cisco Unified Communications Manager

For Cisco Unified Communications Manager documentation, see the following URL: http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

Microsoft Lync

For Microsoft Lync documentation, see the following URLs:

- http://technet.microsoft.com/en-us/library/gg558664.aspx
- http://office.microsoft.com/en-us/lync/

Microsoft Active Directory

For information about Microsoft Windows Server Active Directory, seethe following URL: http://technet2.microsoft.com/windowsserver/en/technologies/featured/ad/default.mspx

About Remote Call Control

Microsoft Remote Call Control (RCC) allows enterprise users to control their Cisco Unified IP Phone or Cisco IP Communicator Phone through Microsoft Lync, a third-party desktop instant-messaging (IM) application. When a user signs in to the Microsoft Lync client, the Lync server sends instructions, through the IM and Presence Service node, to the Cisco Unified Communications Manager to set up, tear down and maintain calling features based on a user's action at the Lync client.

Note SIP federation and Remote Call Control (RCC) do not work together on the same IM and Presence Service cluster. This is because for SIP federation a user cannot be licensed for both Cisco IM and Presence Service and Microsoft Lync/OCS, but for RCC a user must be licensed for Cisco IM and Presence Service and Microsoft Lync/OCS at the same time.

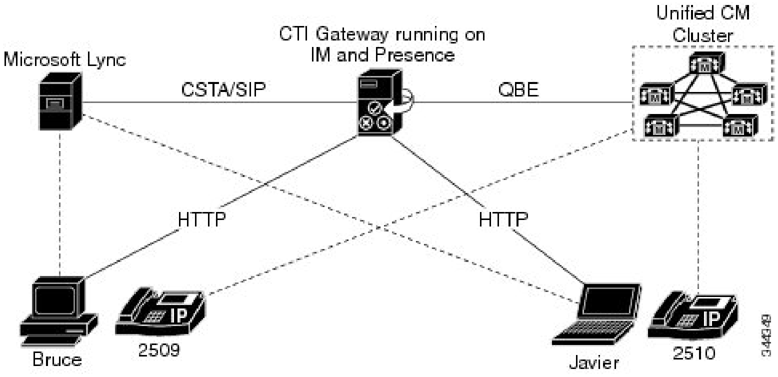
Note An IM and Presence Service cluster that is used for RCC does not support Jabber or other IM and Presence Service functionality.

Integration Overview

IM and Presence Service allows enterprise users to control their Cisco Unified IP Phone or Cisco IP Communicator Phone through Microsoft Lync, a third-party desktop IM application.

Microsoft Lync sends session-initiating requests to the Computer Telephony Interface (CTI) Gateway on IM and Presence Service to control Cisco Unified IP Phones or Cisco IP Communicator Phones that are registered in Cisco Unified Communications Manager, as illustrated in the following figure. The CTI Gateway forwards the requests to the CTI Manager on Cisco Unified Communications Manager. The Cisco Unified Communications Manager returns the events to the Microsoft Lync application using the same path in the opposite direction.

Figure 1: Integration Overview



Microsoft Lync sends requests to IM and Presence Service

Microsoft Lync sends session-initiating requests to IM and Presence Service. These requests are routed to the CTI connection addresses that are configured on IM and Presence Service.

Note IM and Presence Service supports CTI connections with up to eight Cisco Unified Communications Manager nodes.

The requests are distributed to the CTI connection addresses in a round-robin sequence, for example the first request is routed to first CTI node, second request to next CTI node, and so on. In a dual-node IM and Presence Service cluster, a load balancer can be used to distribute (in a round-robin manner) the session-initiating requests that are sent from Microsoft Lync clients to the publisher and subscriber IM and Presence Service nodes.

CTI Gateway Monitors CTI Connection Addresses for Microsoft Lync User Sign-In

When the CTI Gateway on IM and Presence Service starts, it connects to all CTI connection addresses in the configured list, and monitors these connections by sending periodic heartbeat messages. When a Microsoft Lync user signs in, Microsoft Lync server sends a SIP INVITE request with a CSTA body to the CTI Gateway to monitor the Cisco Unified IP Phone or Cisco IP Communicator Phone for the user. The CTI Gateway creates a session for that Microsoft Lync user, and uses the load-balancing mechanism to send session-initiating requests from that user to any of the CTI connection addresses.

CSTA Application Session Is Established

After the CSTA application session is established, Microsoft Lync and CTI Gateway exchange a sequence of SIP INFO messages for activities such as monitoring devices, making calls, transferring calls, or changing the status of controlling devices. This message exchange is sent over the same CTI connection address with which the initial session was established.

If connection to any of the CTI Managers fails, outbound call requests from Microsoft Lync are returned until the connection comes back into service. If a Cisco Unified Communications Manager node is down, the CTI Gateway will make periodic attempts to reestablish a connection to it. When the Cisco Unified Communications Manager node comes back in service, the CTI Gateway will reconnect to it and monitor the connection. In this case, when Microsoft Lync sends an (in-session) SIP INFO request, the CTI Gateway will have a different

CTI Manager connection ID because of a new connection. Microsoft Lync sends a new SIP INVITE message, but the Microsoft Lync user is not required to sign in again.

Line Appearances

When a user selects a phone to use with the remote call control feature, on IM and Presence Service the user is selecting a line appearance to control through the Microsoft Lync client. A line appearance is the association of a line with a device. On Cisco Unified Communications Manager, the administrator can associate a device with multiple lines, and a line with multiple devices. Typically it is the role of the Cisco Unified Communications Manager administrator to configure line appearances by specifying the lines and devices that are associated with each other.

See the *Microsoft Office Communicator Call Control with Microsoft OCS for IM and Presence Service on Cisco Unified Communications Manager* for information on the configuration steps to integrate IM and Presence Service with Microsoft OCS for Microsoft Office Communicator Call Control.

CHAPTER 2

Integration Requirements

Note Call forward setting on IP phone: Call forward settings made on the Cisco IP phone, using the soft key button or the Cisco UCM phone configuration page are not reflected in the Microsoft Lync Client, however call forward settings made on Micorsoft Lync are reflected on the Cisco IP phone.

The Microsoft Lync Client can override any call forward setting configured on the IP Phone. The IP Phone can override any call forward setting configured on the Microsoft Lync Client.

Software Requirements

The following software is required for integrating IM and Presence Service with Microsoft Lync Server:

- IM and Presence Service, current release
- IM and Presence Service Lync Remote Call Control Plug-in
- Cisco Unified Communications Manager, current release
- Microsoft Lync Server 2010 or 2013 Release 4.x, Standard Edition or Enterprise Edition
    - Lync Server Control Panel
    - Lync Server Deployment Wizard
    - Lync Server Logging Tool
    - Lync Server Management Shell
    - Lync Server Topology Builder
- Microsoft 2010 Lync Client, or, Microsoft 2013 Lync Client
- (Optional) Upgraded Skype for Business 2015 Client

Note The Skype for Business 2015 client must have been upgraded from a Lync 2013 client and must be registered to a Lync 2013 server.

- (Optional) Cisco CSS 11500 Content Services Switch
- Microsoft Domain Controller
- Microsoft Active Directory
- DNS
- Certificate Authority

Preconfiguration Checklist

For this integration it is assumed that you have the following installed and configured:

- An IM and Presence Service node that is set up and configured as described in *Configuration and Administration of IM and Presence Service on Cisco Unified Communications Manager*. The IM and Presence Service node must be correctly deployed with a Cisco Unified Communications Manager (Unified Communications Manager) server as described in *Configuration and Administration of IM and Presence Service on Cisco Unified Communications Manager*.
- A Microsoft Lync Server that is set up and configured according to the requirements defined in the Microsoft documentation.
- A Microsoft Lync Client or an upgraded Skype for Business 2015 Client that is set up according to the requirements defined in the Microsoft documentation.

Note If you are using Skype for Business clients, the client must have been upgraded from a Lync 2013 client, and must be registered to a Lync 2013 server.

Before beginning the configuration tasks, we recommend that you complete the following preconfiguration checklist:

1. Verify that all services are running on Microsoft Lync Server.
2. Verify that you updated all SRV records in DNS in support of Microsoft Lync Server as instructed in the Microsoft Lync Server installation instructions.
3. Verify that the computer on which the Microsoft Lync client is installed can resolve the FQDN of the Microsoft Lync server. You can do this by executing the NSLOOKUP command from the Microsoft Lync client computer.
4. Verify that the IM and Presence Service node, Cisco Unified Communications Manager node and Microsoft Lync server are added to DNS and that each of these servers is resolving to its FQDN. You can do this by executing the NSLOOKUP command from another resource in each of their domains.

5. If you are using LDAP synchronization between AD and Cisco Unified Communications Manager server, verify that connections are synchronizing properly.

Integration License Requirements

You must assign IM and Presence Service to each Microsoft Lync Remote Call Control (RCC) user. IM and Presence Service capabilities are included within both User Connect Licensing (UCL) and Cisco Unified Workspace Licensing (CUWL). See the *Cisco Unified Communications Manager Enterprise License Manager User Guide* for more information.

You can assign IM and Presence Service to a user in the **End User Configuration** window in Cisco Unified Communications Manager. See the *Cisco Unified Communications Manager Administration Guide* for more information.

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CHAPTER 3

Cisco Unified Communications Manager Server Setup

Note Note that because menu options and parameters may vary for different Cisco Unified Communications Manager releases, see the Cisco Unified Communications Manager documentation appropriate to your release.

Cisco Unified Communications Manager User and Device Setup

Before you configure Cisco Unified Communications Manager for integration with Microsoft Lync, you need to complete the user and device configuration on Cisco Unified Communications Manager. You need to configure the phone devices, configure the users, and then associate a device with each user.

You also need to associate a line to a device, or for users of the Extension Mobility feature, to a device profile. This association forms a line appearance. When a user is associated to the device or to a device profile, the line appearance is associated to the user.

Task	Menu path
Configure the phone devices, and associate a primary extension with each device	Cisco Unified Communications Manager **Administration** > **Device** > **PhonePhone**
Configure the users, and associate a device with each user	Cisco Unified Communications Manager **Administration** > **User Management** > **End User**
Associate a user with a line appearance	Cisco Unified Communications Manager **Administration** > **Device** > **Phone**

What To Do Next

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Related Topics

Line Appearances, on page 4
http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html

Add Users to a Standard CCM Access Control Group

Before you begin

Make sure you have completed the prerequisite user and device configuration on Cisco Unified Communications Manager.

Procedure

Step 1 Select **Cisco Unified Communications Manager Administration** > **User Management** > **User Settings** > **Access Control Group**.

Step 2 Select **Find**.

Step 3 Select **Standard CCM End Users**.

Step 4 Select **Add End Users to Group**.

Step 5 Select the end user to add to the Standard CCM access control group.

Step 6 Select **Add Selected**.

Step 7 Select **Save**.

What to do next

Set Up CTI Gateway Application User, on page 10

Related Topics

Cisco Unified Communications Manager User and Device Setup, on page 9

Set Up CTI Gateway Application User

Complete the following procedure to configure an application user for the CTI Gateway.

Procedure

Step 1 Select Cisco Unified Communications Manager **Administration** > **User Management** > **Application User**.

Step 2 Select **Add New**.

Step 3 Enter an application user name in the **User ID** field.

Example:

CtiGW

Step 4 Enter a password for this application user, and confirm the password.

Step 5 Select **Save**.

What to do next

Add Application User to CTI-Enabled Access Control Group, on page 11

Add Application User to CTI-Enabled Access Control Group

Complete the following procedure to add the application user to a CTI-enabled access control group.

Before you begin

Configure an application user for the CTI Gateway.

Procedure

Step 1 Select **Cisco Unified Communications Manager Administration** > **User Management** > **User Settings** > **Access Control Group**.

Step 2 Select **Find**.

Step 3 Select **Standard CTI Enabled**.

Step 4 Select **Add App Users to Group**.

Step 5 Select the application user that you created for the CTI Gateway.

Step 6 Select **Add Selected**.

Step 7 Select **Save**.

What to do next

Assign CTI Device Control to Application User, on page 11

Related Topics

Set Up CTI Gateway Application User, on page 10

Assign CTI Device Control to Application User

Complete the following procedure to assign CTI device control to the application user.

Caution Do not add devices as controlled devices to the application user because the role "Standard CTI Allow Control of All Devices" gives the application user sufficient privileges to control any Cisco Unified Communications Manager device. Adding devices as controlled devices to the application user can negatively impact Cisco Unified Communications Manager performance because Cisco Unified Communications Manager does not support a single user controlling a large number of devices in this manner.

Before you begin

Configure an application user for the CTI gateway.

Procedure

Step 1 Select **Cisco Unified Communications Manager Administration** > **User Management** > **User Settings** > **Access Control Group**.

Step 2 Select **Find**.

Step 3 Select **Standard CTI Allow Control of All Devices**. If you are deploying an RT model of Cisco Unified IP phones, select **Standard CTI Allow Control of Phones supporting Connected Xfer and conf**.

Step 4 Select **Add App Users to Group**.

Step 5 Select the application user that you created for the CTI Gateway.

Step 6 Select **Add Selected**.

Related Topics

Set Up CTI Gateway Application User, on page 10

Add Application User to CTI-Enabled Access Control Group, on page 11

Set Up Dial Rules

A dial rule must be set up to strip the + prefix coming from the Lync server. If this is not done, the Cisco Unified Communications Manager will not find the Line URI and the result is a failed call attempt.

Note You perform the following configuration only if users are provisioned with E.164 numbers. If both users and IP phones are provisioned with E.164 numbers, then there is no need to set up an application dial rule to strip the + prefix.

Procedure

Step 1 Select Cisco Unified Communications Manager **Administration** > **Call Routing** > **Dial Rules** > **Application Dial Rules** > **Add New**.

Step 2 Enter a name and a description for the dial rule.

Step 3 In the **Number Begins With** field, enter +.

Step 4 In the **Number of Digits** field, enter **12** to support the following number format: xxx-xxx-xxxx.

Step 5 In the **Total Digits to be Removed** field, enter **1**.

This will ensure that the + prefix will be stripped because digits are always stripped from left to right.

Step 6 Select **Save**.

What to do next

IM and Presence Service Node Setup, on page 15

CHAPTER 4

IM and Presence Service Node Setup

Set Up Service Parameters

The SIP message routing from IM and Presence Service to Microsoft Lync is based on the Record-Route header added by Microsoft Lync in the initial request. IM and Presence Service resolves the hostname in the Record-Route header to an IP address and routes the SIP messages to the Microsoft Lync client.

In addition the transport type on IM and Presence Service should be the same as the transport type configured on Microsoft Lync for the IM and Presence Service route.

Procedure

Step 1 Select **Cisco Unified CM IM and Presence Administration** > **System** > **Service Parameters**.

Step 2 Select the IM and Presence server.

Step 3 Select the service **Cisco SIP Proxy**.

Step 4 Verify that the following parameters are configured correctly:

a) The proxy domain must define the enterprise top-level domain (for example, "example.com"). This value can be entered in the **CUCM Domain** service parameter field.

   This parameter specifies which URIs are treated as local and handled by this IM and Presence Service installation. Other SIP requests may be proxied.

b) Enable the Add Record-Route Header parameter.
c) Enable the Use Transport in Record-Route Header parameter.
d) The SIP Route Header Transport Type parameter value must be set to the same type as the transport parameter configured on Microsoft Lync for the Microsoft Lync to IM and Presence Service route.

Step 5 Select **Save**.

What to do next

Set Up Incoming and Outgoing Access Control Lists, on page 16

Set Up Incoming and Outgoing Access Control Lists

This procedure involves adding four access control list (ACL) entries:

- The FQDN of the Lync server for the incoming ACL
- The IP address of the Lync server for the incoming ACL
- The FQDN of the Lync server for the outgoing ACL
- The IP Address of the Lync server for the outgoing ACL

Procedure

Step 1 Select **Cisco Unified CM IM and Presence Administration** > **System** > **Security** > **Incoming ACL** > **Add New**.

Step 2 Enter a description of the incoming ACL, for example, Lync Standard Server.

Step 3 Enter the FQDN of the Lync server in the **Address Pattern** field and select **Save**.

Tip To view the new Incoming ACL entry, select **Go** from the top right of the window. A list of all configured Incoming ACLs is displayed.

Step 4 Select **Add New**.

Step 5 Enter a description of the incoming ACL, for example, Lync Standard Server.

Step 6 Enter the IP address of the Lync server in the **Address Pattern** field and select **Save**.

Step 7 Select **Cisco Unified CM IM and Presence Administration** > **System** > **Security** > **Outgoing ACL** > **Add New**.

Step 8 Enter a description of the outgoing ACL, for example, Lync Standard Server.

Step 9 Enter the FQDN of the Lync server in the **Address Pattern** field and select **Save**.

Tip To view the new Outgoing ACL entry, select **Go** from the top right of the window. A list of all configured Outgoing ACLs is displayed.

Step 10 Select **Add New**.

Step 11 Enter a description of the outgoing ACL, for example, Lync Standard Server.

Step 12 Enter the IP address of the Lync server in the **Address Pattern** field and select **Save**.

What to do next

Set Up Routing Settings, on page 16

Set Up Routing Settings

Complete the following procedure to configure the routing settings.

Procedure

Step 1 Select **Cisco Unified CM IM and Presence Administration** > **Presence** > **Routing** > **Settings**.

Step 2 Select **On** for **Method/Event Routing Status**.

Step 3 Select **Default Cisco SIP Proxy TCP Listener** for the Preferred Proxy Server.

Step 4 Select **Save.**

What to do next

Remote Call Control Setup, on page 17

Remote Call Control Setup

Set Up IM and Presence Service CTI Connection

Complete the following procedure to configure the CTI connections on IM and Presence Service.

Before you begin

Obtain the username and password that you configured for the application user account on the associated Cisco Unified Communications Manager server for the CTI Gateway.

Procedure

Step 1 Select **Cisco Unified CM IM and Presence Administration** > **Application** > **Microsoft RCC** > **Settings**.

Step 2 Select **On** from the **Application Status** menu.

Step 3 Enter the CTI Gateway application username and password.

Tip The username and password are case-sensitive and must match what is configured on Cisco Unified Communications Manager.

Step 4 Enter a value (in seconds) for the heartbeat interval.

This is the length of time between heartbeat messages sent from IM and Presence Service to the Cisco Unified Communications Manager nodes to monitor the CTI connections.

Step 5 Enter a value (in seconds) for the session timer.

This is the session timer for the Microsoft Lync sign-in session.

Step 6 Select the type of Microsoft server you are using from the Microsoft Server Type menu.

Note For Microsoft Lync integration, you must select **MOC server OCS**.

Step 7 As required, enter the IP address of each Cisco Unified Communications Manager node with which you want to establish a CTI connection.

Note You can configure a CTI connection with up to eight Cisco Unified Communications Manager nodes. These nodes must all belong to the same Cisco Unified Communications Manager cluster.

Step 8 Select **Save**.

Important If you select MOC server OCS as the Microsoft Server Type, you must install the IM and Presence Service Lync Remote Call Control Plug-in on the Microsoft Lync client for any users who use more than one line appearance for remote call control. The IM and Presence Service Lync Remote Call Control Plug-in adds a menu item to the Microsoft Lync client that enables the user to select a line appearance to control.

What to do next

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Related Topics

Set Up CTI Gateway Application User, on page 10
Lync Remote Call Control Installation, on page 55
Run Microsoft RCC Troubleshooter, on page 19

Assign User Capabilities

Complete the following procedure to assign Microsoft Remote Call Control (RCC) capabilities to users.

Procedure

Step 1 Select **Cisco Unified CM IM and Presence Administration** > **Application** > **Microsoft RCC** > **User Assignment**.

Step 2 Select **Find**.

Step 3 Check the users to whom you want to assign remote call control capabilities.

Step 4 Select **Assign Selected Users**.

Step 5 Check **Enable Microsoft RCC** in the **Microsoft RCC Assignment** window.

Step 6 Select **Save**.

Important Make sure that you have assigned remote call control capabilities to each Microsoft Lync user.

What to do next

Run Microsoft RCC Troubleshooter, on page 19

Related Topics

Set Up IM and Presence Service CTI Connection, on page 17
Run Microsoft RCC Troubleshooter, on page 19

Run Microsoft RCC Troubleshooter

The Microsoft RCC Troubleshooter validates the configuration that supports the integration of the Microsoft Lync client with IM and Presence Service.

Procedure

Step 1 Select **Cisco Unified CM IM and Presence Administration** > **Diagnostics** > **Microsoft RCC Troubleshooter**.

Step 2 Enter a valid user ID.

Tip Select Search to find the ID for a user.

Step 3 Enter the Microsoft Lync server address.

Step 4 Select **Submit**.

What to do next

Microsoft Component Integration Setup for IM and Presence Service, on page 21

CHAPTER 5

Microsoft Component Integration Setup for IM and Presence Service

Line URI Setup on Microsoft Active Directory

Before you configure the Line URI parameter on Microsoft Active Directory, note the following:

- For the Line URI, we recommend that you use the format: **`tel:xxxx;phone-context=dialstring where:`**
    - **`xxxx`** specifies the directory number that the CTI Manager reports to IM and Presence Service as the calling or called number when a call is placed.
    - **`phone-context=dialstring`** enables the Microsoft Lync client to control one of the devices that are associated with the directory number.

Note If you are using E.164 numbers, do not include **`phone-context=dialstring`** because it will result in an error at the Microsoft Lync client. See Lync Error When Using E.164 Numbers, on page 62.

- If you configure the device ID, the Microsoft Lync client controls that particular device on initial sign in; for example: **`tel:xxxx;phone-context=dialstring;device=SEP0002FD3BB5C5`**
- If you configure the partition, the Microsoft Lync client specifies the partition for the directory number; for example: **`tel:xxxx;phone-context=dialstring;device=SEP0002FD3BB5C5;partition=myPartition`**
- The Line URI only takes effect when the Microsoft Lync user signs in.

- After initial sign in, the Microsoft Lync user can change the line appearance that they wish to control using the Cisco Unified Communications Manager IM and Presence Service Lync Remote Call Control Plugin.
- If you do not configure the device ID in the Line URI, the CTI Gateway determines the devices that are associated with the line Directory Number (DN). If only one device is associated with the line DN, the CTI Gateway uses that device.

Note You can also use the E.164 format for the Line URI. However, you must ensure that the DNs are also configured with E.164 on Cisco Unified Communications Manager.

Related Topics

Line Appearances, on page 4
IM and Presence Service User Authentication, on page 22
Lync Remote Call Control Installation, on page 55

IM and Presence Service User Authentication

When configuring the SIP URI on Microsoft Active Directory, consider how IM and Presence Service performs the user authentication checks. The user authentication logic is as follows:

1. IM and Presence Service checks if the Microsoft Lync (sign in) user ID matches the Cisco Unified Communications Manager user ID. If IM and Presence Service cannot find a match:
2. IM and Presence Service checks if the Microsoft Lync user email (the From header) matches the Cisco Unified Communications Manager user email. If IM and Presence Service cannot find a match:
3. IM and Presence Service checks if the Microsoft Lync user email matches the ocsPrimaryAddress value of a Cisco Unified Communications Manager user.

For example, a user Joe has the Microsoft Lync user ID joe@someCompany.com. The From header in the SIP INVITE is sip:joe@someCompany.com.

In this case, IM and Presence Service checks the following:

- If there is a user in the Cisco Unified Communications Manager database whose user ID is 'joe'. If this user ID does not exist:
- If there is a user in the Cisco Unified Communications Manager database whose mail is 'joe@someCompany.com'. If this mail does not exist:
- If there is a user in the Cisco Unified Communications Manager database whose ocsPrimaryAddress is 'sip:joe@someCompany.com'.

Set Up Microsoft Active Directory

Before you begin

- Read the topic describing Line URI configuration on Microsoft Active Directory.
- Read the topic describing the user authentication checks on IM and Presence Service.

Procedure

Step 1 From the **Microsoft Active Directory** application window, add a user name and the telephone number that are associated with each particular user.

Step 2 For each of the users that you added, open the **Properties** window on Microsoft Active Directory and configure the following parameters:

a) Enable the user for the Microsoft Lync Server.
b) Enter the SIP URI.
c) Enter the Microsoft Lync server name or pool.

Caution Ensure the Microsoft Lync server name or pool name does not contain the underscore character.

d) Under Telephony Settings, select **Configure**.
e) Check **Enable Remote call control**.
f) Enter the Remote Call Control SIP URI; for example, **`sip:8000@my-cups.my-domain.com`**, where **`my-cups.my-domain.com`** specifies the FQDN of the IM and Presence Service node that you configured for this integration.
g) Enter the Line URI value.

Important The SIP URI that you enter on Microsoft Active Directory must match the static route URI that you define when you are configuring static routes on Microsoft Lync.

What to do next

Enable Users in Lync Server Control Panel, on page 23

Enable Users in Lync Server Control Panel

The following procedure describes how to enable new users in the Lync Server Control Panel.

Procedure

Step 1 Go to the Windows server that has Microsoft Lync Server installed.

Step 2 Select **StartAll Programs** > **Microsoft Lync Server** > **Lync Server Control Panel**.

Step 3 Choose **Enable users for Lync Server** from the **Top Actions** menu.

Step 4 Select **Add**.

Step 5 Select the LDAP search option and select **Find**.

Step 6 Click on the user to enable and select **OK**.

Step 7 Choose the application pool from the **Assign users to a pool** drop-down list.

Step 8 Select the Specify a SIP URI option and enter the SIP URI, for example, **`sip:UserA@lyncdomain.com`**, where **`UserA`** is the user you added and **`lyncdomain.com`** specifies the domain name of the Lync server.

Step 9 Choose **Remote call control** from the **Telephony** drop-down list.

Step 10 Enter the Line URI in the format tel:<telephone_number>, where <telephone_number> is the telephone number you entered when adding the user.

Step 11 Enter the Line Server URI, for example, **`sip:UserA@my-cups.my-domain`**.com, where **`UserA`** is the user you added and **`my-cups.my-domain.com`** specifies the domain name of the IM and Presence Service node.

Please note the following:

a) The Line Server URI domain is the value that is matched by the static route MatchUri parameter. See Set Up Static Route for Microsoft Lync Server , on page 25.

b) The Line Server URI domain and the value in the MatchUri parameter must match to enable the Lync server to correctly route SIP messages to the IM and Presence Service node.

c) The IM and Presence Service node must also have this domain set as its proxy domain.

Step 12 Select **Enable** at the top of the window to enable the new user. The user should have a check mark in the Enabled column.

What to do next

Microsoft Lync Server Setup Overview, on page 24

Related Topics

Line URI Setup on Microsoft Active Directory, on page 21
IM and Presence Service User Authentication, on page 22
Line Appearances, on page 4

Microsoft Lync Server Setup Overview

Note This topic provides a brief description of the configuration required on Microsoft Lync Server for this integration. A comprehensive description of Microsoft Lync configuration is out of the scope of this document. For more information, see the Microsoft Lync documentation at the following URL: http://technet.microsoft.com/en-us/library/gg558664.aspx.

Make sure that the Microsoft Lync server is properly installed and activated. Make sure that the following items are configured on Microsoft Lync:

1. Certificate configuration
2. Static Routes
3. Authorized Host

4. Domain Name Server
5. Pool Properties
6. Server Properties
7. Pool Users
8. User Configuration
9. Microsoft Lync Client Configuration

Note If the CTI Gateway is configured to use TCP, you must define the IP address of the Gateway in Lync Server Topology Builder. See the following URL for more information: http://technet.microsoft.com/en-us/library/gg602125.aspx.

You configure the Microsoft Lync Server using the Lync Server Management Shell utility. The Management Shell utility is installed by default with the Lync server installation. Set up the following items during Microsoft Lync server configuration:

- static routes
- application pools
- Remote Call Control (RCC) application
- Lync server SIP listen port

After you set up the Microsoft Lync Server, commit the topology and restart the front-end service.

Set Up Static Route for Microsoft Lync Server

The Lync server uses the static route to match the URI of the incoming client's SIP message INVITE. The Lync server references the URI value as the Line Server URI.

Procedure

Step 1 Select **Start** > **All Programs** > **Microsoft Lync Server** > **Lync Server Management Shell**.

Step 2 Enter the following command to verify the current system configuration:

```
Get-CsStaticRoutingConfiguration
```

Step 3 Enter the following command to create a static route:

```
$tcpRoute = New-CsStaticRoute -TCPRoute -Destination <IP_address_CUPserver> -Port 5060
-MatchUri "<Line_Server_URI_domain>" -ReplaceHostInRequestUri $true
```

Step 4 At the prompt, enter the following command to load the static route into the Lync server.

```
Set-CsStaticRoutingConfiguration -Route @{Add=$tcpRoute}
```

Step 5 Verify the new system configuration by entering the Get command from Step 2, on page 25 again.

Note If you need to modify or delete a static route, enter the following command:

```
Remove-CsStaticRoutingConfiguration –Identity Global
```

The following table describes the parameters that you use to insert a new static route for Lync server.

Table 1: Static route parameters

Parameter	Description
$tcpRoute	The name of the variable. It can be named anything but it must begin with a `$` and mach the reference in the Set command.
New-CsStaticRoute	The internal command that populates the static route to a variable.
-TCPRoute	This parameter configures the route as TCP.
-Destination	The IP address of the IM and Presence Service node.
-Port	The port to which the IM and Presence Service node listens. For TCP, the port is 5060.
-MatchUri	This value is compared to the Line Server URI value that is specified for each user in the Lync Control Panel. See Enable Users in Lync Server Control Panel, on page 23. This MatchURI value and the Line Server URI value must both match the IM and Presence Service node FQDN. The value of this parameter must be written in double quotes, for example, `-MatchUri "my-cups.my-domain.com"`
-ReplaceHostInRequestUri	This parameter replaces the URI in the initial INVITE to the value that is referenced in the Destination parameter.
-CsStaticRoutingConfiguration	The internal command to move parameter values to the routing database.
-Route	This parameter takes the parameters in the variable and adds the static route.

What to do next

Set Up Application Pool for Microsoft Lync Server , on page 26

Set Up Application Pool for Microsoft Lync Server

The following procedure sets up an application pool that is referenced by the Lync server (registrar). It also links the site information to this pool.

Procedure

Step 1 In the Lync Server Management Shell enter the following command to verify the current system configuration:

```
Get-CSTrustedApplicationPool
```

Step 2 Enter the following command to create the application pool:

```
New-CsTrustedApplicationpool -Identity "<IP_address_CUPserver>" -Registrar <Lync_server_FQDN>
-Site 1 -TreatAsAuthenticated $True -ThrottleAsServer $True -RequiresReplication $False
```

Step 3 Select **Y** at the prompt.

Step 4 Verify the new system configuration by entering the **`Get`** command from Step 1, on page 27 again.

Tip If you need to modify or delete the application pool, enter the following command:

```
Remove-CsTrustedApplicationPool -Identity
TrustedApplicationPool:<IP_address_CUPserver>
```

The following table describes the parameters that you use to configure the application pool.

Table 2: Application pool parameters

Parameter	Description
New-CsTrustedApplicationPool	The internal command that adds the application pool.
-Identity	The reference name of the pool which is also the IP address of the IM and Presence Service node. The value of this parameter must be written in double quotes, for example, `-Identity "10.0.0.1"` This value must match the value in the TrustedApplicationPoolFqdn parameter of the TrustedApplication command in Set Up RCC Application for Microsoft Lync Server , on page 28.
-Registrar	The FQDN of the Lync server.
-Site	The numeric value of the site. **Tip** You can find the site ID with the **`Get-CsSite`** Management Shell command.
-TreatAsAuthenticated	Always set this value to **`$True`**
-ThrottleAsServer	Always set this value to **`$True`**
-RequiresReplication	Because authentication is not required for TCP, you must set this value to **`$False`**

What to do next

Set Up RCC Application for Microsoft Lync Server , on page 28

Set Up RCC Application for Microsoft Lync Server

The following procedure adds the Microsoft Remote Call Control (RCC) application to the pool.

Procedure

Step 1 In the Lync Server Management Shell enter the following command to verify the current system configuration:

```
Get-CSTrustedApplication
```

Step 2 Enter the following command to add the RCC application to the pool:

```
New-CsTrustedApplication -ApplicationID RCC -TrustedApplicationPoolFqdn
"<IP_address_CUPserver>" -Port 5060 -EnableTcp
```

Step 3 Select **Y** at the prompt.

Step 4 Verify the new system configuration by entering the **`Get`** command from Step 1, on page 28 again.

Tip If you need to modify or delete the application pool, enter the following command:

```
Remove-CsTrustedApplicationPool -Identity
TrustedApplicationPool:<IP_address_CUPserver>
```

The following table describes the parameters that you use to configure the application pool.

Table 3: Application configuration parameters

Parameter	Description
New-CsTrustedApplication	The internal command that adds the RCC application.
-ApplicationID	The name of the application, for example, RCC.
-TrustedApplicationPoolFQDN	The IP address of the IM and Presence Service node. The value of this parameter must be written in double quotes, for example, `-Identity "10.0.0.1"` This value must match the value in the Identity parameter of the TrustedApplicationpool command in Set Up Application Pool for Microsoft Lync Server , on page 26.
-Port	The SIP TCP listening port of the IM and Presence Service node. For TCP, the port is 5060.

Parameter	Description
-EnableTCP	This parameter sets the transport to TCP. If this parameter is not included, the transport will default to TLS. **Note** See Security between IM and Presence Service and Microsoft Lync Setup, on page 43 for more information about Communication with Microsoft Lync server over TLS.

What to do next

Set Up Lync Server SIP Listen Port, on page 29

Set Up Lync Server SIP Listen Port

The following procedure sets the SIP listen port on the Lync server. This is required for incoming SIP traffic from the IM and Presence Service node.

Procedure

Step 1 In the Lync Server Management Shell enter the following command to verify the current system configuration:

```
Get-CSRegistrarConfiguration
```

Step 2 Enter the following command to set the Lync server listening port:

```
Set-CsRegistrar registrar:<Lync_server_FQDN> -SipServerTcpPort 5060
```

Step 3 Verify the new system configuration by entering the `Get` command from Step 1, on page 29 again.

Tip If you need to modify or delete the application pool, enter the following command:

```
Remove-CsRegistrarConfiguration
```

The following table describes the parameters that you use to configure the Lync server listen port.

Table 4: Lync server listen port parameters

Parameter	Description
Set-CsRegistrar	Internal command that sets the Lync server port.
registrar:	FQDN of the Lync server.
-SipServerTcpPort	SIP listening port of the Lync server. The default value is typically 5060.

What to do next

Commit Lync Server Setup, on page 30

Commit Lync Server Setup

This procedure describes how to commit the topology and restart the front-end service.

Procedure

Step 1 In the Lync Server Management Shell enter the following command to enable the topology:

```
Enable-CsTopology
```

Step 2 Enter the following command to output the topology to an XML file called rcc.xml and save it to the C drive:

```
Get-CsTopology -AsXml | Out-File C:\rcc.xml
```

Note You can select any name and location to output the topology information.

Step 3 Open the rcc.xml file.

Step 4 In the **Cluster Fqdn** section, change the IPAddress parameter from “<0.0.0.0>” to the IP Address of the IM and Presence Service node.

Step 5 Save the rcc.xml file.

Step 6 Enter the following command in the Lync Server Management Shell:

```
Publish-CsTopology -FileName C:\rcc.xml
```

Step 7 Enter the following command to restart the front-end service:

```
Restart-Service RtcSrv
```

What to do next

Normalization Rules Setup, on page 31

CHAPTER 6

Normalization Rules Setup

Set Up Normalization Rules on Microsoft Active Directory

A reverse look-up of a directory number to username does not work under these conditions:

- the user is not provisioned for E.164 in Active Directory and
- Active Directory phone number normalization rules are not set up

Under these conditions, the application identifies the call as coming from an extension number, and the username will not display in Microsoft Lync.

Therefore you must set up the correct normalization rules for the Active Directory address book on the Microsoft Lync server to enable the Microsoft Lync user to see the name of the calling party in the popup window that displays when the call is made.

Note You must provide a normalization rule file for extension dialing. See the sample normalization rules topic for an example.

Before you begin

The CA-signed certificate for Microsoft Lync must be on the Microsoft Lync PC to achieve correct certificate distribution for address book synchronization. If a common CA is used to sign certificates, for example Verisign or RSA, the CA certificate may already come installed on the PC.

Procedure

Step 1 Ensure that normalization is enabled in Lync Server. To do this, open the Lync Server Management Shell and enter the following command:

```
Get-CsAddressBookConfiguration
```

If the UseNormalizationRules value is set to True, normalization is enabled. If the UseNormalizationRules value is set to False, enter the following command to enable normalization:

```
Set-CsAddressBookConfiguration -UseNormalizationRules $True
```

Step 2 Locate the ABFiles subdirectory in the Lync Server's shared directory that was configured during initial server deployment. Select **Topology Builder** > **File Stores** to identify the file server FQDN and share name. The path is as follows: `\\<Server FQDN>\<Share Folder>\1-WebServices-1\ABFiles`

Step 3 Navigate to the following sample file: `C:\Program Files\Microsoft Lync Server 2010\WebComponents\Address Book Files\Files\Sample_Company_Phone_Number_Normalization_Rules.txt`

Step 4 Make a copy of the Sample_Company_Phone_Number_Normalization_Rules.txt file and save it as Company_Phone_Number_Normalization_Rules.txt in the ABFiles directory.

Note You must save the Company_Phone_Number_Normalization_Rules.txt file in the ABFiles directory, and not where the actual address book files are saved.

Step 5 Open the Company_Phone_Number_Normalization_Rules.txt file in Notepad and remove regex code like `[\s()\-\./]*`. Microsoft Lync Server ignores non-telephony related digits and only analyzes the continuous 0-9 numerical digit patterns. However it does recognize the + prefix.

Step 6 In Lync Server Management Shell, enter the following command to import the new settings in the Company_Phone_Number_Normalization_Rules.txt file and apply them to numbers stored in the address book files:

```
Update-CsAddressBook
```

Step 7 Wait for five before you force an address book update on the Lync client, see Update Microsoft Lync Address Book, on page 33.

What to do next

Update Microsoft Lync Address Book, on page 33

Sample Normalization Rules

```
## +1 (ddd) ddd-dddd EXTddddd
#
\+1(\d{10})EXT(\d{5})
+1$1;ext=$2
#
# +1 (ddd) ddd-dddd Xddddd
#
\+1(\d{10})[Xx]{1}(\d{5})
+1$1;ext=$2
#
# 1 (ddd) ddd-dddd
#
1(\d{10})
+1$1
#
# +1 (ddd) 70ddddd
#
\+1(\d{3})70(\d{5})
+1$170$2;ext=$2
#
# 70d-dddd Xddddd
#
70(\d{5})[Xx]{1}(\d{5})
```

```
+142570$1;ext=$2
#
# ddd-dddd Xddddd
#
(\d{7})[Xx]{1}(\d{5})
+1425$1;ext=$2
```

Update Microsoft Lync Address Book

With the default server/client settings, the Address Book is not immediately updated. To ensure that the Address Book is updated with the latest users added to the Active Directory, you must force the update on the server side and then force Microsoft Lync to pull down the latest files to update its local GalContacts.db file.

Procedure

Step 1 On Lync Server, enter the following command in the Lync Server Management Shell:

```
Update-CsAddressBook
```

This command triggers the Lync Server to synchronize current Active Directory information in the SQL database into the downloadable client and device address book files.

Note Wait five minutes for the synchronization process to complete.

Step 2 With Administrator privileges on Microsoft Lync, enter the following command in the Windows Command Prompt:

```
reg add HKLM\Software\Policies\Microsoft\Communicator /v GalDownloadInitialDelay /t REG_DWORD
/d 0 /f
```

This command forces Microsoft Lync to immediately download the address book.

Step 3 Check whether the GalContacts.db and GalContacts.db.idx files exist on Microsoft Lync. If they do exist, delete them from the user's profile directory.

Step 4 Exit Microsoft Lync. Do not just sign out.

Step 5 Start the Microsoft Lync client and sign in again.

Step 6 Verify that the updated GalContacts.db and GalContacts.db.idx files have been downloaded.

Step 7 Perform a search for the new users and verify that their usernames display in Microsoft Lync.

What to do next

Security Certificate Setup for IM and Presence Service, on page 35

Related Topics

Set Up Normalization Rules on Microsoft Active Directory, on page 31

CHAPTER 7

Security Certificate Setup for IM and Presence Service

This chapter is only applicable if you require a secure connection between IM and Presence Service and Microsoft Lync.

This chapter describes how to configure security certificates using a standalone CA. If you use an enterprise CA, see the *Interdomain Federation for IM and Presence Service on Cisco Unified Communications Manager* for an example of the certificate exchange procedure using an enterprise CA:

Note SIP Proxy certificates (own and trust) should be X.509 version 3 compliant.

Set Up Standalone Root Certificate Authority (CA)

Complete the following procedure to configure the standalone root CA.

Procedure

Step 1 Sign in to the CA server with Domain Administrator privileges.

Step 2 Insert the Windows Server 2003 CD.

Step 3 Select **Start** > **Settings** > **Control Panel** and double-click **Add or Remove Programs**.

Step 4 Select **Add/Remove Windows Components**.

Step 5 Select **Application Server**, then select **Internet Information Services (IIS)**.

Step 6 Complete the installation procedure.

Step 7 Select **Add/Remove Windows Components**.

Step 8 Select **Certificate Services**, then select **Next**.

Step 9 Select **Standalone root CA**, then select **Next**.

Step 10 Type the name of the CA root.

Note This name can be a friendly name for the CA root in the forest root.

Step 11 Change the time to the number of years required for this certificate and select **Next** to begin installation.

Step 12 Select the location for the certificate database and the certificate database files.

Step 13 Select **Next**.

Step 14 Select **Yes** when prompted to stop IIS.

Step 15 Select **Yes** when prompted with a message regarding Active Server Pages, then select **Finish**.

What to do next

Download Root Certificate from CA Server, on page 36.

Download Root Certificate from CA Server

Complete the following procedure to download the root certificate from the CA server.

Before you begin

Configure the Standalone Root Certificate Authority.

Procedure

Step 1 Sign in to your CA server and open a web browser.

Step 2 Open the URL `http://<ca_server_IP_address>/certsrv`.

Step 3 Select on Download a CA certificate, certificate chain, or CRL.

Step 4 Select **Base 64** for the Encoding Method.

Step 5 Select **Download CA Certificate**.

Step 6 Save the certificate file certnew.cer to the local disk.

Important If you do not know the Subject Common Name (CN) of the root certificate, you can use an external certificate management tool to find out. On a Windows operating system, you can right-click the certificate file with a .cer extension and open the certificate properties.

What to do next

Upload Root Certificate to IM and Presence Service, on page 37

Related Topics

Set Up Standalone Root Certificate Authority (CA), on page 35

Upload Root Certificate to IM and Presence Service

Complete the following procedure to upload the root certificate onto IM and Presence Service.

Before you begin

Download the Root Certificate from the CA Server.

Procedure

Step 1 Copy the certnew.cer file to the local computer that you use to administer the IM and Presence Service.

Step 2 Select Cisco Unified Operating System **Administration** > **Security** > **Certificate Management**.

Step 3 Select **Upload Certificate**.

Step 4 Select cup-trust from the **Certificate Name** menu.

Note Leave the **Root Name** field blank.

Step 5 Select Browse and locate the certnew.cer file on your local computer.

Note You may need to change the certificate file to a .pem extension.

Step 6 Select Upload File.

Tip Make a note of the new CA certificate filename you have uploaded to the cup-trust using the Certificate Management Find screen. This certificate filename (without the .pem or .der extension) is the value you enter in the 'Root CA' field when uploading the CA-signed SIP proxy certificate.

What to do next

Generate Certificate Signing Request for IM and Presence Service, on page 37

Related Topics

Download Root Certificate from CA Server, on page 36

Upload Signed Certificate to IM and Presence Service, on page 40

Generate Certificate Signing Request for IM and Presence Service

Complete the following procedure to generate a Certificate Signing Request (CSR) for IM and Presence Service.

Before you begin

Upload the Root Certificate onto IM and Presence Service.

Procedure

Step 1 Select Cisco Unified Operating System **Administration** > **Security** > **Certificate Management**.

Step 2 Select **Generate CSR**.

Step 3 Select cup from the **Certificate Name** menu.

Step 4 Select **Generate CSR**.

What to do next

Download CSR from IM and Presence Service, on page 38

Related Topics

Upload Root Certificate to IM and Presence Service, on page 37

Download CSR from IM and Presence Service

Complete the following procedure to download the CSR from IM and Presence Service.

Before you begin

Generate a CSR for IM and Presence Service.

Procedure

Step 1 Select Cisco Unified Operating System **Administration** > **Security** > **Certificate Management**.

Step 2 Select **Download CSR**.

Step 3 Select cup from the **Certificate Name** menu.

Step 4 Select **Download CSR**.

Step 5 Select **Save** to save the cup.csr file to your local computer.

What to do next

Submit Certificate Signing Request on CA Server, on page 39

Related Topics

Generate Certificate Signing Request for IM and Presence Service, on page 37

Submit Certificate Signing Request on CA Server

Complete the following procedure to submit the CSR on the CA server.

Before you begin

Download the CSR from IM and Presence Service.

Procedure

Step 1 Copy the certificate request file cup.csr to your CA server.

Step 2 Open the URL `http://local-server/certserv` or `http://127.0.0.1/certsrv`.

Step 3 Select **Request a certificate**, then select **Advanced certificate request**.

Step 4 Select **Submit** a certificate request by using a base-64-encoded CMC or PKCS #10 file, or submit a renewal request by using a base-64-encoded PKCS #7 file.

Step 5 Using a text editor like Notepad, open the cup self-certificate that you generated.

Step 6 Copy all information from and including

-----BEGIN CERTIFICATE REQUEST

to and including

END CERTIFICATE REQUEST-----

Step 7 Paste the content of the certificate request into the **Certificate Request** text box.

Step 8 Select **Submit**.

The Request ID number displays.

Step 9 Open Certificate Authority in Administrative Tools.

The **Certificate Authority** window displays the request you just submitted under Pending Requests.

Step 10 Right-click on your certificate request and select **All TasksIssue.**

Step 11 Select Issued certificates and verify that your certificate has been issued.

What to do next

Download Signed Certificate from CA Server, on page 39

Related Topics

Download CSR from IM and Presence Service, on page 38

Download Signed Certificate from CA Server

Complete the following procedure to download the signed certificate from the CA server.

Before you begin

Submit the CSR on the CA Server.

Procedure

Step 1 Open `http://<local_server>/certsrv` on the Windows server that CA is running on.
Step 2 Select **View** the status of a pending certificate request.
Step 3 Select the option to view the request that was just submitted.
Step 4 Select **Base 64 encoded**.
Step 5 Select **Download certificate**.
Step 6 Save the signed certificate to the local disk
Step 7 Rename the certificate cup.pem.
Step 8 Copy the cup.pem file to your local computer.

What to do next

Upload Signed Certificate to IM and Presence Service, on page 40

Related Topics

Submit Certificate Signing Request on CA Server, on page 39

Upload Signed Certificate to IM and Presence Service

Complete the following procedure to upload the signed certificate to IM and Presence Service.

Before you begin

Download the signed certificate from the CA Server.

Procedure

Step 1 Select Cisco Unified Operating System **Administration** > **Security** > **Certificate Management**.
Step 2 Select **Upload Certificate**.
Step 3 Select cup from the **Certificate Name** menu.
Step 4 Specify the root certificate name. The root certificate name must contain the .pem or .der extension.
Step 5 Select **Browse** and locate the signed cup.pem certificate on your local computer.
Step 6 Select **Upload File**.

What to do next

Lync Remote Call Control Installation, on page 55

Related Topics

Download Signed Certificate from CA Server, on page 39

CHAPTER 8

Security between IM and Presence Service and Microsoft Lync Setup

This chapter is only applicable if you require a secure connection between the IM and Presence Service and Microsoft Lync.

Security Certificate for Microsoft Lync Setup

Download CA Certification Chain

Complete the following procedure to download the CA certification chain.

Procedure

Step 1 Select **Start** > **Run**.

Step 2 Enter `http://<name of your Issuing CA Server>/certsrv` and select **OK**.

Step 3 From **Select a task**, select Download a CA certificate, certificate chain, or CRL .

Step 4 Select **Download CA certificate chain**.

Step 5 Select **Save** in the **File Download** dialog box.

Step 6 Save the file on a hard disk drive on your server.

Note The certificate file has an extension of .p7b. If you open this .p7b file, the chain will have the following two certificates:

- name of Standalone root CA certificate
- name of Standalone subordinate CA certificate (if any)

What to do next

Install CA Certification Chain, on page 44

Install CA Certification Chain

Complete the following procedure to install the CA certification chain.

Before you begin

Download the CA certification chain.

Procedure

Step 1 Select **Start** > **Run**.
Step 2 Enter `mmc` and select **OK**.
Step 3 Select **File** > **Add/Remove Snap-in**.
Step 4 Select **Add** in the **Add/Remove Snap-in** dialog box.
Step 5 Select **Certificates** in the list of **Available Standalone Snap-ins** and select **Add**.
Step 6 Select **Computer account** and select **Next**.
Step 7 In the **Select Computer** dialog box, ensure Local computer: (the computer this console is running on) is selected.
Step 8 Select **Finish**, select **Close**, and then select **OK**.
Step 9 Expand **Certificates** (Local Computer) in the left pane of the Certificates console.
Step 10 Expand **Trusted Root Certification Authorities** and right-click **Certificates**.
Step 11 Point to **All Tasks** and select **Import**.
Step 12 Select **Next** in the **Import Wizard**.
Step 13 Select **Browse** and locate the certificate chain on your computer.
Step 14 Select **Open** and select **Next**.
Step 15 Leave the default value Place all certificates in the following store selected.
Step 16 Ensure **Trusted Root Certification Authorities** appears under the Certificate store.
Step 17 Select **Next** and select **Finish**.

What to do next

Submit Certificate Request on CA Server, on page 45

Related Topics

Download CA Certification Chain, on page 43

Submit Certificate Request on CA Server

Complete the following procedure to submit the certificate request on the CA server.

Before you begin

Install the CA Certification Chain.

Procedure

Step 1 Select **Start** > **All Programs** > **Microsoft Lync Server** > **Lync Server Management Shell**.

Step 2 Enter the following command to create a certificate request for Microsoft Lync Server:

```
Request-CsCertificate -New -Type Default -DomainName <FQDN of Lync Server> -Output c:\cert.csr
-ClientEku $true
```

Step 3 From Microsoft Lync Server, enter the URL `http://<name of your Issuing CA server>/certsrv`.

Step 4 Select **Request a Certificate** and then select **Advanced certificate request**.

Step 5 Select **Submit** a certificate request by using a base-64-encoded CMC or PKCS #10 file, or submit a renewal request by using a base-64-encoded PKCS #7 file.

Step 6 Open the file cert.csr from Step 2, on page 45 and copy all information in the file to the clipboard.

Step 7 Paste the information from the file cert.csr to the **Saved Request** box in the certificate authority server and select **Submit**.

What to do next

Approve and Import Certificate, on page 45

Related Topics

Install CA Certification Chain, on page 44

Approve and Import Certificate

Complete the following procedure to approve and import the certificate.

Before you begin

Submit the Certificate Request on the CA Server.

Procedure

Step 1 From the Certificate Authority Server, select **Administrative Tools** > **Certificate Authority**.

Step 2 Select **Pending Requests** and find the new certificate in the list.

Step 3 Right-click on the new certificate and select **All Tasks** > **Issue Certificate**.

Step 4 From Microsoft Lync Server, enter the URL `http://<name of your Issuing CA server>/certsrv`.

Step 5 Select **View** the status of a pending certificate request.

Step 6 Select **Base 64 encoded** and download the certificate as a cer file extension to the Microsoft Lync server local drive.

Step 7 Sign in as a member of the Administrators group to the same Microsoft Lync Server on which you created the certificate request.

Step 8 Start the Lync Server Deployment Wizard and select **Install** or **Update** Lync Server System.

Step 9 Select **Run Again** (beside Step 3: Request, Install, or Assign Certificates).

Step 10 From the **Available Certificate Tasks** page, select **Import** a certificate from a .p7b, pfx or .cer file.

Step 11 In the **Import Certificate** page, enter the full path and filename of the certificate that you retrieved from the Certificate Authority in Step 6, on page 46. Alternatively, you can select **Browse** to locate and select the file.

What to do next

Assign Imported Certificate, on page 46

Related Topics

Submit Certificate Request on CA Server, on page 45

Assign Imported Certificate

Complete the following procedure to assign the imported certificate.

Before you begin

Approve and import the Certificate.

Procedure

Step 1 From Microsoft Lync Server start the Lync Server Deployment Wizard.

Step 2 Select **Install** or **Update** Lync Server System.

Step 3 Select **Run Again** in Step 3: Request, Install or Assign Certificates.

Step 4 From the **Available Certificate Tasks** page, select **Assign an existing certificate**.

Step 5 From the **Certificate Assignment** page, select **Next**.

Step 6 From the **Advanced Certificate Usages** page, select all checkboxes to assign the certificate for all usages.

Step 7 From the **Certificate Store** page, select the certificate that you requested and imported.

Step 8 In the **Certificate Assignment Summary** page, review your settings, and select **Next** to assign the certificates.

Step 9 From the wizard completion page, select **Finish**.

Step 10 Open the Certificate snap-in on each server, select **Certificates (Local computer)** > **Personal** > **Certificates**, and verify that the certificate is listed in the **Details** pane.

What to do next

Verify Certificate Setup for Server and Client Authentication, on page 47

Related Topics

Approve and Import Certificate, on page 45

Verify Certificate Setup for Server and Client Authentication

Complete the following procedure to verify that the certificate is properly configured for server and client authentication.

Procedure

Step 1 From Microsoft Lync Server, start the Lync Server Deployment Wizard.

Step 2 Select **Install** or **Update** Lync Server System.

Step 3 Select **Run Again** in Step 3: Request, Install or Assign Certificates.

Step 4 In the **Certificate Wizard** screen, highlight the Default certificate and select **View**.

Step 5 In the **View Certificate** screen, select **View Certificate Details**.

Step 6 In the **Certificate** screen, select the **Details** tab.

Step 7 From the **Show** drop-down list, select **Extensions Only**.

Step 8 Select **Enhanced Key Usage** and verify that the following are listed: Server Authentication (1.3.6.1.5.5.7.3.1) Client Authentication (1.3.6.1.5.5.7.3.2)

Step 9 Select **Start** > **All Programs** > **Microsoft Lync Server** > **Lync Server Management Shell**.

Step 10 Enter the following command to view the certificate from Microsoft Lync Server: `Get-CsCertificate`

Step 11 Verify that the Default certificate is present and similar to the following:

```
Issuer    : CN=ne001a-lynccaNotAfter
NotAfter         : 6/16/2012 2:18:20 PM
NotBefore        : 6/16/2011 2:08:20 PM
SerialNumber     : 152E466D000000000000C
Subject          : CN=pool1.rcdnlync.com
AlternativeNames : {sip.rcdnlync.com, ne011a-lyncent.rcdnlync.com, pool1.rcdnlync.com}
Thumbprint       : 84BED88F2BFBB463CB4CBC328DAA6FD3A5E0677B
Use              : Default
```

What to do next

TLS Route for Microsoft Lync Setup, on page 48

TLS Route for Microsoft Lync Setup

Set up the following items to configure a TLS route for IM and Presence Service on Microsoft Lync:

- static routes
- application pools
- Microsoft Remote Call Control (RCC) application

After you set up a TLS route for IM and Presence Service on Microsoft Lync, commit the topology and restart the front-end service.

Set Up Static Route

Complete the following procedure to configure the static route.

Procedure

Step 1 Select **Start** > **All Programs** > **Microsoft Lync Server** > **Lync Server Management Shell**.

Step 2 If there is a TCP route, remove it with the following command:

```
Remove-CsStaticRoutingConfiguration -Identity Global
```

Step 3 Enter the following command to create a static TLS route:

```
$tlsRoute = New-CsStaticRoute -TLSRoute -Destination <FQDN CUP Server> -Port 5062 -MatchUri
*.rcdnlync.com -UseDefaultCertificate $true
```

Step 4 At the prompt, enter the following command to load the static route into the Lync server.

```
Set-CsStaticRoutingConfiguration -Route @{Add=$tlsRoute}
```

Step 5 Verify the new system configuration by entering the following command:

```
Get-CsStaticRoutingConfiguration
```

The following table describes the parameters that you use to insert a new static route for Lync server.

Table 5: Static route parameters

Parameter	Description
$tlsRoute	The name of the variable. It can be named anything but it must begin with a `$` and mach the reference in the Set command.
New-CsStaticRoute	The internal command that populates the static route to a variable.
-TLSRoute	This parameter configures the route as TLS.
-Destination	The FQDN of theIM and Presence Service node.

Parameter	Description
-Port	The port to which the IM and Presence Service node listens. For TLS, the port is 5062.
-MatchUri	This value is a wildcard, denoted by an asterisk (*), followed by a domain. It is compared to the Line Server URI value that is specified for each user in the Lync Control Panel. See Enable Users in Lync Server Control Panel, on page 23.
-UseDefaultCertificate	This value is set to True to instruct the static route to use the default certificate.
-CsStaticRoutingConfiguration	The internal command to move parameter values to the routing database.
-Route	This parameter takes the parameters in the variable and adds the static route.

What to do next

Set Up Application Pool, on page 49

Set Up Application Pool

The following procedure sets up an application pool that is referenced by the Lync server (registrar). It also links the site information to this pool.

Procedure

Step 1 Select **Start** > **All Programs** > **Microsoft Lync Server** > **Lync Server Management Shell**.

Step 2 Enter the following command to remove any existing TCP application pool:

```
Remove-CsTrustedApplicationPool -Identity TrustedApplicationPool:<IP_Address_CUPserver>
```

Step 3 Enter the following command to create the application pool:

```
New-CsTrustedApplicationPool -Identity <FQDN CUP Server> -Registrar <FQDN of Pool> -site 1
-ThrottleAsServer $true -TreatAsAuthenticated $true
```

Step 4 Select Y at the prompt.

Step 5 Verify the new system configuration by entering the following command:

```
Get-CsTrustedApplicationPool
```

The following table describes the parameters that you use to configure the application pool.

Table 6: Application pool parameters

Parameter	Description
New-CsTrustedApplicationPool	The internal command that adds the application pool.
-Identity	The FQDN of the IM and Presence Service node.
-Registrar	The reference name of the pool. It can also be the FQDN of the Lync server.
-Site	The numeric value of the site. **Tip** You can find the site ID with the Get-CsSite Management Shell command.
-TreatAsAuthenticated	Always set this value to `$True`
-ThrottleAsServer	Always set this value to `$True`

What to do next

Set Up RCC Application, on page 50

Set Up RCC Application

The following procedure adds the Microsoft Remote Call Control (RCC) application to the pool.

Procedure

Step 1 Select **Start** > **All Programs** > **Microsoft Lync Server** > **Lync Server Management Shell**.

Step 2 Enter the following command to remove any existing TCP application:

```
Remove-CsTrustedApplication -Identity <FQDN of IM and Presence server>/urn:application:rcc
```

Step 3 Enter the following command to add the RCC application to the pool:

```
New-CsTrustedApplication -ApplicationID RCC -TrustedApplicationPoolFqdn <FQDN of IM and
Presence server> -Port 5062
```

Step 4 Select **Y** at the prompt.

Step 5 Verify the new system configuration by entering the following command:

```
Get-CsTrustedApplication
```

The following table describes the parameters that you use to configure the application pool.

Table 7: Application configuration parameters

Parameter	Description
New-CsTrustedApplication	The internal command that adds the RCC application.

Parameter	Description
-ApplicationID	The name of the application, for example, RCC.
-TrustedApplicationPoolFQDN	The FQDN of the IM and Presence Service node.
-Port	The SIP TLS listening port of the IM and Presence Service node. For TLS, the port is 5062.

What to do next

Commit Lync Server Setup, on page 51

Commit Lync Server Setup

This procedure describes how to commit the topology and restart the front-end service.

Procedure

Step 1 In the Lync Server Management Shell enter the following command to enable the topology:

```
Enable-CsTopology
```

Step 2 Enter the following command to output the topology to an XML file called rcc.xml and save it to the C drive:

```
Get-CsTopology -AsXml | Out-File C:\rcc.xml
```

Note You can select any name and location to output the topology information.

Step 3 Open the rcc.xml file.

Step 4 In the **Cluster Fqdn** section, change the IPAddress parameter from “<0.0.0.0>” to the IP Address of the IM and Presence Service node.

Step 5 Save the rcc.xml file.

Step 6 Enter the following command in the Lync Server Management Shell:

```
Publish-CsTopology -FileName C:\rcc.xml
```

Step 7 Enter the following command to restart the front-end service:

```
Restart-Service RtcSrv
```

What to do next

Set Up Microsoft Lync for TLSv1, on page 52

Set Up Microsoft Lync for TLSv1

IM and Presence Service only supports TLSv1 so you must configure Microsoft Lync to use TLSv1. This procedure describes how to configure FIPS-compliant algorithms on Microsoft Lync to ensure that Microsoft Lync sends TLSv1 with TLS cipher TLS_RSA_WITH_3DES_EDE_CBC_SHA.

Procedure

Step 1 Select **Start** > **Administrative Tools** > **Local Security Policy**.

Step 2 Select **Security Settings** in the console tree.

Step 3 Select **Local Policies**.

Step 4 Select **Security Options**.

Step 5 Double-click the FIPS security setting in the **Details** pane and modify the security setting.

Step 6 Select **OK**.

Step 7 Restart the Windows Server for the change to the FIPS security setting to take effect.

What to do next

Create New TLS Peer Subject for Microsoft Lync, on page 52

Create New TLS Peer Subject for Microsoft Lync

Complete the following procedure to create a new TLS Peer Subject for Microsoft Lync on IM and Presence Service.

Procedure

Step 1 Select **Cisco Unified CM IM and Presence Administration** > **IM and Presence** > **Security** > **TLS Peer Subjects**.

Step 2 Select **Add New**.

Step 3 In the **Peer Subject Name** field, enter the subject CN of the certificate that Microsoft Lync presents.

Step 4 In the **Description** field, enter the name of the Microsoft Lync server.

Step 5 Select **Save**.

What to do next

Add TLS Peer to TLS Peer Subjects List, on page 53

Add TLS Peer to TLS Peer Subjects List

Complete the following procedure to add the TLS Peer to the selected TLS Peer Subjects list on IM and Presence Service.

Before you begin

Create a new TLS Peer Subject for Microsoft Lync on IM and Presence Service.

Procedure

Step 1 Select **Cisco Unified CM IM and Presence AdministrationSystemSecurityTLS Context Configuration**.

Step 2 Select **Find**.

Step 3 Select **Default_Cisco_UPS_SIP_Proxy_Peer_Auth_TLS_Context**.

The TLS Context Configuration window displays.

Step 4 From the list of available TLS ciphers, select **TLS_RSA_WITH_3DES_EDE_CBC_SHA**.

Step 5 Select the right arrow to move this cipher to **Selected TLS Ciphers**.

Step 6 Check **Disable Empty TLS Fragments**.

Step 7 From the list of available TLS peer subjects, select the TLS peer subject that you configured.

Step 8 Select the right arrow to move it to **Selected TLS Peer Subjects**.

Step 9 Select **Save**.

What to do next

Lync Remote Call Control Installation, on page 55

CHAPTER 9

Lync Remote Call Control Installation

Install IM and Presence Service Lync Remote Call Control Plugin on Client Computer

The Cisco Unified CM IM and Presence Service Lync Remote Call Control Plugin adds a IM and Presence Service menu item to the Microsoft Lync client interface that enables the user to select a phone device to control. You must install this plug-in if the user has multiple devices (lines). When the user selects the IM and Presence Service menu item, IM and Presence Service opens a web page in the user's default web browser. The user can select which phone device to control from this web page.

Before you begin

- Your username and password for Cisco Unified Communications Manager IM and Presence Service User Options.
- The administrator must assign the user to the "Standard CCM End User" Group. Confirm that you have been added to this group.
- For this procedure you require the Cisco Unified Communications Manager IM and Presence Lync Remote Call Control Plugin batch file called addrccmenu.bat, which you can download from the **Cisco Unified CM IM and Presence Administration** user interface. Select **Application** > **Plugins** and download the Cisco Unified Communications Manager IM and Presence Lync Remote Call Control Plugin. The batch file is downloaded as a zip file. You must save this zip file to a location on the Microsoft Lync client computer and extract its contents.

Procedure

Step 1 Open a Windows command prompt on the Microsoft Lync client computer.

Step 2 Navigate to the location of the extracted addrccmenu.bat file.

Step 3 At the command line, enter the following command, where *impserveraddress* is the IP address, hostname or FQDN of the IM and Presence Service node:

```
addrccmenu.bat impserveraddress
```

Step 4 If you receive a regedit security warning, allow the operation to continue.

Step 5 When the operation is complete, log out and exit the Microsoft Lync client.

Step 6 Log in to the Microsoft Lync client again and choose the **Tools** menu option. You can now see the new Cisco menu item.

> **Note** If you need to direct the IM and Presence Service menu item to a different IM and Presence Service node, you can execute this procedure again using the IP address, hostname or FQDN for a different IM and Presence Service node.

What to do next

If the IM and Presence Service web page does not open in the user's default web browser when the Microsoft Lync client user accesses the IM and Presence Service menu item, see IM and Presence Service Web Page Does Not Open from the Microsoft Lync Client Default Web Browser., on page 61

Uninstall IM and Presence Service Lync Remote Call Control Plugin

To uninstall the Cisco Unified Communications Manager IM and Presence Service Lync Remote Call Control Plugin, you must rerun the batch file without specifying the IP address, hostname or FQDN of the IM and Presence Service node.

Procedure

Step 1 Download the zip file to the Microsoft Lync computer and extract the contents of the zip file.

Step 2 Open a Windows command prompt.

Step 3 Navigate to the location of the extracted addrccmenu.bat file.

Step 4 At the command line, enter the following command:

```
addrccmenu.bat
```

Step 5 If you receive a regedit security warning, allow the operation to continue.

Step 6 When the operation is complete, log out and exit the Microsoft Lync client.

Step 7 Log in to the Microsoft Lync client again and select the Tools menu option. The Cisco menu item should no longer be visible.

Access Phone Selection Through a Web Browser

You use the Cisco Unified Communications Manager IM and Presence Service User Options Web interface to customize settings, create personal response messages, and organize contacts.

Before you begin

Confirm the following information from your system administrator:

- The hostname or IP address for Cisco Unified Communications Manager IM and Presence Service User Options.
- Your username and password for Cisco Unified Communications Manager IM and Presence Service User Options.
- To be able to log in to the Cisco Unified Communications Manager IM and Presence Service User Options Web interface, the administrator must assign the user to the "Standard CCM End User" Group.

Procedure

Step 1 Open a supported Web browser on your computer.

Step 2 Enter the URL addresses for Cisco Unified Communications Manager IM and Presence Service User Options:

https://*imp_server_address*:8443/cupuser/showHomeMini.do?mini=true

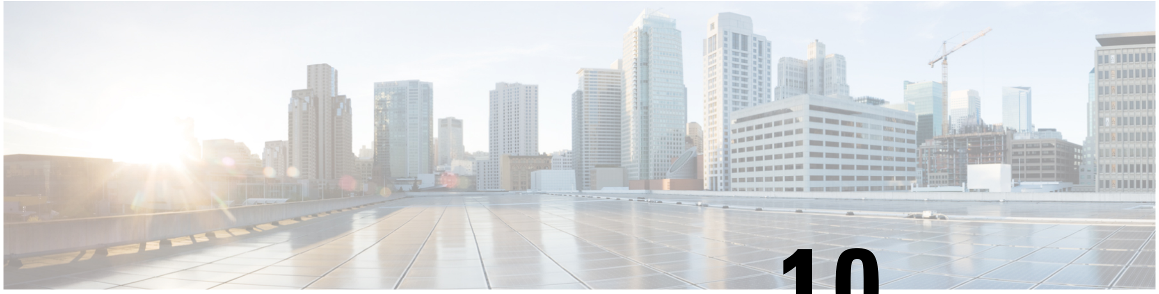
Where *imp_server_address* is the hostname, FQDN, or IP address of the IM and Presence Service node.

Step 3 Enter your username for Cisco Unified Communications Manager IM and Presence Service User Options.

Step 4 Enter your password Cisco Unified Communications Manager IM and Presence Service User Options provided by your system administrator.

Step 5 Click **Login**.

To log out of the User Options Web interface, click **Logout** in the upper right corner of the User Options page. For security purposes, you will be automatically logged out of User Options after thirty minutes of inactivity



CHAPTER 10

Microsoft Lync Server and Microsoft Lync Client Logging

The Lync Server Logging Tool allows you to initiate traces of the Lync server and view message logs. The Microsoft Lync client also allows you to collect logging information for SIP messaging and other client-related logging information.

Initiate Trace and View Microsoft Lync Server Log

Use the following procedure to initiate a trace of the Microsoft Lync server and view the message logs.

Procedure

Step 1 Select **Start** > **All Programs** > **Microsoft Lync Server** > **Lync Server Logging Tool**.

Step 2 In the **Components** area, check the SIPStack check box.

Step 3 In the **Level** area, choose the **All** option.

Step 4 In the **Flags** area, check all the flags.

Step 5 When you are ready to being the trace, select **Start Logging**.

Step 6 When you are ready to stop the trace, select **Stop Logging**.

Step 7 Select **Analyze Log Files**.

Step 8 Check the SIPStack and the SIPStackPerf check boxes.

Step 9 Select **Analyze**.

Step 10 Select the **Messages** tab and click on any message to view its contents.

Enable and View Microsoft Lync Client Logs

Use the following procedure to enable client logging and view the resulting logs.

Procedure

Step 1 Select **Start** > **All Programs** > **Microsoft Lync** > **Microsoft Lync Server**.

Step 2 Click on the drop-down arrow on the top right of the window.

Step 3 Select **Tools** > **Options**.

Step 4 Select **General** from the left pane.

Step 5 In the **Logging** area, check the Turn on logging in Lync and Turn on Windows Event logging for Lync check boxes.

Step 6 Select **OK**.

Step 7 Exit the Lync client. Do not just sign out of the Lync client.

Step 8 Go to `C:\Users\Administrator.NE001B-LYNCAD\Tracing>` on your client computer.

Step 9 Select all files in this directory and delete them.

Step 10 Sign in to the Lync client.

Tip You will see new files being created in `C:\Users\Administrator.NE001B-LYNCAD\Tracing>`.

Step 11 Complete a sign in or call attempt from the Lync client.

Step 12 Exit the Lync client.

Step 13 Open the Communicator-uccapi-0 file in `C:\Users\Administrator.NE001B-LYNCAD\Tracing>`.

Note The Communicator-uccapi-0 file contains logs for SIP messaging and other client-related logging information.

CHAPTER 11

Troubleshooting

IM and Presence Service Web Page Does Not Open from the Microsoft Lync Client Default Web Browser.

Problem When the Microsoft Lync client user accesses the IM and Presence Service menu item, the default web browser cannot connect to the IM and Presence Service node and the IM and Presence Service web page does not open.

Solution When the Microsoft Lync client user accesses the IM and Presence Service menu item, IM and Presence Service should open a web page in the user's default web browser. If the web browser cannot connect to the IM and Presence Service node, check the following:

1. Ensure that JavaScript is enabled in the browser settings.
2. Enter the following address in a web browser to verify that the browser can connect to the IM and Presence Service node: https://*imp_server_address*:8443/cucmuser/showHomeMini.do?mini=true

   Where *imp_server_address* is the hostname, FQDN, or IP address of the IM and Presence Service node.
3. If you specified an invalid IP address or FQDN for your IM and Presence Service node, repeat the plug-in installation procedure, specifying the correct IM and Presence Service node address.
4. If you experience other connection problems, you may need to do the following:
   - Add the web address of the IM and Presence Service node to the list of trusted web addresses in the browser on the Microsoft Lync client computer. In Microsoft Explorer, select Internet **Options** > **Security** > **Trusted Sites** and add the following entry to the list of trusted web addresses:

     ```
     https://<IM and Presence_server_name>
     ```

- Add the HTTPS web address of your domain to the security zone of the IM and Presence Service node. In Microsoft Explorer, select **Microsoft Internet Explorer** > **Internet Options** > **Security** > **Local Internet** > **Sites** > **Advanced** and add the following entry to the list of web addresses for the security zone: `https://*.<your_domain>`

5. If an error message appears informing the users that they do not have permission to use this feature, you must enable the users for Microsoft Lync in the IM and Presence Service node. See Remote Call Control Setup, on page 17.
6. If an error message appears regarding an un-trusted security certificate issue or similar warning, select **Continue**. Most browsers allow you to download a website security certificate and mark it as trusted.

Lync Error When Using E.164 Numbers

Solution When you add the tel: value in the Line URI field shown in Enable Users in Lync Server Control Panel, on page 23, do not add `phone-context=dialstring` if you are using E.164 numbers. For example, the Line URI field must be configured as `“tel:+19728131000”` and not `“tel:+19728131000;phone-context=dialstring.”`

If `phone-context=dialstring` is added, the Lync client will produce an error and will not send out the initial INVITE to the Lync server to begin the sign-in sequence.

Synchronize User to Cisco Unified Communications Manager

If the user is provisioned in AD but does not appear in Cisco Unified Communications Manager, perform the following procedure to synchronize the user to Cisco Unified Communications Manager.

Procedure

Step 1 Select Cisco Unified Communications Manager **Administration** > **System** > **LDAP** > **LDAP Directory** (select the LDAP Configuration Name that matches AD).

Step 2 Verify that the configuration is correct.

Step 3 Select **Perform Full Sync Now** and select **OK** when prompted.

Step 4 Select Cisco Unified Communications Manager **Administration** > **User Management** > **End User**.

The user should now display in the user list.

Enable IM and Presence for User ID

If the user is configured in Cisco Unified Communications Manager but does not appear in IM and Presence Service, perform the following procedure.

Procedure

Step 1 Select **Cisco Unified Communications Manager Administration** > **User Management** > **End User**.

Step 2 Search for the user.

Step 3 Select the user.

Step 4 Check the **Enable User for Unified CM IM and Presence** check box.

Step 5 Select **Save**.

Verify User Phone Call Control at the Lync Client Is Enabled

If the user has no call control at the Lync client, the user must complete the following procedure.

Procedure

Step 1 Sign in to the Lync client.

Step 2 Click the drop-down arrow on the top right of the window.

Step 3 Select **Tools** > **Options** > **Phones**.

Step 4 In the **Phone Integration** area, select the option **Enable integration with your phone system**.

Step 5 Select **Advanced**.

Step 6 Verify that the Automatic Configuration option is selected.

This option allows the client to access the correct information from the Lync server database.

Step 7 Select **OK**.

If the problem persists, ensure that the user is sychronized from Cisco Unified Communications Manager and that the user is enabled for RCC in the IM and Presence Service node.

Related Topics

Assign User Capabilities, on page 18

Phone Icon with a Red X in the Status Bar in Microsoft Lync Client

Solution The integration configuration is successful if a user signs into Microsoft Lync client and sees the text “Call forwarding is on” or “Call forwarding is off” in the status bar at the bottom of the window. If there is a phone icon with a red X in the status bar, the integration is unsuccessful. To resolve sign-in problems, you can initiate a trace of the Lync server to identify any problems with the INVITE/INFO SIP message exchange sequence between the IM and Pesence server and the Microsoft Lync server. See the Microsoft Lync documentation for more information about Microsoft Lync server logging and Microsoft Lync client logging.

Related Topics

Get More Information, on page 1