Configure LDAP Synchronization

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LDAP Synchronization Overview

Lightweight Directory Access Protocol (LDAP) synchronization helps you to provision and configure end users for your system. During LDAP synchronization, the system imports a list of users and associated user data from an external LDAP directory into the Unified Communications Manager database. You can also configure your end users while the import occurs.

Note Unified Communications Manager supports LDAPS (LDAP with SSL) but does not support LDAP with StartTLS. Ensure that you upload the LDAP server certificate to Unified Communications Manager as a Tomcat-Trust.

See the *Compatibility Matrix for Cisco Unified Communications Manager and the IM and Presence Service* for information on the supported LDAP directories.

LDAP synchronization advertises the following functionalities:

- **Importing End Users**—You can use LDAP synchronization during the initial system setup to import your user list from a company LDAP directory into the Unified Communications Manager database. If you've preconfigured items such as feature group templates, user profiles, service profiles, universal device and line templates, you can apply configurations to your users, and assign configured directory numbers and directory URIs during the sync process. The LDAP synchronization process imports the list of users and user-specific data and applies the configuration templates that you've set up.

Note You cannot make edits to an LDAP synchronization once the initial synchronization has occurred already.

- **Scheduled Updates**—You can configure Unified Communications Manager to synchronize with multiple LDAP directories at scheduled intervals to ensure that the database is updated regularly and user data is up-to-date.

- **Authenticate End Users**—You can configure your system to authenticate end user passwords against the LDAP directory rather than the Cisco Unified Communications Manager database. LDAP authentication provides companies with the ability to assign a single password to end users for all company applications. This functionality does not apply to PINs or application user passwords.
- **Directory Server User Search for Cisco Mobile and Remote Access Clients and Endpoints**—You can search a corporate directory server even when operating outside the enterprise firewall. When this feature is enabled, the User Data Service (UDS) acts as a proxy and sends the user search request to the corporate directory instead of sending it to the Unified Communications Manager database.

LDAP Synchronization Prerequisites

Prerequisite Tasks

Before you import end users from an LDAP directory, complete the following tasks:

- Configure User Access. Decide which access control groups you want to assign to your users. For many deployments, the default groups are sufficient. If you need to customize your roles and groups, refer to the 'Manage User Access' chapter of the Administration Guide.
- Configure Default credentials for a credential policy that is applied by default to newly provisioned users.
- If you are syncing users from an LDAP directory, make sure that you have a Feature Group Template set up that includes the User Profiles, Service Profiles, and Universal Line and Device Template settings that you want to assign to your users phones and phone extensions.

Note For users whose data you want to synchronize to your system, ensure that their email ID fields on the Active Directory server are unique entries or left blank.

LDAP Synchronization Configuration Task Flow

Use the following tasks to pull a user list from the external LDAP directory and import it into the Unified Communications Manager database.

Note If you have already synced the LDAP directory once, you can still sync new items from your external LDAP directory, but you cannot add new configurations in Unified Communications Manager to the LDAP directory sync. In this case, you can use the Bulk Administration Tool and menus such as Update Users or Insert Users. Refer to the *Bulk Administration Guide for Cisco Unified Communications Manager*.

Procedure

	Command or Action	Purpose
Step 1	Activate the Cisco DirSync Service, on page 3	Log in to Cisco Unified Serviceability and activate the Cisco DirSync service.
Step 2	Enable LDAP Directory Synchronization, on page 4	Enable LDAP directory synchronization in Unified Communications Manager.
Step 3	Create an LDAP Filter, on page 4	**Optional**. Create an LDAP filter if you want Unified Communications Manager to synchronize only a subset of users from your corporate LDAP directory.
Step 4	Configure LDAP Directory Synchronization, on page 5	Configure settings for the LDAP directory sync such as field settings, LDAP server locations, synchronization schedules, and assignments for access control groups, feature group templates, and primary extensions.
Step 5	Configure Enterprise Directory User Search, on page 7	**Optional**. Configure the system for enterprise directory server user searches. Follow this procedure to configure phones and clients in your system to perform user searches against an enterprise directory server instead of the database.
Step 6	Configure LDAP Authentication, on page 8	**Optional**. If you want to use the LDAP directory for end user password authentication, configure LDAP authentication settings.
Step 7	Customize LDAP Agreement Service Parameters, on page 9	**Optional**. Configure the optional LDAP Synchronization service parameters. For most deployments, the default values are sufficient.

Activate the Cisco DirSync Service

Perform this procedure to activate the Cisco DirSync Service in Cisco Unified Serviceability. You must activate this service if you want to synchronize end user settings from a corporate LDAP directory.

Procedure

Step 1 From Cisco Unified Serviceability, choose **Tools** > **Service Activation**.

Step 2 From the **Server** drop-down list, choose the publisher node.

Step 3 Under **Directory Services**, click the **Cisco DirSync** radio button.

Step 4 Click **Save**.

Enable LDAP Directory Synchronization

Perform this procedure if you want to configure Unified Communications Manager to synchronize end user settings from a corporate LDAP directory.

Note If you have already synced the LDAP directory once, you can still sync new users from your external LDAP directory, but you cannot add new configurations in Unified Communications Manager to the LDAP directory sync. You also cannot add edits to underlying configuration items such as the feature group template or user profile. If you have already completed one LDAP sync, and want to add users with different settings, you can use Bulk Administration menus such as Update Users or Insert Users.

Procedure

Step 1 From Cisco Unified CM Administration, choose **System** > **LDAP** > **LDAP System**.

Step 2 If you want Unified Communications Manager to import users from your LDAP directory, check the **Enable Synchronizing from LDAP Server** check box.

Step 3 From the **LDAP Server Type** drop-down list, choose the type of LDAP directory server that your company uses.

Step 4 From the **LDAP Attribute for User ID** drop-down list, choose the attribute from your corporate LDAP directory that you want Unified Communications Manager to synchronize with for the **User ID** field in the **End User Configuration** window.

Step 5 Click **Save**.

Create an LDAP Filter

You can create an LDAP filter to limit your LDAP synchronization to a subset of users from your LDAP directory. When you apply the LDAP filter to your LDAP directory, Unified Communications Manager imports only those users from the LDAP directory who match the filter.

Note Any LDAP filter that you configure must comply with the LDAP search filter standards that are specified in RFC4515.

Procedure

Step 1 In Cisco Unified CM Administration, choose **System** > **LDAP** > **LDAP Filter**.

Step 2 Click **Add New** to create a new LDAP filter.

Step 3 In the **Filter Name** text box, enter a name for your LDAP filter.

Step 4 In the **Filter** text box, enter a filter. The filter can contain a maximum of 1024 UTF-8 characters and must be enclosed in parentheses ().

Step 5 Click **Save**.

Configure LDAP Directory Synchronization

Use this procedure to configure Unified Communications Manager to synchronize with an LDAP directory. LDAP directory synchronization allows you to import end user data from an external LDAP directory into the Unified Communications Manager database such that it displays in End User Configuration window. If you have setup feature group templates with universal line and device templates, you can assign settings to newly provisioned users and their extensions automatically.

Tip If you are assigning access control groups or feature group templates, you can use an LDAP filter to limit the import to the group of users with the same configuration requirements.

Procedure

Step 1 From Cisco Unified CM Administration, choose **System** > **LDAP** > **LDAP Directory**.

Step 2 Perform one of the following steps:

- Click **Find** and select an existing LDAP directory.
- Click **Add New** to create a new LDAP directory.

Step 3 In the **LDAP Directory Configuration** window, enter the following:

a) In the **LDAP Configuration Name** field, assign a unique name to the LDAP directory.
b) In the **LDAP Manager Distinguished Name** field, enter a user ID with access to the LDAP directory server.
c) Enter and confirm the password details.

Note
When configuring the LDAP Directory on Unified Communications Manager Release 15SU2, passwords must consist exclusively of ASCII characters and be limited to a maximum of 32 characters to ensure successful LDAP directory integration.

This limitation is addressed and resolved in Release 15SU3 and later versions.

d) In the **LDAP User Search Space** field, enter the search space details.
e) In the **LDAP Custom Filter for Users Synchronize** field, select either **Users Only** or **Users and Groups**.
f) (Optional). If you want to limit the import to only a subset of users who meet a specific profile, from the **LDAP Custom Filter for Groups** drop-down list, select an LDAP filter.

Step 4 In the **LDAP Directory Synchronization Schedule** fields, create a schedule that Unified Communications Manager uses to synchronize data with the external LDAP directory.

Step 5 Complete the **Standard User Fields to be Synchronized** section. For each End User field, choose an LDAP attribute. The synchronization process assigns the value of the LDAP attribute to the end user field in Unified Communications Manager.

Step 6 If you are deploying URI dialing, make sure to assign the LDAP attribute that will be used for the user's primary directory URI address.

Step 7 In the **Custom User Fields To Be Synchronized** section, enter custom user field name with the required LDAP attribute.

Step 8 To assign the imported end users to an access control group that is common to all the imported end users, do the following

a) Click **Add to Access Control Group**.
b) In the pop-up window, click the corresponding check box for each access control group that you want to assign to the imported end users.
c) Click **Add Selected**.

Step 9 If you want to assign a feature group template, select the template from the **Feature Group Template** drop-down list.

Note
The end users are synced with the assigned **Feature Group Template** only for the first time when the users are not present. If an existing **Feature Group Template** is modified and a full sync is performed for the associated LDAP, the modifications will not get updated.

Step 10 If you want to assign a primary extension by applying a mask to imported telephone numbers, do the following:

a) Check the **Apply mask to synced telephone numbers to create a new line for inserted users** check box.
b) Enter a **Mask**. For example, a mask of 11XX creates a primary extension of 1145 if the imported telephone number is 8889945.

Step 11 If you want to assign primary extensions from a pool of directory numbers, do the following:

a) Check the **Assign new line from the pool list if one was not created based on a synced LDAP telephone number** check box.
b) In the **DN Pool Start** and **DN Pool End** text boxes, enter the range of directory numbers from which to select primary extensions.

Step 12 (Optional) In the Jabber Endpoint Provisioning section, select one of the required Jabber devices for auto provisioning from the following drop-down in case you want to create a Jabber device:

- Cisco Dual Mode for Android (BOT)
- Cisco Dual Mode for iPhone (TCT)
- Cisco Jabber for Tablet (TAB)
- Cisco Unified Client Services Framework (CSF)

Note
The **Write back to LDAP** option allows you to write the Primary DN chosen from Unified CM back to the LDAP server. LDAP attributes available for write back are: **telephoneNumber**, **ipPhone**, and **mobile**.

Step 13 In the **LDAP Server Information** section, enter the hostname or IP address of the LDAP server.

Step 14 If you want to use TLS to create a secure connection to the LDAP server, check the **Use TLS** check box.

Note

Sometimes, when we try to synchronize users through the secure port after restarting tomcat, the users will not be synchronized. You must restart the Cisco DirSync service for the user synchronization to happen successfully.

Step 15 Click **Save**.

Step 16 To complete an LDAP sync, click **Perform Full Sync Now**. Otherwise, you can wait for the scheduled sync.

Note When users are deleted in LDAP, they will automatically be removed from Unified Communications Manager after 24 hours. Also, if the deleted user is configured as a mobility user for any of the following devices, these inactive devices will also be automatically deleted:

- Remote Destination Profile
- Remote Destination Profile Template
- Mobile Smart Client
- CTI Remote Device
- Spark Remote Device
- Nokia S60
- Cisco Dual Mode for iPhone
- IMS-integrated Mobile (Basic)
- Carrier-integrated Mobile
- Cisco Dual Mode for Android

Configure Enterprise Directory User Search

Use this procedure to configure phones and clients in your system to perform user searches against an enterprise directory server instead of the database.

Before you begin

- Ensure that the primary, secondary, and tertiary servers, which you choose for LDAP user search, are network reachable to the Unified Communications Manager subscriber nodes.
- From **System** > **LDAP** > **LDAP System**, configure the type of LDAP server from the **LDAP Server Type** drop-down list in the **LDAP System Configuration** window.

Procedure

Step 1 In Cisco Unified CM Administration, choose **System** > **LDAP** > **LDAP Search**.

Step 2 To enable user searches to be performed using an enterprise LDAP directory server, check the **Enable user search to Enterprise Directory Server** check box.

Step 3 Configure the fields in the **LDAP Search Configuration** window. See the online help for more information about the fields and their configuration options.

Step 4 Click **Save**.

Note
To search conference rooms represented as Room objects in OpenLDAP Server, configure the custom filter as (| (objectClass=intOrgPerson)(objectClass=rooms)). This allows Cisco Jabber client to search conference rooms by their name and dial the number associated with the room.

Conference rooms are searchable provided **givenName** or **sn** or **mail** or **displayName** or **telephonenumber** attribute is configured in the OpenLDAP server for a room object.

Configure LDAP Authentication

Perform this procedure if you want to enable LDAP authentication so that end user passwords are authenticated against the password that is assigned in the company LDAP directory. This configuration applies to end user passwords only and does not apply to end user PINs or application user passwords.

Procedure

Step 1 In Cisco Unified CM Administration, choose **System** > **LDAP** > **LDAP Authentication**.

Step 2 Check the **Use LDAP Authentication for End Users** check box to use your LDAP directory for user authentication.

Step 3 In the **LDAP Manager Distinguished Name** field, enter the user ID of the LDAP Manager who has access rights to the LDAP directory.

Step 4 In the **Confirm Password** field, enter the password for the LDAP manager.

Note
Ensure that you renter the LDAP password when you are upgrading your Unified Communications Manager from Release 11.5(1)SU2 to Release 14SU3 and above.

Note
When configuring the LDAP Directory on Unified Communications Manager Release 15SU2, passwords must consist exclusively of ASCII characters and be limited to a maximum of 32 characters to ensure successful LDAP directory integration.

This limitation is addressed and resolved in Release 15SU3 and later versions.

Step 5 In the **LDAP User Search Base** field, enter the search criteria.

Step 6 In the **LDAP Server Information** section, enter the hostname or IP address of the LDAP server.

Step 7 If you want to use TLS to create a secure connection to the LDAP server, check the **Use TLS** check box.

Step 8 Click **Save**.

What to do next

Customize LDAP Agreement Service Parameters, on page 9

Customize LDAP Agreement Service Parameters

Perform this procedure to configure the optional service parameters that customize the system-level settings for LDAP agreements. If you do not configure these service parameters, Unified Communications Manager applies the default settings for LDAP directory integration. For parameter descriptions, click the parameter name in the user interface.

You can use service parameters to customize the below settings:

- **Maximum Number of Agreements**—Default value is 20.
- **Maximum Number of Hosts**—Default value is 3.
- **Retry Delay On Host Failure (secs)**—Default value for host failure is 5.
- **Retry Delay On HotList failure (mins)**—Default value for hostlist failure is 10.
- **LDAP Connection Timeouts (secs)**—Default value is 5.
- **Delayed Sync Start time (mins)**—Default value is 5.
- **User Customer Map Audit Time**

Procedure

Step 1 From Cisco Unified CM Administration, choose **System** > **Service Parameters**.

Step 2 From the **Server** drop-down list box, choose the publisher node.

Step 3 From the **Service** drop-down list box, choose **Cisco DirSync**.

Step 4 Configure values for the Cisco DirSync service parameters.

Step 5 Click **Save**.