

# Cisco Prime Collaboration Provisioning 11.0

## Deployment Guide

March 2016

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## Introduction

Cisco Prime™ Collaboration 11.0 allows voice and video network operations centers (NOCs) to visualize, monitor, and troubleshoot Cisco TelePresence®, voice, and video infrastructure applications and also to provision users and their voice and video services

**Cisco Prime Collaboration consists of two applications, Cisco Prime Collaboration Provisioning and Cisco Prime Collaboration Assurance and Analytics.** The product is based on the Linux operating system and incorporates both voice and video management tools in one product.

**Cisco Prime Collaboration Assurance and Analytics:** The Cisco Prime Collaboration Assurance and Analytics product allows network operators to monitor and troubleshoot their voice and video networks. It provides tools to troubleshoot video sessions and diagnostic tests to proactively find problems in the network before they affect users' experience. It also has comprehensive long-term reporting and analytics capability and notification capabilities.

**Cisco Prime Collaboration Provisioning:** Cisco Prime Collaboration Provisioning allows administrators to provision users and their unified communications services such as phones, video endpoints, lines, voicemail, and presence using a single user interface. The product has a powerful auditing feature that allows you to track all the changes and also offers a self-care portal that allows administrators to empower end users to provision services (speed dialing and call forwarding, for example) on their devices and change Cisco® Unified Communications Manager and voicemail passwords and PINs. Service templates allow the administrator to automatically configure the Cisco Unified Communications solution in a consistent way. The batch provisioning feature in Cisco Prime Collaboration Provisioning allow you to bulk-add users and their services and also to push dial-plan objects for a branch office, for example, using a single batch file. Cisco Prime Collaboration Provisioning also makes onboarding (provisioning services to new employees added to Active Directory) and off-boarding (deprovisioning services from employees who leave the organization) easier to manage with its Automatic Service Provisioning feature.

This document specifically covers the steps for deploying Cisco Prime Collaboration Provisioning. Refer to the Cisco Prime Collaboration Assurance and Analytics Deployment Guide for deployment steps for the Assurance and Analytics component of Cisco Prime Collaboration.

## Terms

Table 1 gives definitions for terms used in this guide.

**Table 1.** Terms Related to Cisco Prime Collaboration Provisioning

Term	Definition
<b>Attributes</b>	Attributes may have true-or-false, text, template, or keyword settings. They are set in the service template.
<b>Admins</b>	Administrators are authorized to perform various tasks in Cisco Prime Collaboration Provisioning. There are global admins and domain admins.
<b>Unified Communications Manager</b>	Cisco Unified Communications Manager, formerly Cisco Unified Call Manager.
<b>Domain</b>	A logical partition to subdivide a shared environment to create separate local administrative partitions.
<b>Domain admin</b>	An administrator who has provisioning access to one or more domains. A domain admin generally does not have higher-level access to set up infrastructure devices or the overall Cisco Prime Collaboration Provisioning system.
<b>Domain sync</b>	Domain synchronization: User sync and infrastructure sync bring infrastructure objects, users, and user services into Cisco Prime Collaboration Provisioning's database. Domain sync will move all the objects brought into the database into the corresponding domains.
<b>MACD</b>	Moves, adds, changes, and deletes.
<b>Global admin</b>	Top-level administrator with access to all system resources. Typically the global admin sets up the system and delegates management tasks to domain admins.

Term	Definition
<b>Service area</b>	Usually maps to a physical location and embeds parameters such as
<b>User</b>	device pool, location, partition, etc.
<b>Sync</b>	An employee that uses IP telephony services provided by the Cisco Unified Communications applications.
<b>Service template</b>	Imports configuration information from Cisco Unified Communications applications. There are three types of sync: infrastructure sync, user sync, and domain sync.

## Provisioning Overview

One of the Cisco Prime Collaboration products, Cisco Prime Collaboration Provisioning is a business-process-oriented provisioning tool that uses management domains, rules, and policy to control provisioning of user services and network infrastructure.

Provisioning is done by ordering services or service changes rather than by modifying individual attributes on individual applications. An administrator can submit an order to Cisco Prime Collaboration Provisioning to perform a change to the infrastructure or user services. All orders are tracked to provide an audit trail. Orders can be submitted through the provisioning GUIs, batch files, and APIs.

Provisioning is user centric, meaning that an administrator must first select a user to see all the services that are associated with that user. The administrator can then place an order to perform a MACD for that user. Every order is placed against a user ID. Various services that the user is eligible for can be provisioned—for example, adding a phone, line, and voicemail.

Cisco Prime Collaboration Provisioning is designed to support Cisco products only. Third-party call processing applications are not supported. Cisco Prime Collaboration Provisioning does not use Simple Network Management Protocol (SNMP) for provisioning. It uses Cisco Administrative XML Layer (AXL), Structured Query Language (SQL) calls, and Telnet or Secure Shell (SSH) Protocol-style communications, depending on the device type being provisioned.

Cisco Prime Collaboration Provisioning supports a large number of Cisco Unified Communications elements, including Cisco Unified Communications Manager, Cisco Unified Communications Manager Express, Cisco Unity<sup>®</sup> Unified Messaging, Cisco Unity Express, Cisco IOS<sup>®</sup> Software devices, and Cisco Unity Connection.

## Installation

The Cisco Prime Collaboration Assurance and Analytics and Cisco Prime Collaboration Provisioning Open Virtualization Archive (OVA) files must be installed on separate virtual machines if you are installing both. For Cisco Prime Collaboration Provisioning, if you have more than 10,000 phones, you need to install the application and database on separate virtual machines. You can use the same provisioning OVA to install both. The options are given at install time to install the application, the database, or both. You can choose what you want to install depending on the number of phones you plan to manage.

## Prerequisites

You can install Cisco Prime Collaboration as a VMware virtual appliance only (as an OVA) file that you can import into your VMware virtual infrastructure. Cisco Prime Collaboration runs on any VMware-certified hardware with ESXi 4.1, 5.0, or 5.1 installed. Large and very large deployments require ESXi 5.0 or later.

Hyper threading must be disabled in the server (at the BIOS level) for better performance of Cisco Prime Collaboration. Refer to your hardware documentation for information about disabling hyper threading.

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## Server Requirement

Please refer to the installation guide at <http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-collaboration/products-installation-guides-list.html> for the server requirements.

## Client Requirement

Please refer to the installation guide at <http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-collaboration/products-installation-guides-list.html> for the client requirements.

The following browsers are supported: Firefox 31 ESR or later, Internet Explorer 10 and 11, Chrome v.43 or later.

## Preparing for Installation

Download the software from the download site for Cisco Prime Collaboration Provisioning. The software is available as OVA files and is available for small, medium, large, and very large deployments. The OVAs contain the operating system (Linux) as well, so all you need to do is deploy the OVA on your VMware server.

Refer to the Quick Start Guide at <http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-collaboration/products-installation-guides-list.html> for the OVA details.

We recommend that you know the values beforehand for the following parameters, because you must specify them at the console prompts when configuring the virtual appliance:

- **IP address:** The IP address of the virtual appliance. Note that Cisco Prime Collaboration Provisioning supports only IPv4 addresses.
- **IP default netmask:** The default subnet mask for the IP address.
- **IP default gateway:** The IP address of the default gateway.
- **Default DNS domain:** The default DNS domain.
- **Primary nameserver:** The primary name server. You may add the name server. To configure several name servers, enter **y**.
- **Primary NTP server [time.nist.gov]:** The primary Network Time Protocol (NTP) server.  
To enter a secondary NTP server, enter **y** at the next prompt.
- **Time zone:** The time zone set for Cisco Prime Collaboration. When you are prompted to enter the system time zone, specify the default time zone: UTC. You can use SSH to change the time zone after you install the Cisco Prime Collaboration Provisioning server; the time stamp that is displayed on the user interface is the server time. You must use the same time zone for the Cisco Prime Collaboration Assurance and Cisco Prime Collaboration Provisioning servers in converged mode. For a list of supported time zones, please visit [http://docwiki.cisco.com/wiki/Supported\\_Timezones\\_for\\_Prime\\_Collaboration](http://docwiki.cisco.com/wiki/Supported_Timezones_for_Prime_Collaboration).
- **Username:** Command-line interface (CLI) admin username. The default username is admin. However, you can specify the username of your choice.
- **Password:** CLI admin password. This password is used to log in to the CLI to check the application status and perform backup and restore.
- **Root user:** Super user who has all privileges in the CLI.
- **Root password:** Password for the root user.

- **globaladmin:** Super user who can access Cisco Prime Collaboration Provisioning user interfaces (this username cannot be changed).
- **globaladmin password:** Password for the global admin.

### Checking Port Availability

Make sure the firewall is opened for the required ports to manage the voice and video infrastructure from the Cisco Prime Collaboration server. Refer to [http://docwiki.cisco.com/wiki/Required\\_Ports\\_for\\_Prime\\_Collaboration](http://docwiki.cisco.com/wiki/Required_Ports_for_Prime_Collaboration) for the list of ports required for both the Cisco Prime Collaboration Assurance server and the Cisco Prime Collaboration Provisioning server.

### Licensing the Product

Refer to the Quick Start Guide at <http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-collaboration/products-installation-guides-list.html> for licensing details.

### Direct Versus Indirect Provisioning

Cisco Prime Collaboration Provisioning does not always communicate directly with devices to set configurations. Endpoints, for example, get their provisioned settings from Unified Communications Manager, which is directly provisioned by Cisco Prime Collaboration Provisioning. The following sections outline how devices are provisioned.

#### Direct Provisioning

- **Cisco Unified Communications Manager and Cisco Unity devices:** Unified Communications Manager has API interfaces referred to as AXL interfaces. Cisco Prime Collaboration Provisioning talks directly to Unified Communications Manager through AXL and connects to Cisco Unity SQL Server using Java Database Connectivity (JDBC), SQL, and representational state transfer (REST).
- **Cisco Unified Communications Manager Express:** Unified Communications Manager Express is a Cisco IOS Software application that runs on Cisco routers and provides telephony services. Because Unified Communications Manager Express is a Cisco IOS Software application, Cisco Prime Collaboration Provisioning communicates with the router using the Cisco IOS Software CLI.
- **Cisco Unity Express:** Cisco Unity Express is a software application that runs on a service module installed either in a Cisco modular router or in integrated hardware in a Cisco modular router. Part of the Cisco Unity Express configuration is done through the Cisco IOS Software interface for the router and part through the service-module command interface. Cisco Prime Collaboration Provisioning communicates with the router using the Cisco IOS CLI.

#### Indirect Provisioning

- **Phones:** Cisco Prime Collaboration Provisioning does not communicate directly with the phones, but it configures Unified Communications Manager with phone settings. The phones get their configurations from Unified Communications Manager.
- **Microsoft Exchange:** Cisco Prime Collaboration Provisioning does not communicate directly with Microsoft Exchange, but Exchange gets users added indirectly during the provisioning of a voicemail account to a Cisco Unity user.
- **Presence:** Cisco Prime Collaboration Provisioning also sets presence settings related to a user's service on Unified Communications Manager.

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## Required Device Protocols and Software Versions

For devices supported by Cisco Prime Collaboration Provisioning, refer to

<http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-collaboration/products-device-support-tables-list.html>

## Before Beginning Deployment

Because Cisco Prime Collaboration Provisioning is typically used within the business processes of an organization, a brief business analysis activity early in the deployment process is highly recommended. This analysis will provide the information necessary to determine how best to configure various Cisco Prime Collaboration Provisioning system objects. The following questions will help make this analysis:

- Will fewer technical staff be delegated management capabilities for the day-2 (MACD) activity for user services? (Example: A help desk, or administrative staff in various locations.)
- What groupings of users map best to how you want to do this delegated management? (Example: Geographically based groupings or organizationally based groupings.)

These two questions will dictate the number of domains that you need to create in Cisco Prime Collaboration Provisioning. Note that users with the ordering role for a domain can see only users in their own domain.

- For each site or location, what device pools, phone protocols, voicemail templates, common device configuration, locations, and partitions are required?
- For each site or location, which devices will support that location?

These two questions will dictate the number of service areas that you need to create in Cisco Prime Collaboration Provisioning for that domain. Service areas point to unique combinations of call processors and message processors (example: Cisco Unified Communications Manager and Cisco Unity Connection). Directory number blocks can also be defined in service areas.

- Is a single Cisco Unified Communications application (example: Cisco Unified Communications Manager) shared across these groupings of users and locations?

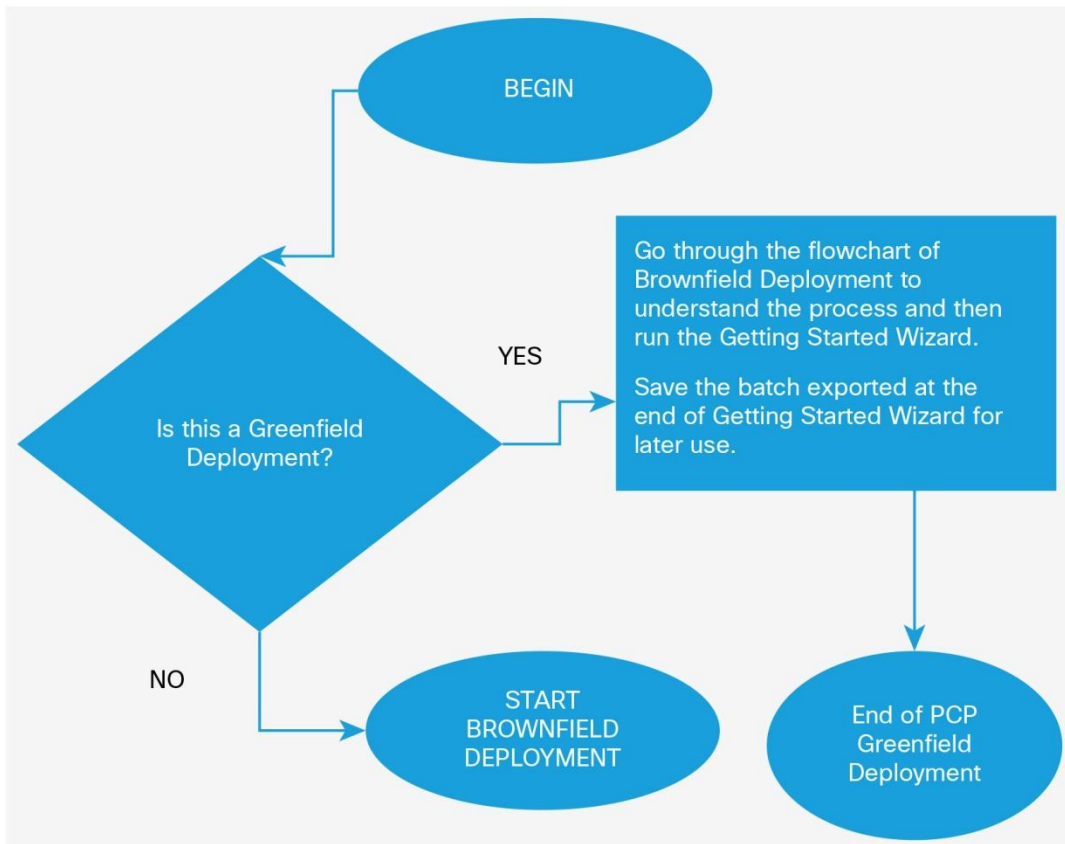
This question will dictate how basic synchronization rules are set within Cisco Prime Collaboration Provisioning. For example, will Cisco Prime Collaboration Provisioning need to place users into domains automatically at synchronization time based on the department code or device pool or location in Unified Communications Manager, or can it put all users it finds into a single Unified Communications Manager domain?

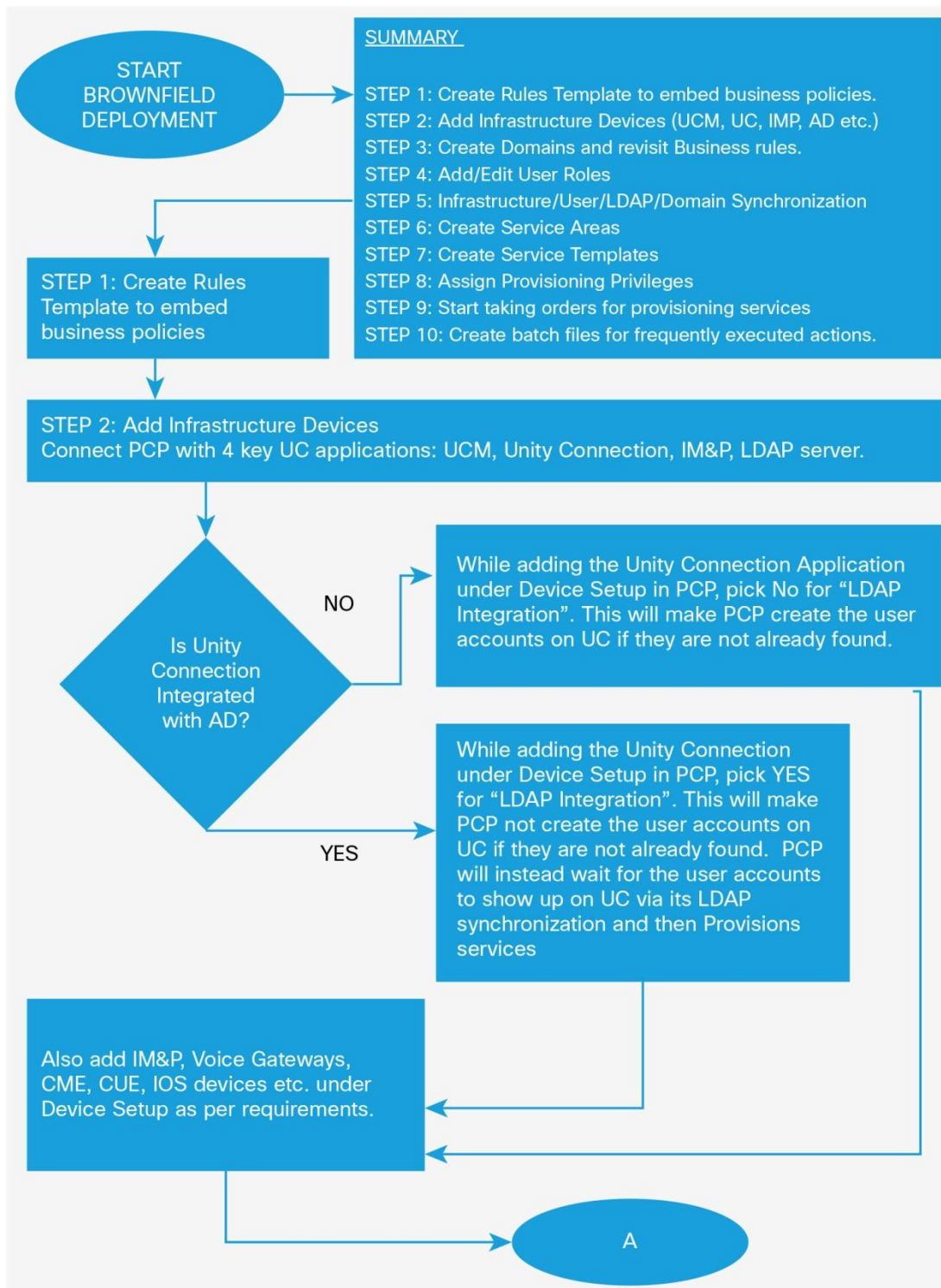
## Cisco Prime Collaboration Provisioning Deployment Flowchart

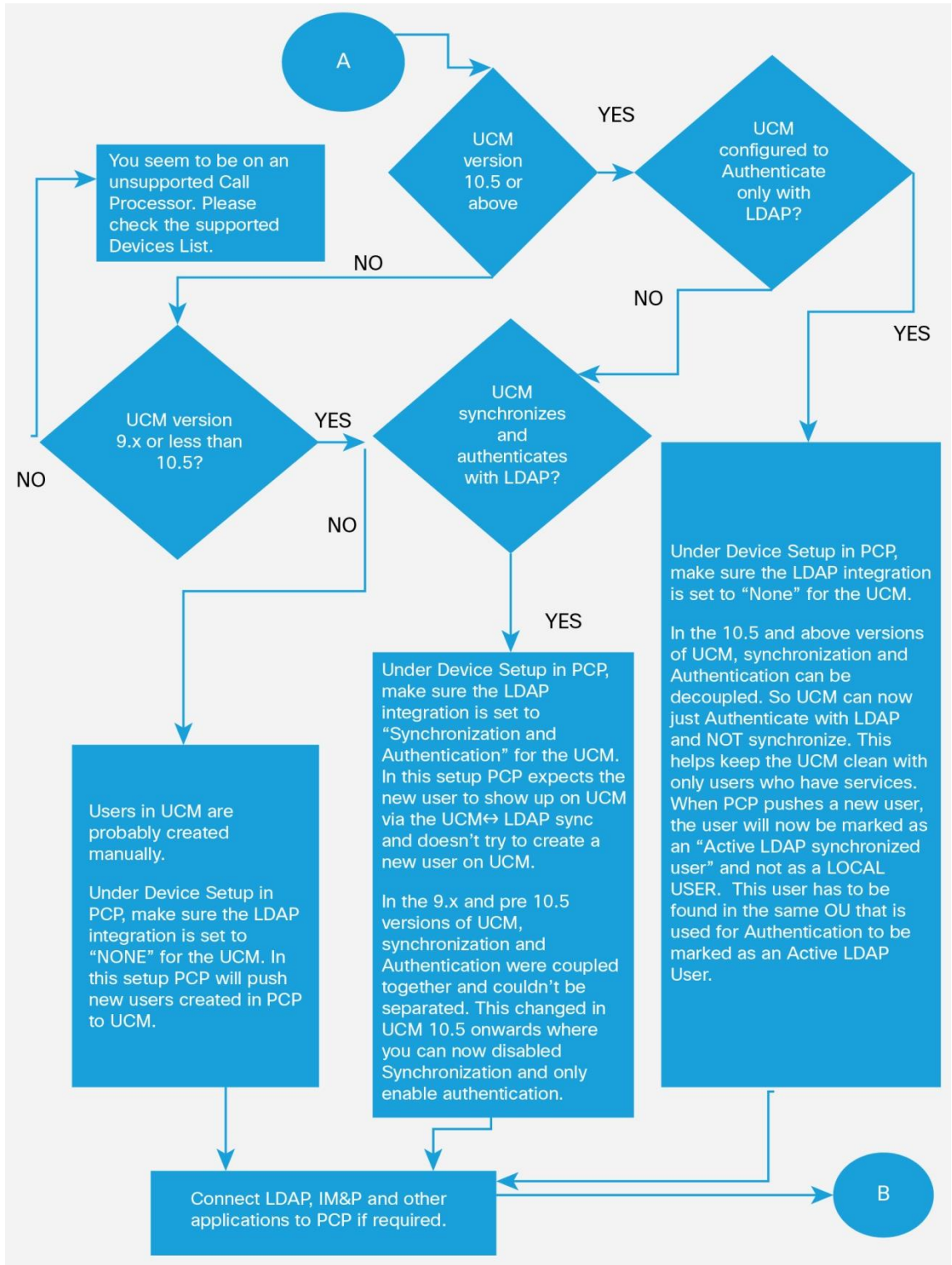
The flowchart in Figure 1 illustrates the deployment steps and the various combinations of use cases that occur. We highly recommend that you go through the entire flowchart in detail before configuring anything on Cisco Prime Collaboration Provisioning. This provides an intuitive understanding of all the scenarios possible, and you can then plan the deployment more effectively and in a more time-efficient manner.

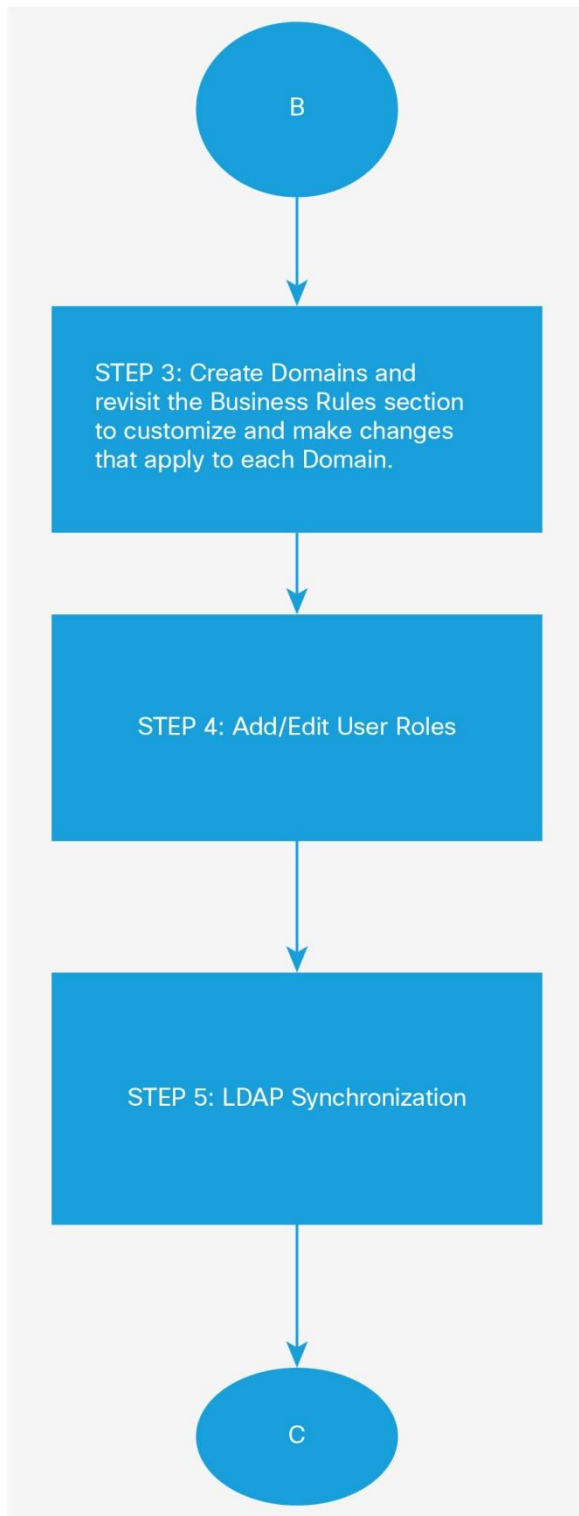


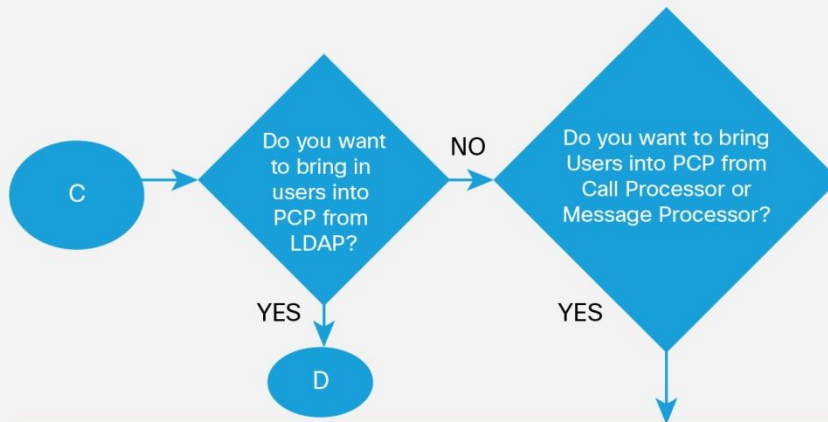
**Figure 1.** Cisco Prime Collaboration Provisioning Deployment Flowchart











Associate the Call processors under each Domain. Under the Domain configuration settings set the Security Server to NONE and configure as per needs the "Unified CM Rule" and "Unity Connection Rule" settings described below:

### 1. Unified CM Rule Settings:

**SYNC BY ATTRIBUTE:** Use the filters in Synchronization rules section in Domain Settings to filter out users (based on user's Department or based on Endpoint/RDP's Device Pool or based on a Endpoint's Location) that have to be put into this domain.

**SYNC ONLY EXISTING USERS:** If there are users already existing in PCP and if the admin intends not to bring any more users then use this option. On running the sync only the existing user's details and their services associated will be updated. No new users will be added to PCP.

**SYNC ALL USERS:** This option will bring in all the users that are found in Call Processor into PCP. If new users are found, which don't exist already in PCP, then these new users will be added to PCP and their services found on the UC applications will be downloaded to PCP as well on running the User Synchronization on the domain. These synchronization processes will tie the users details imported from LDAP with the services provisioned on the UC applications.

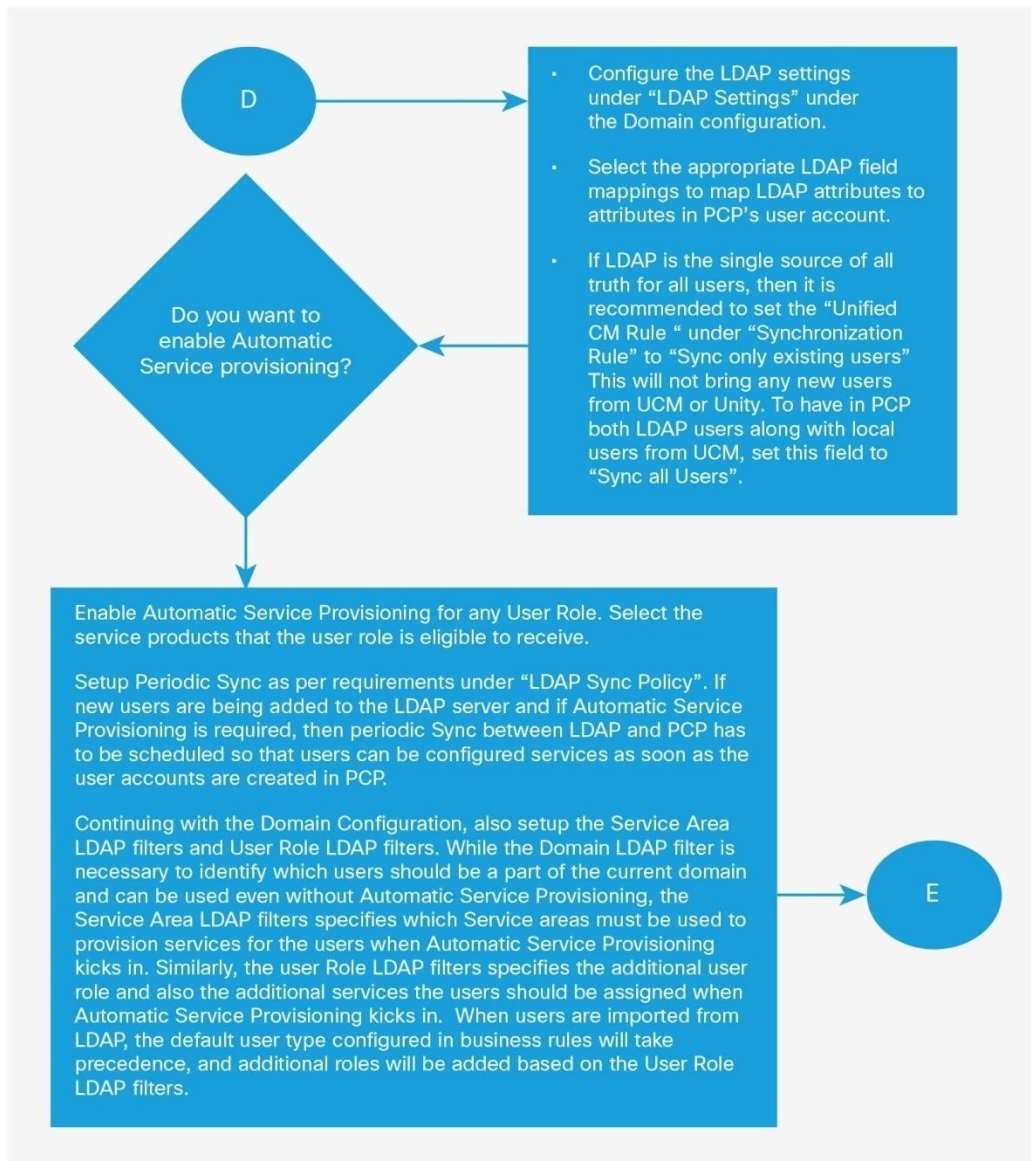
### 2. Unity Connection Rules Settings:

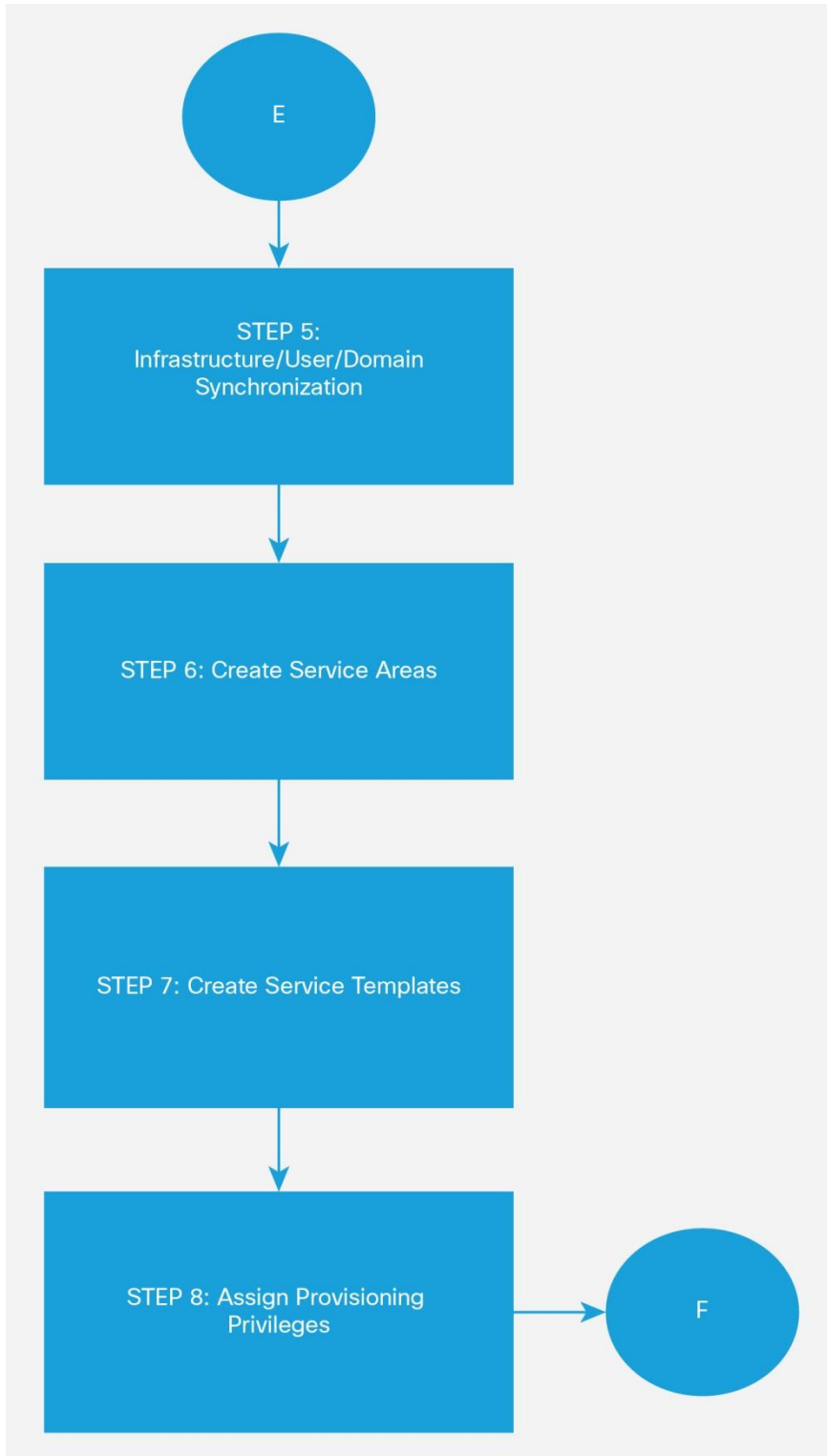
**SYNC ALL USERS:** If this rule is enabled then user accounts will be pulled in from the associated Unified Message Processor otherwise it will be updated from the Call Processor. When the rule is enabled, you can also specify the ID of the Message Processor, which takes precedence in the event a user has accounts on multiple Unity Message Processors. This value can also be left blank to indicate no preference.

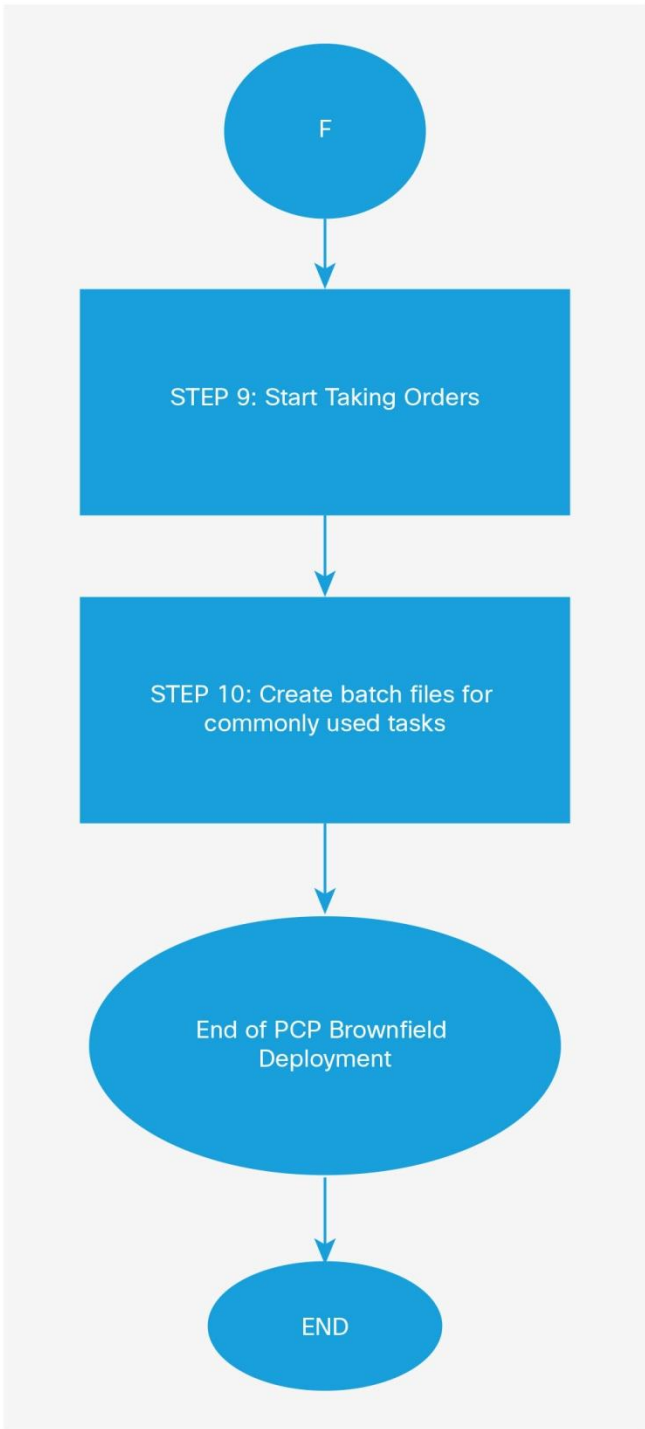
**SYNC PRIMARY USER FROM UNITY CONNECTION:** If this rule is enabled then user accounts will be pulled in from the associated Unified Message Processor; otherwise it will be updated from the Call Processor. When the rule is enabled, you can also specify the ID of the Unity Message Processor, which takes precedence in the event a user has accounts on multiple Unity Message Processors. This value can also be left blank to indicate no preference.

3. Configure the User Synchronization to be run periodically via the CLI as a cron job (see section "How to Infrastructure and User Synchronization via CLI" in this guide). if the UCM version is 9.x. For 10.x versions, change notification will automatically bring in users and some objects. Refer to the user guide for a full list of supported objects.











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## Deployment and Configuration (Details): Know the Flow

It is very important to follow these steps in order to minimize the impact of dependencies and for faster setup:

- Step 1.** Create a rules template to embed business policies.
- Step 2.** Add infrastructure devices.
- Step 3.** Create domains and revisit business rules.
- Step 4.** Add and edit user roles.
- Step 5.** Synchronize infrastructure, users, LDAP, and domains.
- Step 6.** Create service areas.
- Step 7.** Create service templates.
- Step 8.** Assign provisioning privileges.
- Step 9.** Start taking orders for provisioning services.
- Step 10.** Create batch files for frequently performed actions.

The Getting Started wizard helps walk you through these steps.

### Step 1: Create a rules template to embed business policies

Cisco Prime Collaboration Provisioning provides a predefined set of business rules that control different behavior across different features: processing of orders, default values for various objects, default PINs and passwords, default user role for each domain, etc. Rules can be set per domain or in a global template assigned to all new domains. When you install Cisco Prime Collaboration Provisioning, the business rules in the customer domain template are configured according to the needs of the business. When a new domain is created, it inherits the standard set of business rules from the customer domain template. Hence, it makes sense to edit these rules before embarking on creating new domains. You can then change the business rules as required for each new domain. Changes made to the customer domain template affect only new domains created after that point. Rules can be data driven (Cisco Prime Collaboration Provisioning uses the Data field), enabled or disabled driven, or both. The descriptions of the rules indicate which of these applies.

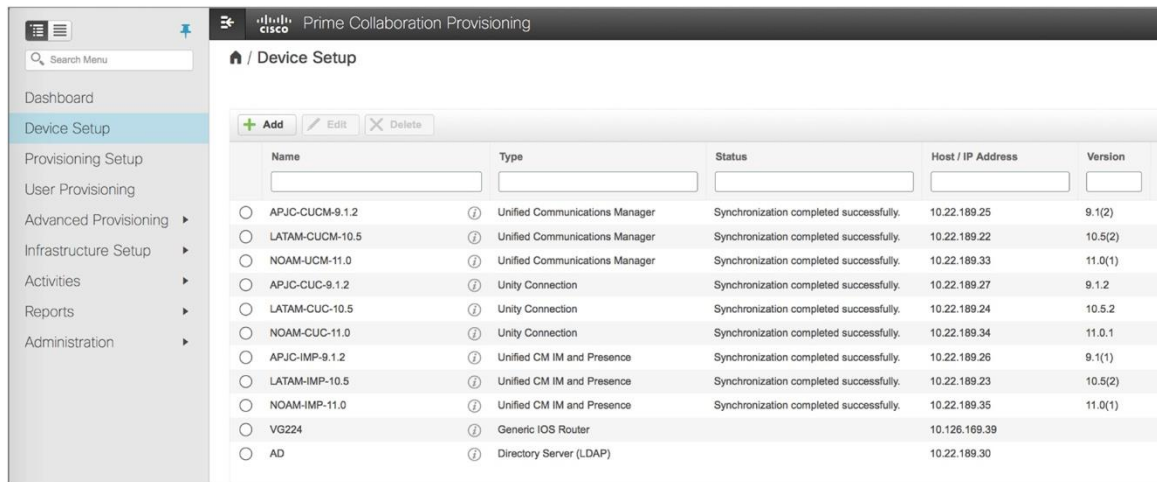
If you intend to use the workflow functionality, make sure to enable the workflow rules:

- IsAuthorizationRequiredForAddOrder
- IsAuthorizationRequiredForCancelOrder
- IsAuthorizationRequiredForChangeOrder
- PhoneAssignmentDoneBy
- PhoneReceiptDoneBy
- PhoneShippingDoneBy

## Step 2: Add infrastructure devices

On the Device Setup page, add the Cisco Unified Communications Manager publishers, Cisco Unity Connection, Cisco IM&P, Active Directory, and other supported applications as required (Figure 2).

**Figure 2.** Device Setup Page in Cisco Prime Collaboration Provisioning



Name	Type	Status	Host / IP Address	Version
<input type="radio"/> APJC-CUCM-9.1.2	Unified Communications Manager	Synchronization completed successfully.	10.22.189.25	9.1(2)
<input type="radio"/> LATAM-CUCM-10.5	Unified Communications Manager	Synchronization completed successfully.	10.22.189.22	10.5(2)
<input type="radio"/> NOAM-UCM-11.0	Unified Communications Manager	Synchronization completed successfully.	10.22.189.33	11.0(1)
<input type="radio"/> APJC-CUC-9.1.2	Unity Connection	Synchronization completed successfully.	10.22.189.27	9.1.2
<input type="radio"/> LATAM-CUC-10.5	Unity Connection	Synchronization completed successfully.	10.22.189.24	10.5.2
<input type="radio"/> NOAM-CUC-11.0	Unity Connection	Synchronization completed successfully.	10.22.189.34	11.0.1
<input type="radio"/> APJC-IMP-9.1.2	Unified CM IM and Presence	Synchronization completed successfully.	10.22.189.26	9.1(1)
<input type="radio"/> LATAM-IMP-10.5	Unified CM IM and Presence	Synchronization completed successfully.	10.22.189.23	10.5(2)
<input type="radio"/> NOAM-IMP-11.0	Unified CM IM and Presence	Synchronization completed successfully.	10.22.189.35	11.0(1)
<input type="radio"/> VG224	Generic IOS Router		10.126.169.39	
<input type="radio"/> AD	Directory Server (LDAP)		10.22.189.30	

## Step 3: Create domains and revisit business rules

A domain is a way to group users into separate administrative partitions. Each domain can be mapped to multiple Unified Communications Manager or Cisco Unity Connection clusters. Domain configuration is done on the Provisioning Setup page (Figure 3).

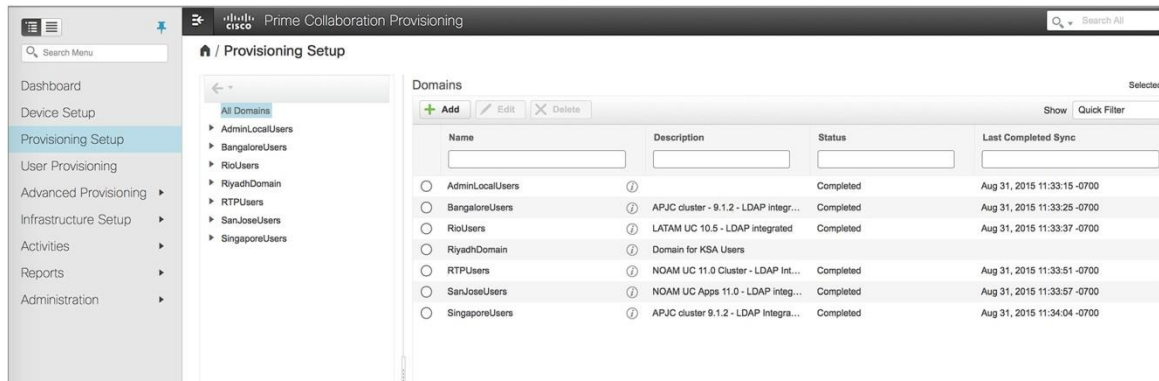
Example: A HQUsers domain could consist of users in company headquarters, SJUsers could contain users located in San Jose, RTPUsers could consist of users located in RTP, etc.

Each domain could have a separate domain admin whose responsibility is to handle MACD for users in that domain. Cisco Prime Collaboration Provisioning also allows multiple domain administrators.

- We recommend that the initial deployment of Cisco Prime Collaboration Provisioning focus on defining the correct domains and service areas, the service templates, and the basic rules.
- Try to avoid flat domain or service-area design; for example, having one domain with a thousand service areas or hundreds of domains with one service area per domain is not good design.
- You can design domains based on delegation needs or geographic location.
- We recommend that you calculate the service areas needed for each domain beforehand. By default, the number of service areas needed is the combination of attributes in the service-area setup (device pool, voicemail templates, common device configuration, location, and partition). If the number of service areas needed for a domain exceeds 100, consider breaking it into two domains for easier manageability and optimal usability.
- It is easier to create multiple domains and remove some later, consolidating users into fewer domains, than it is to create a small number of domains and later split users into more domains.
- Consider the use of user roles, advanced rule settings, and other configuration parameters after you understand these well.

Once you have created the domains, revisit the Business Rules section under Settings > Rules to modify and customize the policies per domain.

**Figure 3.** Provisioning Setup Page



#### Step 4: Add and edit user roles

Cisco Prime Collaboration Provisioning is a user-centric provisioning product and requires human users and open-space locations to be defined with user IDs. This provides a convenient way to identify users and devices in shared spaces. User roles can serve several purposes. They provide policy enforcement and control which products and services can be ordered for different types of users such as contractors, executives, or sales personnel. They are also used to determine what choices are presented to order administrators at order time. The user role setup determines what services are ordered and which service templates are applied for a given user type during the Automatic Service Provisioning process. An administrator may create many user roles to define different levels of services.

Three roles are created for the administrator by default:

- Employee
- Executive
- Room

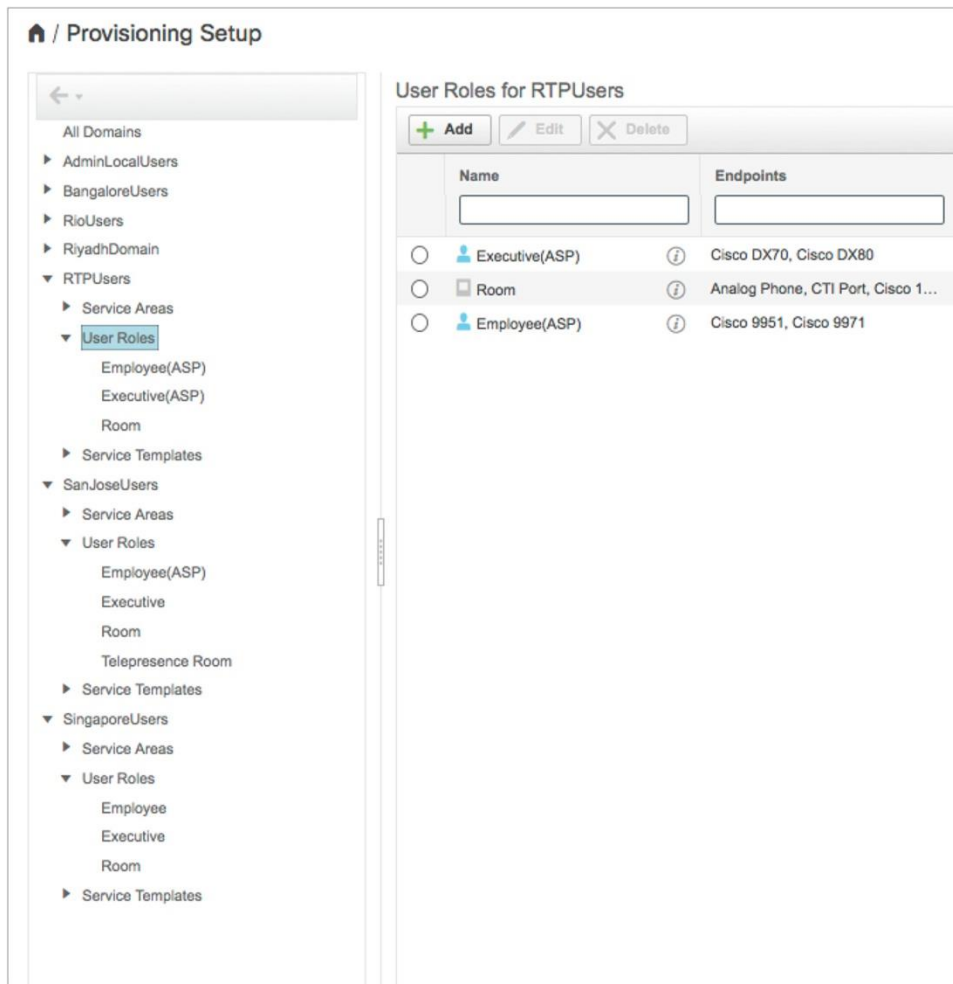
Employee and Executive are used for actual users, whereas the Room role is provided as a general role for shared spaces, lobby phones, and other open-area endpoint devices. The default Room users, though they appear in Cisco Prime Collaboration Provisioning, are not configured in Unified Communications Manager and cannot be renamed or removed.

Initially, for each domain, set up one or more users with the Ordering role at a minimum. More roles can be added later if necessary. These user roles are configured under each domain.

Another important switch is the Pseudo user role. If either a user role or an open space is marked as Pseudo, the corresponding user account will not be created in Unified Communications Manager and the user account will exist only in Cisco Prime Collaboration Provisioning's database.

Figure 4 shows an example of configuring user roles.

**Figure 4.** Configuring User Roles



### Step 5: Synchronize infrastructure, users, LDAP, and domains

The next step is to run the synchronization processes. The infrastructure sync is necessary mainly to bring the device pools, partitions, and locations into Cisco Prime Collaboration Provisioning's database, which will help you configure the service areas in the next step. You can also run the user sync and Lightweight Directory Access Protocol (LDAP) sync as part of this step as well.

The four main synchronization processes are run in Cisco Prime Collaboration Provisioning to bring data from various applications (Figures 5 through 7):

- Infrastructure synchronization: Brings the infrastructure objects from unified communications applications into Cisco Prime Collaboration Provisioning. These objects are not specific to individual users; for example, they define the calling search space, device pools, route patterns, and translation patterns associated with each user.
- User synchronization: Discovers all users and their associated services and brings them into Cisco Prime Collaboration Provisioning's database.

- Domain synchronization: User and infrastructure sync bring the objects into the database first. This way the administrator can have the users' services and infrastructure objects pulled in from various clusters and gathered in the database. Following the infrastructure and user synchronization, a domain synchronization is necessary to consolidate all the services that exist for users and to bring all the downloaded objects from various call processing and message processing clusters into their domain.
- Infrastructure sync and user sync retrieve information from the unified communications applications. These syncs are unidirectional. Cisco Prime Collaboration Provisioning does not update devices during these syncs. The syncs should be completed on all devices before a domain sync is started. Domain sync aggregates data from the processor syncs. Devices are not accessed during the domain sync.
- LDAP synchronization:
  - You can configure Cisco Prime Collaboration Provisioning to synchronize users from an external LDAP server. With this feature, Cisco Prime Collaboration Provisioning can populate its user database with user IDs directly from an associated LDAP source. Configuring and scheduling LDAP synchronization is done through the domain configuration page.
  - You can configure a filter query at the domain level to allow Cisco Prime Collaboration Provisioning to get only user IDs that belong in a specific domain, as opposed to importing the entire LDAP directory into each domain. You can create complex filters based on the available fields in Active Directory.
  - After LDAP synchronization occurs, a report is generated. The report lists the number of new users created, the number of existing users updated, and the number of users deleted during the synchronization. The report also lists the operations that could not be performed during the synchronization. The failed operations can be due to incorrect data entered into the LDAP server or wrong settings. This report can be found in a panel under the LDAP sync dialog.

**Figure 5.** Infrastructure and User Synchronization

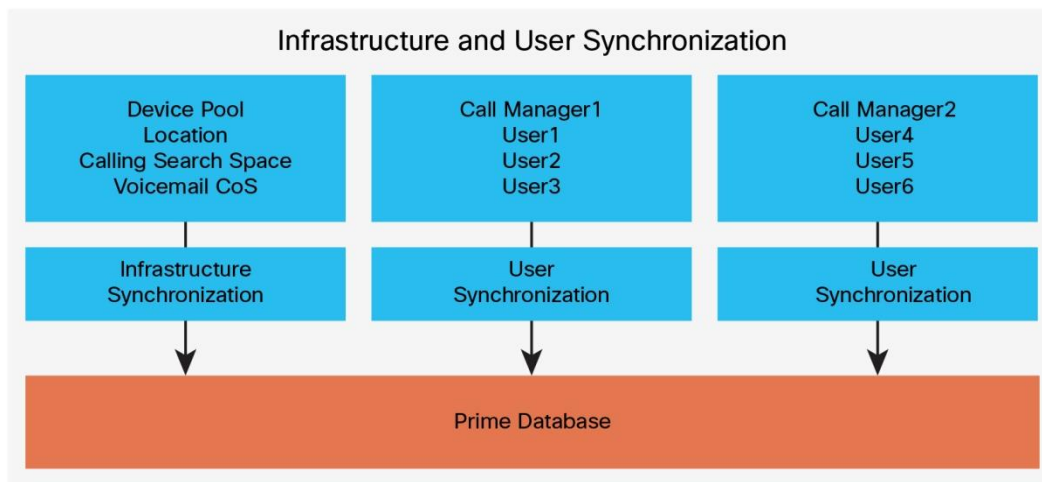


Figure 6. LDAP Synchronization

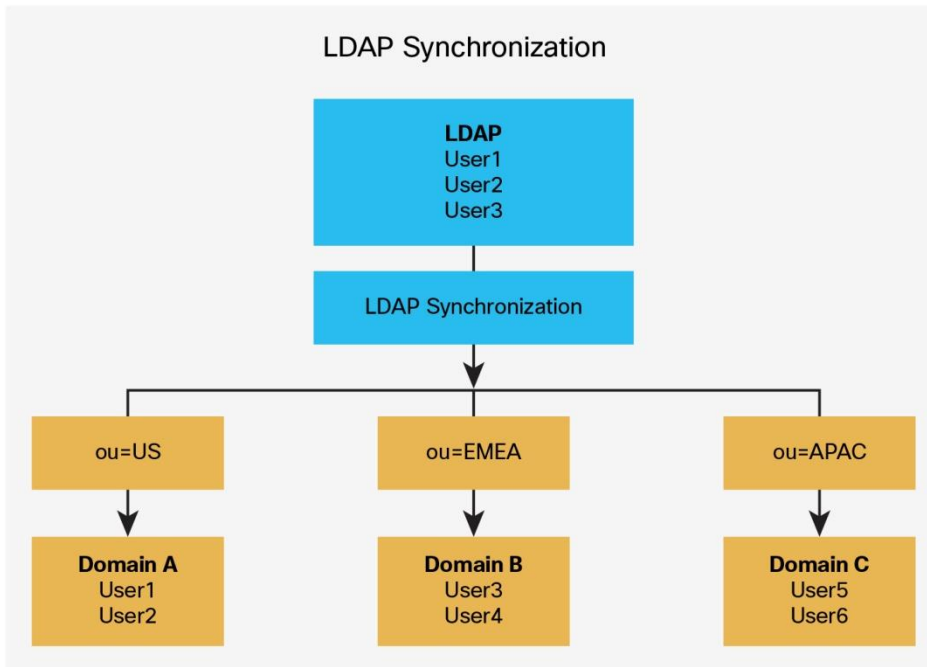
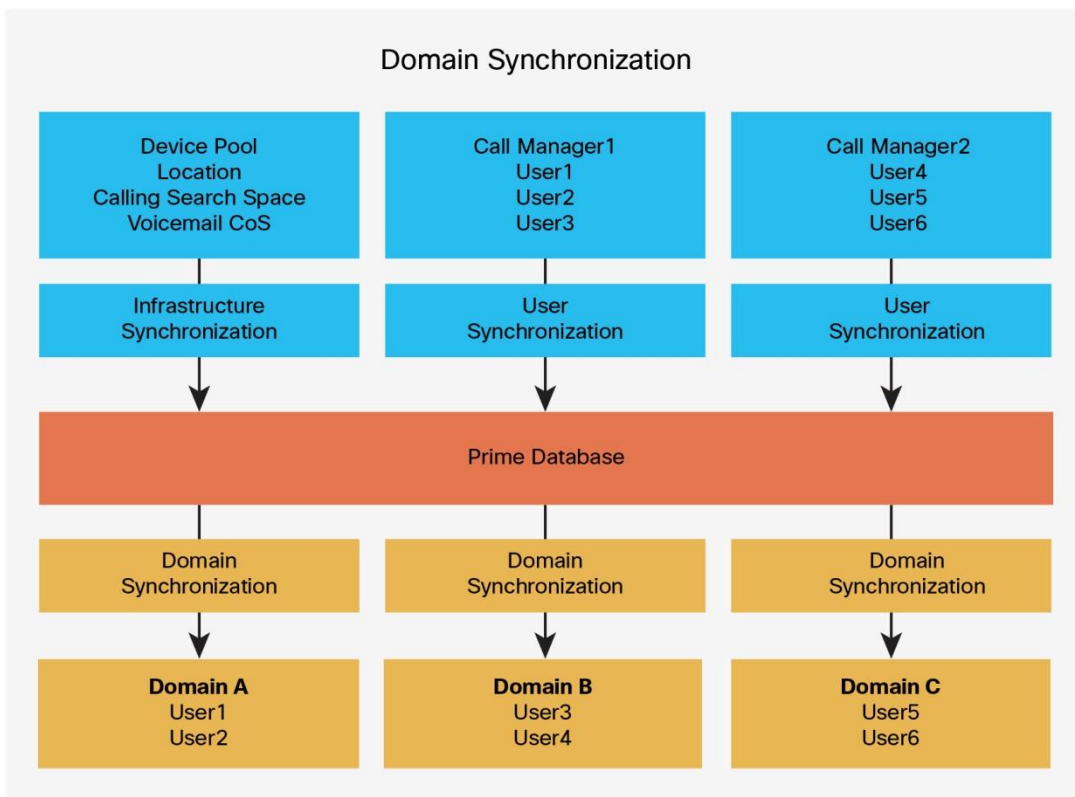


Figure 7. Domain Synchronization



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## Best Practice: Scheduled Synchronization

Consider the following when setting up a scheduled sync:

- We recommend that you run a sync at off-peak or late-night hours to avoid any impact on the Cisco Unified Communications apps, LDAP server, and Cisco Prime Collaboration Provisioning.
- Besides running synchronizations on demand through the appropriate Cisco Prime Collaboration Provisioning user interface, you can set up scheduled synchronizations. You must use the Scheduled Tasks function that comes with your operating system.
- We recommend that you run a nightly sync to help ensure that Cisco Unified Communications Manager and Cisco Prime Collaboration Provisioning have the same data. Beginning with Cisco Prime Collaboration Provisioning 10.0, periodic syncs are not required with Unified Communications Manager 10.0 and later because Cisco Prime Collaboration Provisioning can get the changes through the change-notification mechanism. Note, however, that only a limited set of frequently changed objects are currently supported, and the supported list doesn't span all the objects in Unified Communications Manager.
- LDAP sync can be configured to execute periodically from the Domain Settings page. If the unified communications applications are integrated with LDAP, we recommend that you run the LDAP sync for the unified communications applications first, followed by Cisco Prime Collaboration Provisioning's LDAP sync. That way, if and when Automatic Service Provisioning is configured, the user will be found in the unified communications applications and Cisco Prime Collaboration Provisioning won't have to wait for the user to show up in the unified communications applications. The order for new services for onboarding users via Automatic Service Provisioning will then run to completion right away.

If changes are made in the unified communications applications via the native interface, those changes must be brought into Cisco Prime Collaboration Provisioning. Starting with Unified Communications Manager 10.0, Cisco Prime Collaboration Provisioning has access to a change notification API that is polled to gather the delta (changes made to Unified Communications Manager). This helps Cisco Prime Collaboration Provisioning update itself with all the changes. However, this new API is not available for previous versions of Unified Communications Manager and is not available on the voicemail application (Cisco Unity Connection).

Also note that not all objects are pulled into Cisco Prime Collaboration Provisioning via change notification. For objects that are supported, refer to this list:

[http://www.cisco.com/c/en/us/td/docs/net\\_mgmt/prime/collaboration/11-0/Provisioning/Guide/Cisco\\_Prime\\_Collaboration\\_Provisioning\\_Guide\\_11/Cisco\\_Prime\\_Collaboration\\_Provisioning\\_Guide\\_11\\_chapter\\_0110.html#ID79](http://www.cisco.com/c/en/us/td/docs/net_mgmt/prime/collaboration/11-0/Provisioning/Guide/Cisco_Prime_Collaboration_Provisioning_Guide_11/Cisco_Prime_Collaboration_Provisioning_Guide_11_chapter_0110.html#ID79)

As described in Figure 1, various use cases and scenarios arise when different versions of the unified communications applications are used and when users are brought into Cisco Prime Collaboration Provisioning from various sources (Unified Communications Manager, Cisco Unity, Active Directory). Refer to the flowchart in Figure 1 for all the scenarios that exist to identify the one that fits your unified communications environment.

### Points to Note

1. Cisco Prime Collaboration Provisioning only reads the user information from the LDAP server. It does not write any information to the LDAP server.
2. Only Microsoft Active Directory servers 2000, 2003, and 2008 are supported as LDAP servers.
3. LDAP synchronization only creates the users; it does not add their services to their user records. Make sure you run user and domain synchronization after LDAP synchronization so that the users' services are added to their user records.
4. The user search base configured in LDAP services in the domain is used to synchronize LDAP users into the Cisco Prime Collaboration Provisioning user database. Although the LDAP user search base is configured when users are added, the authentication, authorization, and accounting (AAA) server is used to authenticate Cisco Prime Collaboration Provisioning users when they log in to Cisco Prime Collaboration Provisioning.

### Advanced Configuration: LDAP-Integrated Unified Communications Manager

Cisco Prime Collaboration Provisioning supports LDAP-integrated Cisco Unified Communications Manager. As described in the flowchart in Figure 1, when adding an Active Directory-integrated Unified Communications Manager to Cisco Prime Collaboration Provisioning from the Add Device page, you have the option of selecting the LDAP directory integration to perform synchronization only or both synchronization and authentication. If Unified Communications Manager is integrated with an external LDAP, users are not created through Cisco Prime Collaboration Provisioning; instead they are synchronized through Unified Communications Manager. When placing an order in Cisco Prime Collaboration Provisioning, if a user is not available on Unified Communications Manager, the workflow subsystem waits for a predefined period of time (24 hours by default) for the user to become available and then continues processing the order. You can configure the 24-hour period on Cisco Prime Collaboration Provisioning in the `ipt.properties` file in the `/opt/cupm/sep` directory by doing the following:

**Step 1.** Change the following two settings:

- `dfc.oem.extdir.retries: 24`
- `dfc.oem.extdir.retry_interval: 3600`

**Step 2.** Restart Cisco Prime Collaboration Provisioning: Using SSH, log in to the Cisco Prime Collaboration Provisioning server as the admin user.

**Step 3.** Run the following command to stop the Cisco Prime Collaboration Provisioning server:

```
cpc2-prov/admin# application stop cpcm
```

**Step 4.** Wait for a minute or two for the ports to be freed, and then run the following command to restart the server:

```
cpc2-prov/admin# application start cpcm
```

If a user is added to Active Directory, the user first needs to be synchronized to Unified Communications Manager, and then the user can be synchronized from Unified Communications Manager to Cisco Prime Collaboration Provisioning. How long it takes to get the user into Cisco Prime Collaboration Provisioning depends upon these factors:

- How often Unified Communications Manager performs the synchronization from Active Directory (which is configured on Unified Communications Manager)
- Whether a synchronization from Unified Communications Manager to Cisco Prime Collaboration Provisioning is performed to automatically pull the user into a domain, or whether a user is manually added in Cisco Prime Collaboration Provisioning



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To avoid performing Cisco Prime Collaboration Provisioning synchronizations after a user is added in Active Directory, a user can be added to both Active Directory and Cisco Prime Collaboration Provisioning in parallel. With Cisco Prime Collaboration Provisioning, you can also enable LDAP sync to import users directly from LDAP. When services are ordered in Cisco Prime Collaboration Provisioning, the services are not activated until Active Directory is synchronized with Unified Communications Manager. But in this case, it is not necessary to do a Cisco Prime Collaboration Provisioning user sync after a user is added in Active Directory.

### **Behaviors for Adding or Deleting Users in Cisco Prime Collaboration Provisioning and Cisco Unified Communications Manager (Non-LDAP-Integrated Unified Communications Manager)**

If you add a new user in Cisco Prime Collaboration Provisioning, whether a Pseudo user or not, the user initially exists only in Cisco Prime Collaboration Provisioning.

When you provision services for a Pseudo user, only the phone settings are provisioned in Unified Communications Manager. When you provision services for a real user, the user is created in Unified Communications Manager and the phone settings are provisioned into the communications manager.

If users leave the company, you can cancel their services and then remove them from Cisco Prime Collaboration Provisioning. Cisco Prime Collaboration Provisioning then removes those users, along with their services, from Unified Communications Manager. This situation illustrates why you should manage your users from Cisco Prime Collaboration Provisioning, not Unified Communications Manager. All of your MACD work should be from Cisco Prime Collaboration Provisioning.

### **How to Enable Infrastructure and User Synchronization via CLI**

**Step 1.** Log in to the Provisioning server as root using SSH.\

**Step 2.** Enter `crontab -e` to edit a copy of the crontab file in vi editor.

**Step 3.** Press the `i` key to enter Insert mode.

**Step 4.** To run synchronization at regular intervals, enter the following: `minute hour day-of-the-month month day-of-week command-to-be-executed`  
where:

- Minute: Valid range is from 0 to 59.
- Hour: Valid range is from 0 to 23.
- Day of the month: Valid range is from 1 to 31.
- Month: Valid range is from 1 to 12.
- Day of the week: Valid range is from 0 to 6 (Sunday = 0).

For example, to run Call Processor synchronization at 3:24 p.m. every day, enter the following:

```
24 15 * * * /opt/cupm/sep/build/bin/sync.sh callprocessor
```

To run Message Processor synchronization at 8:24 p.m. every day, enter the following command:

```
24 20 * * * /opt/cupm/sep/build/bin/sync.sh messageprocessor
```

**Note:** Run `man 5 crontab` for information on other cron commands.

**Step 5.** Press the `Esc` key to exit Insert mode, and then press: to enter the command line.

**Step 6.** Enter `wq` to write and quit the editor.

**Step 7.** Enter `crontab -l` to see if the file is saved.

### Best Practice: Structuring LDAP

We recommend using LDAP as the single source of truth for user accounts. If the LDAP is clearly structured, users can be filtered accurately to be brought into the right domains. Also Automatic Service Provisioning based on the user's role and location (site) becomes easier. If the LDAP is not clearly structured, you can try using the Advanced Query under Domain LDAP filters to filter users into the domains. The Service Area LDAP filters also enable the administrator to use the telephone number configured in LDAP as the line number for the user. Masks can also be applied if an extension has to be provisioned.

### Automatic Service Provisioning and Deprovisioning

The Automatic Service Provisioning feature enables the unified communications administrator to automatically provision services for new users. Automatic Service Provisioning is supported for Cisco Unified Communications applications 10.x and above.

### How to Enable Automatic Service Provisioning

1. For a user role, enable Automatic Service Provisioning by checking the checkbox in the Automatic Service Provisioning section. Here the admin can pick either a standard endpoint model, which has to be provisioned for every new user, or the Self-Provisioned Endpoint option. With Self-Provisioned Endpoint, other services are created (line, voicemail, single-number reach, extension mobility, etc.), but no endpoint is created for the user (as shown in Figure 8 below). On receiving a new endpoint, the user dials the Self-Provisioning IVR via the Self-Provisioning computer telephony integration route point (CTI RP) to associate the new endpoint with himself/herself.

**Figure 8.** Self-Provisioned Endpoint

Service Name	Provisioned Service Area
Enable Mobility Support( Mobility )	ZankerRoadAdjacentBuild...
Enable SoftPhone Support( Not Available )	ZankerRoadAdjacentBuild...
Line( 1237868976 Wei Song )	ZankerRoadAdjacentBuild...
- Voicemail( 1237868976 )	ZankerRoadAdjacentBuild...
Endpoint( Cisco Jabber for Desktop: weisong-1 )	ZankerRoadAdjacentBuild...
- Line( 1237868976 Wei Song )	ZankerRoadAdjacentBuild...
Remote Destination Profile( weisong-1 )	ZankerRoadAdjacentBuild...
- Remote Destination Profile Line( 1237868976 Wei Song )	ZankerRoadAdjacentBuild...
User Services( User Services Enabled )	ZankerRoadAdjacentBuild...

- 
2. In the same Automatic Service Provisioning setting, mark which templates are to be used for which services in which service areas. For example, if there are different line templates for local calling, international calling, and national calling, identify which users in which service areas (sites) are eligible to get local, national, or international calling.
  3. In the Domain Settings, configure the domain LDAP filter to control which users goes into which domains, configure the service area LDAP filter to control which users are provisioned with services at which site, and finally, configure the user role LDAP filter to provision services in that user role and also to associate the incoming user with that role.

#### **Best Practice: Configuring the User's Telephone Number**

The service area LDAP filters also enable the administrator to use the telephone number configured in LDAP as the line number for the user. Masks can also be applied if an extension has to be provisioned. If LDAP is the single source of truth for telephone numbers as well, this configuration works best.

### **Step 6: Create service areas**

Once you have the domains and user roles created, the next step is to create service areas within these domains (Figures 9 and 10).

A service area usually maps to a physical location, as the two key parameters that define a service area are location and device pool (along with other nonmandatory parameters such as partition, common device config, and voice gateway references). Also note that a service area contains a DN block as well, which could be mapped to a DID pool and associated with a particular location.

Note that a service area is associated with a particular Unified Communications Manager and a particular Cisco Unity cluster. Depending on how the device pools are configured, they could group phones based on buildings or floors and the service areas would be configured accordingly.

Example: A service area can be a department within a company headquarters building (for example, engineering, marketing, finance, or other departments) or may be tied to a specific location or site, or could identify a group of phones in a floor of a building.

Also, a service area can be restricted to a certain employee role. That is the reason for configuring the user roles before adding service areas.

For instance, many of Cisco's office buildings contain only sales employees. In such cases a service area with only the SalesEmployee role could be created. The user roles that are associated with a particular service area are configured before configuring DN blocks.

#### **Best Practice: Service Areas and Device Pools**

If there are too many device pools, a recommended best practice would be to create service areas for those commonly used device pools first and then to add the subsequent device pools with regular use of the product. If a particular domain is going to contain a lot of service areas, splitting the domain up into multiple groups would be a good idea too. This would load-balance the MACD requests across multiple administrators.

Figure 9. Service Areas

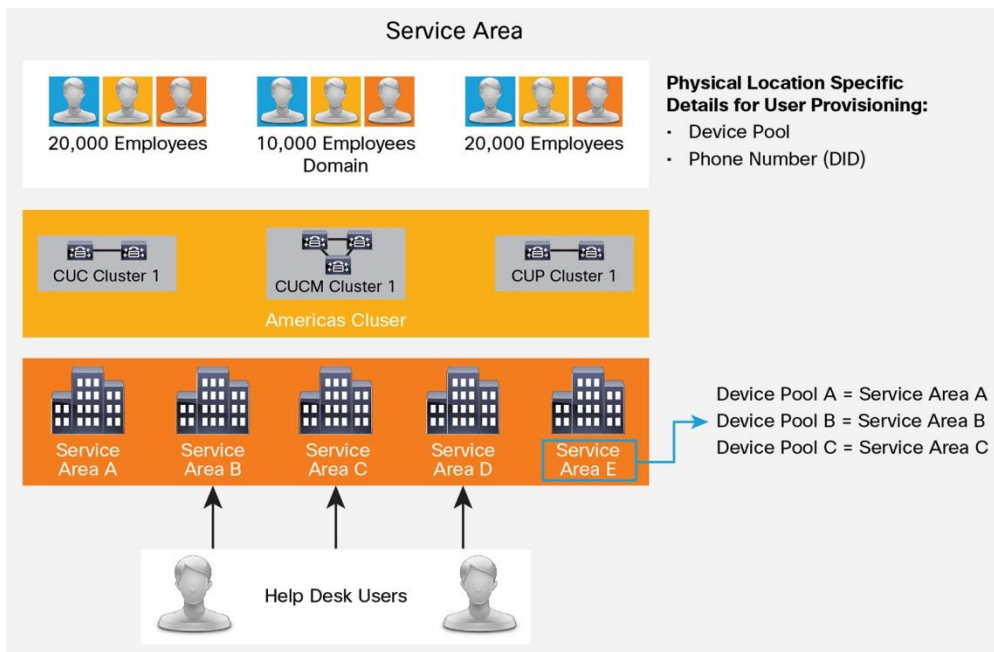


Figure 10. Service Area Configuration Page

Provisioning Setup

The new Service Area contains the [Mandatory/Optional] objects through which user can provision the available services that are associated with Calling Search Space (CSS), Device Pool, Region and Location.

Name: ZankerRoadAdjacentBuildings  
Domain: SanJoseUsers

**Call Processor Settings**

Name: NOAM-UCM-11.0-CiscoUnifiedCM  
Common Device Config: [Dropdown]  
Location: Hub\_None  
Partition: [Dropdown]  
Device Pool: Default  
Voice Gateway References: SKIGW0C863967CE

**Unified Presence Processor Settings**

Name: NOAM-IMP-11.0-CiscoUnifiedPresence

**Unified Message Processor Settings**

Name: NOAM-CUC-11.0-CiscoUnityConnection  
Exchange Server: [Dropdown]  
Subscriber Template: PCP\_UserTemplateWithTTS

**User Settings**

User Roles: Room, Executive, Employee(ASP), Telepresence Room

**Directory Number Blocks**

Prefix	First Number	Last Number
1408763	0000	9999

---

## Step 7: Create service templates

Service templates are very handy and serve many purposes:

- They drastically reduce the error rate in configuration.
- They help admins take care of MACD at a faster rate by populating attributes quickly.
- They offer keyword-based fields to customize attributes as per user data automatically.
- They help create uniform device descriptions, line descriptions, etc.
- Experts in unified communications can create them and then less-skilled help desk users can use them blindly.
- They automate mundane, repetitive tasks
- Family templates, universal line templates, and device templates reduce the number of templates as well, making it easy to apply the same template to various endpoint models.

Service templates must be created for all regularly carried out activities, such as changes in phone attributes, changes in line attributes, changes in voicemail attributes, changes to EM profiles or lines, etc. Service templates allow small or large numbers of settings to be collected into a single template, which can be applied to endpoints or services. This saves time over setting many individual attributes and provides accuracy to prevent missed attributes or typos in attribute fields. At order time, when a service template is applied, all the attributes in the template are automatically applied to the service configuration, and keywords, if any, are replaced with the values from the user's record. Cisco Prime Collaboration Provisioning supports various keywords. FIRSTNAME, LASTNAME, EXTENSION, and CITY are some examples.

At order time, Cisco Prime Collaboration Provisioning takes into account the service template used in addition to the service area settings to determine the final product configuration to be provisioned.

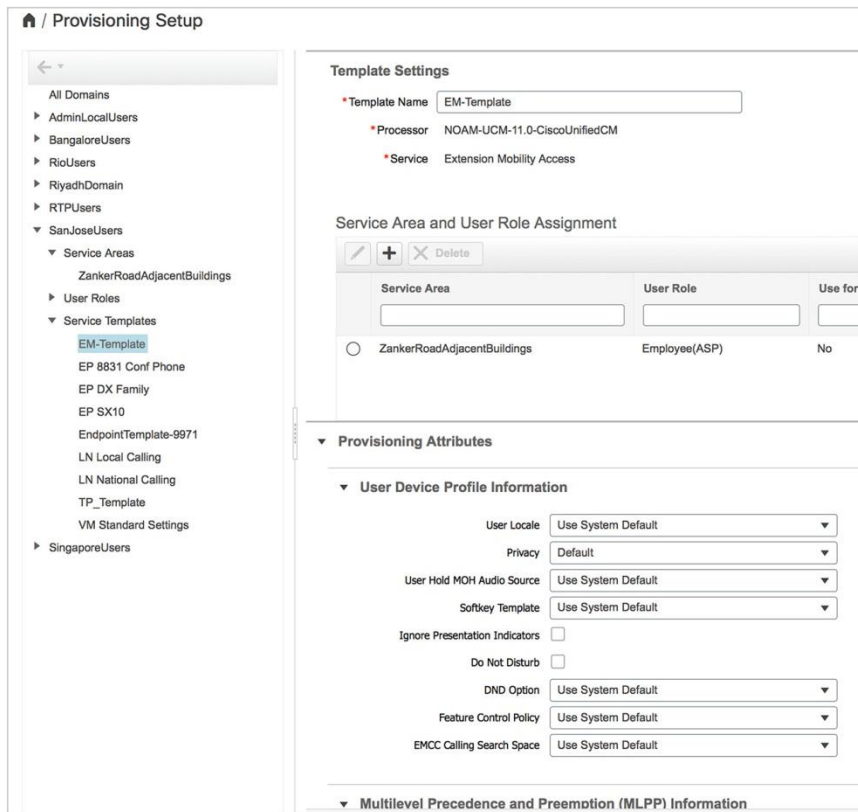
Family templates and universal templates are also added in version 11.0 of Cisco Prime Collaboration Provisioning.

Figure 11 shows the service template configuration page.

### **Best Practice: Template Use**

Make the best use of all the supported keywords and also the family and universal templates. These templates, and the keyword mechanism, save order admins a lot of time, help reduce misconfigurations, and also help keep a common, consistent configuration for all users across all unified communications applications and services.

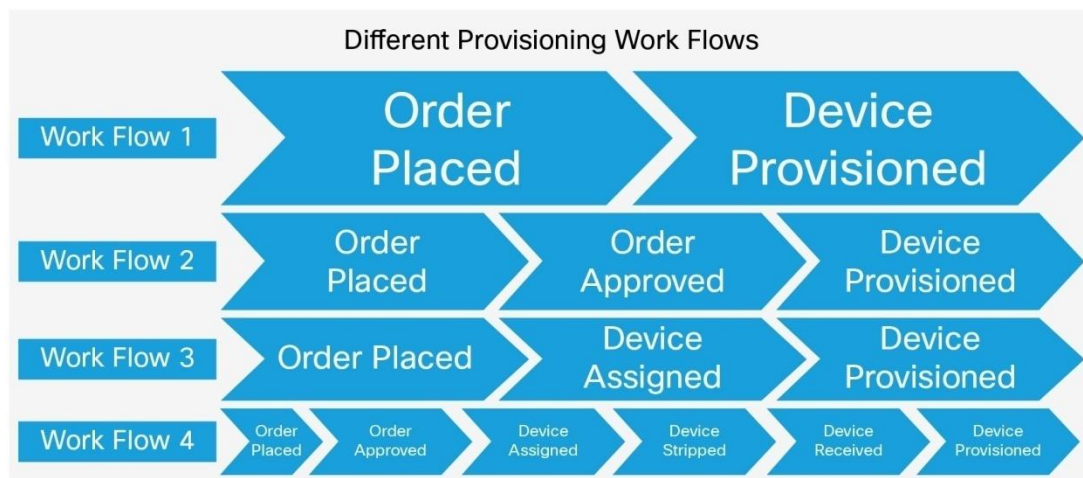
**Figure 11.** Service Template Configuration Page



### Step 8: Assign authorization roles

The next step is to create administrative users, order approvers, MACD administrators, etc. for each domain. Figure 12 shows the workflows supported.

**Figure 12.** Workflows Supported



For the sake of clarity, let's revisit the different kinds of users in Cisco Prime Collaboration Provisioning.

- **Users**

Users are those for whom services are provisioned. These users can also be authorized to perform various tasks in Cisco Prime Collaboration Provisioning.

- **Global admin users**

Global admins have complete authorization to perform all tasks in Cisco Prime Collaboration Provisioning. A global admin user, created at installation, has global administrator rights.

- **Domain admin users**

- For domain admin users, authorization is limited to tasks within a specific domain or, if using the Multidomain Admin function, one or more domains.
- Domain admins can be assigned more than one user role within a single domain.
- Domain admins can be assigned to manage multiple domains.

Table 2 lists the roles and rights for each type of user.

**Table 2.** Roles Supported

User Type	User Roles	Rights
<b>Global</b>	Administration	Full rights (except maintenance)
	Maintenance	Configure system cleanup activities
<b>Domain-specific (users with these roles can perform only authorized tasks within their assigned domain)</b>	Policy infrastructure configuration management	Manage phone inventory, create new user types, and set phone button templates
	Ordering	Authorize granular control over management of infrastructure products for nonglobal users
	Advance assignment	Place orders with all ordering privileges along with the ability to assign MAC address at time of order
	Approval	Approve or reject orders
	Assignment	Assign phone (MAC address) to an order
	Shipping	Ensure that the equipment is sent before order processing continues
	Receiving	Ensure that the equipment is received before order processing continues

### Best Practices for Role Assignment

- Global administrators should be Cisco Unified Communications experts who install the Cisco Prime Collaboration Provisioning application and set up the infrastructure, rules, and policy. They can assign domain admin roles to users.
- Domain administrators: These junior help desk technicians are the ones who service requests for MACDs coming in from employees (users) in the organization. These junior admins need not be well versed with unified communications and can handle the day-to-day MACD requests.
- Domain admins with advance assignment privileges are senior help desk technicians who can set provisioning attributes at the time of the order. These admins are knowledgeable about unified communications and understand the jargon of Unified Communications Manager, Cisco Unity Connection, IM&P, etc.
- The infrastructure configuration role for domain admins is a new role to allow non-global administrators to provision a specific set of infrastructure configuration objects.

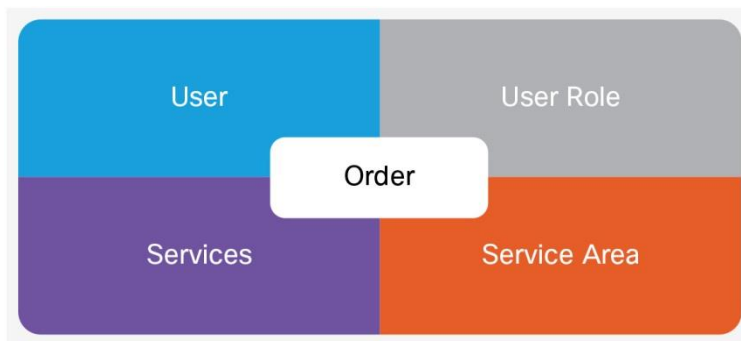


- User roles determine the level of access within Cisco Prime Collaboration Provisioning. Global admins have access to every feature of Cisco Prime Collaboration Provisioning, whereas the access by other roles is limited.
- Approval, assignment, shipping, and receiving are the workflow roles that help move the order from one administrator to another.

## Step 9: Start taking orders for provisioning services

Now that you have details on the user for whom certain services have to be provisioned, the list of services that have to be provisioned, and the cluster on which these services have to be provisioned, you are ready to take an order (Figures 13 and 14).

**Figure 13.** Order Construct



**Figure 14.** User Selection

Prime Collaboration Provisioning

globleadmin

Search All

Search Menu

Dashboard

Device Setup

Provisioning Setup

User Provisioning

Advanced Provisioning

Infrastructure Setup

Activities

Reports

Administration

Home / User Provisioning

Create a new user or search for a user to modify

Selected 0 / Total 28

Quick Filter

User ID	Name	Email	Phone Number	Domain	Role(s)	Clusters	
<input type="checkbox"/>	asamer	Akhter, Aamer	aaamer@cisco.com	123 123 1234	RTPUsers	Employee(ASP)	NOAM-UCM-11.0-CiscoUnifiedC...
<input type="checkbox"/>	abe	Abe, Roshin	abe@cisco.com	123 343 4345	BangaloreUsers	Employee(ASP)	
<input type="checkbox"/>	alex	Alexander, Jose	alex@cisco.com	123 123 1234	RioUsers	Employee(ASP)	LATAM-CUCM-10.5-CiscoUnifie...
<input type="checkbox"/>	angus	Mc Donald, Angus	angus@cisco.com	3454345654	SanJoseUsers	Employee(ASP),SelfCareUser	NOAM-UCM-11.0-CiscoUnifiedC...
<input type="checkbox"/>	changli	Li, Chang	changli@cisco.com	123 123 1234	SingaporeUsers	Employee	APJC-CUCM-9.1.2-CiscoUnified...
<input type="checkbox"/>	chaturco	Turco, Charles	chaturco@cisco.com	68001	RioUsers	Employee(ASP),Executive(ASP)	LATAM-CUCM-10.5-CiscoUnifie...
<input type="checkbox"/>	ctchou	Chou, CT	ctchou@cisco.com	6787676567	SanJoseUsers	Employee(ASP),SelfCareUser	NOAM-UCM-11.0-CiscoUnifiedC...
<input type="checkbox"/>	dilipg	G, Dilip	dilipg@cisco.com	123 456 6785	SanJoseUsers	Administration,Advanced Assign...	NOAM-UCM-11.0-CiscoUnifiedC...
<input type="checkbox"/>	jim	Whitten, Jim	jim@cisco.com	123 123 1234	RTPUsers	Employee(ASP)	NOAM-UCM-11.0-CiscoUnifiedC...
<input type="checkbox"/>	jwhittennenenen	Jwhittennenenen	jwhittennenenen@cisco.com	918054540007	BangaloreUsers	Employee(ASP)	APJC-CUCM-9.1.2-CiscoUnified...
<input type="checkbox"/>	johm	Johm, Jose	johm@cisco.com	123 123 1234	RioUsers	Employee(ASP)	LATAM-CUCM-10.5-CiscoUnifie...
<input type="checkbox"/>	josecamero	Caremo, Jose	jose@cisco.com	123 123 1234	RioUsers	Employee(ASP)	LATAM-CUCM-10.5-CiscoUnifie...
<input type="checkbox"/>	khan	Khan, Rahmath	khan@cisco.com	989 876 7876	BangaloreUsers	Employee(ASP)	
<input type="checkbox"/>	khassan	Hassan, Khuram	khassan@cisco.com	1235654567	SanJoseUsers	Employee(ASP),SelfCareUser	NOAM-UCM-11.0-CiscoUnifiedC...
<input type="checkbox"/>	lichang	Chang, Li	lichang@cisco.com	123 123 1234	SingaporeUsers	Employee	
<input type="checkbox"/>	momi	Momi, Monimoy	momi@cisco.com	343 344 3454	BangaloreUsers	Employee(ASP)	
<input type="checkbox"/>	nmatur	Matur, Niranjan	nmatur@cisco.com	565 889 8767	SanJoseUsers	Employee(ASP),SelfCareUser	
<input type="checkbox"/>	parlo	Parlo, Jose	parlo@cisco.com	123 123 1234	RioUsers	Employee(ASP)	LATAM-CUCM-10.5-CiscoUnifie...
<input type="checkbox"/>	patat	Patak, Damodar	patat@cisco.com	123 343 1234	BangaloreUsers	Employee(ASP)	
<input type="checkbox"/>	prime	Admin, PCP Helpdesk	prime@cisco.com	111 212 1234	AdminLocalUsers	Administration,Advanced Assign...	
<input type="checkbox"/>	raghu	Raju, Raghave	raghu@cisco.com	456 876 7876	BangaloreUsers	Employee(ASP)	
<input type="checkbox"/>	scotero	Otero		688023420028	RioUsers	Employee(ASP),Executive(ASP)	LATAM-CUCM-10.5-CiscoUnifie...
<input type="checkbox"/>	SJ21DipPersonalTPRoom	SJ21DipPersonalTPRoom		Not Available	SanJoseUsers	SelfCareUser,Telepresence Room	NOAM-UCM-11.0-CiscoUnifiedCM
<input type="checkbox"/>	SJ21LobbyTelepresence	SJ21LobbyTelepresence			SanJoseUsers	SelfCareUser,Telepresence Room	NOAM-UCM-11.0-CiscoUnifiedCM



Select the user for whom the services have to be provisioned, and place the order by following the wizard process, as shown in Figures 15 through 20.

**Figure 15.** View the Services Already Configured for the User

The screenshot shows the Cisco Prime Collaboration Provisioning interface. The main content area is titled 'User Provisioning' for user 'Dilip G (dilipg)'. It displays a table of 16 orders with the following data:

#	Status	Date
154	COMPLETE	9/3/15 23:09:30 -07
153	COMPLETE	9/1/15 14:18:53 -07
152	RELEASED	9/1/15 09:32:16 -07
129	Waiting to Assign	8/28/15 10:32:10 -07
128	COMPLETE	8/28/15 10:30:47 -07
127	COMPLETE	8/28/15 10:28:38 -07
126	COMPLETE	8/28/15 10:26:20 -07
119	COMPLETE	8/25/15 10:23:41 -07
118	COMPLETE	8/25/15 10:22:47 -07
116	COMPLETE	8/25/15 09:18:24 -07
115	RELEASED	8/25/15 09:10:31 -07
	Recoverable Error	

The 'Service Details' panel on the right shows a list of 8 services. The 'Provisioned Service Area' for all services is 'ZankerRoadAdjacentBuildings'. The services listed are:

- Extension Mobility Access( Cisco 9971: dilipg-1 )
- Extension Mobility Line( 14087630013 )
- Endpoint( Cisco 8831: SEP2068307BE119 )
- Line( 14087630011 Dilip G )
- Voicemail( 14087630011 )
- Endpoint( Cisco 9971: BAT2068307BE000 )
- Line( 14087630012 Dilip G )
- User Services( Enable Service Settings )

**Figure 16.** Select the Right Service Area

The screenshot shows the 'New Service' dialog box. It contains a label 'Select a Service Area' followed by a dropdown menu with the value 'ZankerRoadAdjacentBuildings'. Below the dropdown are two buttons: 'Continue' and 'Cancel'.

Figure 17. Select the Right Services

Home / User Provisioning
Dilip G (dilipg) ⓘ

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Found 16 Orders. ⓘ

#	Status	Date
154	COMPLETE	9/3/15 23:09:30 -0700
153	COMPLETE	9/1/15 14:18:53 -0700
152	RELEASED Waiting to Assign	9/1/15 09:32:18 -0700
129	COMPLETE	8/28/15 10:32:10 -0700
128	COMPLETE	8/28/15 10:30:47 -0700
127	COMPLETE	8/28/15 10:28:38 -0700
126	COMPLETE	8/28/15 10:26:20 -0700
119	COMPLETE	8/25/15 10:23:41 -0700
118	COMPLETE	8/25/15 10:22:47 -0700
116	COMPLETE	8/25/15 09:18:24 -0700
115	RELEASED Recoverable Error	8/25/15 09:10:31 -0700

### Select Service

- Enable Mobility Support**  
Enables mobility for this user on a Call Processor.
- Enable SoftPhone Support**  
Enables CTI support needed for Soft Phone applications.
- Enhanced Mobility Service**  
Adds an Extension Mobility device profile, line and voicemail.
- Enhanced Endpoint Service**  
Adds an endpoint, line, voicemail, and enable a standard set of voice services.
- Extension Mobility Access**  
Adds a new Extension Mobility device profile for a user.
- Extension Mobility Access with Line**  
Adds an Extension Mobility device profile and line.
- Extension Mobility Line**  
Adds a new line on a user's existing Extension Mobility device profile.
- Jabber Service**  
Add Jabber Service.
- Line**  
Add a new line for user
- Line on a Shared Endpoint**  
Add a new line to a shared endpoint.
- Endpoint**  
Adds a new endpoint for a user.
- Endpoint Service**  
Adds a new endpoint and line.
- Remote Destination Profile**  
Add a new Remote Destination Profile for a user.
- Remote Destination Profile Service**  
Adds a Remote Destination Profile and line.
- Single Number Reach Service**  
Adds single number reach capability and enables mobility. Allows configuring a Remote Destination Profile.
- Voicemail**  
Adds a standard configuration voicemail account.

Figure 18. Customize the Endpoint Service

### Configure Service

You Are Provisioning **Endpoint Service**
[Step 3 of 5]

Service Area **ZankerRoadAdjacentBuildings**

Configure Service **Endpoint**

Enter endpoint information or [Choose a reserved endpoint or Copy Endpoint](#)

▼ **Endpoint Information**

\*Endpoint Type

Service Template


Device Description

Protocol **SIP**

MAC Address

Use Dummy MAC Address

Phone Button Template



► **Advanced Order Configuration**

Figure 19. Customize the Line Configuration

### Configure Service

You Are Provisioning **Endpoint Service**

Service Area **ZankerRoadAdjacentBuildings**

Configure Service **Line**

---

**Line [1]**

▼ **Endpoint Information**

Line Position **1 - Available**

---

▼ **Basic Line Information**

\*Line Type

Service Template

Line Description

Alerting Name

ASCII Alerting Name

Display (Internal Caller ID)

ASCII Display (Internal Caller ID)

Primary Extension

---

► **Advanced Order Configuration**

Figure 20. Order Confirmation

### Confirmation of Order

Order Number **161**

Thank you. Your customer's order has been submitted. Please give the order number to the customer. They will need this information in the future when dealing with other Customer Service Representatives.

### If Cisco Prime Collaboration Provisioning encounters an error at order time:

- Only partially configured information will be saved to the devices.
- Manual configuration is required for the device to complete the provisioning tasks; however, the manual changes to the device will be resynchronized to the inventory database when Cisco Prime Collaboration Provisioning is operational again and a synchronization is requested.

### What happens when Cisco Unified Communications Manager Publisher fails?

- You will not be able to access any of the information on the Unified Communications Manager server or cluster. We recommend that you add Publisher only to Cisco Prime Collaboration Provisioning.

## Step 10: Create batch files for frequently performed actions

Batch provisioning helps admins create templates for regularly executed changes. These changes can be batched one after another to complete a set of tasks in one step. Support is provided for Unified Communications Manager, Cisco Unity Connection, Cisco Unity, Presence Processor, Cisco Unity Express, Unified Communications Manager Express, and generic Cisco IOS Software router. Users with the administration role can provision devices using batch provisioning.

Sample batch files for all devices are available for download from the Batch Provisioning page in Cisco Prime Collaboration Provisioning (Figure 21).

Batch action files can be edited with any spreadsheet application and uploaded after edit. When you upload a batch action file, its contents are converted to batch actions, and the columns that are common to all batch actions in the batch action file are displayed.

You must upload batch action files in the correct order according to any dependencies that exist between the batch actions. For more information about these dependencies, see the corresponding chapter in the User Guide.

Batch files, apart from being tremendously useful for bulk provisioning users and services, are also handy when creating the infrastructure objects in unified communications applications for a brand new site or when tearing down the infrastructure configuration from unified communications applications for an existing site.

**Figure 21.** Sample Batch Files Download Link



## Analog Voice Gateway and Phone Support

Cisco Prime Collaboration Provisioning also supports provisioning analog phones.

### What is a voice gateway reference?

- Each analog voice gateway registered to Cisco Unified Communications Manager is called a voice gateway reference in Cisco Prime Collaboration Provisioning.
- Cisco Prime Collaboration Provisioning supports voice gateways (Cisco VG224, VG204, VG202, and VG350 Analog Voice Gateways) with Skinny Client Control Protocol (SCCP).

## Why do we need a voice gateway reference?

- To provision analog phones from Cisco Prime Collaboration Provisioning.

## How do you get voice gateway references in Cisco Prime Collaboration Provisioning?

- To get the voice gateway reference from Unified Communications Manager into Cisco Prime Collaboration Provisioning, perform an infrastructure sync on the Unified Communications Manager to which the analog voice gateway is registered.
- Cisco Prime Collaboration Provisioning also allows the addition of voice gateway references to Unified Communications Manager through:
  - Infrastructure configuration
  - Configuration template
  - API
  - Batch

## Voice Gateway Infrastructure Provisioning

- Cisco Prime Collaboration Provisioning supports voice gateways as infrastructure products on Unified Communications Manager.
- Cisco Prime Collaboration Provisioning will sync back all the voice gateway references with SCCP during Unified Communications Manager infrastructure sync.

## Enabling Analog Phone Support in Cisco Prime Collaboration Provisioning

To manage analog phones, make sure the “Enable Analog Endpoint Support” box is checked under Administration > Settings (Figure 22).

Figure 22. Enabling Analog Phone Support

The screenshot shows the Cisco Prime Collaboration Provisioning Administration Settings page. The left sidebar contains a navigation menu with options like Dashboard, Device Setup, Provisioning Setup, User Provisioning, Advanced Provisioning, Infrastructure Setup, Activities, Reports, Administration, License Management, Single Sign-On, Rules, Settings (highlighted), System Notification Settings, Domain Notification Settings, Data Maintenance, Backup Management, Logging and ShowTech, Updates, and Maintenance Mode. The main content area is titled 'Administration / Settings' and includes the following sections:

- Enable Analog Endpoint Support** (checked)
- Enable Maintenance Mode Popup Notification** (checked)
- Login user name is case-insensitive** (checked)
- Allow orders in progress to be stopped after** (15 minutes)
- Password Policy Settings**
  - Must contain characters from 3 of lowercase, uppercase, number and special character (checked)
  - Disallow 3 consecutively repeated characters (checked)
  - Disallow same as username (checked)
  - Disallow variation of 'Cisco' to be used (checked)
  - Minimum Length: 8
  - Maximum Length: 80
- Self-Care Feature Access**
  - Endpoint Features** (checked): General, Speed Dials, Do Not Disturb, Locale, Music On Hold, Others
  - Line Features** (checked): Call Forward, Caller ID, Notification, Music On Hold
  - Extension Mobility Features** (checked): Speed Dials, Do Not Disturb, Locale, Music On Hold
  - RDP Features** (checked): Do Not Disturb, Locale, Music On Hold, Alternate Numbers
  - RDP Line Features** (checked): Call Forward, Caller ID, Music On Hold
  - User Setting Features** (checked): Information, Password, PIN, Conference
- Custom Settings** (with an Update button)

---

## Batch Operations for Analog Phones

Sample batch files for add, change, replace, and cancel operations for analog phones are available for download from the Batch Provisioning page. The sample batch files related to analog phones are listed below:

- AddAnalog\_Phone.txt
- AddAnalog\_PhoneV3XX.txt
- AddAnalog\_PhoneService.txt
- ChangeAnalog\_Phone.txt
- ChangeAnalog\_PhoneV3XX.txt
- ReplaceAnalog\_Phone.txt
- CancelAnalog\_Phone.txt

## Move Users and Services

Cisco Prime Collaboration Provisioning supports moving a user from one domain to another. The user's services are moved, along with the user, to the new domain. However, Cisco Prime Collaboration Provisioning supports moving the services to a service area that is associated with the same processor. This feature is supported through the user interface, batch operations, and the API. Cisco Prime Collaboration Provisioning supports full rollback in this feature; that is, if the move fails for one service area, the rest of the service area settings are rolled back.

This feature is not supported in the following scenarios:

- The user is a Pseudo user
- The user has pending orders
- Syncs are running on the user's domain or the devices in that domain
- Deletion is running on the user's domain or the devices in that domain
- The user is already being moved from one call processor to another

This feature is also helpful if an administrator needs to make some changes to a user's existing service area settings and wants the changes to be applied to the user's existing services. The admin can move the services to the same service area and check Apply All to apply the new service area settings to all of the existing services.

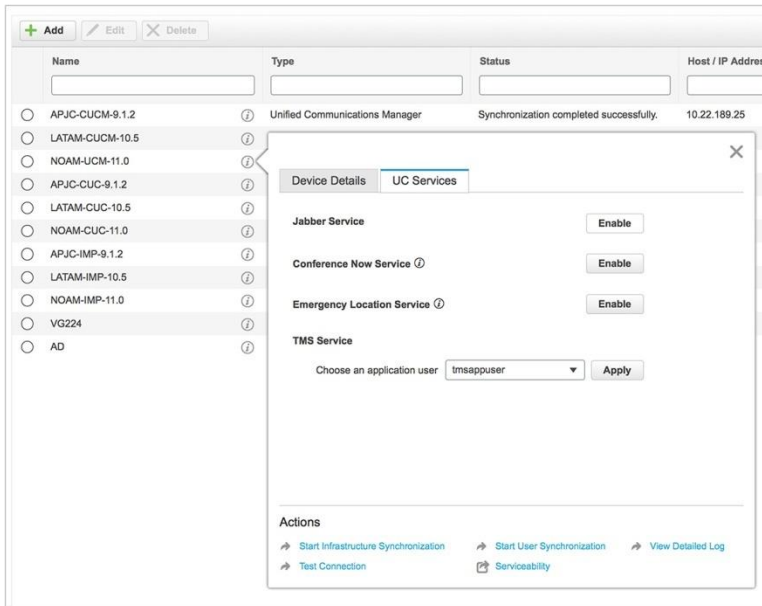
When moving multiple services, if one move operation fails, a rollback order is created and all the completed move orders are rolled back to their earlier service area.

## Provisioning Cisco Jabber and Conference Now

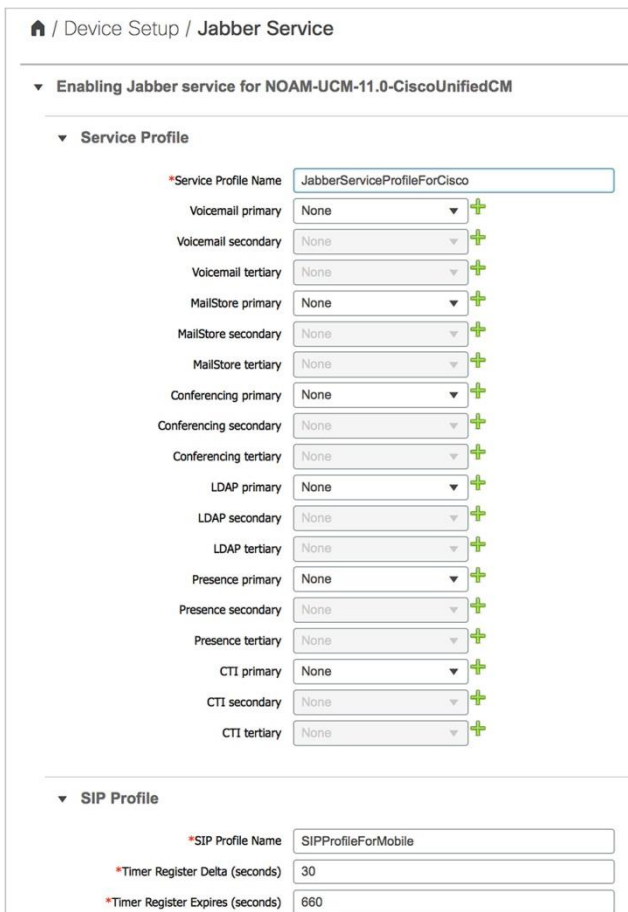
Starting with Cisco Prime Collaboration 10.0, you can provision day-1 Cisco Jabber® services.

For new deployments, pick Unified Communications Manager's UC Services tab, as shown in Figure 23, and click the Enable button for Jabber Service. This opens up a configuration page that allows you to configure a service profile and a Session Initiation Protocol (SIP) profile specific to your organization's Cisco Jabber service requirements (Figure 24).

**Figure 23.** Configuring Cisco Jabber



**Figure 24.** Configuring the Cisco Jabber Service Profile



Here you can set up the service profile, SIP profile, soft-key template, and service parameters for Cisco Unified Communications Manager 9.1 and later.

You can then order Cisco Jabber services for users with the normal ordering process.

## Cisco TelePresence Management Suite Integration

Cisco Prime Collaboration Provisioning supports scheduling on Cisco TelePresence Management Suite for video endpoints registered in Unified Communications Manager. Upon selecting the “Enable Scheduling” checkbox for a video endpoint, Cisco Prime Collaboration Provisioning will have associated that particular endpoint to be controlled by the application user associated with Cisco TelePresence Management Suite (Figure 25). This particular application user has to be known to Cisco Prime Collaboration Provisioning and is configured on the Unified Communications Manager quickview under Device Setup.

**Figure 25.** Cisco TelePresence Management Suite (TMS) Integration

Name	Type	Status	Host / IP Address
<input type="radio"/> APJC-CUCM-9.1.2	<a href="#">?</a> Unified Communications Manager	Synchronization completed successfully.	10.22.189.25
<input type="radio"/> LATAM-CUCM-10.5	<a href="#">?</a>		
<input type="radio"/> NOAM-UCM-11.0	<a href="#">?</a>		
<input type="radio"/> APJC-CUC-9.1.2	<a href="#">?</a>		
<input type="radio"/> LATAM-CUC-10.5	<a href="#">?</a>		
<input type="radio"/> NOAM-CUC-11.0	<a href="#">?</a>		
<input type="radio"/> APJC-IMP-9.1.2	<a href="#">?</a>		
<input type="radio"/> LATAM-IMP-10.5	<a href="#">?</a>		
<input type="radio"/> NOAM-IMP-11.0	<a href="#">?</a>		
<input type="radio"/> VG224	<a href="#">?</a>		
<input type="radio"/> AD	<a href="#">?</a>		

**UC Services**

**Jabber Service**

**Conference Now Service** [?](#)

**Emergency Location Service** [?](#)

**TMS Service**

Choose an application user:

**Actions**

[Start Infrastructure Synchronization](#) [Start User Synchronization](#) [View Detailed Log](#)

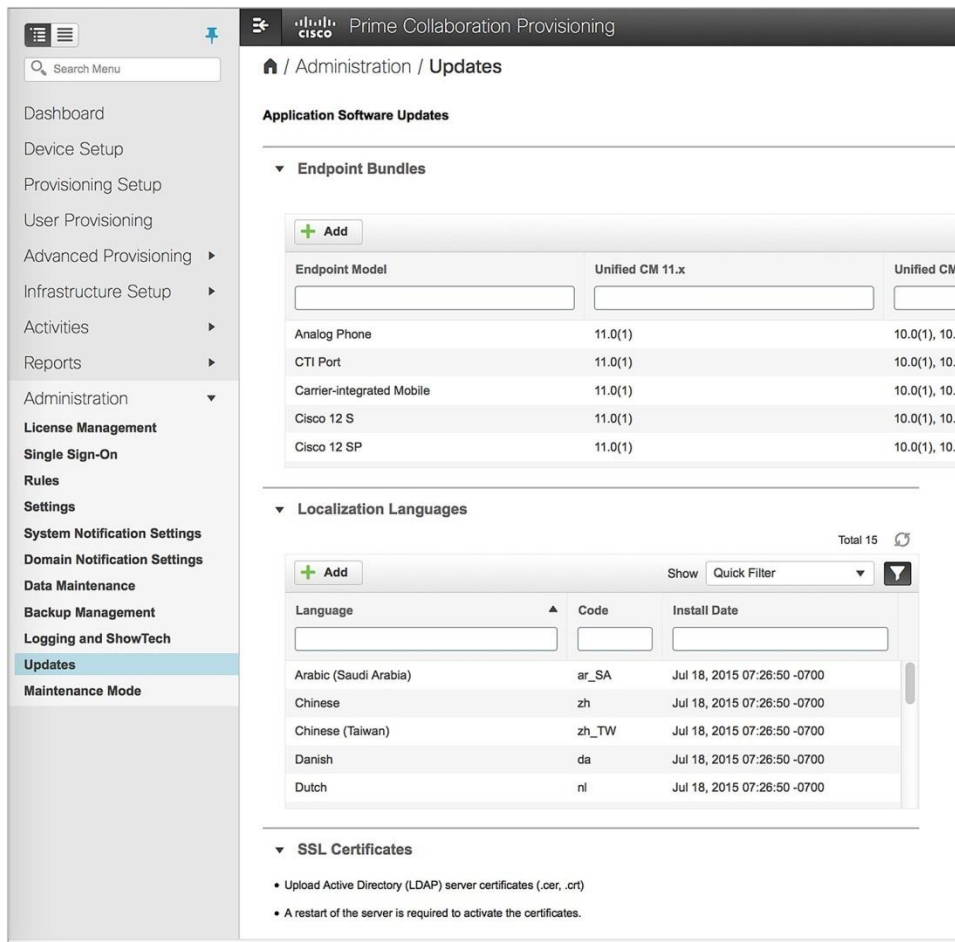
[Test Connection](#) [Serviceability](#)

## Localization

Cisco Prime Collaboration Provisioning supports translated language files and comes with a set of prebuilt language files. Administrators can download the language bundle and upload it to Cisco Prime Collaboration Provisioning at Administration > Updates > Localization Languages to install the localization files (Figure 26). When the installation is completed, the admin needs to restart the Cisco Prime Collaboration Provisioning server. The language (German, French, or English) setting in the browser is used to select the language to be shown in the browser. Other language files will be created based on business opportunities.



**Figure 26.** Localization



## SSL Certificates

Using the Cisco Prime Collaboration Provisioning user interface, you can import LDAP server certificates.

## Endpoint Bundles

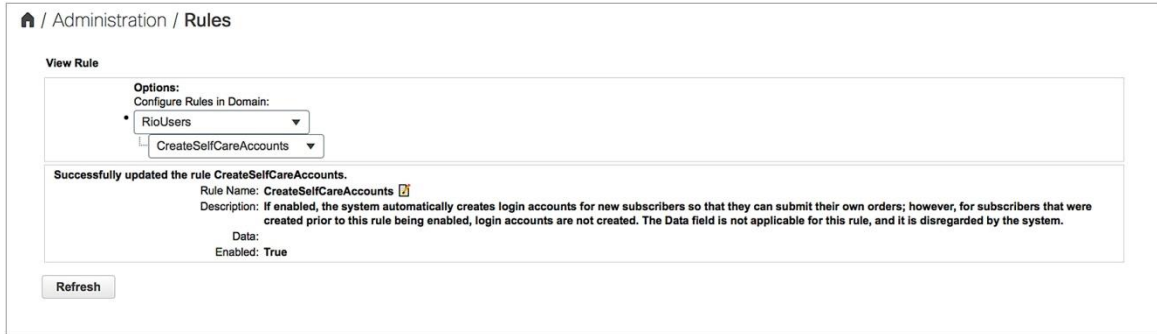
Using Cisco Prime Collaboration Provisioning, you can upload new and existing endpoints through the user interface. You can add or update endpoints by uploading the endpoint files (valid zip files containing lists of supported endpoints). The endpoint bundle eliminates the need to log in as root into the system and restart services.

## Self-Care Portal

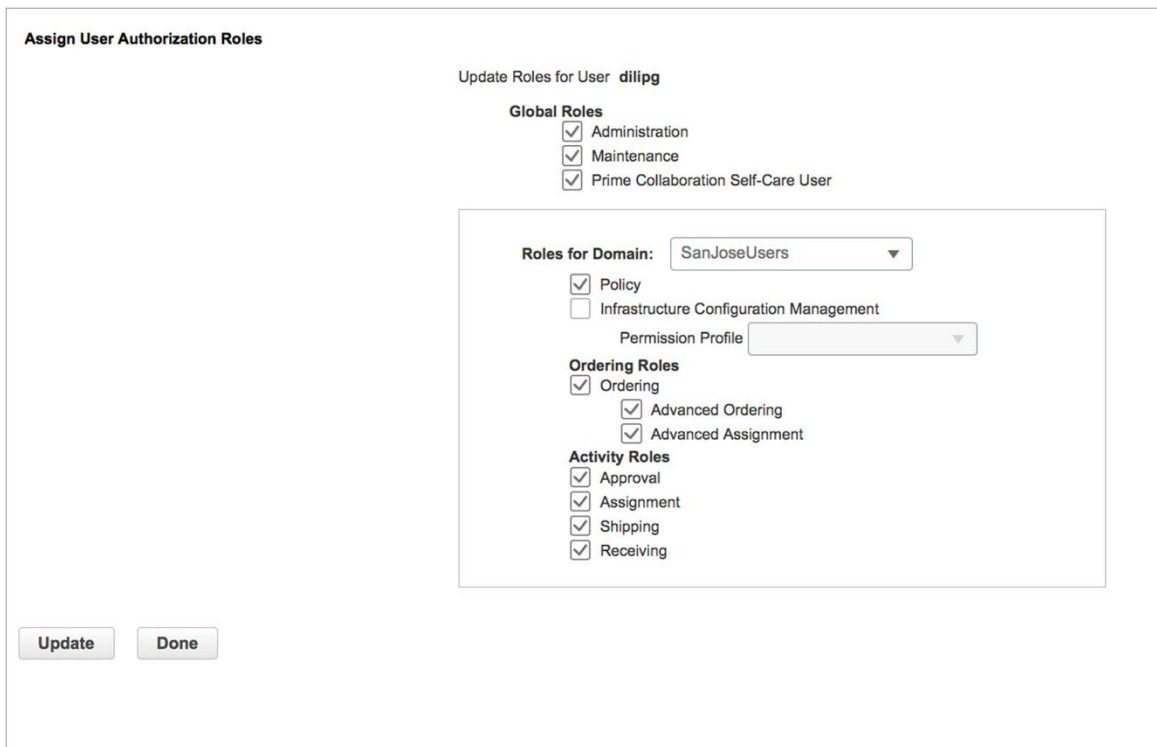
Cisco Prime Collaboration provides a Self-Care portal, which allows users to control their own preference settings such as username, password, and so on. Users can update their own account and services by using the Self-Care portal. The Self-Care feature allows end users to modify line settings, manage services, add or reset their voicemail box or voicemail PIN, and configure phone options. The Self-Care portal covers user services across multiple Unified Communications Manager, Cisco Unity Connection, and IM&P clusters.

To enable users for the Self-Care portal, turn on the “enable Self-Care” business rule (Figure 27) and check the **Prime Collaboration Self-Care User** box for the users required under Global Roles (Figure 28).

**Figure 27.** Enabling Self-Care Accounts



**Figure 28.** User Authorization Roles



## Getting Started Wizard for New Deployments

The Getting Started wizard allows the administrator to quickly set up communication between unified communications applications and Cisco Prime Collaboration Provisioning. Note that the wizard allows the administrator to add freshly installed unified communications processors only to Cisco Prime Collaboration Provisioning (that is, the Getting Started wizard is used mainly for new deployments). The Unified Communications Manager Publisher and Subscriber must not be configured before running the Getting Started wizard. The wizard supports unified communications processors 10.5 and later. To add unified communications processors that are already configured, choose the Infrastructure Setup menu.

---

## **BEST PRACTICE: Configuration Batch File**

The wizard, at the end, also creates a batch file export of all the configuration done. This batch can be saved for later use and is also beneficial for partners who want to create a template of the deployment to be applied at multiple customer sites.

## **What Do Companies Use Cisco Prime Collaboration Provisioning For?**

Different companies have different challenges or return-on-investment (ROI) goals they want Cisco Prime Collaboration Provisioning to solve. They use all or part of the Cisco Prime Collaboration Provisioning toolbox to solve their business problems. The toolbox can be subdivided into a set of tools by problem to be solved or by type of operation.

### **Usage by Problem to Be Solved**

#### **Is there a wizard I can use to deploy new Cisco Unified Communications applications in my network?**

Yes; the Getting Started wizard helps administrators quickly set up devices and provision services for new deployments. Using the step-by-step wizard, administrators can add devices, create a domain and a service area (site), and enable services for the user role.

#### **I need to roll out one or more sites.**

For just one or two sites, it generally is best to use the GUIs of the Cisco Unified Communications applications to directly set up the applications and devices. If you plan to deploy more sites, it is best to capture common deployment settings in batch templates. Some large companies have rolled out many sites by creating batch templates for common areas, such as manufacturing buildings, sales offices, and retail stores. These sites can be added to templates that are built for different physical regions or countries to configure sites uniformly based on function while customized by state or country.

When rolling out new sites, you often need to add many users and their services all at once. In this case you can create batches with lists of user IDs, phone types, and services. Then you can load these batches into Cisco Prime Collaboration Provisioning to be executed immediately or at a future date to bulk-create users and user services in a new site. This function is sometimes used to bulk-migrate users from an older private branch exchange (PBX) into a Cisco voice-over-IP (VoIP) network.

#### **Can I auto-provision users and their services?**

Yes; the auto-provisioning wizard allows you to enable automatic and manual service provisioning for a user role in two ways:

- **Automatic Service Provisioning:** This choice is optional. If you enable the Automatic Service Provisioning feature, the endpoints and services you assign are automatically provisioned to the user created with this user role.
- **Manual service provisioning:** The endpoints and services are manually assigned by an administrator while placing an order for a user with this user role.

You can enable both automatic and manual service provisioning for only a single user role with the wizard. To enable automatic and manual service provisioning for more user roles, choose Design > User Provisioning Setup.

---

### **I want onsite or regional administrators to handle MACDs and password reset.**

Cisco Prime Collaboration Provisioning can have a single domain for all users or multiple domains with users. In order to delegate day-2 tasks to different regional administration groups, you can put users for each group in different domains. With this configuration, you can delegate administration for a specific user group to a specific regional administrator or regional administration group. A regional administrator assigned to manage users in one domain can't make changes to users in another domain.

When a day-2 administrator is created in the provisioning system, that person can be assigned to multiple domains.

### **I need to create uniform configurations across one or more clusters.**

In some cases companies have had turnover in IT staff, causing many different individuals to configure Cisco Unified Communications Manager and resulting in inconsistent provisioning. In another example, when multiple companies merge and want to bring together two or more Cisco Unified Communications networks but each is configured differently, rather than manually sorting out the configurations server by server, you can use templates to create uniform configurations. This scenario is similar to rolling out new sites. You can push the templates out to all Cisco Unified Communications Managers to make the configurations consistent.

### **I need to be notified when an event occurs.**

Cisco Prime Collaboration Provisioning allows you to set up notifications when an event occurs. You can choose whether you want the notifications to be aggregated or sent out as soon as the event occurs. The time that you enter will start after the occurrence of the first event. During this time, if other related events occur, an aggregated notification with details of all such events is sent out in one single email when the time value expires.

Notifications can be set at two levels:

- System settings (Figure 29): For settings to configure notifications for system events, such as order failures and synchronization failures, events are aggregated based on type. For example, all synchronization failures are aggregated in one email message and order failures are placed in a separate email message.
- Domain settings (Figure 30): For settings to configure notifications for workflow events such as order approvals, assignment, shipping, and receiving in the domain, again events are based on workflow event type. For example, all approval email messages are aggregated together, whereas all email messages about assignment are aggregated in a separate email message. You can also set an escalation window in the domain notifications template. The value set for the escalation window makes the system send out an email message to the system administrators after the time specified if no action was taken for the triggering event (for example, order approvals).

Figure 29. Configuring System Notification Settings

Administration / System Notification Settings

Mail Server Name

Mail Server Port

Mail Server User Name

Mail Server User Password

Confirm Mail Server User Password

From Address

**Email Content URL Parameters**

Protocol

Host

Port

**Notification Events**

Send Email

- Infrastructure synchronization failure
- Domain Synchronization failure
- User synchronization failure
- Order failure
- When system enters or exits Maintenance Mode(email will be sent to the logged in administrators)

More provisioning event notifications can be set in [Domain Settings](#).

**Administration Notification Group**

System Users:

Aggregation Window

External Email Addresses  
Enter comma-separated email addresses

Figure 30. Configuring Domain Notification Settings

Administration / Domain Notification Settings

**Notification Configuration Domain Settings**

Domain

**Email Settings**

Mail Server Name

Mail Server Port

Mail Server User Name

Mail Server User Password

From Address

Aggregation Window

Escalation Window

**Notification Events**

Send Email

- Order completion notification (email will be sent to user)
- Order rejection notification (email will be sent to user)
- Workflow pending activity

Settings applied to the domain template will be used as default settings for new domains. Optionally, the settings can also be applied to existing domains by clicking the 'Apply to all domains' button.

### **I need to create distribution lists. Are there any limitations or recommendations?**

Cisco Prime Collaboration Provisioning supports distribution lists on Cisco Unity and Cisco Unity Connection devices with the following recommendations:

- We recommend that you organize the distribution list in a hierarchical structure. Each distribution list should contain a maximum of 500 members. You can nest it by having another distribution list as a member under the top distribution list that can also contain 500 members.
- If you are adding members to a distribution list through Cisco Prime Collaboration Provisioning, you can add 200 new members in one instance.
- If you are modifying (adding or deleting members) a distribution list through Cisco Prime Collaboration Provisioning, the total number of modifications (removals and additions) in one instance should not be more than 200. For example, if you are removing some members (say X members) and adding new members (say Y members), the sum of X and Y should not be more than 200 members.
- Cisco Prime Collaboration Provisioning does not limit the creation of distribution lists, which may have thousands of members, as long as the add operation is done by adding 200 members each time. However, you may experience slow response in the user interface when you view a distribution list that has a large number of members.

### **Frequently Asked Questions**

#### **Why doesn't the Extension Mobility Service show up in the user record?**

Please check the following:

- Make sure you have Extension Mobility Service subscribed for the user.
- Make sure the service name defined in Cisco Prime Collaboration Provisioning is the name of the Extension Mobility Service configured on a call processor.
- Make sure the service URL defined in Cisco Prime Collaboration Provisioning is the Extension Mobility Service configured on the call processor:  
`http://<IPAddress>/emapp/EMAppServlet?device=#DEVICENAME#`, where <IPAddress> is the name or the IP address of the server where Extension Mobility is installed.

#### **How do I handle common directory-number mapping across multiple service areas?**

There are multiple ways to deploy directory-number mapping, depending on whether the directory numbers need to have some significance within a domain or within a service area.

If directory numbers can be random within the entire domain, the directory-number pool can be added to each service area. The directory-number allocation in Cisco Prime Collaboration Provisioning checks to see if the directory number it would pick out of a block has been used, so the first service area to pick a directory number gets it and the other service area then skips it to get the next one. In this design, users get the next available number in the pool.

You may also allocate directory-number blocks based on the calling search spaces setup or on how many users are expected within a service area. In this case, some network planning is necessary to decide how to allocate directory numbers. This option may be useful if each service area is to use certain ranges of directory numbers. For example, building 1 is in SA1 and has extensions with the pattern 1xxxx, and building 2 is in SA2 and has extensions with the pattern 2xxxx.

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In either case, you can have multiple directory-number blocks per service area to fine-tune how the numbers get allocated.

### **How do I work with TAPS in Cisco Unified Communications Manager?**

The Tool for Auto-Registered Phone Support (TAPS) feature is supported on Cisco Unified Communications Manager. We suggest that you use it in conjunction with the Bulk Administration Tool (BAT) to provide two features:

- Update MAC addresses and download predefined configuration for new phones
- Reload configurations for replacement phones

When new phones are added to Unified Communications Manager, TAPS works in conjunction with BAT to update phones that were added to BAT using dummy MAC addresses. After you use BAT to bulk-add the phones with dummy MAC addresses to Unified Communications Manager Administration, you can plug each phone into the network and dial a TAPS directory number that causes the phone to download its configuration. At the same time, the phone gets updated in Unified Communications Manager Administration with the correct MAC address.

For the first case, instead of using BAT to provision the phones with dummy MAC addresses, Cisco Prime Collaboration Provisioning is extended to be able to provision these phones. During phone order entry, a choice box is presented to you indicating whether this phone should use a dummy address (available only to users with an advanced assignment role). Possible values are **Y** and **N** (default). If you choose **Y**, the MAC address field will be hidden (and anything previously entered in that field will be cleared) to prevent you from entering additional values. During order processing, Cisco Prime Collaboration Provisioning generates a dummy MAC address that is not currently used in the system. This dummy MAC address is an internal MAC address that is not valid in the public domain. Cisco Prime Collaboration Provisioning uses a specific prefix for the MAC address (first three octets).

For the second case, if Unified Communications Manager TAPS is configured with the setting “Allow Auto-Registered phones to reset with any profile,” you can switch to a new phone simply by using the TAPS feature. Cisco Prime Collaboration Provisioning just needs to sync back the changes. If Unified Communications Manager TAPS is configured with the setting “Allow Auto-Registered phones to reset with a profile with dummy MAC address,” you can use Cisco Prime Collaboration Provisioning to change the MAC address of the existing phone to a dummy MAC address and use the same procedure to get the physical MAC address of the new phone updated in Unified Communications Manager.

After a phone with a dummy MAC address is registered, Cisco Prime Collaboration Provisioning needs to synchronize in order to get the new MAC address. Alternatively, subsequent Cisco Prime Collaboration Provisioning user and domain synchronizations will bring the system to the latest state.

For batch provisioning, if the product attribute “use DummyAddress” with the value **Y** is provided (the value **N** instructs Cisco Prime Collaboration Provisioning to use existing logic), Cisco Prime Collaboration Provisioning ignores the MAC address in the batch file (if presented) and generates a dummy address.

In the user record, the phones configured for TAPS won’t show any special attribute to indicate that. The only way you can find that a phone is configured for TAPS is by looking at the device name string next to the phone in the user record, which shows a different prefix (**BAT** instead of **SEP**). This prefix is shown only until the TAPS phone logs in to the TAPS application and gets the real address and subsequent user and domain syncs have been performed.

### **How does Cisco Prime Collaboration Provisioning auto-assign direct inward dialing (DID)?**

When Cisco Prime Collaboration Provisioning goes to use a directory number from a DID block, it first checks to see if it is already used (assuming that it is in sync with the Unified Communications Manager). If it is used, it skips that one and gets the next number until it finds an unused one. So if you assign a pool of 5000 for auto-assignment, and 1200 of those were already used, it won't hand out duplicates.

### **Can Cisco Prime Collaboration Provisioning reset an existing Extension Mobility user PIN?**

Yes. Cisco Prime Collaboration Provisioning can reset the phone PIN, which is also the Extension Mobility PIN.

### **What happens if a Cisco Prime Collaboration Provisioning user tries to update a user password and the Cisco Unified Communications Manager is LDAP-integrated?**

If Unified Communications Manager is integrated with LDAP, Cisco Prime Collaboration Provisioning doesn't show an option to change the user password on Unified Communications Manager. It will, however, still show an option to change the user PIN on the communications manager, because the PIN is still stored locally in the communications manager. If you have services on both LDAP-integrated and non-LDAP-integrated Unified Communications Manager, then Cisco Prime Collaboration Provisioning will still show the option to change the user password on the communications manager but will apply the change only to the communications manager that is not integrated with LDAP.

### **Does Cisco Prime Collaboration Provisioning work with TAPS?**

TAPS does not work with Cisco Prime Collaboration Provisioning; it works with Cisco Unified Communications Manager. Cisco Prime Collaboration Provisioning can create a phone with a dummy MAC address and provision Unified Communications Manager. When you plug in the phone, TAPS collects the MAC address and user ID. The TAPS server is used to get the MAC address into Unified Communications Manager, and it switches the real MAC address for the dummy one. Cisco Prime Collaboration Provisioning syncs in the MAC addresses from Unified Communications Manager. It then matches up the dummy addresses of the phones with the real MAC addresses and puts it into the user record. Once this occurs, Unified Communications Manager and Cisco Prime Collaboration Provisioning will show the correct MAC address for the phone.

## **Bandwidth Required by Cisco Prime Collaboration Provisioning and Load Impact on Unified Communications Applications**

Data transfer is very sporadic in Cisco Prime Collaboration Provisioning and occurs only when requested. Cisco Prime Collaboration Provisioning does not use a lot of graphics or flash presentation. Mouse clicks and typed text are generally passed from the browser to Cisco Prime Collaboration Provisioning, and a fairly simple screen is presented back to the browser. In the case of provisioning through the wizard, if the admin does not manually refresh the screen, it refreshes once per minute. When a new screen is requested, Cisco Prime Collaboration Provisioning requires between 5000 and 300,000 bytes (300 kilobytes). When nothing is being updated on the browser screen, bandwidth is essentially zero.

The highest data usage per admin logged in the budget is a 500,000-byte (500-kilobyte) burst every 5 seconds when ordering services, provisioning infrastructure, or doing a search, for the duration of the task.

A 300,000-byte (300-kilobyte) burst every minute when the admin is not using Cisco Prime Collaboration Provisioning occurs only when the admin has left visible a screen that would normally receive an automatic update (such as a user record); otherwise, it is zero bytes per second.



## Cisco Prime Collaboration Provisioning to Managed Devices

- During sync: Cisco Prime Collaboration Provisioning uses the available bandwidth, so more bandwidth means shorter sync times. Both Cisco Prime Collaboration Provisioning and Unified Communications Manager have throttling mechanisms to prevent each from overrunning the other. Many large customers deploy one Cisco Prime Collaboration Provisioning and sync worldwide clusters.
- Provisioning Unified Communications Manager or other Cisco Unified Communications application: During the actual time provisioning is being done, Cisco Prime Collaboration Provisioning uses the available bandwidth to perform provisioning. Provisioning runs as a background process.
- Talking to routers: This traffic is Cisco IOS Software-oriented Telnet-type traffic, which comes in small bursts and uses bandwidth that is available; 2400 to 9600 bps is sufficient.
- All other times: Little or no traffic occurs.

Timeout values are in multiple minutes, so loss of connectivity for short periods of time is tolerated. There are no subsecond latency requirements to engineer into your network design to accommodate Cisco Prime Collaboration Provisioning. It uses a two-phase commit to complete orders, so if an order is in progress when a link failure occurs, and it subsequently times out, Cisco Prime Collaboration Provisioning does not mark the order complete; rather, it attempts to provision the order again. When the link is reestablished, Cisco Prime Collaboration Provisioning starts the order again. When complete, it marks the order complete.

## Installing a Signed Certificate from a Certificate Authority (CA)

### 1. Generate a Cisco Prime Collaboration Provisioning Server Private Key

```
localuser: ssh root@pcp1
root@pcp1's password:
[root@pcp11 ~]#
[root@pcp11 ~]# cd /opt/cupm/httpd/
[root@pcp11 httpd]# ./bin/openssl genrsa -des3 -out pcp1.cisco.com.key 2048
Generating RSA private key, 2048 bit long modulus
.....+++
.....+++
e is 65537 (0x10001)
Enter pass phrase for pcp1.cisco.com.key: Prime123$
Verifying - Enter pass phrase for pcp1.cisco.com.key: Prime123$
[root@pcp11 httpd]#
```

Because the CA typically cannot use a passphrase for the certificate signing request (CSR), run the commands below so that the **pcp1.cisco.com.key** will not use a passphrase.

```
[root@pcp11 httpd]# cp pcp1.cisco.com.key pcp1.cisco.com.key2
[root@pcp11 httpd]# openssl rsa -in pcp1.cisco.com.key2 -out pcp1.cisco.com.key
Enter pass phrase for pcp1.cisco.com.key2: Prime123$
writing RSA key
[root@pcp11 httpd]#
```

## 2. Generate the CSR

```
[root@pcp11 httpd]# /opt/cupm/httpd/bin/openssl req -new -key pcpl.cisco.com.key  
-out pcpl.cisco.com.csr
```

You are about to be asked to enter information that will be incorporated into your certificate request.

What you are about to enter is what is called a Distinguished Name or a DN.

There are quite a few fields but you can leave some blank

For some fields there will be a default value,

If you enter '.', the field will be left blank.

-----

Country Name (2 letter code) [AU]:US

State or Province Name (full name) [Some-State]:CA

Locality Name (eg, city) []:SanJose

Organization Name (eg, company) [Internet Widgits Pty Ltd]:buzz.com

Organizational Unit Name (eg, section) []:IT

Common Name (e.g. server FQDN or YOUR name) []:buzz.com

Email Address []:admin@buzz.com

Please enter the following 'extra' attributes to be sent with your certificate request

A challenge password []:Prime123\$

An optional company name []:Buzz.com

```
[root@pcp11 httpd]#
```

```
[root@pcp11 httpd]# ls *.csr
```

```
pcpl.cisco.com.csr
```

```
[root@pcp11 httpd]#
```

## 3. Download the CSR

```
localuser@localuser:~: sftp root@pcpl.cisco.com
```

```
root@pcpl.cisco.com's password:
```

```
Connected to pcpl.cisco.com.
```

```
sftp> get /opt/cupm/httpd/pcpl.cisco.com.csr
```

```
Fetching /opt/cupm/httpd/pcpl.cisco.com.csr to pcpl.cisco.com.csr
```

```
/opt/cupm/httpd/pcpl.cisco.com.csr
```

```
100% 1102 1.1KB/s 00:00
```

```
sftp> bye
```

```
localuser@localuser:~:
```

## 4. Submit the CSR to Microsoft Certificate Services

1. Access the MS Certificate Services Web page. For example, <https://dc-01.buzz.com/CertSrv>.
2. Select Request a Certificate.
3. Select Advanced Certificate Request.
4. Open **pcpl.cisco.com.csr** in Notepad, select all, and copy.
5. Paste the CSR text into the Microsoft Certificate window.

6. Certificate Template: Web Server.
7. Submit.
8. Select Base 64 Encoded.
9. Select Download Certificate (do not choose Download Certificate Chain).
10. Save Filename `pcp1.cisco.com.ca-signed.crt`

### 5. Upload the Signed Web Certificate via the CLI

Using SFTP, upload `pcp1.cisco.com.ca-signed.crt` to the Cisco Prime Collaboration Provisioning server `/opt/cupm/httpd` folder.

#### Edit the httpd Server Configuration File

```
[root@pcp11 conf]# vi /opt/cupm/httpd/conf/ssl.conf
```

Edit the following lines:

```
SSLCertificateFile /opt/cupm/httpd/pcp1.cisco.com.ca-signed.crt
SSLCertificateKeyFile /opt/cupm/httpd/ pcp1.cisco.com.key
```

```
[root@pcp11 conf]# cat ssl.conf
```

```
# Server Certificate:
# Point SSLCertificateFile at a PEM encoded certificate. If
# the certificate is encrypted, then you will be prompted for a
# pass phrase. Note that a kill -HUP will prompt again. Keep
# in mind that if you have both an RSA and a DSA certificate you
# can configure both in parallel (to also allow the use of DSA
# ciphers, etc.)
# Some ECC cipher suites (http://www.ietf.org/rfc/rfc4492.txt)
# require an ECC certificate which can also be configured in
# parallel.
SSLCertificateFile /opt/cupm/httpd/pcp1.cisco.com.ca-signed.crt
#SSLCertificateFile "/opt/cupm/httpd/conf/server-dsa.crt"
#SSLCertificateFile "/opt/cupm/httpd/conf/server-ecc.crt"
# Server Private Key:
# If the key is not combined with the certificate, use this
# directive to point at the key file. Keep in mind that if
# you've both a RSA and a DSA private key you can configure
# both in parallel (to also allow the use of DSA ciphers, etc.)
# ECC keys, when in use, can also be configured in parallel
SSLCertificateKeyFile /opt/cupm/httpd/pcp1.cisco.com.key
#SSLCertificateKeyFile "/opt/cupm/httpd/conf/server-dsa.key"
#SSLCertificateKeyFile "/opt/cupm/httpd/conf/server-ecc.key"
```

## 6. Restart the Apache Server

After using one of the methods to upload, restart Apache:

```
[root@pcp11 logs]# /opt/cupm/httpd/bin/apachectl -k stop
[root@pcp11 logs]# /opt/cupm/httpd/bin/apachectl -k start -DSSL
```

## 7. Verify That Everything Is Up and Running

```
[root@pcp11 logs]# ps -ef | grep httpd
root 6544 1 0 21:56 ? 00:00:00 /opt/cupm/httpd/bin/httpd -k start -DSSL
daemon 6545 6544 0 21:56 ? 00:00:00 /opt/cupm/httpd/bin/httpd -k start -DSSL
daemon 6547 6544 0 21:56 ? 00:00:00 /opt/cupm/httpd/bin/httpd -k start -DSSL
daemon 6549 6544 0 21:56 ? 00:00:00 /opt/cupm/httpd/bin/httpd -k start -DSSL
root 6812 11477 0 23:00 pts/0 00:00:00 grep httpd
daemon 14461 6544 0 22:04 ? 00:00:00 /opt/cupm/httpd/bin/httpd -k start -DSSL
```

## 8. Troubleshooting

If you need to troubleshoot, look at the log files in this location. A CSR can be used only once. Do not try to upload multiple signed certificates using one CSR.

Sample Error Log

```
[root@pcp11 logs]# cat /opt/cupm/httpd/logs/error_log
[Wed Mar 11 17:37:58.711156 2015] [ssl:emerg] [pid 355:tid 47847297132912]
AH02565: Certificate and
private key www.example.com:443:0 from /opt/cupm/httpd/pcp1.cisco.com.crt and
/opt/cupm/httpd/pcp1.cisco.com-ca-signed.key do not match
AH00016: Configuration Failed
```

## More Information

For more information, please visit the following websites:

- Cisco Prime Collaboration Page on Cisco.com: <http://www.cisco.com/go/primecollaboration>
- Installation Guide for Cisco Prime Collaboration:  
<http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-collaboration/products-installation-guides-list.html>
- End-User Guide for Cisco Prime Collaboration Provisioning:  
<http://www.cisco.com/c/en/us/support/cloud-systems-management/prime-collaboration/products-installation-guides-list.html>
- Refer to the Cisco Prime Collaboration Provisioning tutorial video on demand (VoD)  
[http://www.cisco.com/web/learning/le31/le46/nmtg\\_training/webpages/Prime\\_Training\\_Prod\\_PCollab.html#ab=tab-3-content](http://www.cisco.com/web/learning/le31/le46/nmtg_training/webpages/Prime_Training_Prod_PCollab.html#ab=tab-3-content) for details about the initial setup process of each of the areas listed in this section




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