CCS-UC-1

Crestron Mercury with Cisco® Unified Communications Manager 11.0

Configuration Guide

Crestron Electronics, Inc.

This document was written by the Technical Publications department at Crestron.

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CCS-UC-1: SIP Endpoint with Cisco Unified Communications Manager 11.0

Introduction

This configuration guide describes the necessary procedure to configure a Crestron® Mercury™ device to register to the Cisco® Unified Communications Manager (UCM) as a basic SIP endpoint.

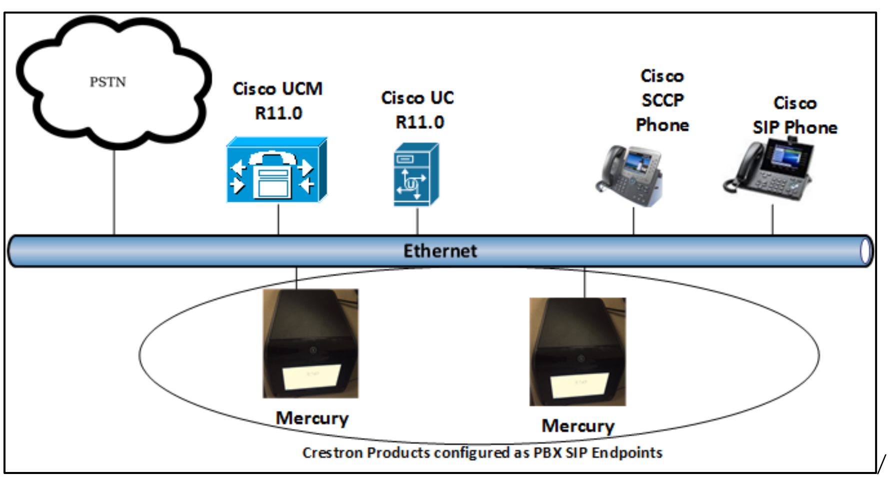
Audience

This document is intended for users attempting to configure and use Crestron Mercury devices as SIP endpoints registering to the Cisco UCM.

Topology

The network topology for the Crestron Mercury endpoint to interop with the Cisco UCM is shown below.

SIP Endpoint Integration with Cisco UCM: Reference Network



The lab network consists of the following components:

- Cisco UCM cluster for voice features
- Cisco SCCP and SIP phones
- Cisco Unity Connection as the voicemail system
- Crestron Mercury as the SIP endpoints

Software Requirements

- Cisco UCM v 11.0.1.20000-2
- Cisco Unity Connection v 11.0.1.20000-2
- Mercury devices v 1.3211.00020

Hardware Requirements

- Cisco UCS-C240-M3S VMWare Host running ESXi 5.5
- Cisco 3845 as PSTN Gateway
- Cisco Phones: models 7960 (SCCP), 8961 (SIP), 8945 (SIP)
- Crestron Mercury devices (2)

Product Description

The Mercury device is a complete solution for conference rooms. It acts an all-in-one touch screen, speakerphone, and AirMedia® product for conference rooms that integrate microphones and speakers into the user interface at the table.

Crestron Toolbox™ is used to discover and control all Crestron devices on the network.

The Crestron Mercury web interface is used to control the Crestron Mercury devices on the network.

Summary

The Mercury devices were configured on the Cisco UCM as basic SIP endpoints since they support only a single line/extension. The devices were successfully registered to the Cisco UCM with digest authentication.

The sections below describe supported and unsupported features on a Mercury device.

Features Supported

- Registration with digest authentication
- Basic calls with G722, G711u, and G711a codecs
- Caller ID (limited to only calling number)
- DTMF support

- Early media support
- Retrieval of a parked call
- Transferee in a call transfer
- Conference participant
- Member of hunt group
- Member of shared line configuration
- Voicemail access and interaction

Features Not Supported

- Caller ID presentation with name and number display
- Call hold and resume
- Call forwarding on the device (Forwarding can be configured on the PBX for the DN assigned to the endpoint.)
- Call waiting
- Conference
- Attended call transfer
- Early attended call transfer
- Blind call transfer
- Configuration of shared line on device
- Initiating call park
- Message waiting indicator

Mercury Configuration

Setup

The Mercury device requires only one connection from its LAN port. The LAN port needs to be connected to one POE+ port to power it up and to be connected to the network for reachability to the Cisco UCM.

Discovering/Accessing the Device

Crestron Toolbox discovers and accesses Mercury devices on the network.

The Help menu on Crestron Toolbox assists the user through the discovery and configuration procedure.

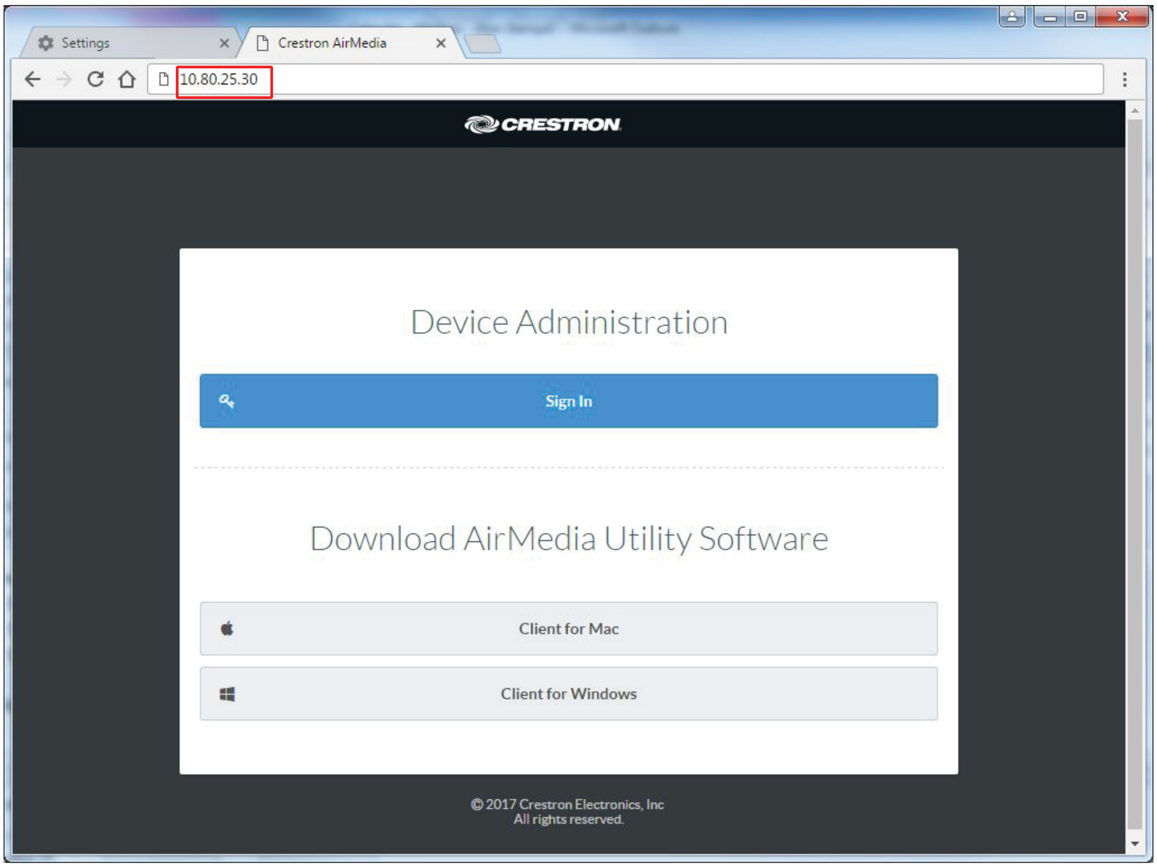
This document will therefore not include details of the same.

Apart from this tool, the device itself provides the IP address that can be used to access and configure the device via the web. (On the device home screen, navigate to Present a Source > AirMedia. This specifies the address of the device.)

Configuring the Device

1. Access the web GUI for the device by using an http session with the device's IP address. 10.80.25.30 was used in this example as the device IP. The initial page that displays is shown below.

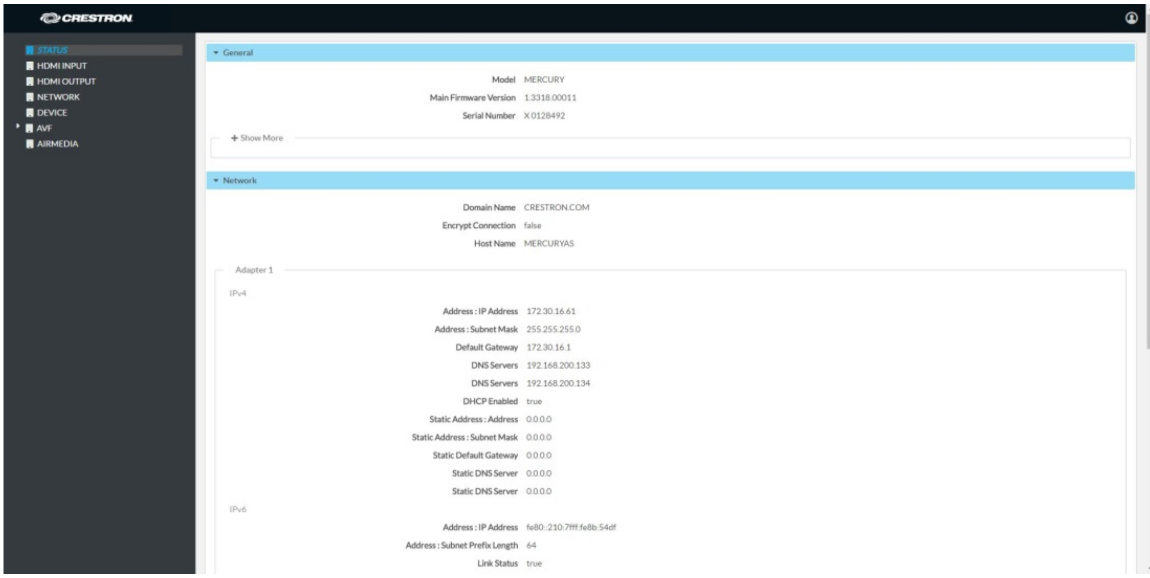
Crestron Mercury Login to Web GUI



2. Click Device Administration. For information on device administration, refer to Doc. 7844 at www.crestron.com/manuals.

   The Status screen that appears displays basic information on the device as shown below.

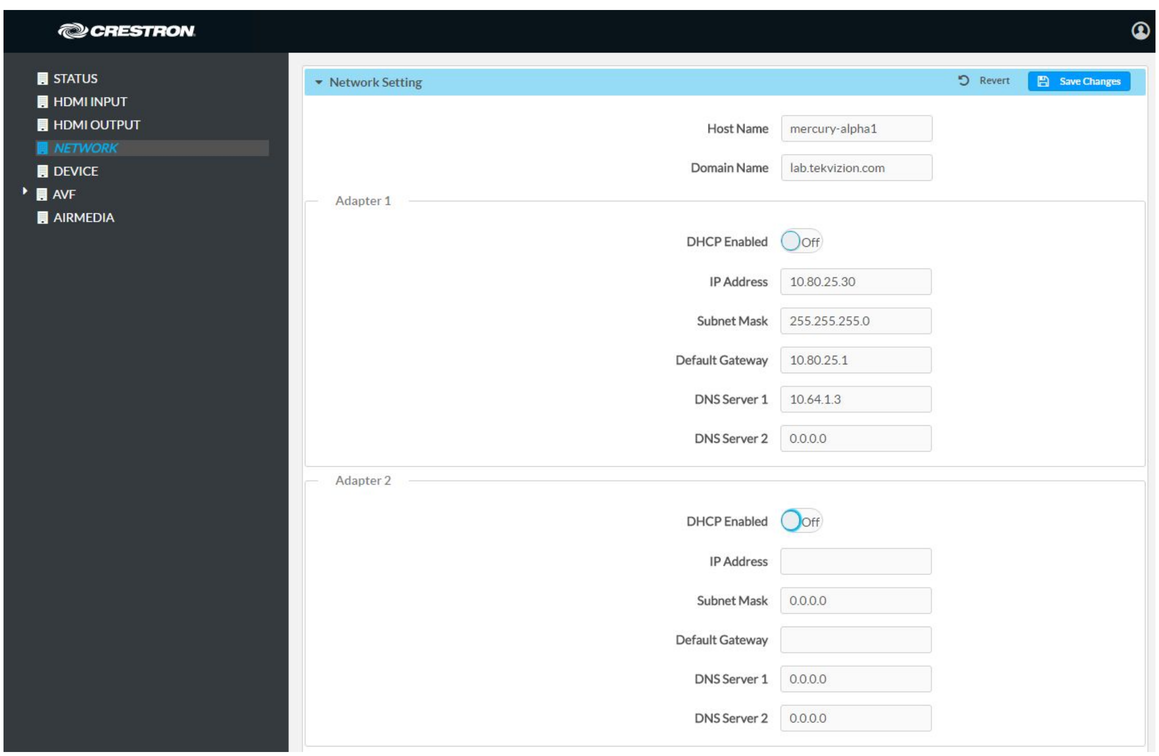
Crestron Mercury: Status Screen



The device can be configured from the **Network Setting** screen.

3. On the web GUI, navigate to **Network**. The **Network Setting** screen is displayed.

Crestron Mercury: Network: Network Setting



Network Settings

Configure the parameters below. Click Save Changes when done.

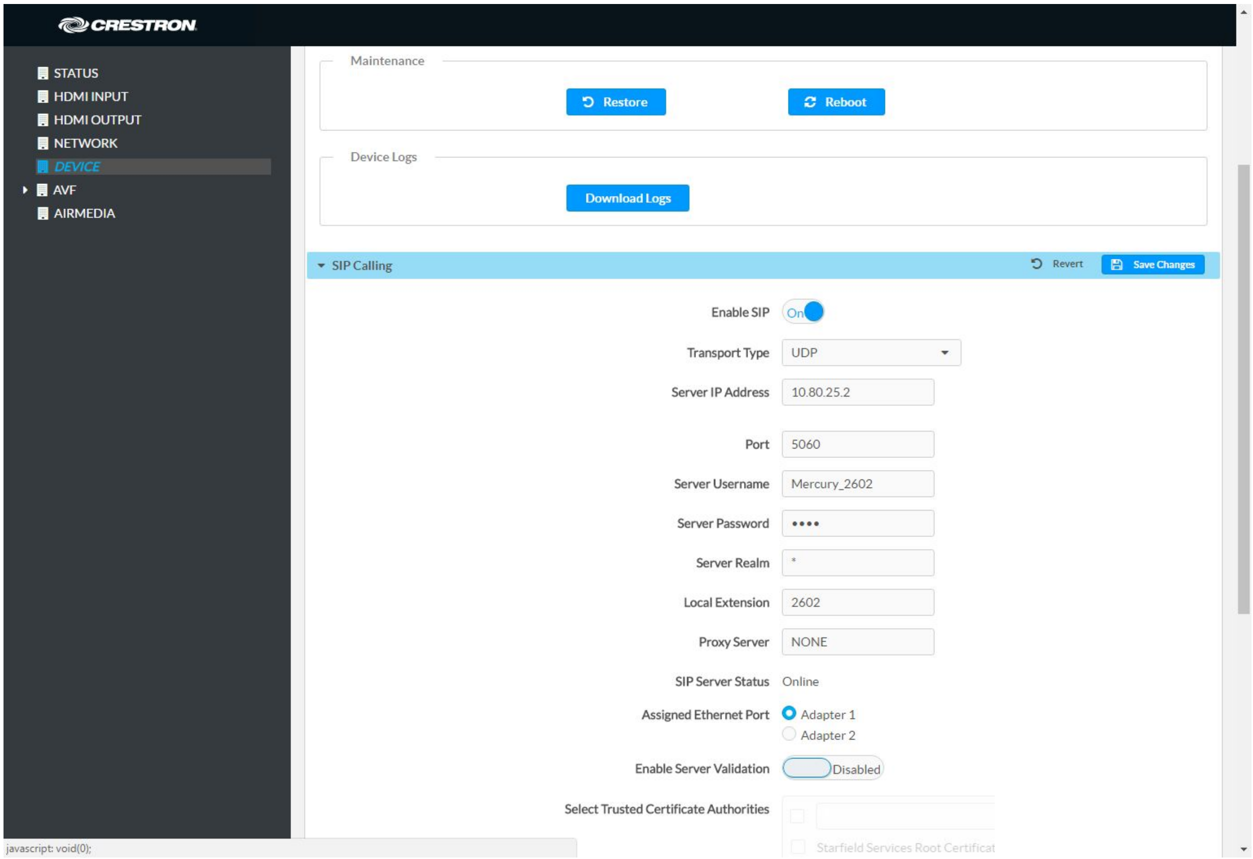
- Domain Name: lab.tekvizion.com, used in this example (mostly auto-detected by device when in DHCP mode).
- DHCP: Either of the two can be chosen:
    - Obtain an IP address automatically
    - Use the following IP address

  For this example, a static IP was configured.
    - IP address: 10.80.25.30, used in this example.
    - Subnet Mask: 255.255.255.0, used in this example.
    - Default Gateway: 10.80.25.1, used in this example.
    - DNS Servers: 10.64.1.3, used in this example.

Configure the SIP Parameters

1. On the web GUI, navigate to Device > SIP Calling. The SIP Calling screen is displayed.

Crestron Mercury: Device: SIP Parameters



2. Enable the check box for **Enable SIP**.
3. Configure the **SIP Server IP Address:** Enter the IP address of the Cisco UCM node. *10.80.25.2* was used in this example.
4. Configure the **SIP port**: *5060* was used in this example.
5. Configure the **SIP Server Username**: Enter the end user configured on Cisco UCM for this device. *2102* was used in this example.
6. Configure the **SIP Server Password**: Enter the password as configured on Cisco UCM for this end user.
7. Configure the **SIP Local Extension**: Enter the directory number that was configured for this device on Cisco UCM. *2102* was used in this example.
8. Leave all other fields at their default values.
9. Click **Save Changes**.

Once the device successfully registers with the Cisco UCM, the **SIP Server Status** updates its status to show *Online*.

Cisco UCM Configuration

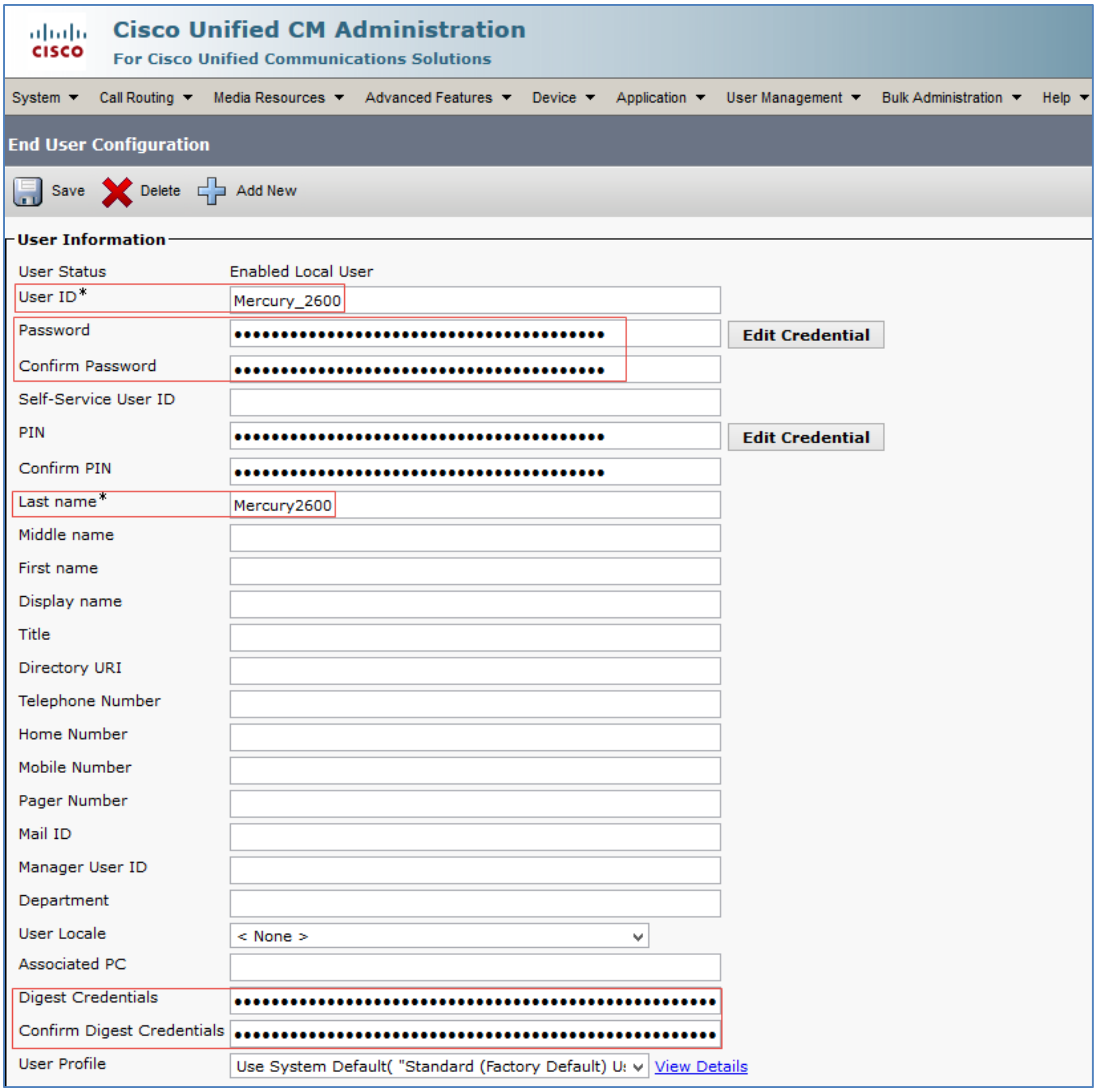
This section describes the Cisco UCM configuration necessary to integrate the Crestron device as an SIP endpoint.

NOTE: It is assumed that the general installation and basic Cisco UCM configuration has already been administered.

Configure the User

1. Navigate to User Management > End User.
2. Click Add New. The End User configuration window appears.

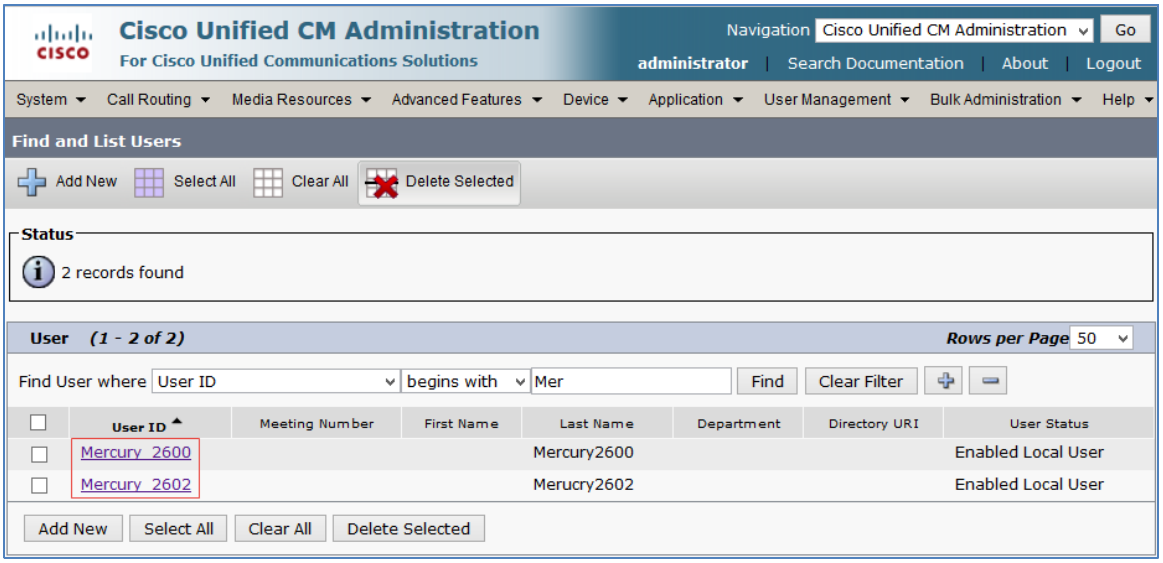
Cisco UCM: End User Configuration



3. Configure **User ID**: Enter a unique end user identification name. Two users were configured for this example for the Mercury devices: *Mercury_2600* and *Mercury_2602*.
4. Configure **Password**: Enter any password. This same password will be entered on the device against SIP Server Password. 123456 was used in this example.
5. Confirm **Password**: Re-enter the same password configured above.
6. Configure the **Last Name**: Enter the end user last name.
7. Configure the **Digest Credentials**: Enter a string of alphanumeric characters.
8. Confirm the **Digest Credentials**: Re-enter the password configured above.

9. Click **Save**. All of the configured users are listed as shown below.

Cisco UCM: End Users Configured for All Mercury Devices



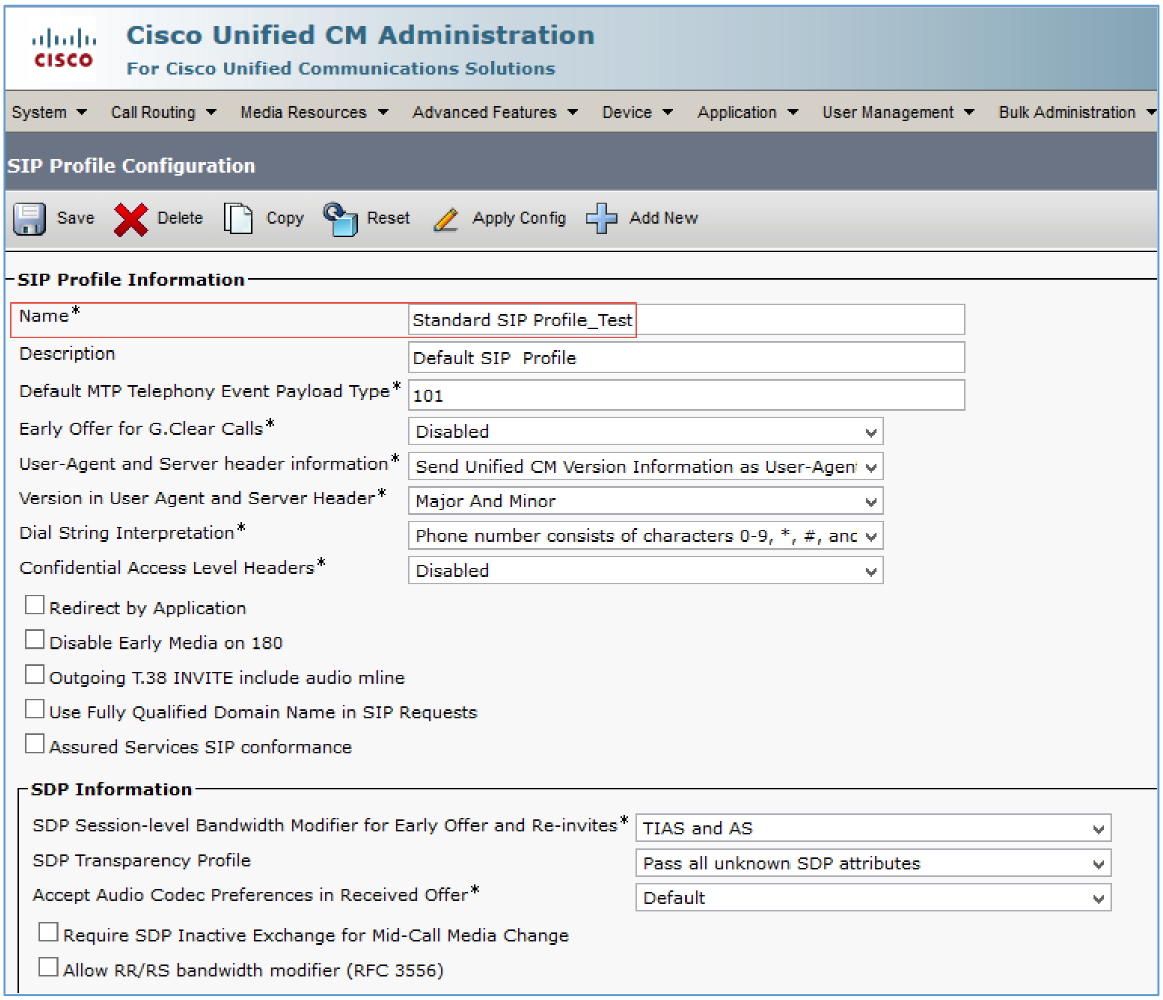
Configure an SIP Profile

For the example, a new SIP Profile **Standard SIP Profile_Test** was configured.

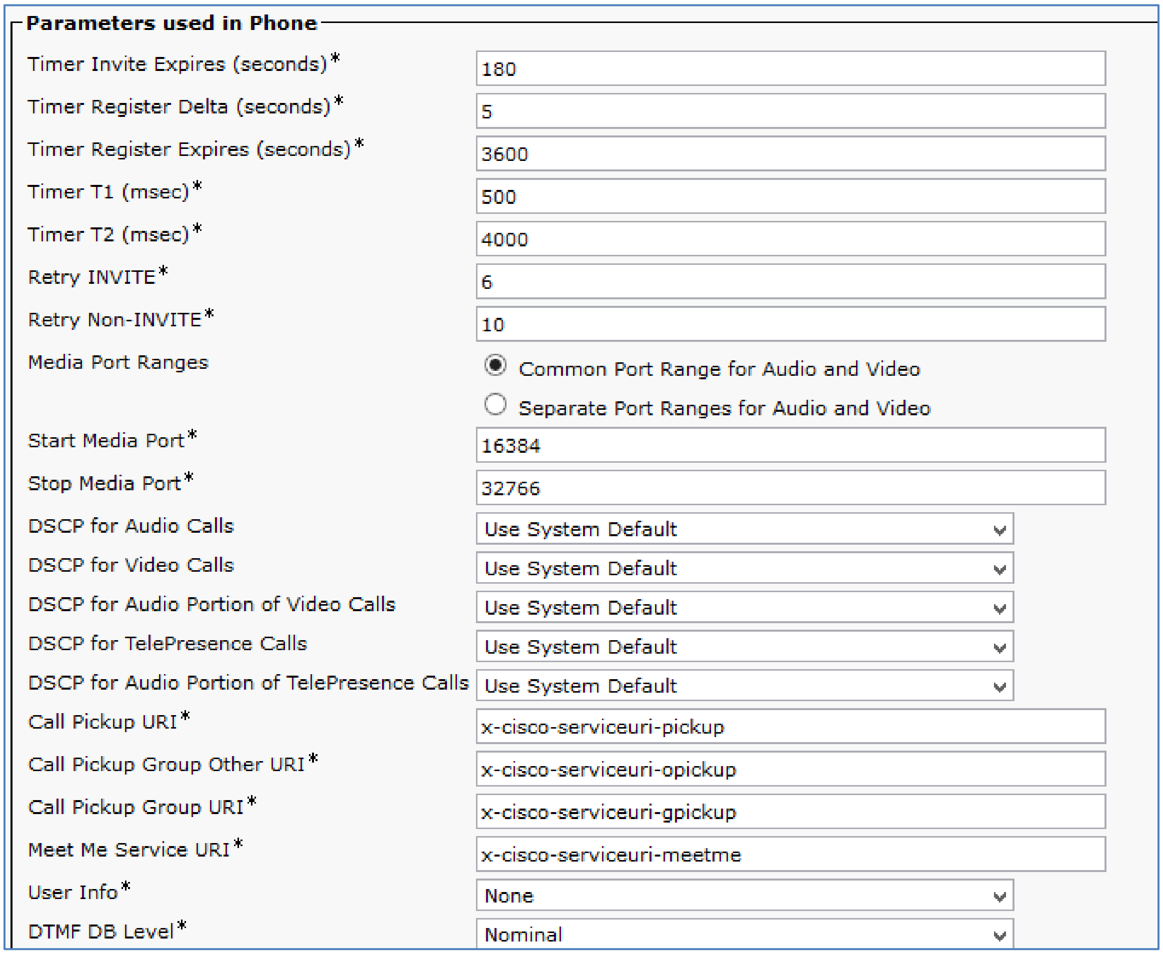
To add a new SIP Profile, perform the following procedure.

1. Navigate to **Device** > **Device Settings** > **SIP Profile**.

Cisco UCM: SIP Profile Configuration (1/4)



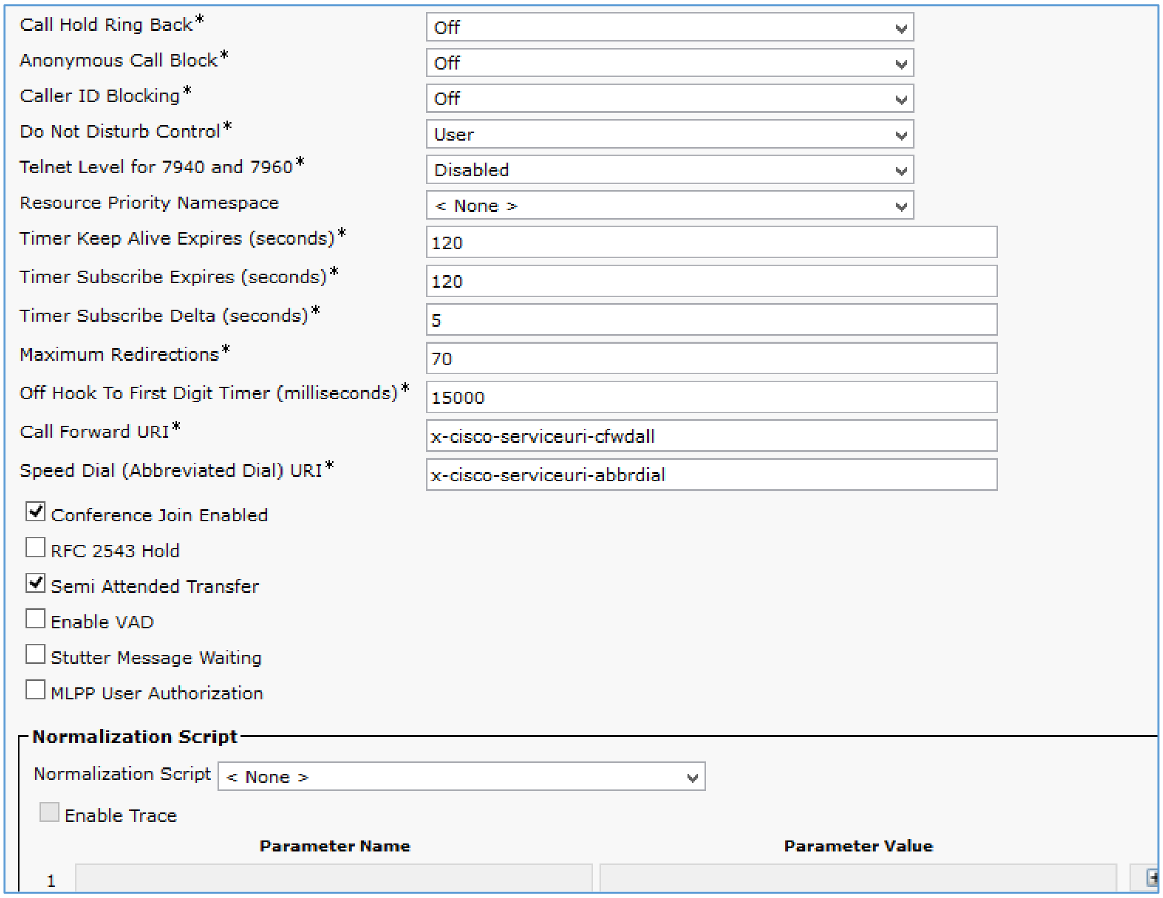
Cisco UCM: SIP Profile Configuration (2/4)



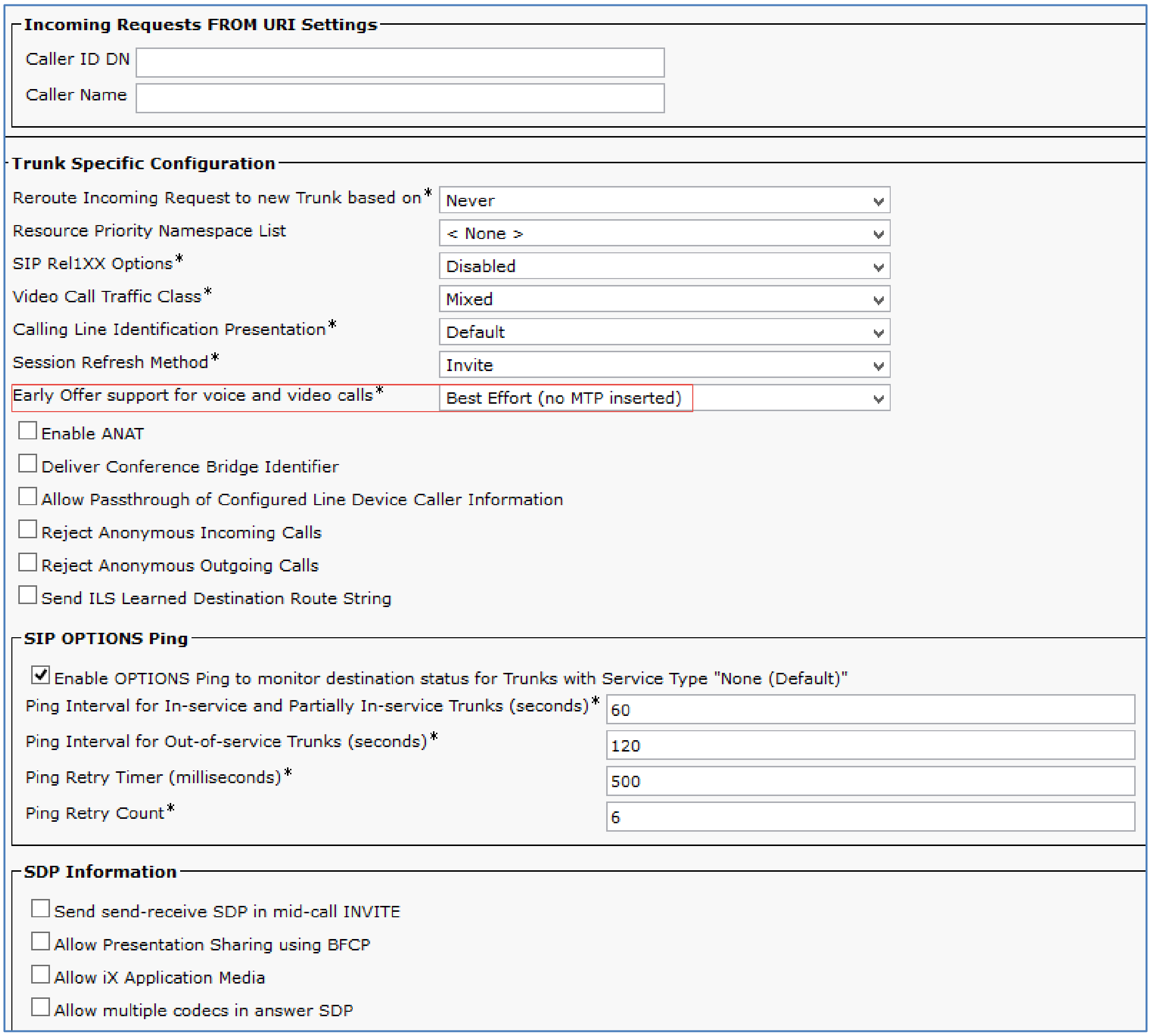
Parameters used in Phone

Timer Invite Expires (seconds)*	180
Timer Register Delta (seconds)*	5
Timer Register Expires (seconds)*	3600
Timer T1 (msec)*	500
Timer T2 (msec)*	4000
Retry INVITE*	6
Retry Non-INVITE*	10
Media Port Ranges	(●) Common Port Range for Audio and Video ( ) Separate Port Ranges for Audio and Video
Start Media Port*	16384
Stop Media Port*	32766
DSCP for Audio Calls	Use System Default
DSCP for Video Calls	Use System Default
DSCP for Audio Portion of Video Calls	Use System Default
DSCP for TelePresence Calls	Use System Default
DSCP for Audio Portion of TelePresence Calls	Use System Default
Call Pickup URI*	x-cisco-serviceuri-pickup
Call Pickup Group Other URI*	x-cisco-serviceuri-opickup
Call Pickup Group URI*	x-cisco-serviceuri-gpickup
Meet Me Service URI*	x-cisco-serviceuri-meetme
User Info*	None
DTMF DB Level*	Nominal

Cisco UCM: SIP Profile Configuration (3/4)



Cisco UCM: SIP Profile Configuration (4/4)

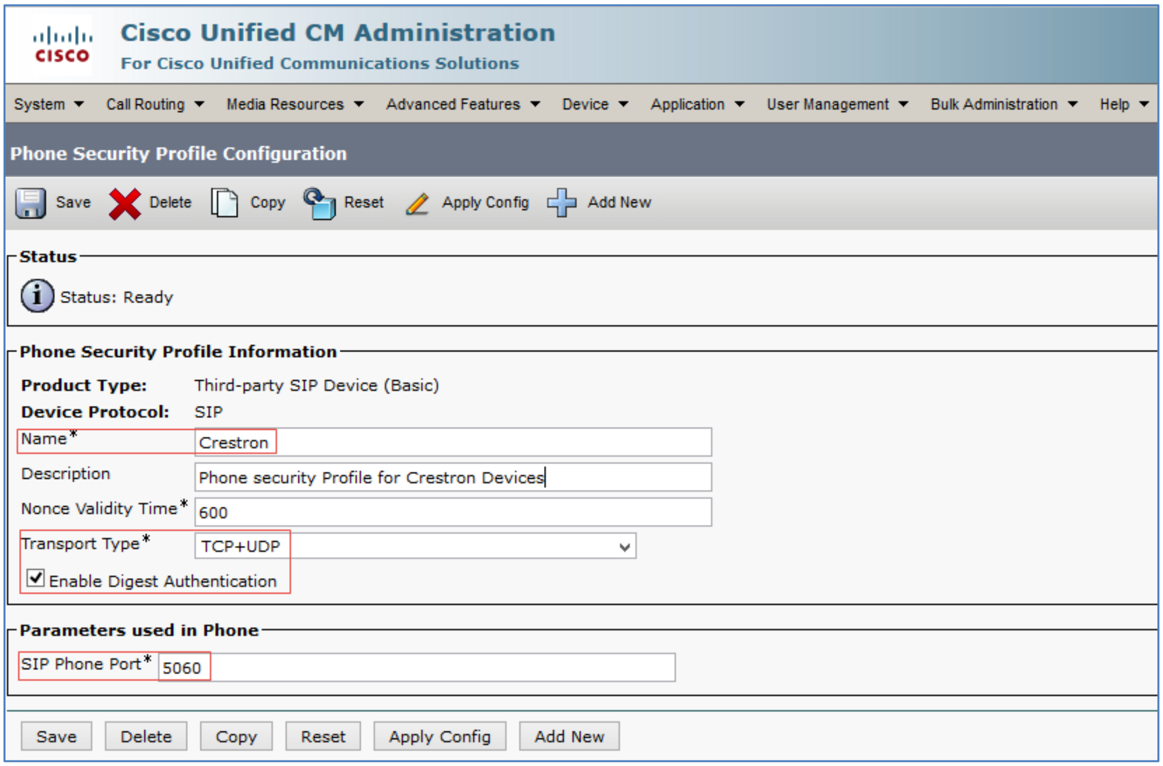


2. On the screen that appears, click **Add New** and configure the SIP Profile as below.
    a. Assign a Name: **Standard SIP Profile_Test**, used in the example.
    b. Configure **Early offer support for voice and video** calls * as Best Effort (no MTP inserted).
    c. Retain all other default config.
3. Then click **Save** and then **Apply Config**.

Configure Phone Security Profile

1. Navigate to System > Security > Phone Security Profile.

Cisco UCM: Phone Security Profile

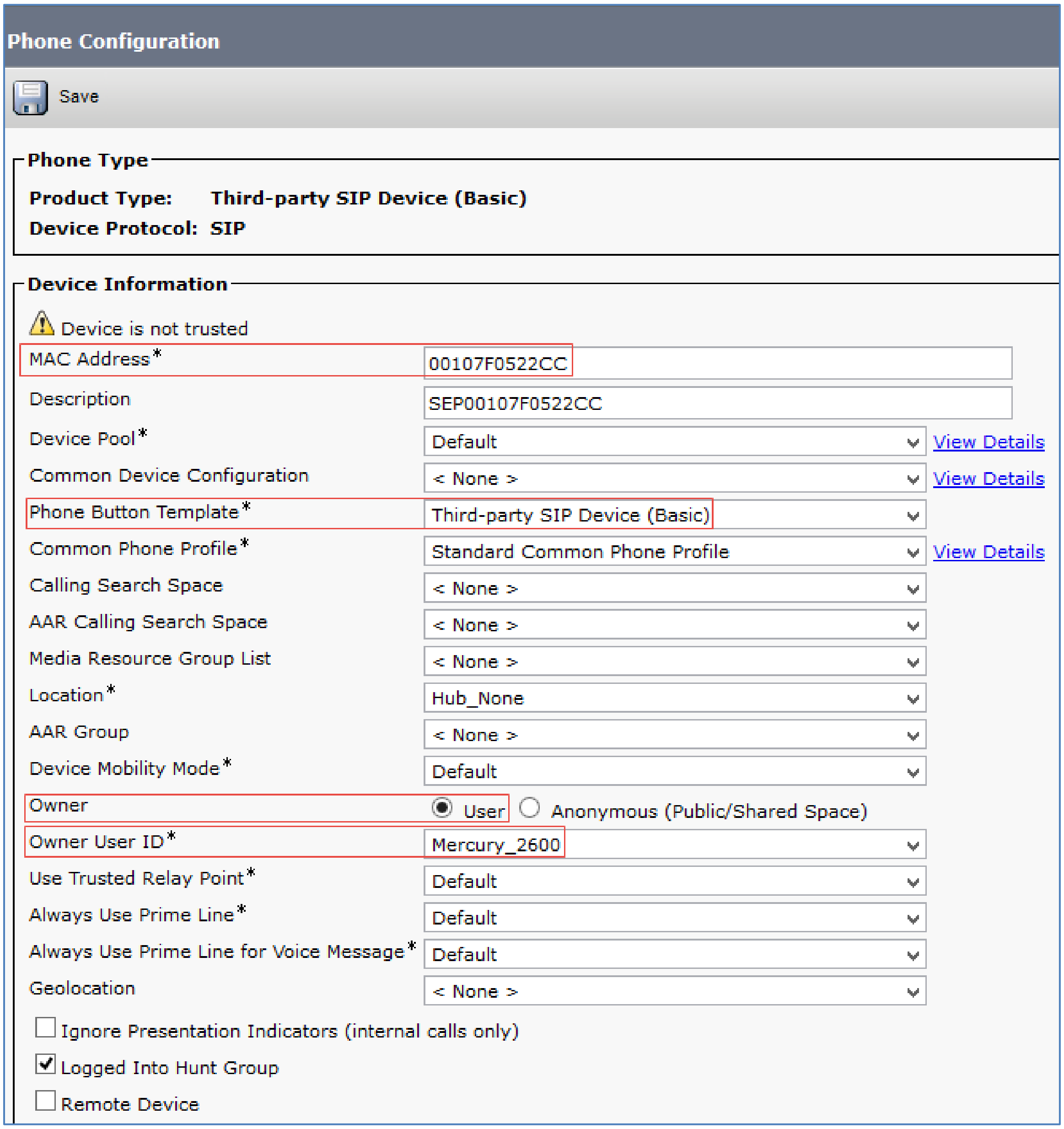


2. Click Add New.
3. Configure a Name: *Crestron*, used in this example.
4. Configure Transport Type: TCP+UDP.
5. Check the Enable Digest Authentication check box.
6. Click Save.

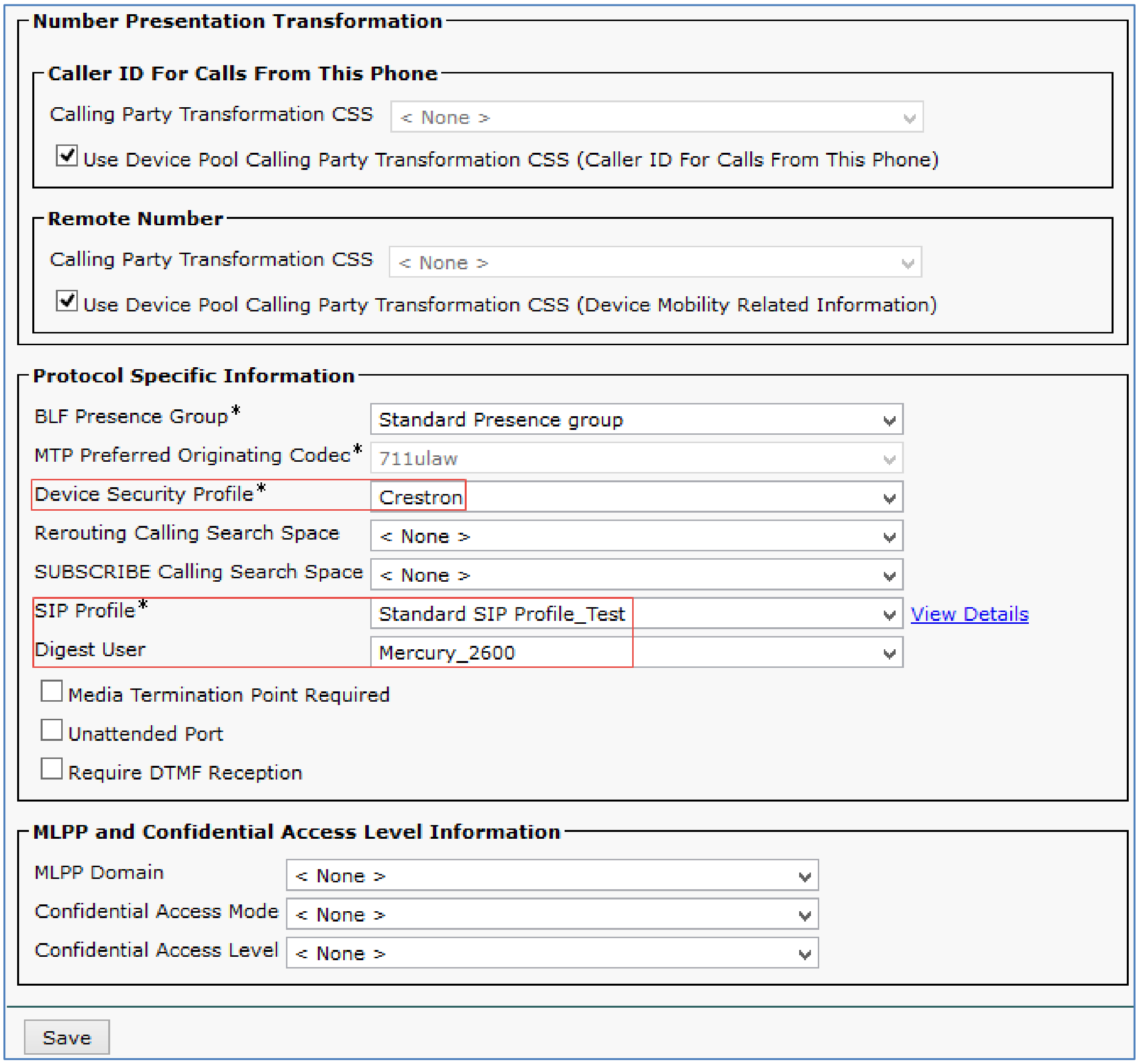
Configure the Crestron Device as a Third-Party SIP Device

1. Navigate to **Device > Phone**.
2. Click **Add New**.

Cisco UCM: Add Crestron Device as Third-Party SIP Device (1/2)



Cisco UCM: Add Crestron Device as Third-Party SIP Device (2/2)



3. Select **Phone Type** as **Third-party SIP Device (Basic)**.
4. Click **Next**.
5. Configure **MAC Address:** Enter the MAC Address of the Mercury device.
6. Select **Device Pool** as **Default**.
7. Select **Phone Button Template** as **Third-party SIP Device (Basic)**.
8. Select **Owner User ID:** select the End User configured earlier from the drop-down. In this example, *Mercury_2600* was selected for the first Mercury device and *Mercury_2602* for the second Mercury device.
9. Select **Device Security Profile** as configured earlier from the drop-down. *Crestron* was used in this example.

10. Select **SIP Profile** as configured earlier from the drop-down menu. *Standard SIP Profile_Test* was used in this example.
11. Select **Digest User ID:** select the End User configured earlier from the drop-down. In this example, *Mercury_2600* was selected for the first Mercury device and *Mercury_2602* for the second Mercury device.
12. Click **Save**.
13. Add a **DN** to this phone. *2600* was configured for one of the Mercury devices in this example. DN 2602 was added to the other Mercury device.

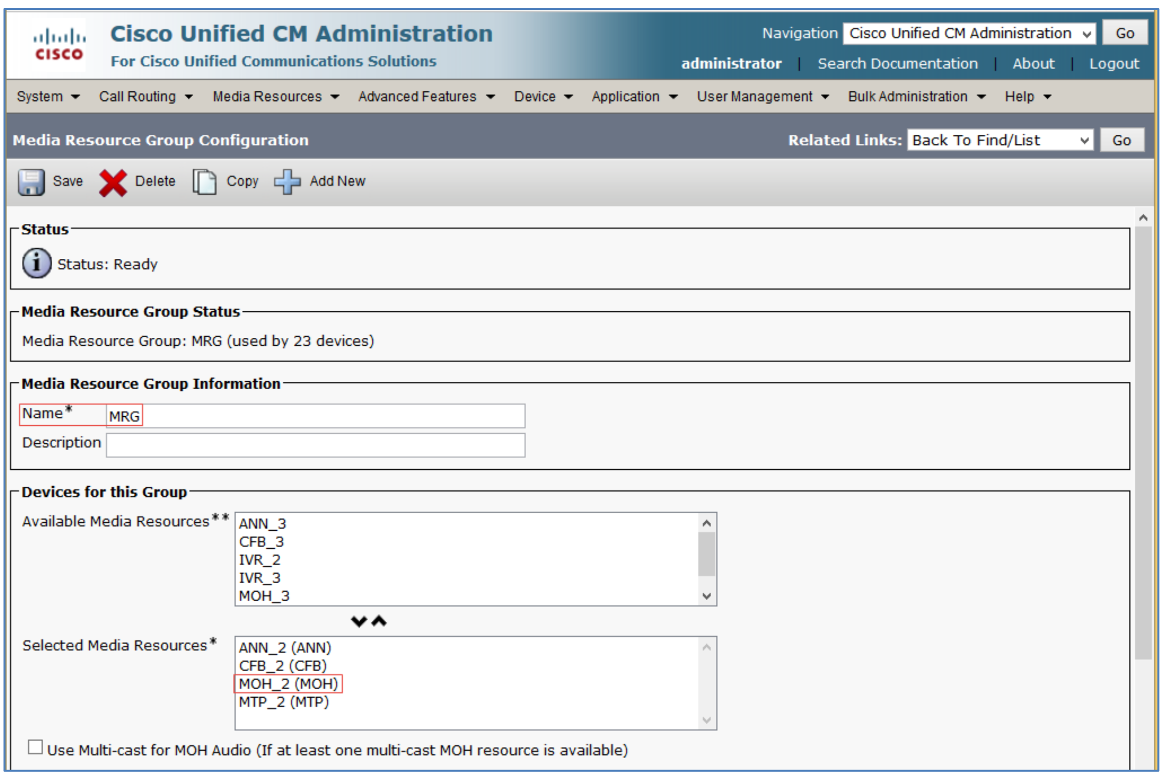
Configure Media Resource Group and Media Resource Group List

A media resource group is required to include Music on Hold servers Conference Bridges and Media Termination Points that may be required to test the Cisco UCM or Service Provider features.

To configure the Media Resource Group (MRG), perform the following procedure.

1. Select **Media Resources > Media Resource Group**.
2. Click **Add New**.

Cisco UCM: Media Resource Group Configuration



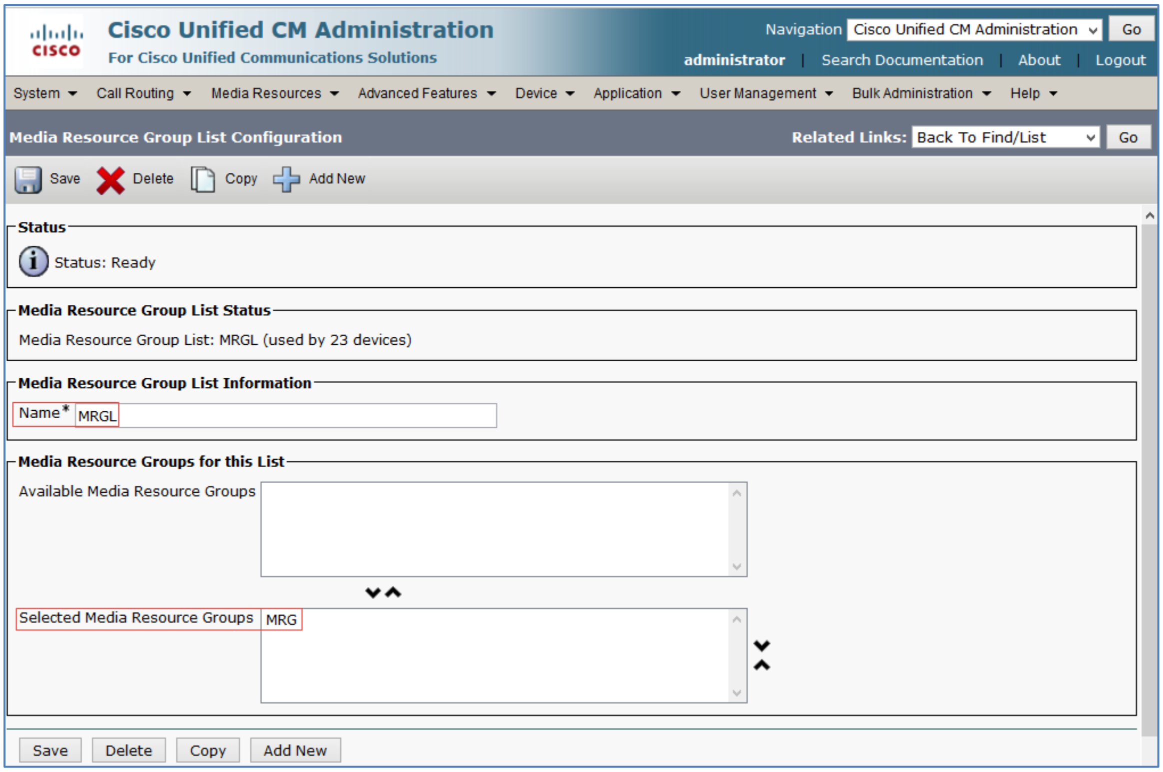
3. Provide a **Name** and select Media Resources from the **Available Media Resources**.

NOTE: These are assumed to have been added earlier and are available for use /registered with this Cisco UCM.)

Perform the following procedure to configure the Media Resource Group List (MRGL).

1. Select **Media Resources > Media Resource Group List**.

Cisco UCM: Media Resource Group List Configuration



2. Click **Add New**.
3. Provide a **Name** and select the media resource groups from the **Available Media Resource Groups**.

Configure the Duplex Streaming Parameter

1. Navigate to **System > Service Parameters**.
2. Select **Server**: Cisco UCM publisher from the drop-down menu.
3. Select **Service**: Cisco Call Manager (Active).
4. Configure **Duplex Streaming Enabled** to **True**.
   This parameter is configured to **True** to enable the device to hear MoH when it is put on hold. When set to false, the device user hears silence when the call is put on hold.

Configure Trunks

Two trunks were configured for this validation example:

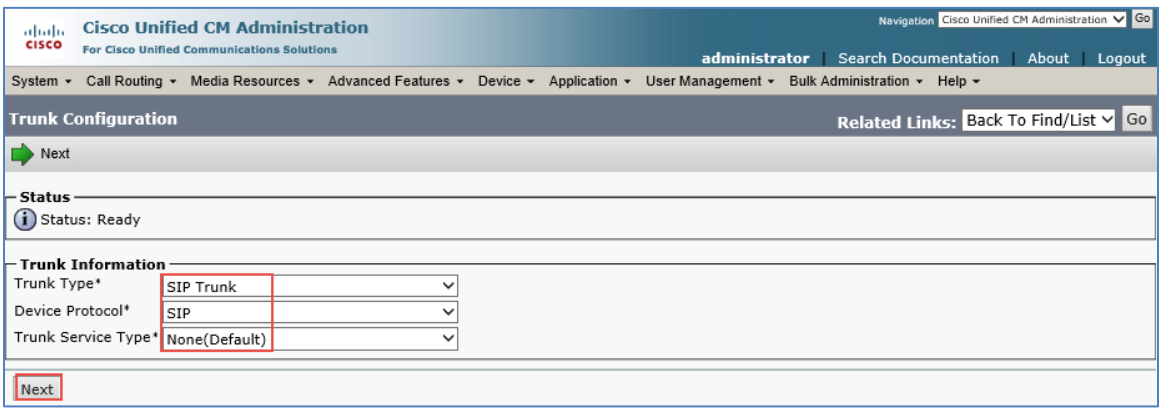
- Between the Cisco UCM and the PSTN Gateway for calls to the PSTN
- Between the Cisco UCM and Cisco Unity Connection for voicemail

Cisco UCM - PSTN Gateway Trunk Configuration

To create a new trunk, perform the following procedure.

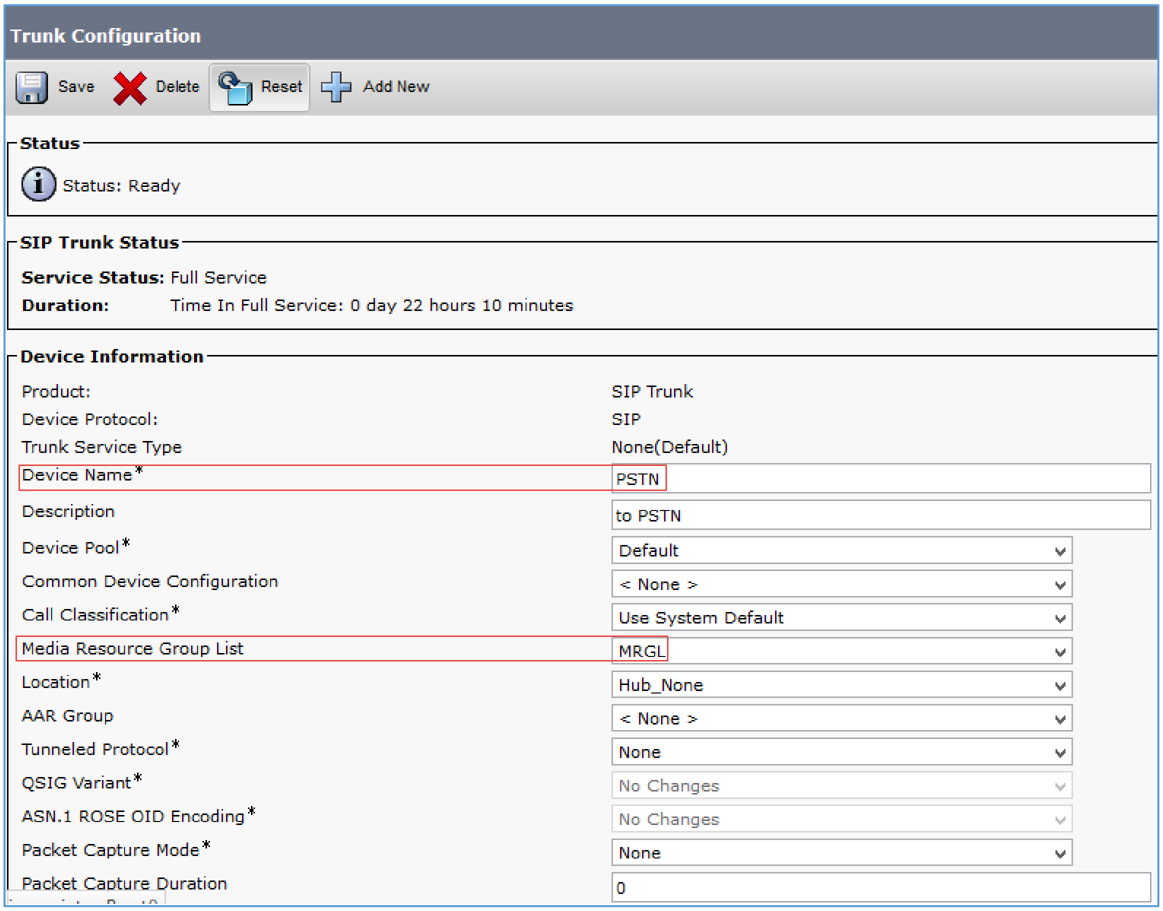
1. From the **Device** menu drop-down list, select **Trunk**.
2. Click **Add New**.

Cisco UCM: Add New Trunk



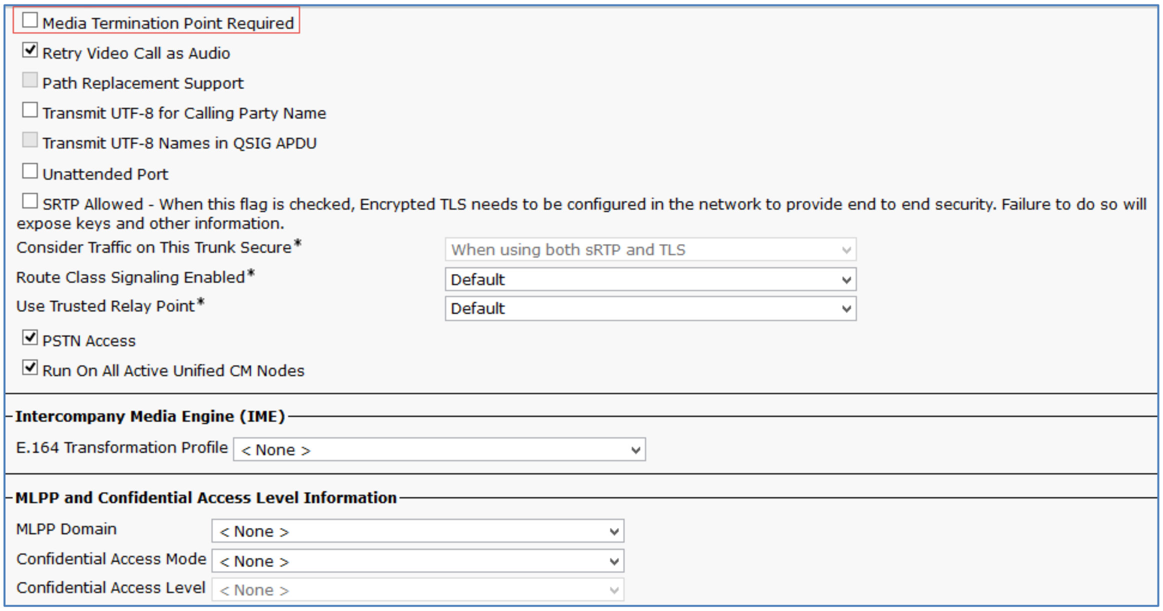
3. Select Trunk Type as **SIP Trunk**, Device Protocol as **SIP**, and Trunk Service Type as **None (Default)**.
4. Click **Next**.

Cisco UCM: Configure Cisco UCM-PSTN Trunk Parameters (1/5)



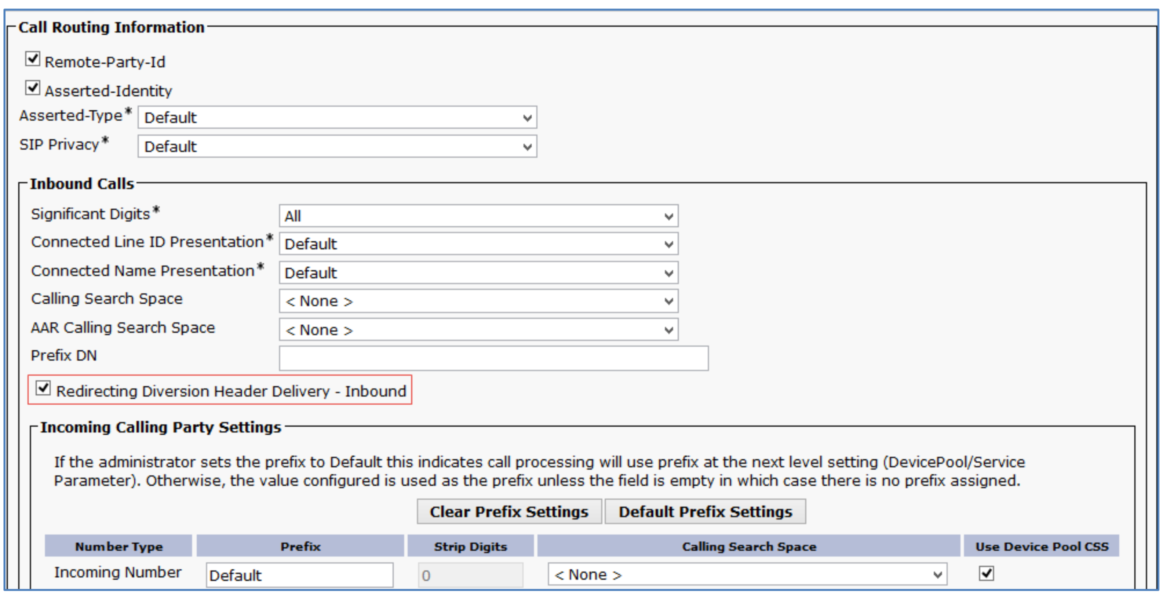
5. In the **Device Name** field, enter a unique SIP Trunk name name, and, as an option, provide a description. *PSTN* was used in this example.
6. From the **Device Pool** drop-down list, select a device pool. *Default* was used in this example.
7. From the Media Resource Group List, select **MRGL** from the drop-down menu.
8. Ensure that the **Media Termination Point Required** is unchecked.

Cisco UCM: Configure Cisco UCM-PSTN Trunk Parameters (2/5)



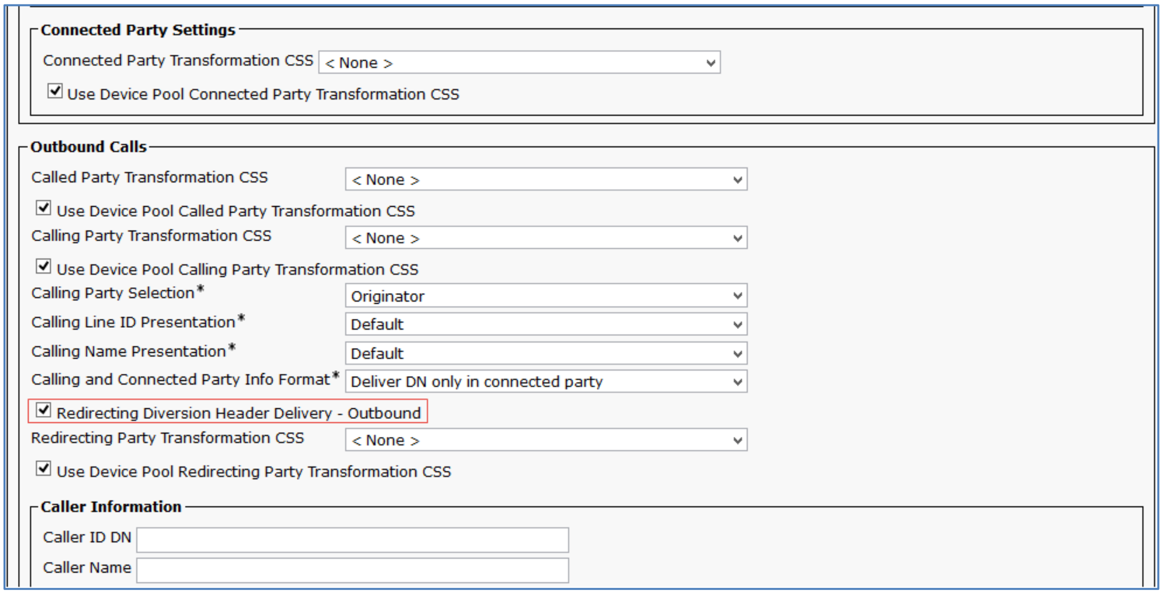
9. Select the Redirecting Diversion Header Delivery – Inbound check box.

Cisco UCM: Configure Cisco UCM-PSTN Trunk Parameters (3/5)



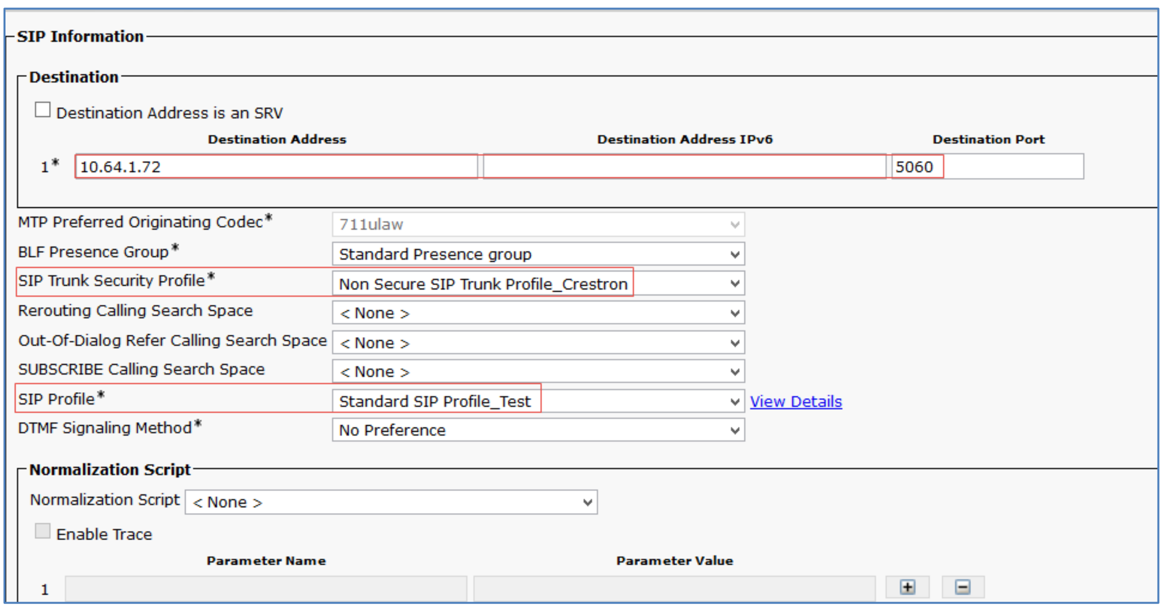
10. Select the Redirecting Diversion Header Delivery – Outbound check box.

Cisco UCM: Configure Cisco UCM-PSTN Trunk Parameters (4/5)



11. Configure the SIP Information as described in the following procedure.

Cisco UCM: Configure Cisco UCM-PSTN Trunk Parameters (5/5)



a. Enter the **Destination Address** and port of the PSTN Gateway.

b. Select the **Non Secure SIP Trunk Profile_Crestron** as the **SIP Trunk Security Profile.**

c. Select the configured **Standard SIP Profile_Test** SIP Profile.

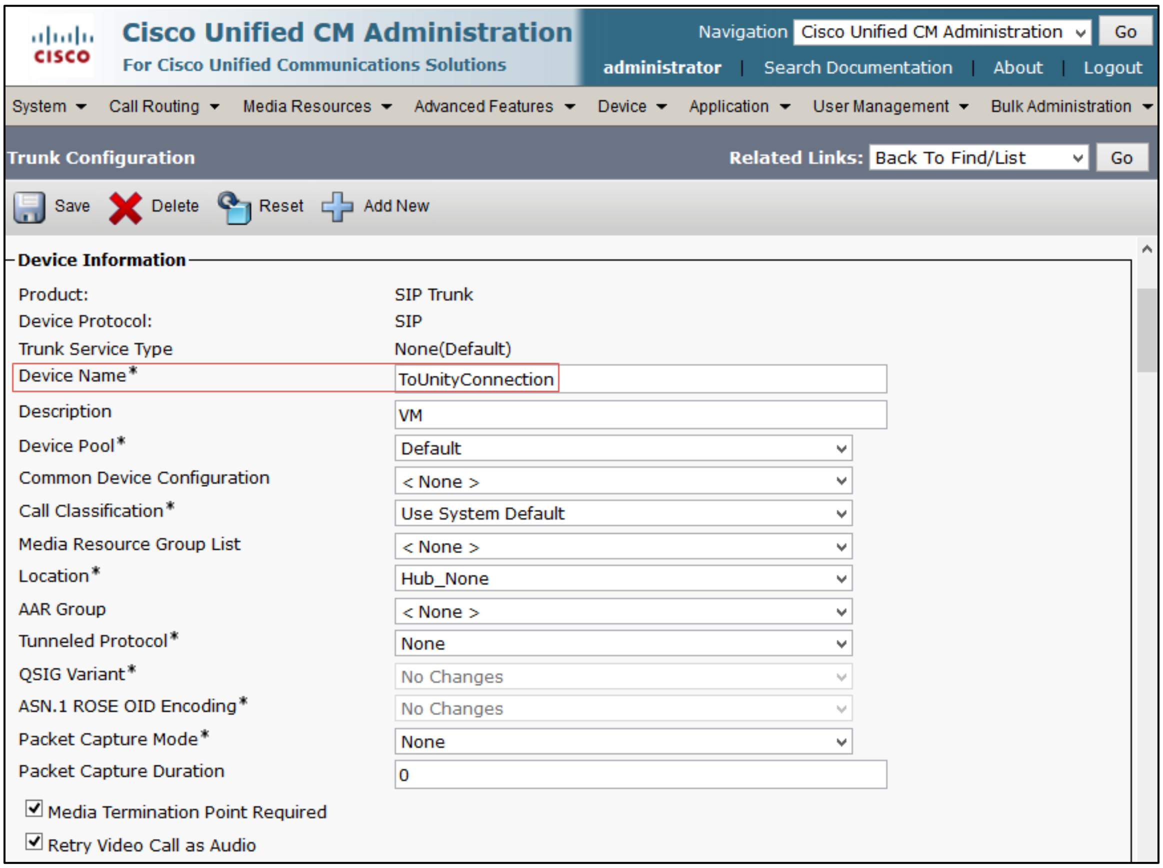
12. Click **Save.**

Cisco UCM - Unity Connection Trunk Configuration

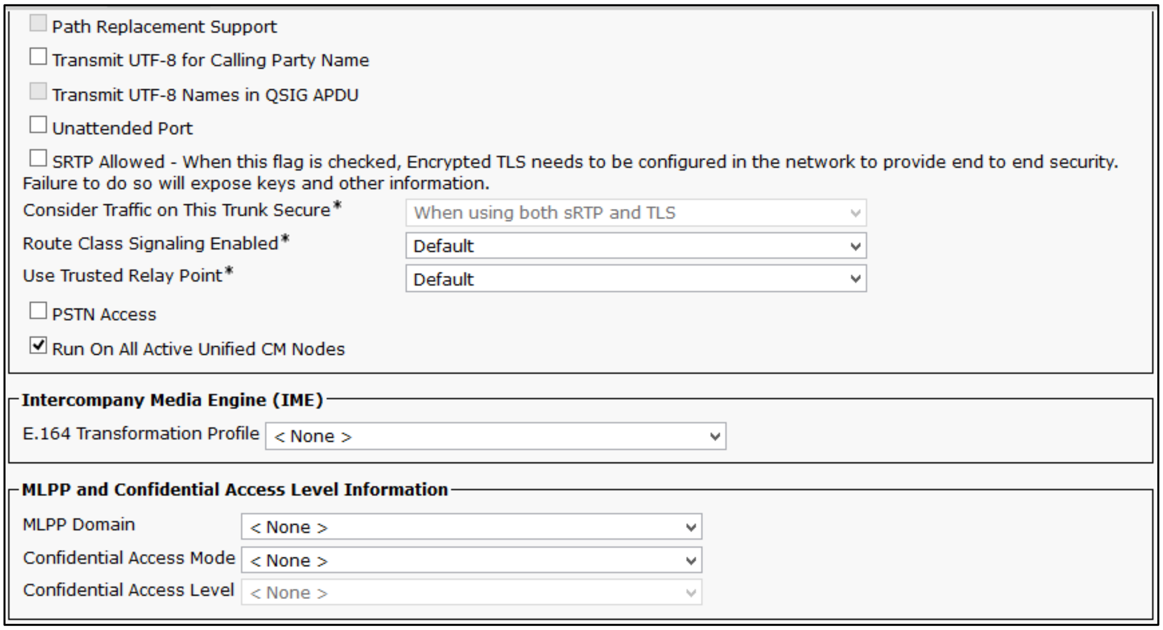
Similar to the above trunk configuration, configure a new trunk from Cisco UCM to the Unity Connection Server.

Below are screenshots of the trunk parameters.

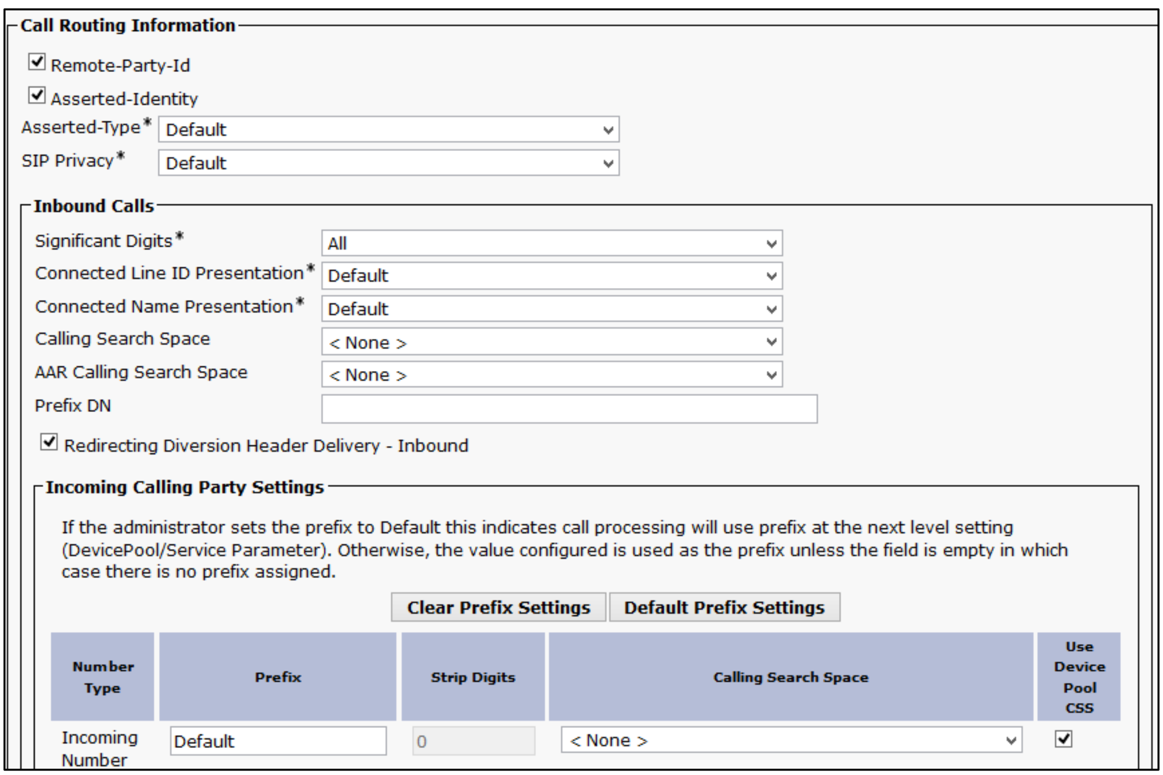
Cisco UCM: Trunk to Voicemail System - Unity Connection (1/6)



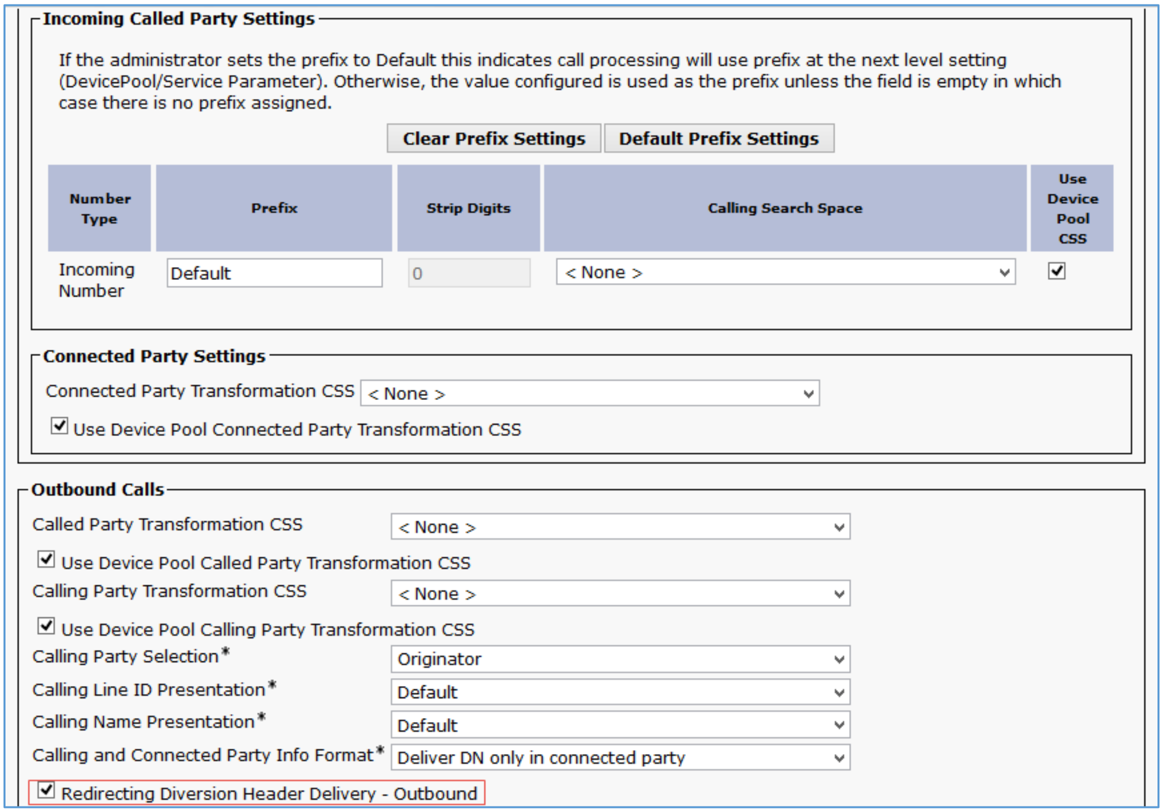
Cisco UCM: Trunk to Voicemail System - Unity Connection (2/6)



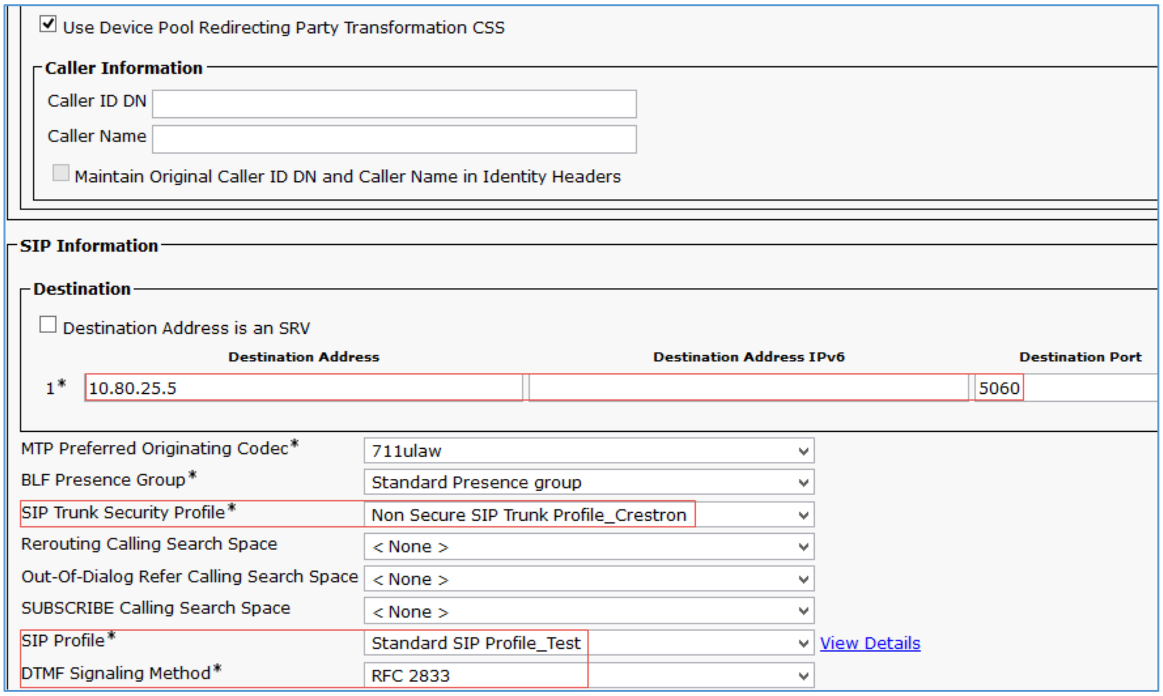
Cisco UCM: Trunk to Voicemail System - Unity Connection (3/6)



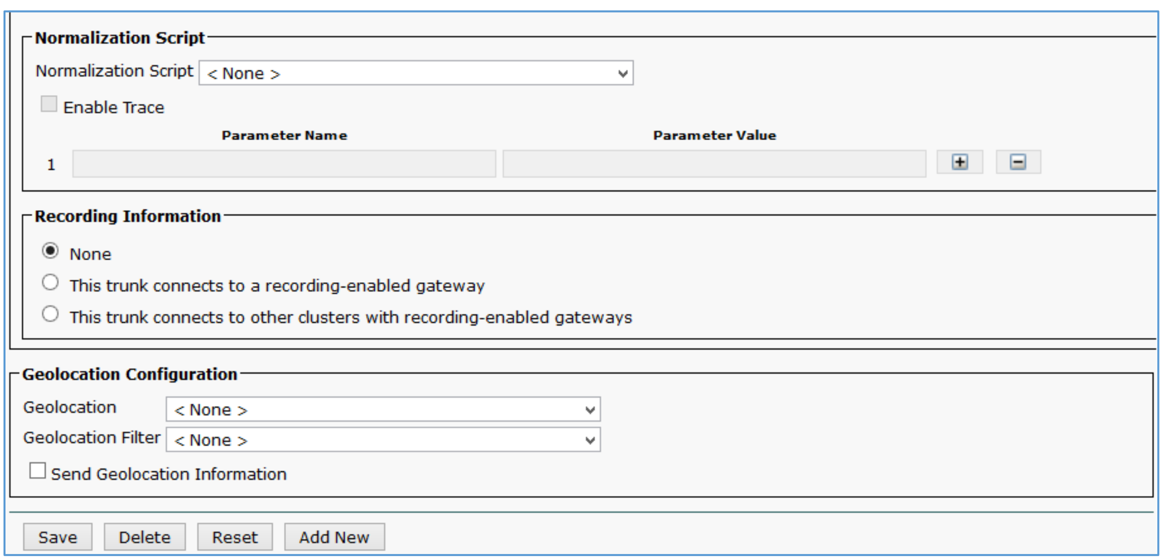
Cisco UCM: Trunk to Voicemail System - Unity Connection (4/6)



Cisco UCM: Trunk to Voicemail System - Unity Connection (5/6)



Cisco UCM: Trunk to Voicemail System - Unity Connection (6/6)



Configure Route Patterns

Route patterns were configured for the following:

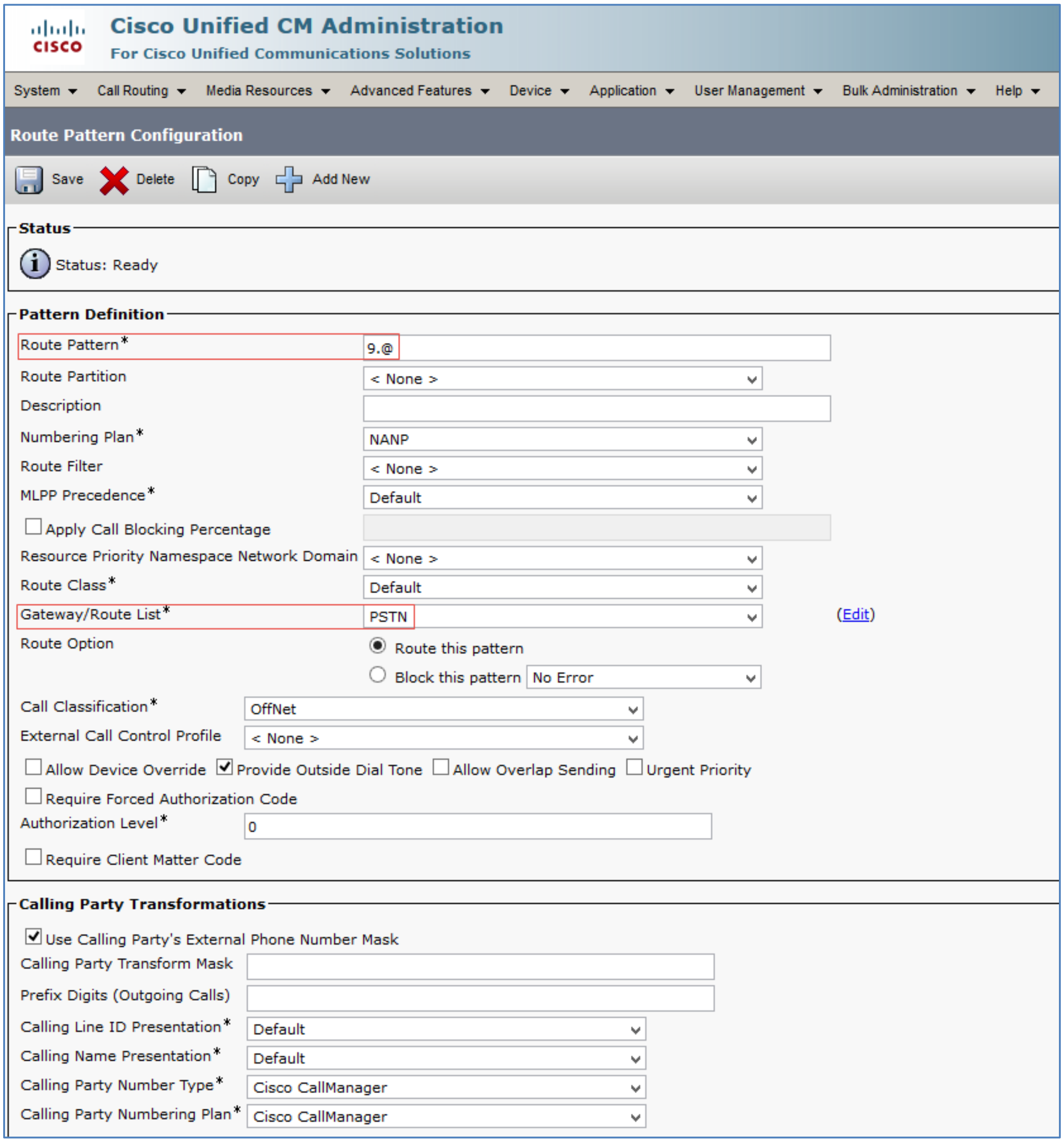
- To route calls from the Cisco UCM to the PSTN
- To restrict Caller ID on outgoing calls
- To access the voicemail

To configure route patterns, perform the following procedure.

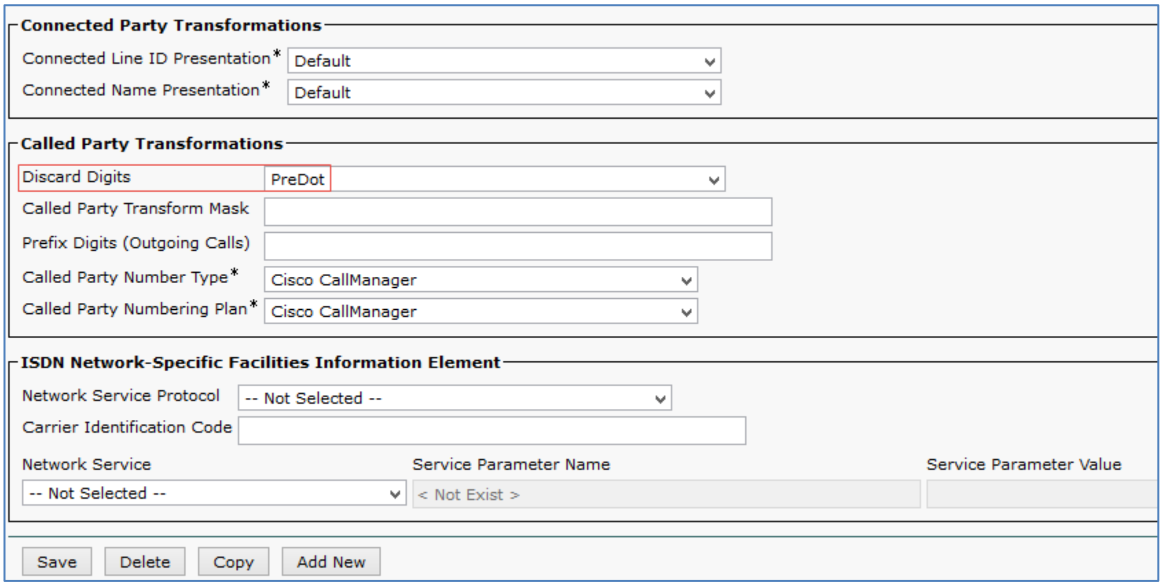
1. Navigate to Call Routing > Route/Hunt > Route Pattern.
2. Click Add New.
3. Enter the details desired and then Click Save.

The route pattern *9.@* was configured to enable outbound dialing from Cisco UCM to PSTN using the access code as "9". The screenshot below shows the configuration.

Cisco UCM: Route Pattern: Outbound Dialing Using Access Code 9 (1/2)

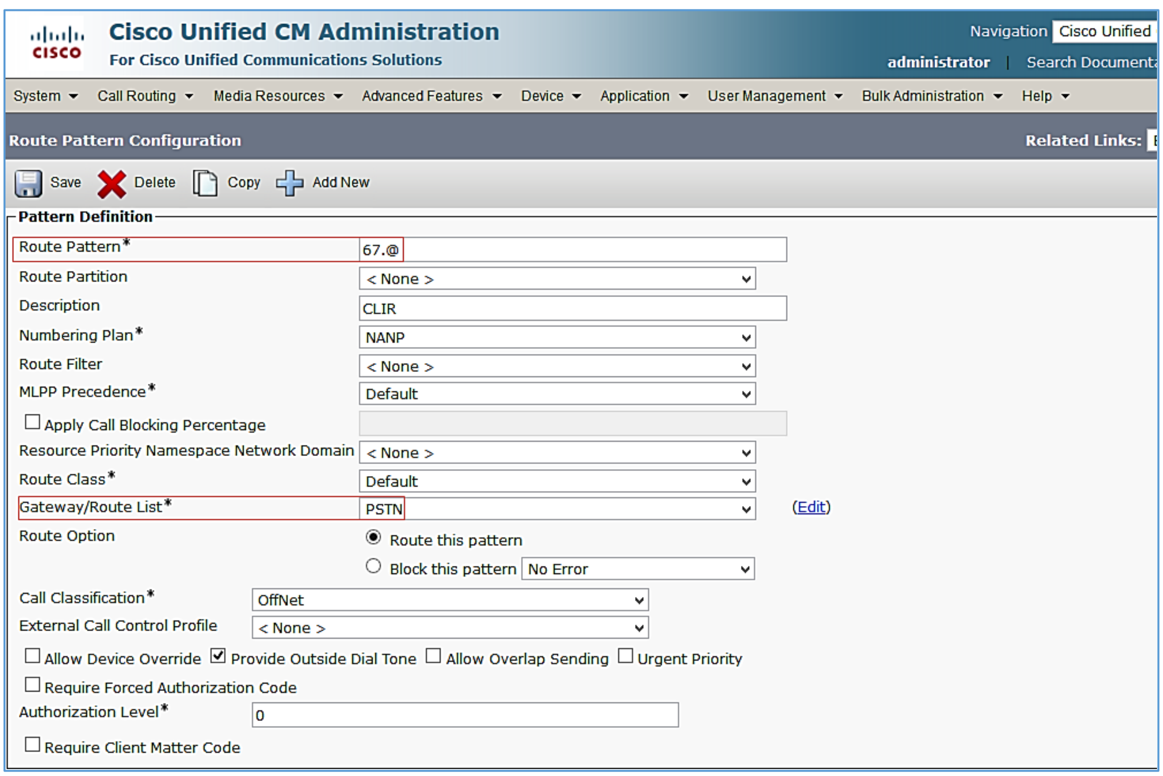


Cisco UCM: Route Pattern: Outbound Dialing Using Access Code 9 (2/2)

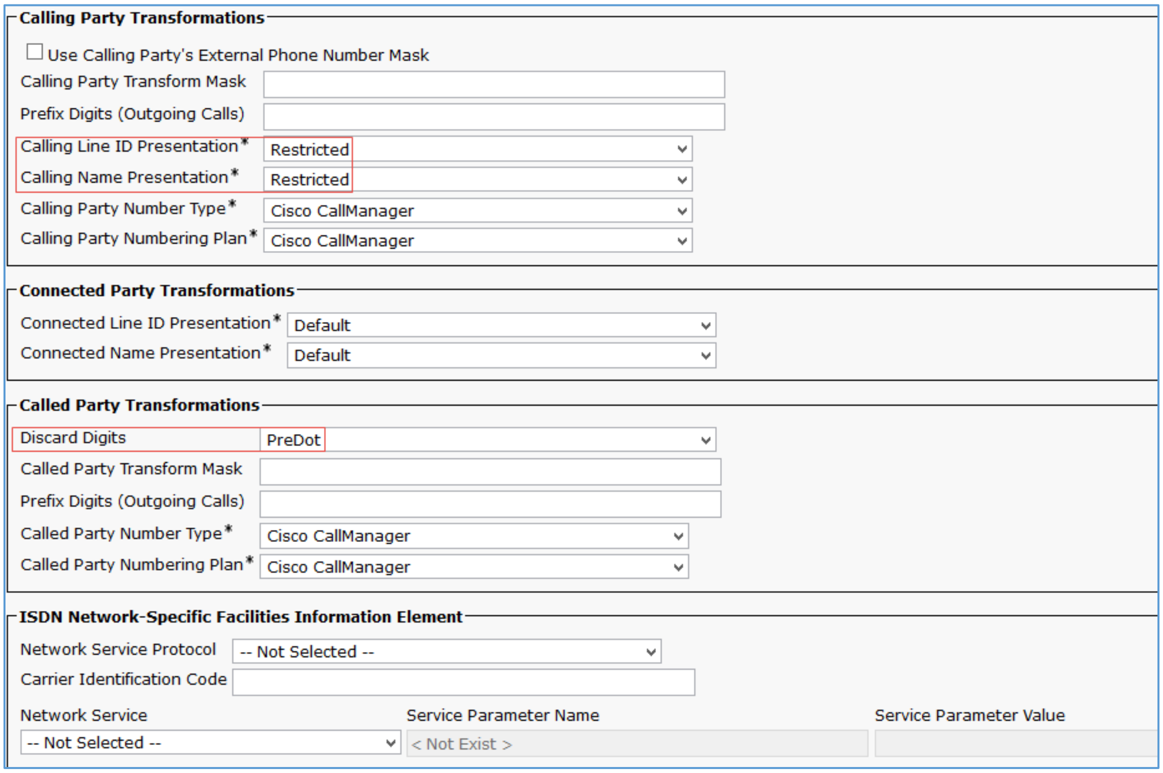


The route pattern *67.@* was configured to restrict Caller ID on outbound calls. The screenshots below show the configuration.

Cisco UCM: Route Pattern: Restrict Caller ID (1/2)

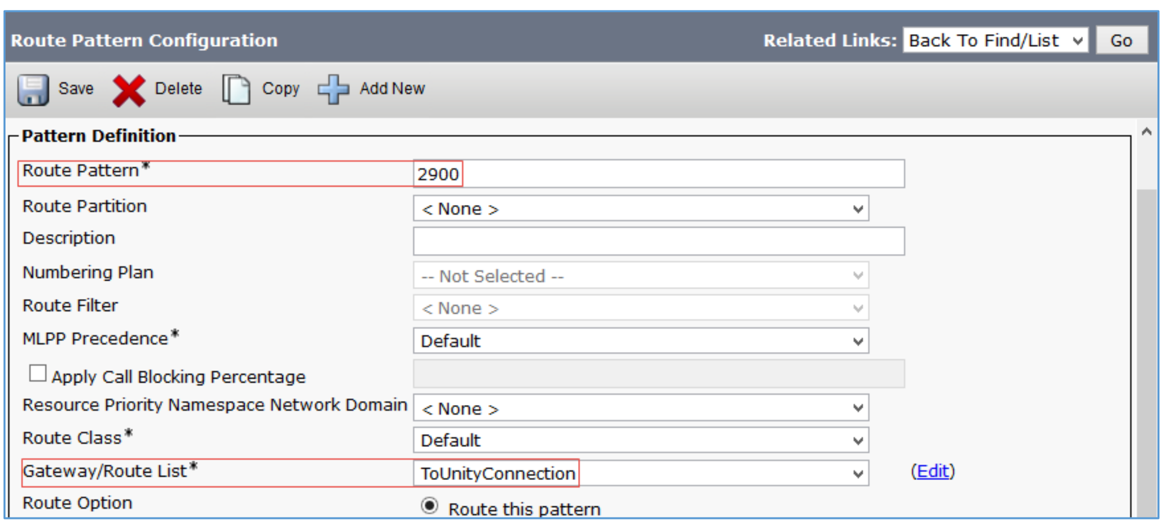


Cisco UCM: Route Pattern: Restrict Caller ID (2/2)

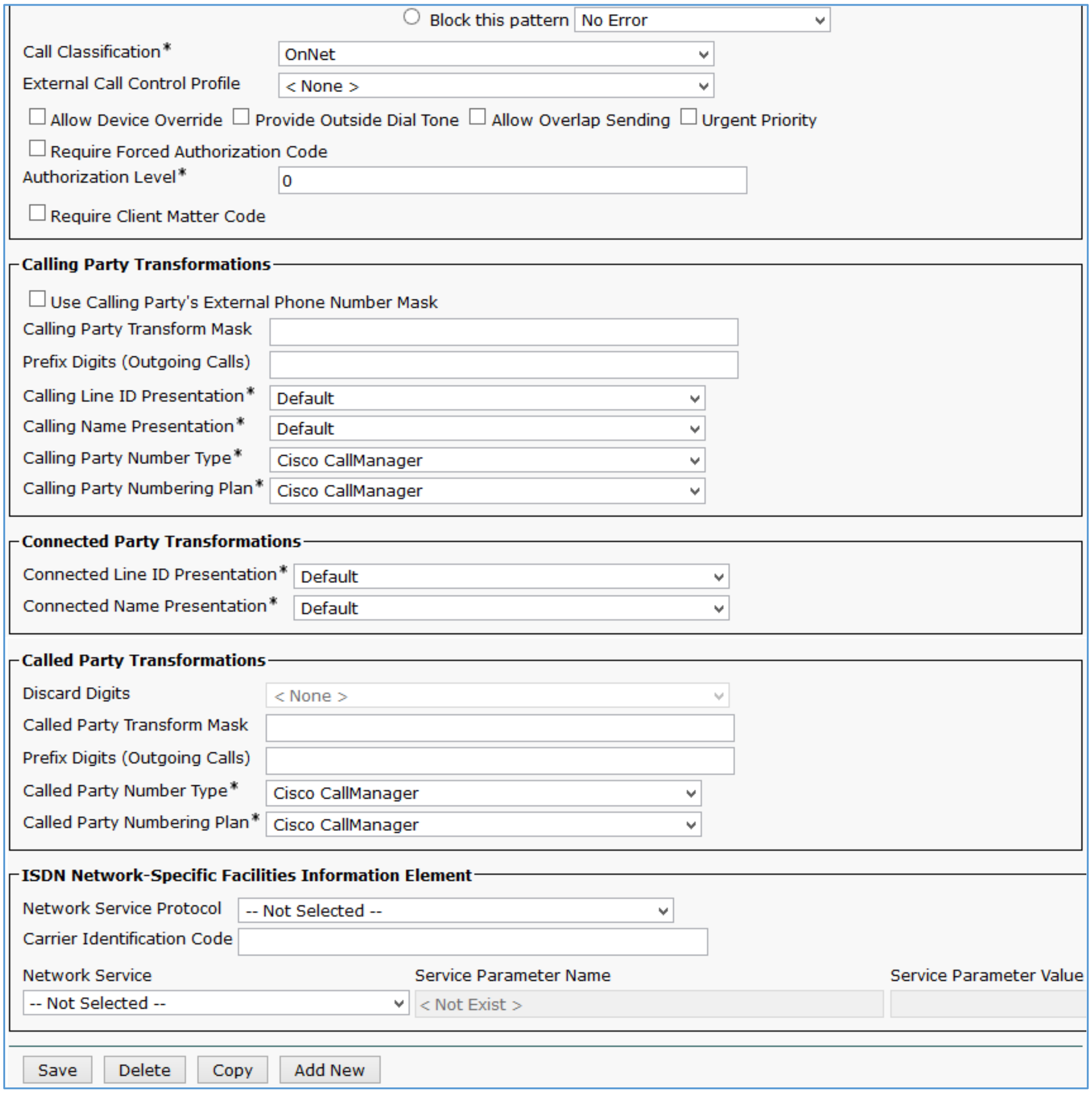


The route pattern *2900* was configured to route the voicemail pilot number (2900) to the Unity Connection server as shown in the following screenshots.

Cisco UCM: Route Pattern: Voicemail Pilot Number (1/2)



Cisco UCM: Route Pattern: Voicemail Pilot Number (2/2)



Voicemail Configuration

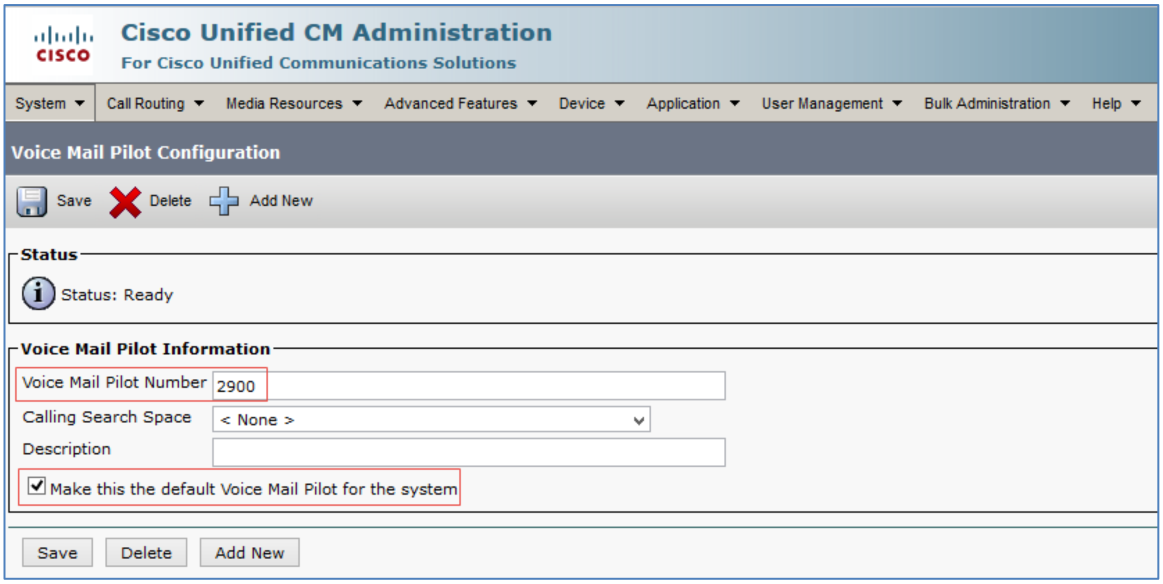
A Cisco UCM - Cisco Unity Connection SIP integration was performed to test voicemail scenarios. Below is the configuration on Cisco UCM and Unity Connection.

Configure Voicemail Pilot and Voicemail Profile on Cisco UCM

1. Navigate to Advanced Features > Voicemail > Voicemail Pilot.
2. Add a new pilot number. *2900* was used in this example.

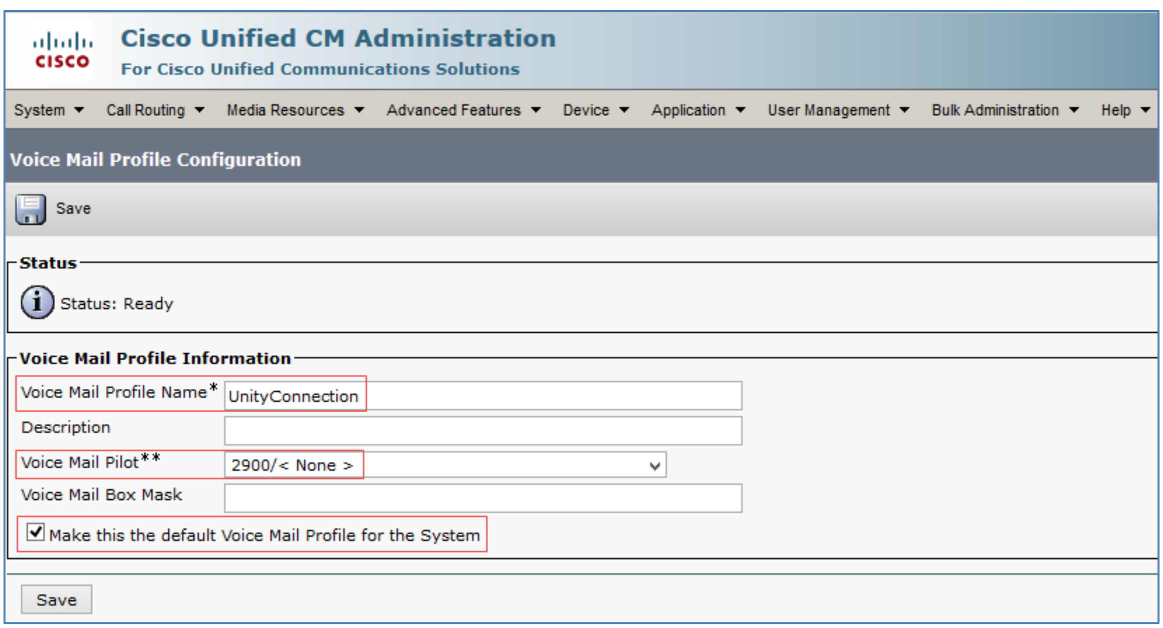
3. Check the **Make this the default Voice Mail Pilot for the System** check box.

Cisco UCM: Add Voicemail Pilot Number



4. Configure a **Voicemail Profile** with this pilot number as shown below.
5. Check the **Make this the default Voice Mail Pilot for the System** check box.

Cisco UCM: Voicemail Profile

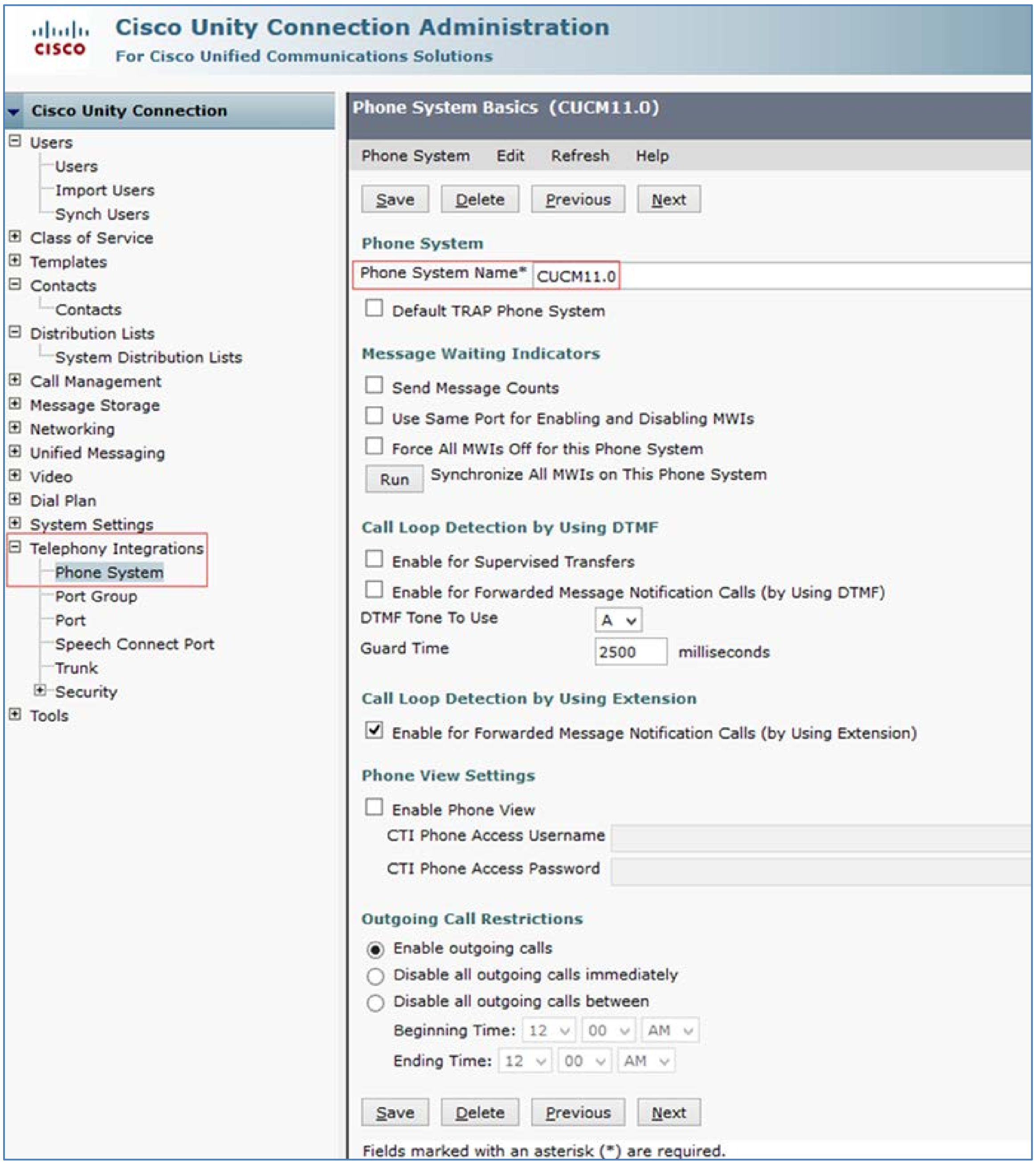


Configuration on Unity Connection: Add New Phone System

To configure a new phone system after logging into Unity Connection, follow this procedure.

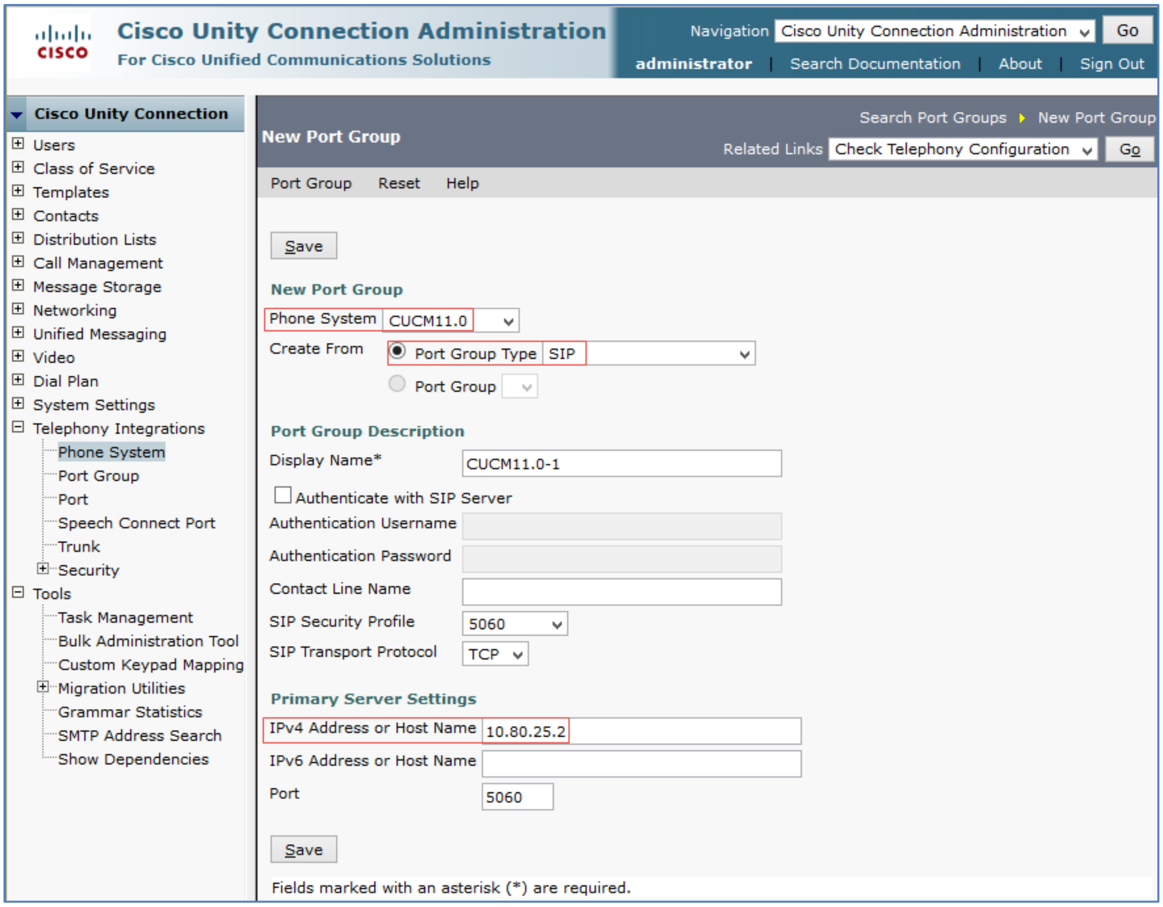
1. Navigate to **Telephony Integrations** > **Phone System**.
2. Click **Add New**.

Cisco Unity Connection: Phone System



3. Configure the **Phone System Name**. **CUCM11.0** was used in this example.
4. Click **Save**.
5. Add a new **Port group** as shown in the screenshot below.

Cisco Unity Connection: Add New Port Group



   a. On the **Phone System Basics** page, in the **Related Links** drop-down box, select **Add Port Group** and select **Go**.

   b. **Phone System**: Select the one created earlier. **CUCM11.0** was used in this example.

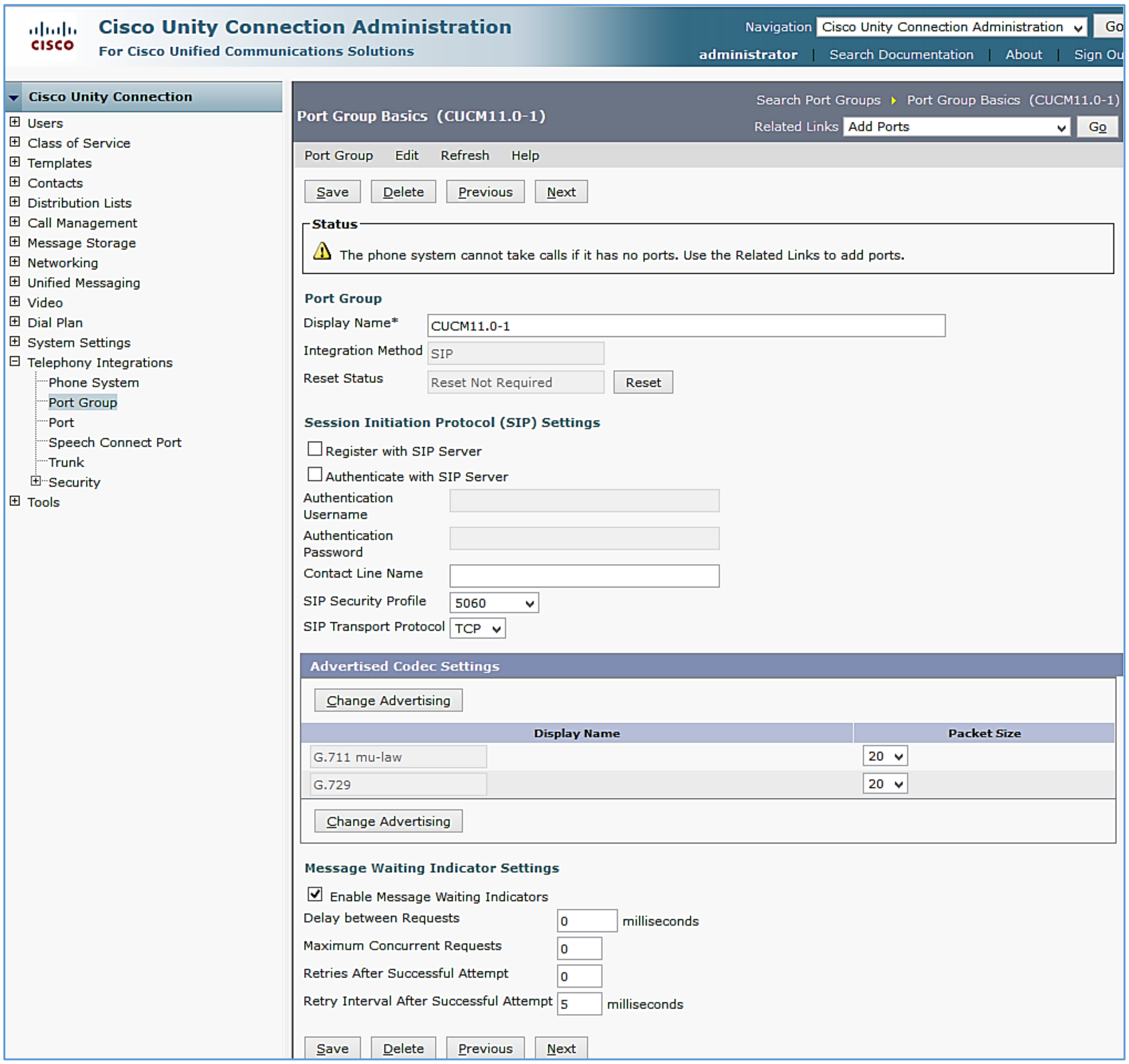
   c. **Create From**: Select **Port Group Type** and select **SIP** from the drop-down menu.

   d. **IPv4 Address or Host Name**: Enter the IP address (or host name) of the primary Cisco UCM server that is being integrated with Cisco Unity Connection.

   e. Click **Save**.

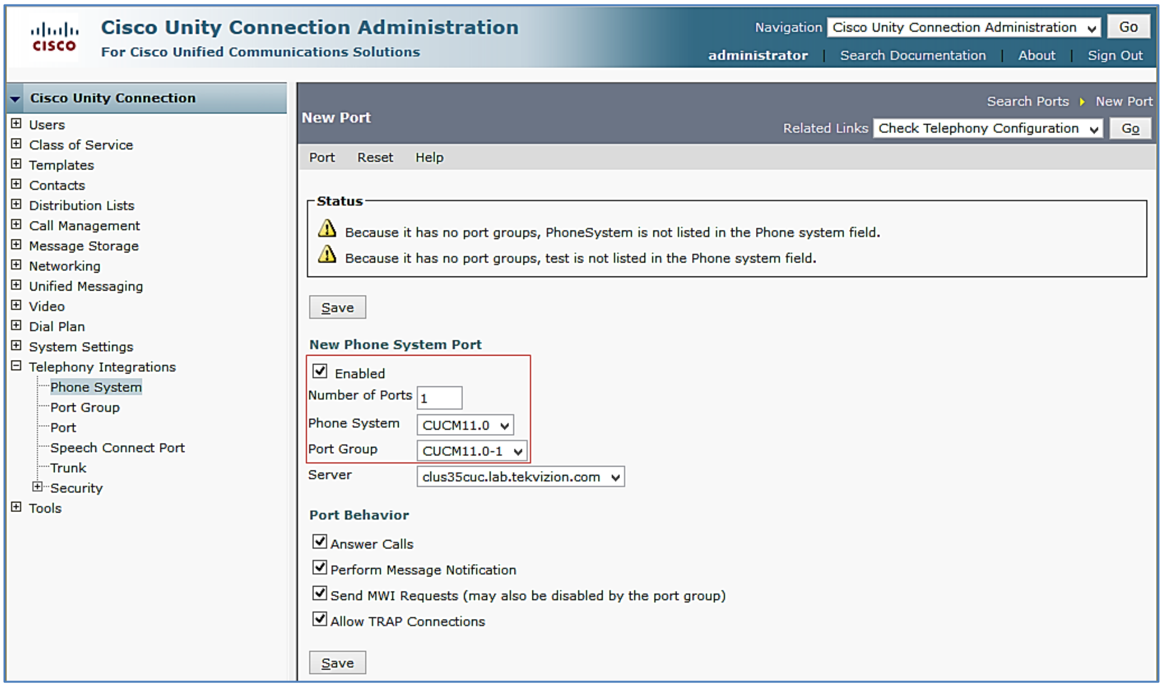
6. On the Port Group Basics page, in the Related Links drop-down box, select **Add Ports**, and select **Go**.

Cisco Unity Connection: Port Group Added: Related Links to Add Port



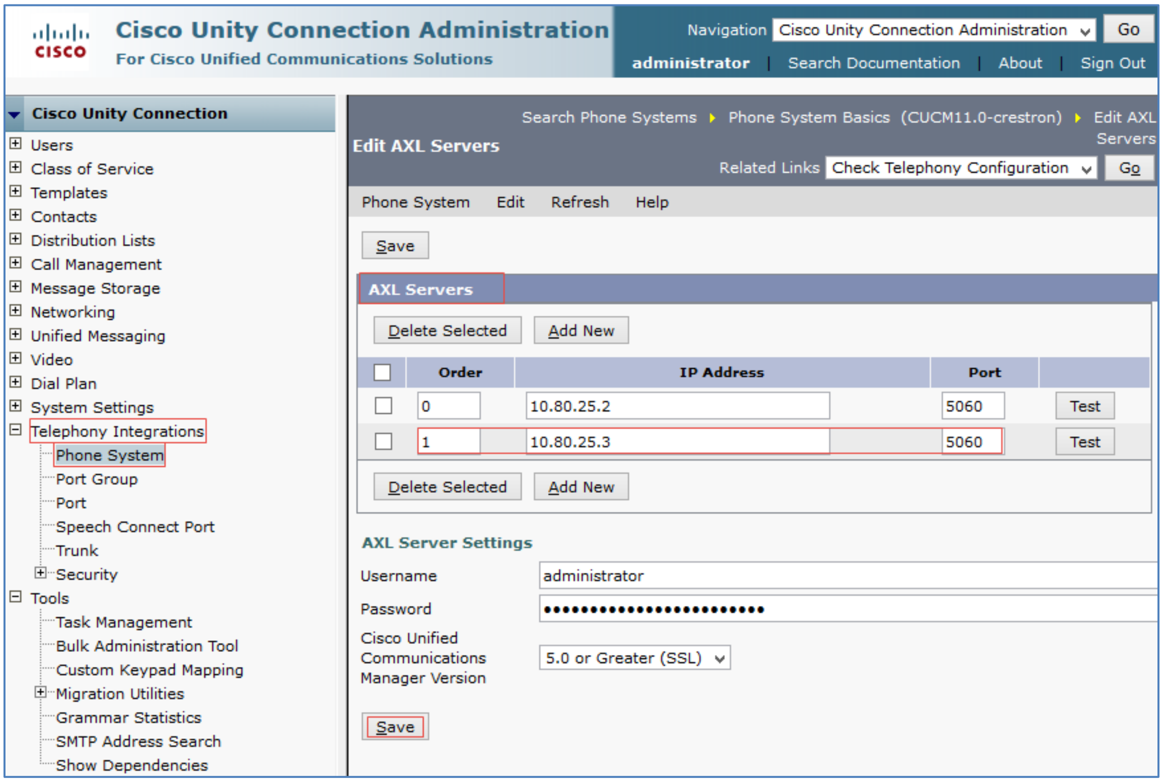
7. On the **New Port** page, configure the settings as shown below and select **Save.**

Cisco Unity Connection: Add New Port



8. Add the Cisco UCM subscriber IP to the list of AXL servers for this phone system.

Cisco Unity Connection: Edit AXL Servers



a. Navigate to **Telephony Integrations** > **Phone System** > **CUCM11.0**.

b. On the Phone System Basics, click **Edit** > **Cisco Unified Communications Manager AXL Servers**.

c. Click **Add New** or in the second row, configure the Cisco UCM Subscriber IP and port. 10.80.25.3 and 5060 was used in this example.

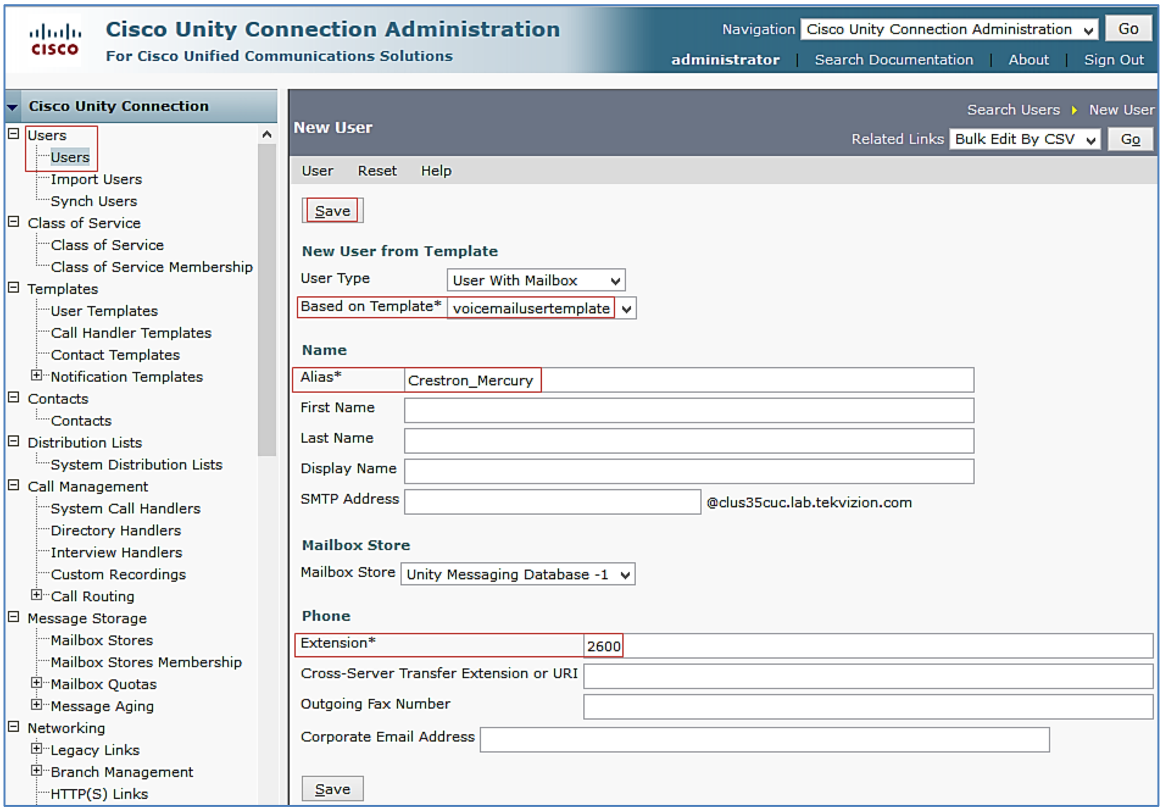
9. Click **Save**.

Configure a Voicemail User

To configure a new user that would have a voicemail box, after logging into Unity Connection, perform the following procedure.

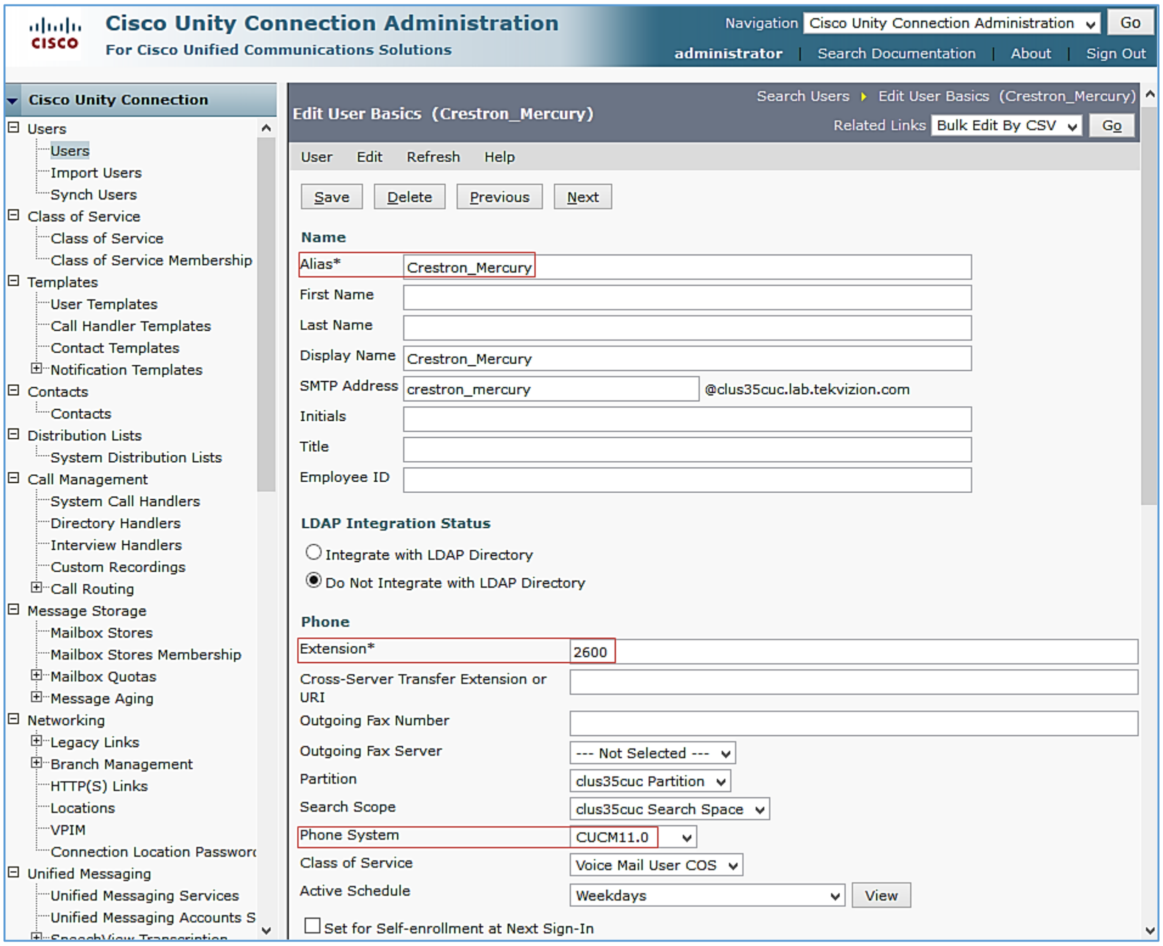
1. Navigate to **Users** > **Users**.
2. Click **Add New**.

Cisco Unity Connection: Add User



3. Configure a **Based on Template** from the drop-down menu. *voicemailusertemplate* was used in this example.
4. Configure an **Alias**. *Crestron_Mercury* was used in this example.
5. Configure an **Extension** for the user. *2600* was used in this example.
6. Click **Save.**
7. On the screen that follows, configure the **Phone System**.

Cisco Unity Connection: Assign Phone System to User



a. Select the Phone System configured earlier from the drop-down menu. **CUCM11.0** was used in this example.

b. Click **Save**.

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