# Configure Self-Provisioning Feature on CUCM (URL Based)

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# Introduction

This document describes how to configure Self-Provisioning Feature on Cisco Unified Communications Manager (CUCM) (URL Based).

# Prerequisites

## Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Unified Communication Manager.
- Voice over Internet Protocol (VoIP)
- Phone Registration Process.

## **Components Used**

The information in this document is based on Cisco Unified Communications Manager 10.5

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

## What is Self-Provisioning?

Self-Provisioning is a feature introduced in the 10.x release of Cisco's Unified Communications Manager (CUCM). It provides a **plug and play** type of functionality that simplifies the phone deployment process. Using **auto-registration**, some template and profile configurations, along with an IVR service, CUCM administrators have the ability to deploy phones with minimal upfront configuration.

Note: Self-Provisioning works only for the Auto-Registered Phones.

# Configure

#### 1. Create a Universal Device Template (UDT)

Step 1. Navigate to **User management > User Phone add > Universal Device Template** and Add New Template.



Step 2. Apply the Configuration that you expect the phones to take after auto registration, to the new UDT, (Device pool/Sip Profile/Device security profile/Phone Button Template)



Step 3. Add The Self Provisioning URL to CUCM, as shown in the image.

System - Call Routing - Media I	Resources  Advanced Features  Device  Application  User Managem	eent ▼ Bulk Administration ▼ Help ▼
Universal Device Template Co	nfiguration	
Save 🗙 Delete Expand All	🕂 Add New	
<ul> <li>Device Settings</li> </ul>		
Device Routing		
Phone Settings		
<ul> <li>Protocol Settings</li> </ul>		
Phone Buttons Configuration		
► IP Phone Services Subscription		
<ul> <li>Security Settings</li> </ul>		
<ul> <li>Service Configuration Settings</li> </ul>		
Information Defau	lt 🔻	
Directory Defau	ult 🔻	
Messages Defa	ult 🔻	
Services Defa	ult 🔻	
Authentication Server Defau	ult 🔻	
Proxy Server Defau	ult 🔻	
Idle Over	ide  https://10.106.114.151/cucm-uds/private/sell	
Idle Timer (seconds) Over	ide 🔻 🛛 1	
Secure Authentication URL Defau	ilt 🔻	
Secure Directory URL Defau	ilt 🔻	
Secure Idle URL Defau	ilt 🔻	
Secure Information URL Defau	ilt 🔻	
Secure Messages URL Defau	lit 👻	
Secure Services URL Defau	lit 🔻	
Services Provisioning *	Default	

Note: Self Provisioning URL Format is, https://<callManager>/cucm-uds/private/selfProvision

#### 2. Create Universal LineTemplate (ULT)

#### Step 1. Navigate to User management >> User/Phone Add >> User Line Template.

cisco	Cisco UI For Cisco Un	nified CM Ad	ministration								
System 👻	Call Routing 🔻	Media Resources 🔻	Advanced Features 👻	Device 👻	Application $\bullet$	Us	er Management 🔻	Bulk Administratio	n 🔻	Help 👻	
							Application User				
							End User				
Cisc	o Unifie	d CM Adm	inistration				User/Phone Add	•		Page Layout Preference	
							SIP Realm			Universal Device Template	
System	version: 10.5	5.2.13901-2					User Settings	•		Universal Line Template	
VMware	e Installation:	2 vCPU Intel(R)	Xeon(R) Platinum	8176 CPU	@ 2.10GHz,		Self-Provisioning			Feature Group Template	

Step 2. Add the Route partition and CSS that is expected on the Phone after Auto Registration.

System - Call Routing - Media Resour	ces - Advanced Features -	Device - Applic	ation 👻 User Management 👻	Bulk Administration 👻	Help 👻
Universal Line Template Configura	tion				
🔚 Save 🗙 Delete Expand A	II 🕂 Add New				
<ul> <li>Template Information</li> </ul>					
Name * Sample Line Temp	late with TA Urgent Pri	ority			
<ul> <li>Required and Frequentl</li> </ul>	y Entered Settings				
Line Description:	#FirstName# #LastNam	e# (# 🥬			
Route Partition:	PT-Intra	-			
Voice Mail Profile:		•			
Calling Search Space:	CSS-Inter	-			
Alerting Name:	#FirstName# #LastNam	e#	-		
External Call Control Profile:		-			

Step 3. This Universal Device Template and Universal Line Template should be linked with Autoregistration so that the Phones can take the Configuration when Auto-Registered.

3. Add the Templates to CUCM node for **Auto-registration** Configuration and navigate to **System** > **Cisco Unified CM**, as shown in the image.

CISCO For Cisco Uni	nified CM Administration
System - Call Routing -	Media Resources • Advanced Features • Device • Application • User Management • Bulk Administration • Help •
Server	
Cisco Unified CM	
Cisco Unified CM Group	Administration
System - Call Routing	✓ Media Resources ✓ Advanced Features ✓ Device ✓ Application ✓ User Management ✓ Bulk Administration ✓ Help ✓
Cisco Unified CM Cor	nfiguration
🔚 Save 🎦 Reset	Apply Config
- Status	
i Status: Ready	
Cisco Unified Comm	unications Manager Information
Cisco Unified Commun	nications Manager: CM_UCM-PUB10 (used by 74 devices)
- Server Information -	
	1
Cisco Unified Commun	vications Manager Server* 10.106.114.151
Cisco Unified Commun	nications Manager Name* Icm. ucm-PUB10
Description	
	10.106.114.151
Location Bandwidth Ma	anager Group < None > C
- Auto-registration In	formation
Universal Device Terror	hate* Auto-registration Template
	to* Correlation Template
Charties Director N	sample Line Template with TAG usage examples V
Starting Directory Nun	nder" 1000

4. Add a New User Profile for Self Provisioning.

Step 1. Navigate to User Management > User Settings > User Profile, as shown in the image.

Cisco Unified CM Administration For Cisco Unified Communications Solutions					
System   Call Routing   Media Resources   Advanced Features   Device   Application	Us	er Management 👻 Bulk Administrati	on 👻	Help 🔻	
		Application User			
		End User			
Cisco Unified CM Administration		User/Phone Add	·		
		SIP Realm			
System version: 10.5.2.13901-2		User Settings	•	Credential Policy Default	
VMware Installation: 2 vCPU Intel(R) Xeon(R) Platinum 8176 CPU @ 2.10GHz,		Self-Provisioning		Credential Policy	
WARNING: DNS unreachable		Assign Presence Users		Role	
Last Successful Backup: 514 day(s) ago	-			Access Control Group	
				Application User CAPF Profile	
Iser administrator last logged in to this cluster on Friday, February 15, 2019 8:57:30 PM CST, to	noc	le 10.106.114.151, from 10.142.1	8	End User CAPF Profile	
apyright © 1999 - 2015 Cisco Systems. Inc.				UC Service	
Il rights reserved.				Service Profile	
his product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. sers are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regula				User Profile	oes not imply third-party authority S. and local laws, return this proc

Step 2. Add the User Device Template, User Line Template and Check the Allow End User to Provision their Own Phone CheckBox.

System - Call Routing - Media Res	sources 🔻 Advanced Features 🔻	Device 🔻	Application 👻	User Management	▼ Bulk Administration ▼	Help 🔻
User Profile Configuration						
🔚 Save 🗙 Delete 🕂 Add Ne	<b>v</b> ,					
– Status –						
i Status: Ready						
User Profile						
Name* selfpro						
Description						
Make this the default User Profile	e for the system					
	·					
-Universal Device Template						
Desk Phones	Auto-registration Template		🔾 Vie	w Details		
Mobile and Desktop Devices	Auto-registration Template		🔾 Vie	w Details		
Remote Destination/Device Profiles	Auto-registration Template		ᅌ Vie	w Details		
– Universal Line Template –						
Universal Line Template Sample Li	ne Template with TAG usage exa	amples ᅌ	View Details			
- Self-Provisioning						
Allow End User to Provision their	own phones					
Limit Provisioning once End User has	s this many phones 10					

**Note**: These Setting Are Applied When the Users try to Self-Provision the Devices with Their own Extensions.

**Note**: You Can Also set a Maximum Limit to Users for Number of Devices After Which the Self Provisioning would not work for Users.

E.g.: if User has 9 devices assigned already Since the Maximum limit in Above screenshot is set to 10, User can self-provision only one Device.

**Note**: If the **Allow End User to Provision their Own Phone** Check-box is left unchecked. Self-Provisioning would not work for Users.

#### 5. Create a Feature Group Template and Assign the User Profile. Navigate to User Management > User/Phone Add > Feature Group Template, and click on Add New.

CISCO Unified CM Administration For Cisco Unified Communications Solutions	
System   Call Routing  Media Resources  Advanced Features  Device  Application	User Management 👻 Bulk Administration 👻 Help 👻
	Application User
	End User
Cisco Unified CM Administration	User/Phone Add   Page Layout Preference
System version: 10.5.2.13901-2	SIP Realm Universal Device Template
VMware Installation: 2 vCPU Intel(R) Xeon(R) Platinum 8176 CPU @ 2.10GHz,	Self-Provisioning Feature Group Template
	Assign Presence Users Quick User/Phone Add
Last Successful Backup: 514 day(s) ago	
System ▼ Call Routing ▼ Media Resources ▼ A	dvanced Features
Feature Group Template Configuration	
🔚 Save 💢 Delete 🖵 Add New	
Feature Group Template         Name *       self_fg         Description	
<ul> <li>Features</li> <li>Home Cluster</li> <li>Enable User for Unified CM IM and Presence (Cor</li> <li>Include meeting information in Presence(Require</li> </ul>	nfigure IM and Presence in the associated UC Servi s Exchange Presence Gateway to be configured on
Services Profile Use System Default	View Details
User Profile selfpro	View Details
<ul> <li>Allow Control of Device from CTI</li> <li>Enable Extension Mobility Cross Cluster</li> <li>Enable Mobility</li> <li>Enable Mobile Voice Access</li> <li>Maximum Wait Time for Desk Pickup * 10000</li> </ul>	

6. Create a user from **Quick user/phone add** page, and Add the **Feature Group Template**.

Step 1. Navigate to **User management > User Phone Add > Quick User /Phone Add**, as shown in the image.



Step 2. Add the **Standard CCM End Users** under Access Control Group membership.

System - Call Routing	🔹 Media Resources 👻 Advanced Features 👻 Device 👻 Application 👻 User Management 👻 Bulk Administration 👻 Help 👻
Quick User/Phone Ac	ld
🔚 Save	
User Information	
First Name	akash
Middle Name	
Last Name *	sethi
User ID *	aksethi
Feature Group Template	self_fg  View Details
Access Control Group	Membership
User is a member of:	
Access Control	Group Membership
User is a member	of: Standard CCM End Users
L	

Step 3. Add an extension in the extension field to the User, click on + Icon under Action to enable the Field.

Access Control Group	Membership			
User is a member of:	Standard CCM End Users	▼ ⋕ =		
Credentials				
Use default credential				
Password				
Confirm Password				
PIN				
Confirm PIN				
				,
Extensions				
Order Extension		Line Primary URI/Partition		Acti
	* New		1	+

Step 3. If a New Extension is to be created Click on **New** and Add a New DN. (As Shown in the image option 1). If the Extension already Exists on CUCM and is to be assigned to User, Choose that from Dropdown menu shown in option 2 of the image here.

ccess Control Group Membership
ser is a member of: Standard CCM End Users
redentials
] Use default credential
Password
Confirm Password
PIN
Confirm PIN
xtensions
Order Extension 2 1 Line Primary URI/Partition Action
• New / • •

Note: Once the User is Created, it Takes Primary Line as Self-Service User ID by default.

7. Verify the End User has received the **primary Extension**, **Self-service User ID,User Profile** and **Standard CCM End User Role**. Navigate to **User Management > End User** and Access the newly Created User, as shown in the image.

CISCO Unified CM Admin For Cisco Unified Communications Sol	istration utions
System - Call Routing - Media Resources - Advar	nced Features • Device • Application • User Management • Bulk Administration • Help •
	Application User
Cieco Unified CM Admini	End User
System  Call Routing  Addia Resources  Addia	vanced Features   Device   Application   User Management   Eulk Administration   Help
End User Configuration	
Save 🗙 Delete 🕂 Add New	
-User Information	
User Status	Enabled Local User
User 1D*	aksethi
Password	Edit Credential
Confirm Password	
Self-Service User ID	1004
PIN	Edit Credential
Confirm PIN	•••••
Last name*	sethi
Middle name	
First name	akash
Title	
System      Call Routing      Media Resources      A	dvanced Features   Device   Application   User Management   Bulk Administration   Help
End User Configuration	
🔚 Save 🗶 Delete 🕂 Add New	
User Locale	< None >
Associated PC	
Digest Credentials	
Confirm Digest Credentials	
Licer Profile	celfore View Detaile
Name Dialing	
	sethiakash
Number of Digits needed for the Unique AA Name	.2

System   Call Routing   Media Resources   Advanced Features   Device   Application   User Management   Bulk Administration   Help
End User Configuration
🔚 Save 🗶 Delete 🕂 Add New
Enable Extension Mobility Cross Cluster
- Directory Number Associations
IPCC Extension < None >

**Note**: User Must have a Primary Extension and Self-Service User ID, **Standard CCM End Users** role, for Self-provisioning to work.

8. Self-Provisioning Service Can be Set up at the System Level to Use Secure mode and a Password can be set.

This feature is set to **Non Authentication Required** Mode, which does **not** Require any PIN to Use Self Provisioning. Navigate to **User Management > Self-Provisioning** 

Self-Provisioning
Save
_ Status
Status: Ready
CAuthentication Mode
Require Authentication
In this mode, users may use their password or PIN to authenticate and provision devices based on the permissions in their User Profile. Additionally, administrators may authenticate on behal
Allow authentication for users only(via Password/PIN)
Allow authentication for users(via Password/PIN) and Administrators(via Authentication Code)
Authentication Code
No Authentication Required
In this mode, authentication is disabled during device self-provisioning. The administrator or end user can enter a user ID or self-provisioning ID into an endpoint and the endpoint will associate the self-provision of the endpoint will associate the self-provision of the self-provision of the endpoint will associate the self-provision of the self-pr

**Note**: Even if the Step 8 is not configured, self-provisioning would still work, as it chooses Default value at No Authentication required.

#### Services Associated with Self-Provisioning

Cisco Call Manager

This Service is associated with the Phone registration and Must be enabled on the Node to which registration is attempted.

Cisco User Data Services

This Service is enabled by Default and cannot be disabled.

This Service can be found under **CM services** on **Network Services** Page In **Cisco Unified Serviceability.** 

#### End User experience on the Phone

1. After a timeout of 1 second, the phone would access the IDLE URL, which would prompt the Login window.



2. User Enters User ID and PIN (Not Password).



3. The user is Shown the Login Success screen and the number that would be provisioned, which would be the primary line added to the User.



After continue is clicked device would go for a Reboot and Come-up with the Settings Specified in Template and with the primary line associated with the User.

# Troubleshoot

Here are few of the common error messages returned by the Phone client:

Error CodeSolution/CauseSELFPROV\_NOT\_ALLOWEDCheck whether the Self-Provisioning checkbox is checked<br/>user's User Profile.SELFPROV\_DEVICE\_LIMITThe user's owned device already reached the limit.INVALID\_DEVICE\_MODELThe provided device model is not valid.MODEL\_PHONETEMPELATE\_NOT\_FOUND The required UDT is not configured.

#### Logs to be Collected

In order to further troubleshoot the UDS (User Data Service), Collect the "Cisco User Data Services" Log from RTMT.

File names are of format cucm-uds####.log. (# represents number.)

The Traces are Set to Info Level by Default.

The maximum file size is 1 MB by default. The maximum number of stored files defaults to 250.

**Note**: When you change either the Maximum No. of Files or the Maximum File Size settings in the Trace Configuration window, the system deletes all service log files except for the

current file, that is, if the service runs.

If the service has not been activated, the system deletes the files immediately after you activate the service.

#### Common Errors seen in UDS logs and their solutions:

# 2013-07-23 23:47:43,016 ERROR [http-bio-443-exec-177] handlers.SelfProvisionHandler - Model phone template is not available.

Solution: Ensure the User Profile has a UDT assigned (the default sample is fine)

# 2013-07-23 23:48:25,852 ERROR [http-bio-443-exec-181] handlers.SelfProvisionHandler - Device Self-Provision is not allowed.

Solution: Ensure the User Profile has "Allow End User to Provision their own phones" checked.

#### 2013-07-23 23:54:06,039 ERROR [http-bio-443-exec-220] handlers.SelfProvisionHandler - Device Self-Provision has reached its device limit.

Solution: Ensure the Usure Profile has a non-zero value in "Limit Provisioning once End User has this many phones" field.

#### **Known Defects**

- <u>CSCuq00358</u>
- <u>CSCve52657</u>
- <u>CSCun77515</u>
- <u>CSCun13382</u>

# **Related Information**

Technical Support & Documentation - Cisco Systems