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Introduction

This article describes how to configure the Dial via Office-Reverse (DVO-R) feature on Cisco Unified Communications Manager and Cisco Jabber for Android or iPhone to work via Cisco Expressway Mobile and Remote Access.

Prerequisites

Requirements

- Cisco Unified Communications Manager 11.0(1a) SU1 (or later)
- Cisco Jabber for Android or Cisco Jabber for iPhone 11.1 (or later)
- Cisco Expressway X8.7

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Unified Communications Manager 11.0(1a) SU1 (or later)
- Cisco Jabber for Android or Cisco Jabber for iPhone 11.1 (or later)
- Cisco Expressway X8.7

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.

Configure

Set up DVO-R

To set up DVO-R, you must do the following:

1. [Set up Cisco Unified Communications Manager to Support DVO-R.](#)
2. [Set up DVO-R for Each Device.](#)
3. [Set up User-Controlled Voicemail Avoidance.](#)
4. [Add Remote Destination](#) (optional).
5. [Configure Jabber Client Settings.](#)

Note: Before configuring and enabling DVO-R, verify that your Cisco Jabber mobile client can register and make a call to an enterprise extension over the Cisco Expressway MRA connection.

Set up Cisco Unified Communications Manager to Support DVO-R

To set up Cisco Unified Communications Manager to support DVO-R, complete the following steps:

1. [Set up an Enterprise Feature Access Number.](#)
2. Verify that you have the correct Device COP File Version. See the Cisco Jabber for Android [Release Notes](#) or the Cisco Jabber for iPhone [Release Notes](#) for the version you are running.
3. If necessary, make appropriate dial plan changes to allow the system to route calls to the Mobile Identity phone number to the outbound gateway. Ensure that the format of the number is appropriate for call routing in line with your dial plan.

Set up an Enterprise Feature Access Number

Use this procedure to set up an Enterprise Feature Access Number (EFAN) for Cisco Jabber DVO-R calls.

Note: When you call someone using DVO-R, the Caller ID received by the called person is your enterprise number and not the EFAN. The EFAN is only used as the caller ID for the callback leg to the Mobile Identity or Alternate Number.

1. Open the **Cisco Unified CM Administration** interface.
2. Select **Call Routing > Mobility > Enterprise Feature Access Number Configuration.**
3. Select **Add New.**
4. In the **Number** field, enter the EFAN. Enter a DID number that is unique in the system. To support dialing internationally, you can prepend this number with \+.
5. In the **Description** field, enter a description of the Mobility EFAN.

6. (Optional) Check the **Default Enterprise Feature Access Number** check box if you want to make this EFAN the default for this system.
7. Select **Save**.

Note: It is also possible to set up a Mobility Profile for Cisco Jabber devices (optional if you have already configured a default EFAN). Mobility profiles allow you to set up the DVO-R settings for a mobile client. After you set up a Mobility Profile, you can assign it to a user or to a group of users, such as the users in a region or location. For more information, see the [Cisco Jabber Deployment and Installation Guide](#) for your release.

Set up DVO-R for each Device

Use the following procedures to set up DVO-R for each TCT or BOT device.

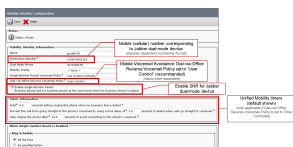
1. [Add a Mobility Identity](#) to the dual-mode device associated to each user.
2. [Enable DVO-R on Each Device](#) on the dual-mode device associated with each user.
3. If you enable Single Number Reach (optional), verify that it works. Dial the desk phone extension and check that the phone number that is specified in the associated mobile identity rings.

Add Mobility Identity

Note: Use this procedure to add a Mobility Identity to specify the number of the mobile device as the destination number. You can specify only one number when you add a Mobility Identity. If you want to specify an Alternate Number, such as a second mobile phone number, you can set up a remote destination. The Mobility Identity configuration characteristics are identical to those of the Remote Destination configuration.

1. Open the **Cisco Unified CM Administration** interface.
2. Navigate to the device that you want to configure as follows:
Select **Device > Phone**. Search for the BOT or TCT device that you want to configure. Select the device name to open the **Phone Configuration** window.
3. In the **Associated Mobility Identity** section, select **Add a New Mobility Identity**.
4. Enter the mobile phone number as the destination number. You must be able to route this number to an outbound gateway. Generally, the number is the full E.164 number. **Note:** If you enable DVO-R for a user, you must enter a destination number for the user's Mobility Identity.
5. Set the **Dial-via-Office Reverse Voicemail Policy** to **User Control**.
6. Check the **Enable Single Number Reach** check box.
7. Leave the Ring Schedule at **All the time** or set up the schedule for routing calls to the mobile number at specific times and/or on specific days.
8. Select **Save**.

The below diagram outlines the required Mobility Identity configuration for an Android device.



The below diagram outlines the required Mobility Identity configuration for an iPhone device.

Mobility Identity Configuration

Status: Ready

Mobility Identity Information

- Name: jsmith-MI
- Destination Number*: +19876543210
- Dual Mode Phone: TCTJSMITH
- Mobility Profile: < None >
- Single Number Reach Voicemail Policy*: Use System Default
- Dial-via-Office Reverse Voicemail Policy*: User Control
- Enable Single Number Reach
Ring this phone and my business phone at the same time when my business line(s) is dialed.

Timer Information

- Wait*: 4.0 seconds before ringing this phone when my business line is dialed.*
- Prevent this call from going straight to this phone's voicemail by using a time delay of*: 1.5 seconds to detect when calls go straight to voicemail.*
- Stop ringing this phone after*: 19.0 seconds to avoid connecting to this phone's voicemail.*

When Single Number Reach is Enabled

Ring Schedule

- All the time
- As specified below

Monday All Day No Office Hours to No Office Hours

Annotations:

- Mobile (cellular) number corresponding to Jabber dual-mode device [dial plan dependent numbering format]
- Mobile Voicemail Avoidance: Dial-via-Office Reverse Voicemail Policy set to "User Control" (recommended) [deployment dependent]
- Enable SNR for Jabber dual-mode device
- Unified Mobility timers (default shown) [only applicable if Dial-via-Office Reverse Voicemail Policy is set to Timer Controlled]

Enable DVO-R on Each Device

1. Open the **Cisco Unified CM Administration** interface.
2. Navigate to the device that you want to configure as follows:
Select **Device > Phone**. Search for the BOT or TCT device that you want to configure. Select the device name to open the **Phone Configuration** window.
3. In the **Protocol Specific Information** section, in the **Rerouting Calling Search Space** drop-down list, select a Calling Search Space (CSS) that can route the call to the DVO-R callback number.
4. In the **Product Specific Configuration Layout** section, set the **Dial via Office** drop-down list to **Enabled**.
5. Select **Save**.
6. Select **Apply Config**.
7. Instruct the user to sign out of the client and then to sign back in again to access the feature.

The below two diagrams outline how to configure Dual Mode for an Android device and enable DVO-R.

Device Information

- Product Type: Cisco Dual Mode for Android
- Device Product: SIP
- Device Name: BOTJSMITH
- Calling Search Space: PSTN
- Rerouting Calling Search Space: Standard Dual Mode for Android
- SIP Profile: Standard SIP Profile for Mobile Device

Protocol Specific Information

- Rerouting Calling Search Space: Standard Dual Mode for Android - Standard SIP Non-S
- SIP Profile: Standard SIP Profile for Mobile Device

Annotations:

- Add Dual Mode for Android device
- Device name must begin with BOT, all caps
- Specify custom Softkey template with Mobility softkey (needed for SNR configuration) [see Mobility Softkey Template]
- Calling Search Space (CSS) in concatenation with line CSS determines how dialed calls are routed [dial plan dependent]
- Select User and assign device ownership by selecting User ID for both Owner and Mobility fields [see End User]
- Specify secure or non-secure SIP profile
- Rerouting CSS determines how calls to mobile (or alternate number) are routed (DVO-R callback leg and SNR) [dial plan dependent]
- Specify default SIP Profile for Mobile Device to ensure Jabber stays registered when running in the background

The below two diagrams outline how to configure Dual Mode for an iPhone device and enable

DVO-R.

Phone Type
Product Type: Cisco Dual Mode for iPhone
Device Protocol: SIP

Real-time Device Status
Registration: Registered with Cisco Unified Communications Manager gmt-dvor-cucm1.cisco.com
IPV4 Address: 10.117.135.28
Active Load ID: Jabber_for_IOS-11.5
Download Status: Unknown

Device Information
 Device is Active
 Device is trusted

Device Name* TCTJSMITH
 Description jsmith - Jabber for iPhone
 Device Pool* Default
 Common Device Configuration < None >
 Phone Button Template* Standard Dual Mode for iPhone
Softkey Template Mobility
 Common Phone Profile* Standard Common Phone Profile

Calling Search Space (CSS)
Calling Search Space (CSS) in concatenation with line CSS determines how dialed calls are routed [dial plan dependent]

Owner and Mobility fields
Select User and assign device ownership by selecting User ID for both Owner and Mobility fields [see End User]

Owner User
Owner User ID* jsmith
Mobility User ID jsmith

Add Dual Mode for iPhone device

Device name must begin with TCT, all caps

Specify custom Softkey template with Mobility softkey (needed for SNR configuration) [see Mobility Softkey Template]

Calling Search Space (CSS) in concatenation with line CSS determines how dialed calls are routed [dial plan dependent]

Select User and assign device ownership by selecting User ID for both Owner and Mobility fields [see End User]

Number Presentation Transformation
Caller ID For Calls From This Phone
 Calling Party Transformation CSS < None >
 Use Device Pool Calling Party Transformation CSS (Caller ID For Calls From This Phone)

Remote Number
 S (Device Mobility Related Information)

Protocol Specific Information
 Packet Capture Mode* None
 Packet Capture Duration 0
 BLF Presence Group* Standard Pr
 MTP Preferred Originating Codec 711ulaw
Device Security Profile* Cisco Dual Mode for iPhone - Standard SIP Non-Se
Rerouting Calling Search Space PSTN
SUBSCRIBE Calling Search Space < None >
SIP Profile* Standard SIP Profile for Mobile Device
 Digest User < None >

Retrouting CSS determines how calls to mobile (or alternate number) are routed (DVO-R callback leg and SNR) [dial plan dependent]

Specify secure or non-secure SIP profile

Specify default SIP Profile for Mobile Device to ensure Jabber stays registered when running in the background

Associated Mobility Identity

Name	Destination Number
jsmith-MI	+19876543210

Associated Remote Destinations
[Add a New Remote Destination](#)

Certification Authority Proxy Function (CAPF) Information
 Certificate Operation* No Pending Operation
 Authentication Mode* By Null String
 Authentication String
 Key Order* RSA Only
 RSA Key Size (Bits)* 2048
 EC Key Size (Bits) < None >
 Operation Completes By 2015 9 18 12 (YYYY:MM:DD:HH)
 Certificate Operation Status: None
 Note: Security Profile Contains Addition CAPF Settings.

MLPP and Confidential Access Level Information
 MLPP Domain < None >
 Confidential Access Mode < None >
 Confidential Access Level < None >

Do Not Disturb
 Do Not Disturb
 DND Option* Call Reject

Product Specific Configuration Layout
 Cisco Usage and Error Tracking Enabled
 Enable SIP Digest Authentication Disabled

Associated Mobility Identity [see Mobility Identity Configuration]

Product Specific Configuration Layout
 Allow End User Configuration Editing Disabled
 iPhone Country Code
 Cisco Usage and Error Tracking Enabled
 Enable SIP Digest Authentication Disabled
 SIP Digest Username
 CTI Control Username
Dial via Office Disabled
Enable Voice Dialing Motion Disabled
Enable Voice Dialing Motion Enabled
 Voice Dialing Phone Number
 Add Voice Dialing to Favorites Enabled
 Sign In Feature Disabled
 Directory Lookup Rules URL
 Application Dial Rules URL
 Transfer to Mobile Network Use Mobility Softkey (user receives call)
 Voicemail Username
 Voicemail Server
 Voicemail Message Store Username
 Voicemail Message Store
 Enable LDAP User Authentication Disabled
 LDAP Username
 LDAP Password
 LDAP Server
 Enable LDAP SSL Disabled
 LDAP Search Base
 LDAP Field Mappings
 LDAP Photo Location
 Emergency Numbers 999,911,112
 On-Demand VPN URL

Enable Dial via Office Reverse for the device (dual-mode only)

Set up Single Number Reach (Optional)

Single Number Reach (SNR) allows the native mobile phone number to ring when someone calls the work number if:

- Cisco Jabber is not available. After Jabber becomes available again, and connects to the corporate network, Cisco Unified Communications Manager returns to placing VoIP calls rather than using SNR.
- The user selects the Mobile Voice Network calling option.
- The user selects the Autoselect calling option and the user is outside of the Wi-Fi network.

Note: While SNR can enhance the user experience, it is not required for DVO-R to work.

To set up SNR you must complete the following:

1. [Enable Single Number Reach.](#)
2. [Add Mobility Identity.](#)
3. [Add Remote Destination](#) (optional).
4. Test your connection.

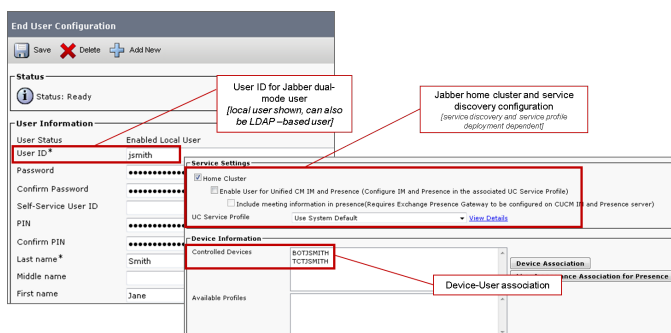
Enable Single Number Reach

Use the following procedure to enable SNR for an end user.

1. Open the **Cisco Unified CM Administration** interface.
2. Search for and delete any existing Remote Destination or Mobility Identity that is already set up with the mobile phone number as follows:
Select **Device > Remote Destination**. Search for the destination number. Delete the destination number.
3. Configure the end user for SNR as follows:
Select **User Management > End User**. Search for the end user. Select the User ID to open the **End User Configuration** window. In the Mobility Information section, check the **Enable Mobility** check box. Select **Save**.
4. Configure the device settings for SNR as follows:
Navigate to **Device > Phone**. Search for the BOT or TCT device that you want to configure. Select the device name to open the **Phone Configuration** window. Enter the following information:
Softkey Template: Choose a softkey template that includes the **Mobility** button. For information about setting up softkey templates, refer to the Cisco Unified Communications Manager Administration Guide for your release (see the Related Information section or the below diagram for more information). Mobility User ID: Select the user. Owner User ID: Select the user. The value must match the mobility user ID. Rerouting Calling Search Space: Choose a Rerouting Calling Search Space that routes to the mobile phone number. Select **Save**.

Note: Cisco Jabber allows users to specify a callback number for DVO-R calls that is different from the mobile phone number of the device, and the Rerouting Calling Search Space controls which callback numbers are reachable. If the user sets up the DVO-R Callback Number with an Alternate Number, ensure that you set up the dial plan to route calls to the Alternate Number.

The below two diagrams outline how to complete the configuration for an end user.



Use this procedure to add a Remote Destination and specify an additional number as the destination number. The Mobility Identity configuration characteristics are identical to those of the

Remote Destination configuration. Additional remote destinations can be any type of phone number, such as home phone numbers, conference room numbers, or multiple mobile phone numbers for additional mobile devices. You can add more than one remote destination.

1. Open the **Cisco Unified CM Administration** interface.
2. Navigate to the device that you want to configure as follows:
Select **Device > Phone**. Search for the BOT or TCT device that you want to configure. Select the device name to open the **Phone Configuration** window.
3. In the **Associated Remote Destinations** section, select **Add a New Remote Destination**.
4. Enter the desired phone number as the **Destination Number**. You must be able to route the number to an outbound gateway. Generally, the number is the full E.164 number.
5. Enter the initial values for the following call timers. For more information, see the online help in Cisco Unified Communications Manager.
6. Check the **Enable Single Number Reach** check box.
7. Set up the schedule for routing calls to the mobile number at specific times and/or specific days.
8. Select **Save**.

Set up User-Controlled Voicemail Avoidance

Note: To prevent the callback leg from Cisco Unified Communications Manager routing to your voicemail — thus stopping the voicemail call going through to the person you are dialing — Cisco recommends that you set your DVO-R voicemail policy to ‘user controlled’. This ensures you must generate a DTMF tone by pressing any key on the keypad before your call can proceed.

Caution: When enabling user-controlled voicemail avoidance, DTMF must be successfully propagated from the carrier to Cisco Unified Communications Manager in order for users to make DVO-R calls.

Use this procedure to set up Cisco Unified Communications Manager to support user-controlled voicemail avoidance.

1. Navigate to the Mobility Identity configuration page (see [Add a Mobility Identity](#)).
2. Check that **Dial-via-Office Reverse Voicemail Policy** is set to **User Control**.

The below diagram shows how to enable DTMF-based features.

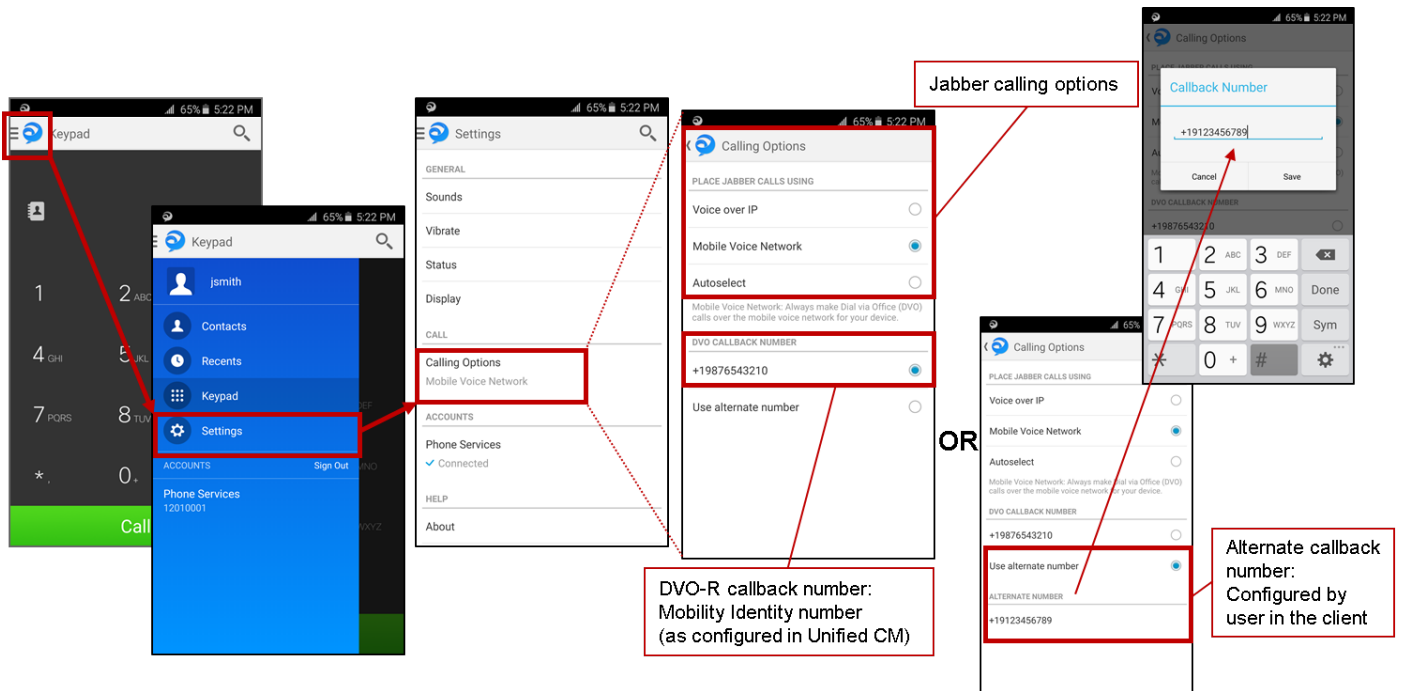
Parameter Name	Value	Default
Enterprise Feature Access Code for Hold *	*91	*91
Enterprise Feature Access Code for Exclusive Hold *	*92	*92
Enterprise Feature Access Code for Resume *	*93	*93
Enterprise Feature Access Code for Transfer *	*94	*94
Enterprise Feature Access Code for Conference *	*95	*95
Enterprise Feature Access Code for Session Holdoff *	*74	*74
Enterprise Feature Access Code for Station Selective Recording *	*96	*96
Enterprise Feature Access Code for Station Selective Recording *	*97	*97
Smart Mobile Phone Interdigit Timer *	500	500
Non-Smart Mobile Phone Interdigit Timer *	2000	2000
Send Call to Mobile Menu Timer *	60	60
SIP Dual Mode Alert Timer *	1500	1500
Call Screening Timer *	4000	4000
Session Resumption Assist Timer *	180	180
Inbound Calling Search Space for Remote Destination *	Trunk or Gateway Inbound Calling Search Space	Trunk or Gateway Inbound Calling Search Space
Enable Enterprise Feature Access *	True	False
Dial-via-Office Forward Search Access Number *	False	False
Enable Mobile Voice Access *	False	False
Mobile Voice Access Number *		
Matchin Caller ID with Remote Destination *	Complete Match	Complete Match
Number of Digits for Caller ID Partial Match *	10	10
Number of Digits for Caller ID Partial Match *	10	10
Number of Digits for Caller ID Partial Match *	10	10
Enable Use of Called Party Transformed Number for Mobile Terminated Calls *	False	False
Honor Gateways or Trunk Outbound Calling Party Selection for Mobile Connect Calls *	False	False
Clusterwide Parameters (System - Mobility Single Number Reach Voicemail)		
Single Number Reach Voicemail Policy *	Timer Control	Timer Control
Dial-via-Office Reverse Voicemail Policy *	Timer Control	Timer Control
User Control Delayed Announcement Timer *	1000	1000
User Control Confirmed Answer Indication Timer *	10000	10000

Configure Cisco Jabber Client Settings

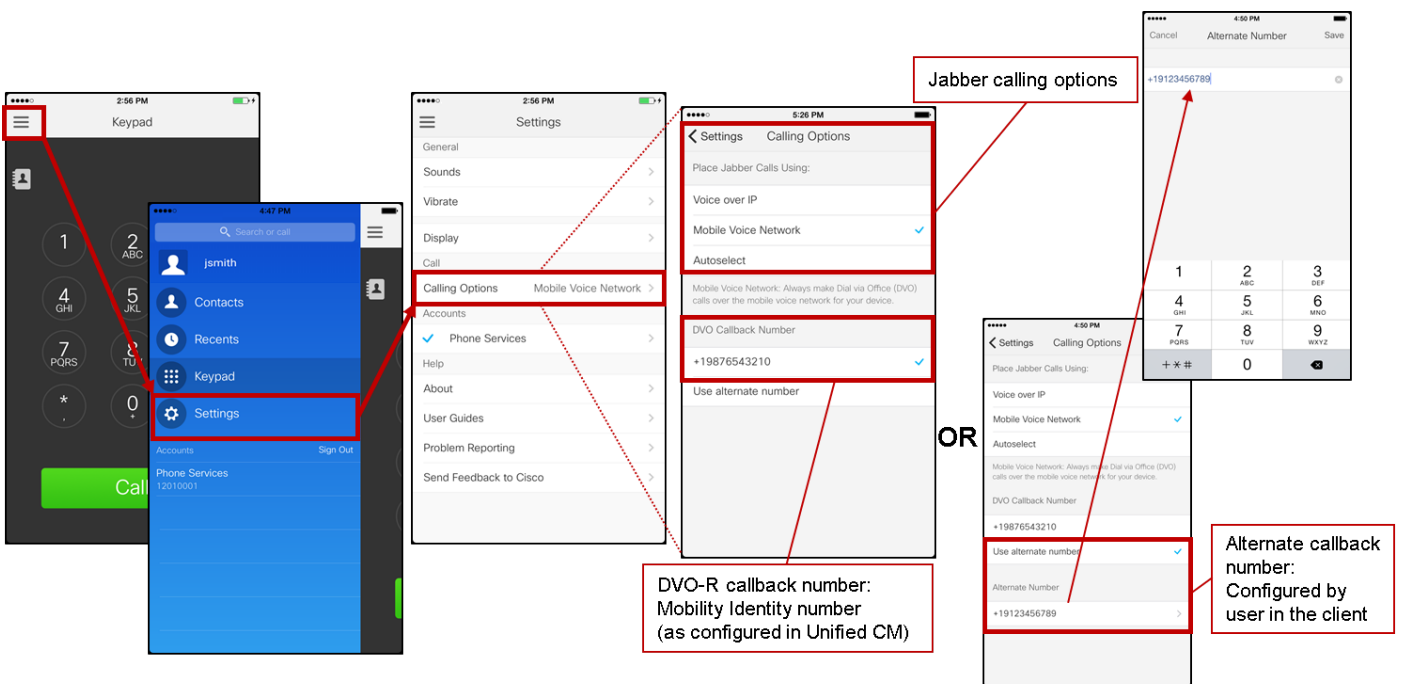
Under settings in your Cisco Jabber client, set your calling options to Mobile Voice Network (or Autoselect) and set a DVO-R callback number.

The callback number will automatically be populated with the number configured as Mobility Identity within Cisco Unified Communications Manager. For DVO-R with callback to an Alternate Number, the user-configured Alternate Number is used. The selected number will be the number that is called when making DVO-R calls.

The below diagram outlines how to configure Cisco Jabber for Android for DVO-R.

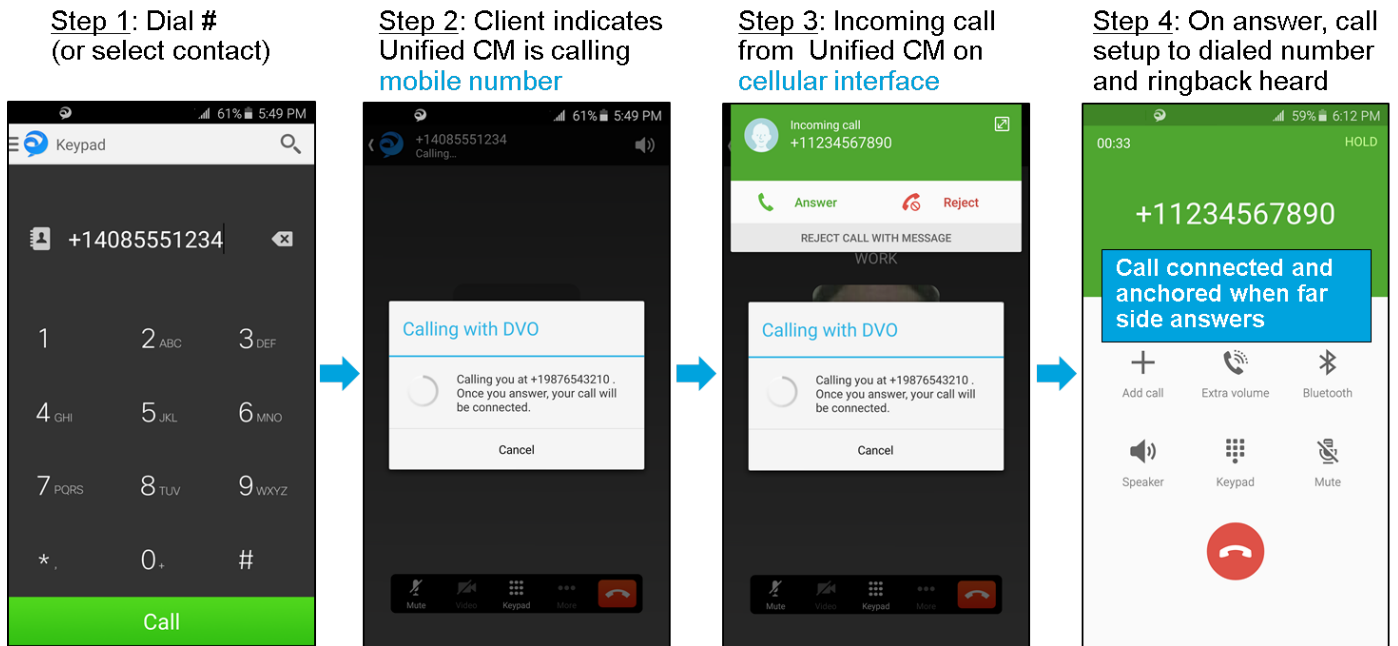


The below diagram outlines how to configure Cisco Jabber for iPhone for DVO-R.



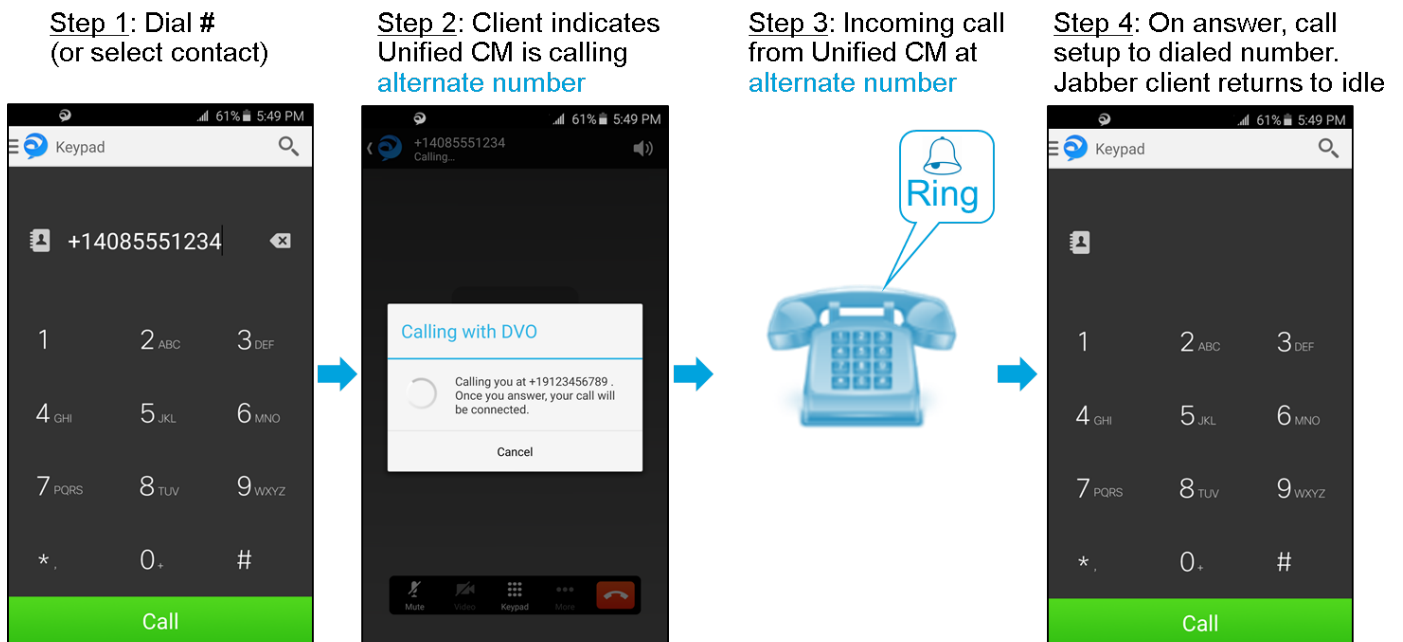
Verify

The below diagram shows the client call flow for DVO-R - using Mobility identity - once it has been set up correctly on Cisco Jabber for Android.



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The below diagram shows the client call flow for DVO-R - using Alternate Number - once it has been set up correctly.



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The below diagram shows the client call flow for DVO-R - using Mobility identity - once it has been set up correctly on Cisco Jabber for iPhone.



Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

Related Information

- [Cisco Expressway Mobile and Remote Access Deployment Guide](#)
- [Cisco Expressway SIP Trunk to Unified CM Deployment Guide](#)
- [Cisco Expressway Basic Configuration Deployment Guide](#)
- [Cisco Jabber Deployment and Installation Guide](#)
- [Cisco Unified Communications Manager Features and Services Guide](#)
- [Cisco Collaboration System Solution Reference Network Designs \(SRND\) - Mobile Collaboration](#)