



## Cisco TelePresence Integration Guide

Documentation for integrating Cisco CTS/TX TelePresence Systems with BlueJeans

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### Introduction

This document goes over how to integrate Cisco TelePresence System (CTS) to dial into a BlueJeans conference.

### Architecture

The diagram below captures the overall setup and call flow. The enterprise architecture consists of the appropriate components based on the Cisco Video deployment guides. In this case, the CTS would register to the Cisco Unified Communications Manager (CUCM) and the CUCM would have a SIP trunk for external video calls to the Cisco VCS-Expressway. The VCS-Expressway is usually deployed in the DMZ as the video edge device for calls in or out of the enterprise.

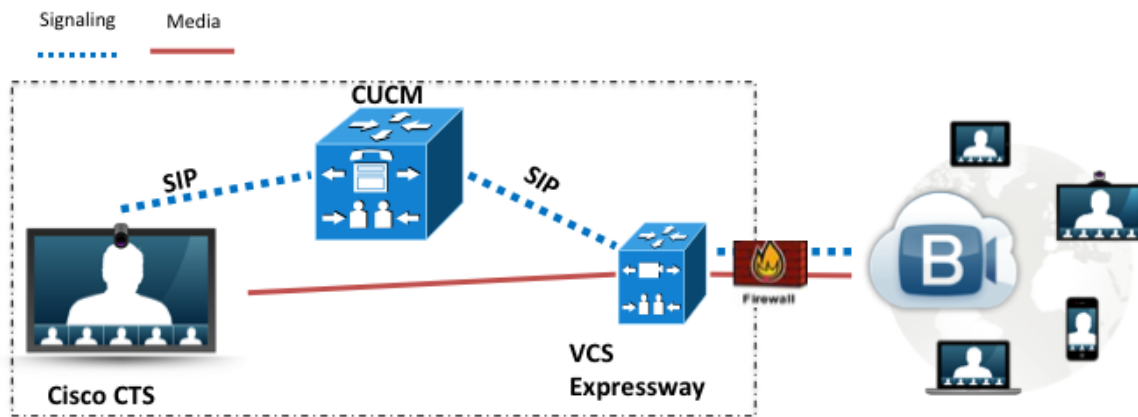


Figure 1 – Call Flow

### Requirements

1. Customer has a working CTS deployment inside their Enterprise with the below software versions for the mandatory components:
  - Cisco TelePresence System (CTS) version 1.8.0 or later
  - Cisco Unified Communications Manager (CUCM) version 8.6.1 or later
  - Cisco TelePresence Video Communications Server (VCS-Expressway) version 6.x or later with encryption and traversal licenses
2. Customer firewall has been setup to allow the following ports from their VCS-Expressway to BlueJeans:
  - TCP 1720
  - TCP 5000 – 5999

- UDP 5000 – 5999
3. The dial in number for BlueJeans from a CTS endpoint is (408) 740-7256

### Configuration

The following steps cover the required one time setup for the CTS, CUCM and VCS-Expressway to dial into BlueJeans once the above requirements have been met.

1. Configure a new SIP Trunk Profile by going to [Device > Device Settings > SIP Profiles](#) and add new profile with values show in [Figure 2](#) (below).
2. Leave all other parameters as default.

**Note:** If there is already a SIP Profile setup please ensure the configuration matches the below.

Parameter	Value
Name	SIP Profile with BFCP (or any name you choose)
SDP Session Level Bandwidth modifier	TIAS and AS
User-Agent and Server Header information	Pass through received information as User-Agent
Early Offer support for voice and video calls (insert MTP if needed)	Check the box
Allow presentation sharing using BFCP	Check the box

Figure 2 –SIP Profile Configuration

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help

**SIP Profile Configuration**

Save Delete Copy Reset Apply Config Add New

**Status**

- Update successful
- All SIP devices using this profile must be restarted before any changes will take affect.

**SIP Profile Information**

Name\* SIP Profile with BFCP

Description SIP Profile with BFCP

Default MTP Telephony Event Payload Type\* 101

Resource Priority Namespace List < None >

Early Offer for G.Clear Calls\* Disabled

SDP Session-level Bandwidth Modifier for Early Offer and Re-invites\* TIAS and AS

User-Agent and Server header information\* Pass Through Received Information as User-Agent

☐ Redirect by Application

☐ Disable Early Media on 180

☐ Outgoing T.38 INVITE include audio mline

☐ Enable ANAT

☐ Require SDP Inactive Exchange for Mid-Call Media Change

☐ Use Fully Qualified Domain Name in SIP Requests

Figure 3 – CUCM Administration: SIP Profile Configuration

**Trunk Specific Configuration**

Reroute Incoming Request to new Trunk based on\* Never

RSVP Over SIP\* Local RSVP

☒ Fall back to local RSVP

SIP Rel1XX Options\* Disabled

☐ Deliver Conference Bridge Identifier

☒ Early Offer support for voice and video calls (insert MTP if needed)

☐ Send send-receive SDP in mid-call INVITE

☒ Allow Presentation Sharing using BFCP

Figure 4 - CUCM Administration: Trunk Specific Configuration

- Go to the CUCM Administration web interface, click on [Device > Trunk](#) and click [Add New](#)
- All other parameters can be set to the default values.

**Note:** If there is already a SIP Trunk setup please ensure the configuration matches the below

Parameter	Value
Device Name	A name for the trunk
Device Pool	Appropriate device pool for video calls
Destination	Add IP address of internal VCS interface and port 5060
SIP Trunk Security Profile	Non Secure SIP Trunk Profile (NOTE if secure SIP Trunk is needed, need to modify this accordingly)

SIP Profile	SIP Profile with BFCP (configured in previous step)
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Figure 5 - SIP Trunk Configuration

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help ▾

**Trunk Configuration**

Save X Delete Reset + Add New

**Status**  
Status: Ready

**Device Information**

Product:	SIP Trunk
Device Protocol:	SIP
Trunk Service Type	None(Default)
Device Name*	sip_trunk_VCS
Description	SIP Trunk to VCS-E
Device Pool*	Default
Common Device Configuration	< None >
Call Classification*	Use System Default
Media Resource Group List	< None >
Location*	Hub_None
AAR Group	< None >
Tunneled Protocol*	None
QSIG Variant*	No Changes
ASN.1 ROSE OID Encoding*	No Changes
Packet Capture Mode*	None
Packet Capture Duration	0

Figure 6 – Cisco CUCM Administration: SIP Trunk Configuration

**SIP Information**

☐ Destination Address is an SRV

	Destination Address	Destination Address IPv6	Destination Port
1 *	10.4.5.212		5060

MTP Preferred Originating Codec\* 711ulaw

Presence Group\* Standard Presence group

SIP Trunk Security Profile\* Non Secure SIP Trunk Profile

Rerouting Calling Search Space < None >

Out-Of-Dialog Refer Calling Search Space < None >

SUBSCRIBE Calling Search Space < None >

SIP Profile\* SIP Profile with BFCP

DTMF Signaling Method\* No Preference

Figure 7 - Cisco CUCM Administration: SIP Information

5. Add a route pattern to route the BlueJeans number from CTS to the VCS-Expressway via the SIP trunk from CUCM. Go to [Call Routing > Route/Hunt > Route Pattern](#) and click [Add New](#)

Parameters	Value
Route Pattern	Enter the 10 digit BlueJeans number - 4087407256
Route Partition	Set to a route partition that only allows CTS endpoints that dial this number to route out to

	the VCS-Expressway (CTS-Video is the example in this case)
<b>Description</b>	Add a description such as Calls to BlueJeans Production
<b>Gateway/Route List</b>	Choose SIP trunk created in previous step

Figure 8 - Cisco CUCM Administration: Route Pattern Settings

**Route Pattern Configuration**

Save Delete Copy Add New

**Status**  
Status: Ready

**Pattern Definition**

Route Pattern\* 4087407256

Route Partition CTS-video

Description Route to BlueJeans via VCS-E

Numbering Plan -- Not Selected --

Route Filter < None >

MLPP Precedence\* Default

☐ Apply Call Blocking Percentage

Resource Priority Namespace Network Domain < None >

Route Class\* Default

Gateway/Route List\* sip\_trunk\_VCS (Edit)

Route Option  
☒ Route this pattern  
☐ Block this pattern No Error

Figure 9 - Cisco CUCM Administration: Route Pattern Configuration

- Configure the BlueJeans number as a favorite on all CTS room systems. On the CUCM administration page, go to [Device > Phone](#) and search for all CTS systems. Go to one of the CTS devices and on the right top choose "Add/Update Speed Dials" in the related links dropdown.

**Cisco Unified CM Administration**

Navigation Cisco Unified CM Administration Go

admin Search Documentation About Logout

System Call Routing Media Resources Advanced Features Device Application User Management Bulk Administration Help

**Phone Configuration**

Related Link: Add/Update Speed Dials Go

Save Delete Copy Reset Apply Config Add New

Figure 10 - Cisco CUCM Administration: Phone Configuration

- Add the number you created in the route pattern (4087407256) with a meaningful label such as "BlueJeans Production".
- Hit [Save](#) and reset the CTS device. Repeat this for every CTS device you want to connect to BlueJeans.

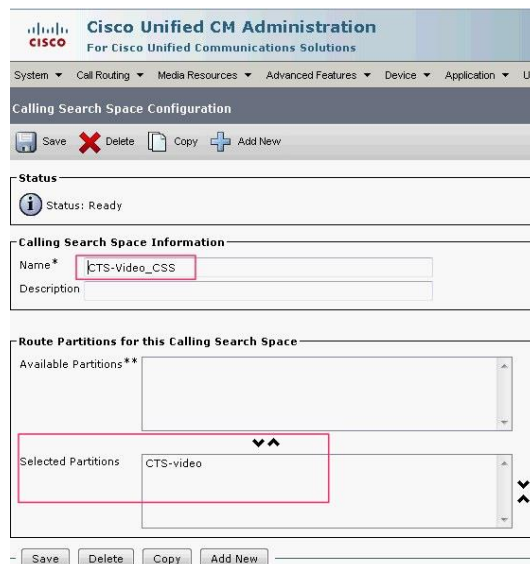


The screenshot shows the 'Speed Dial Configuration for SEP001DA2394C34' page. At the top, there are 'Save', 'Close', and 'Help' buttons. Below is a 'Status' section showing 'Status: Ready'. The main section is 'Speed Dial (Button) Settings', which contains a table with three columns: 'Number', 'Label', and 'ASCII Label'. The table has one row with the following values: '4087407256', 'BJN Production', and 'BlueJeans Production'.

Number	Label	ASCII Label
4087407256	BJN Production	BlueJeans Production

Figure 11 – Cisco CUCM Administration: Speed Dial Configuration

9. Ensure the CTS Line has the right Calling Search Space, which includes the partition, configured on the Route Pattern. Check the Calling Search Space (CSS) configuration by going to [Call Routing > Class of Control > Calling Search Space](#) and ensuring the Route Pattern Partition is in the Selected Partitions section (CTS-video in this example). See [Figure 12 \(below\)](#).



The screenshot shows the 'Calling Search Space Configuration' page in Cisco Unified CM Administration. The page has a 'Status' section showing 'Status: Ready'. Below is the 'Calling Search Space Information' section, which includes a 'Name' field with the value 'CTS-Video\_CSS' and a 'Description' field. The 'Route Partitions for this Calling Search Space' section contains two lists: 'Available Partitions\*\*' and 'Selected Partitions'. The 'Selected Partitions' list contains the value 'CTS-video'.

Figure 12 – Cisco CUCM Administration: Calling Search Space Information

10. Go to the CTS Line 1 on each CTS device by going to [Device > Phone](#) and searching for each CTS. Click on the Line configuration on the Left panel as shown below (3333 is the extension for this CTS)

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾ Help ▾

**Phone Configuration** Related Links

Save Delete Copy Reset Apply Config Add New

**Status**  
Status: Ready

**Association Information**  
Modify Button Items

1	Line [1] - 3333 (no partition)
2	Line [2] - Add a new DN
3	Line [3] - 4083179253
4	Line [4] - 4085502395

**Phone Type**  
Product Type: Cisco TelePresence 500-37  
Device Protocol: SIP

**Device Information**  
Registration: Registered with Cisco Unified Communications Manager 10.4.1.201  
IP Address: 10.4.4.220  
Active Load ID: CTS\_1.8.1(34)\_P1

Figure 13 – Cisco CUCM Administration: Phone Configuration

11. Ensure the display name is set correctly on the Cisco CTS endpoint by scrolling down at the page above and entering a valid name for the endpoint in the Display Internal Caller ID field.

**Line 1 on Device SEP001DA2394C34**

Display (Internal Caller ID)  Display text for  
*specify a number, the person receiving a call may not see the proper id*

ASCII Display (Internal Caller ID)

12. Check the Calling Search Space configured on the Line to ensure it matches the value in Step 10 above (CTS-Video CSS in this example).

**Cisco Unified CM Administration**  
For Cisco Unified Communications Solutions

System ▾ Call Routing ▾ Media Resources ▾ Advanced Features ▾ Device ▾ Application ▾ User Management ▾ Bulk Administration ▾

**Directory Number Configuration**

Save Delete Reset Apply Config Add New

**Status**  
Status: Ready

**Directory Number Information**

Directory Number\*

Route Partition

Description

Alerting Name

ASCII Alerting Name

☒ Allow Control of Device from CTI

Associated Devices

Dissociate Devices

**Directory Number Settings**

Voice Mail Profile  (Choose <None> to use system default)

Calling Search Space

Presence Group\*

Figure 14 – Cisco CUCM Administration: Directory Number Configuration

- Configure the VCS-Expressway to route calls to BlueJeans. Make sure VCS has the appropriate DNS server configured [System > DNS](#)

The screenshot shows the 'Cisco TelePresence Video Communication Server Starter Pack Express' configuration page. The 'System' tab is selected, and the 'DNS' section is expanded. Under 'DNS server', there are three input fields for 'Address 1', 'Address 2', and 'Address 3'. The 'Address 1' field contains the value '8.8.8.8' and is highlighted with a red box.

Figure 15 – VCS Expressway DNS Server Configuration

- Also, ensure VCS is setup for dual network interfaces and the firewall rules are setup to allow traffic from CUCM / CTS to VCS-Expressway.
- Create a DNS zone to route outbound calls by going to [VCS Configuration > Zones > New DNS Zone](#) and adding a zone per below configuration (Figure 16).

**NOTE:** If you already have one, make sure the configuration matches the below:

The screenshot shows the 'Cisco TelePresence Video Communication Server Starter Pack Express' configuration page. The 'VCS configuration' tab is selected, and the 'Edit zone' section is expanded. The 'Configuration' sub-section is active. The 'Name' field contains 'DNSZone' and is highlighted with a red box. The 'Type' field contains 'DNS' and is highlighted with a red box. The 'Hop count' field contains '15' and is highlighted with a red box. The 'H.323' section has a 'Mode' dropdown set to 'On' and is highlighted with a red box. The 'SIP' section has a 'Mode' dropdown set to 'On' and a 'TLS verify mode' dropdown set to 'Off', both highlighted with a red box. The 'Advanced' section has an 'Include address record' dropdown set to 'On' and a 'Zone profile' dropdown set to 'Non-registering device'. At the bottom, there are 'Save', 'Delete', and 'Cancel' buttons.

Figure 16 – VCS Expressway DNS Zone Configuration

- Add a transform to convert the phone number into a BlueJeans URI by going to [VCS Configuration > Dial Plan > Transforms](#) & click on [Add New](#).

Parameter	Value
Pattern Type	Regex

Pattern String	^(4087407256).*
Pattern Behavior	Replace
Replace String	\1.cts@sip.bjn.vc
State	Enabled

Figure 17 – VCS Expressway Transform Configuration Values

Figure 18 – VCS Expressway Transform Configuration

This completes the one time configuration of having a CTS endpoint dial 4087407256 (BlueJeans dial in number) and enters a meeting.

### Joining Meetings

1. Login to [BlueJeans](#) and schedule / start a meeting – refer to [“Scheduling a Meeting”](#) for assistance OR if you received an invitation via email, click on the meeting link in the email.
2. To join the meeting: from Cisco IP Phone connected to the Cisco TelePresence System (CTS), click on the [Favorites Icon](#), choose the [BlueJeans number](#) and hit dial. You should see the BlueJeans welcome screen come up as below:



Figure 19 – BlueJeans In Meeting Welcome Screen

3. After a few seconds, the BlueJeans IVR screen will appear.

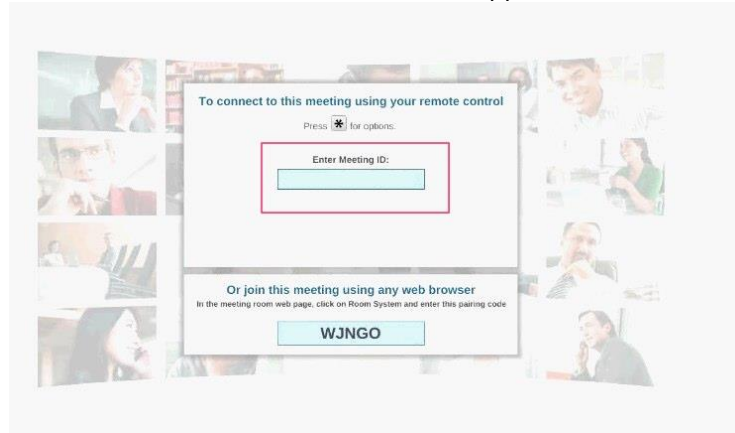


Figure 20 – BlueJeans IVR

You have 2 options to join the meeting:

17. Dial into the meeting by entering the **Meeting ID** and **Passcode** from your email.
  1. Enter the **Meeting ID** using the keypad on the Cisco IP Phone (connected to the CTS room system) followed by the **#** sign.
  2. Once you enter the Meeting ID, enter the **Passcode** (if any) followed by the **#** sign.

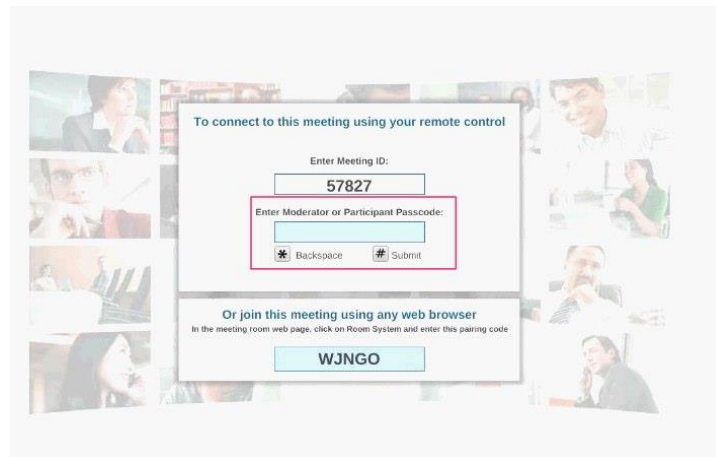


Figure 21 – BlueJeans Participant Passcode

18. Join the meeting using the pairing code.
  1. On the welcome screen there will be an **alphabetic pairing code** (at the bottom), which you can then enter into the meeting web page (WJNGO in this example, [Figure 22](#)).

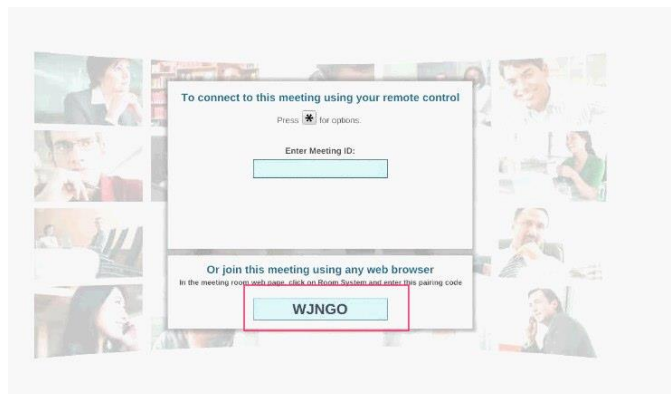


Figure 22 – BlueJeans Pairing Code

## Known Caveats

1. Secure SIP signaling & media needs eToken on CUCM along with minor changes to the SIP Trunk configuration to include security.
2. Currently in CTS 1.8 with native SIP interop mode, there is no support for multi screen / multi camera (for example on a 3 screen system, only the middle screen will be used in the call).

## Troubleshooting

1. Contact BlueJeans support ([support@bluejeans.com](mailto:support@bluejeans.com)) or view pertinent support documentation at [support.bluejeans.com](http://support.bluejeans.com).
2. For additional troubleshooting, VCS-Expressway provides a [Call History](#) which allows you to view details when a call cannot get setup by going to [Status > Calls > History](#) and searching for the call in question. You can then click on [View](#) under Actions to get more details on the call itself.

Start time	Source	Destination	Protocol	Duration	Status	Peer	Actions
2012-04-24 14:28:20	sip:3333@10.4.1.201	sip:4083179253@10.4.5.212:5060	SIP <-> H323	5 minutes 30 seconds	200 / OK	Local	View

Figure 23 – Call History

3. If there is a 30 second delay in the BlueJeans welcome screen showing up, it may be because the VCS-Expressway has SIP UDP enabled. Most times SIP UDP is not required for SIP video endpoints and can be turned off by going to [VCS Configuration > Protocols > SIP > Configuration](#) and setting the [SIP UDP Mode](#) to **OFF**. If SIP UDP cannot be turned off for a reason, then at this time the delay will be present.

The screenshot displays the 'VCS configuration' page in a web interface. The 'SIP' tab is selected, and the 'Configuration' sub-tab is active. The 'UDP mode' setting is highlighted with a red rectangular box. The configuration includes various SIP-related parameters such as SIP mode, registration expire delta, SIP registration proxy mode, UDP mode, UDP port, TCP mode, TCP port, TLS mode, TLS port, TCP outbound port start, TCP outbound port end, session refresh interval, minimum session refresh interval, and requirements for UDP BFCP and duo video modes.

Parameter	Value
SIP mode	On
Registration expire delta (seconds)	60
SIP registration proxy mode	Off
UDP mode	Off
UDP port	5060
TCP mode	On
TCP port	5060
TLS mode	On
TLS port	5061
TCP outbound port start	25000
TCP outbound port end	29999
Session refresh interval (seconds)	1800
Minimum session refresh interval (seconds)	500
Require UDP BFCP mode	On
Require duo video mode	On

Figure 24 – VCS Expressway SIP Configuration