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Introduction

This document describes how you can dial IP addresses from endpoints registered to Cisco Unified Communications Manager (CUCM) with Cisco Video Communication Server (VCS) or Cisco Expressway as a solution.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Neighbor zones on Cisco VCS / Expressway
- Transforms and search rules on Cisco VCS / Expressway
- Session Initiation Protocol (SIP) route patterns and SIP trunks on CUCM

Note: It is assumed in this document that the traversal zone from the VCS Control / Expressway-C towards the VCS Expressway / Expressway-E is active and that the interworking key is installed on the VCS / Expressway.

Components Used

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

- Cisco VCS x8.1 and later
- CUCM Release 9 and later

Note: The same document can be used for Expressway series deployments.

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.

Background

CUCM does not support IP address dialing. If you want to use IP address dialing, Cisco recommends one of the two procedures described in this article. An example use case would be for endpoints registered to CUCM to dial an H.323 endpoint by IP address.

Option 1

- Add a suffix to the IP address, so that the string resembles a SIP Uniform Resource Identifier (URI).
- For example, in order to dial the IP address **198.51.100.2**, users will dial **198.51.100.2@domain**.
- Admin has to educate users to dial <IP address>@domain. This domain can be either the corporate internal domain or a dummy domain. This document is based on use of the VCS domain.

Option 2

- Replace the dots with a symbol in order to turn the IP address into a string.
- For example, in order to dial the IP address 198.51.100.2, users will dial 198*51*100*2.

Note: In both options, the Expressway-E tries to call the IP address with the H.323 protocol. If the destination endpoint does not support H.323, you must enable SIP UDP. Otherwise keep SIP UDP disabled.

Note: Option 2 can be used either with IP phones or when you dial from the CLI or Web GUI of endpoints that use Tandberg Codec (TC) software . When you try to dial * with Touch Panel or Remote Control, this might not work as the * is automatically converted to . when you use these options in order to dial.

Configuration

Note: This configuration is applicable to both of the previously stated options.

CUCM Configuration

On the CUCM, the administrator has to configure a SIP trunk security profile for VCS on port 5060 (this assumes that 5060 is the port used on the VCS towards the CUCM via TCP).

Note: If you use port 5060 / 5061 for Mobile and Remote Access (MRA), use a different TCP port (such as 5075) for the SIP trunk security profile.

Choose System > Security > SIP Trunk Security Profile on CUCM and click Add New.

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CISCO For Cisco Unified Communications Solutions	admin Search Documentation About Logour
System - Call Routing - Media Resources - Advanced Features -	Device Application User Management Bulk Administration Help
Find and List SIP Trunk Security Profiles	
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SIP Trunk Security Profile	Rows per Page 50 ÷
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Add New	

Create a SIP trunk security profile as shown in this screenshot.

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SIP Trunk Security Profile Configura	tion	Related Links: Back To Find/List 🗘 Go
🔜 Save 💢 Delete 🗋 Copy 🎦 Ri	eset 🥒 Apply Config 🕂 Add New	
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Incoming Transport Type*	TCP+UDP	*
Outgoing Transport Type	ТСР	\$
Enable Digest Authentication		
Nonce Validity Time (mins)*	600	
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Incoming Port*	5060	
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Save Delete Conv Reset	Apply Coofin Add New	

On the CUCM, add a SIP trunk towards the VCS Control/Expressway-C.

Choose **Device > Trunk** and click **Add New**.

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Status Status: Ready			
- Device Information			
Product:	SIP Trunk		
Device Protocol:	SUP		
Trunk Service Type	None(Default)		
Device Name*	VCS_trunk		
Description	Trunk to VCS-Control		
Device Pool	Default	+	
Common Device Configuration	< None >	÷	
Call Classification*	Use System Default	+	
Nedla Resource Group List	< None >	÷	
Location ²	Hub_None	+	
AAR Group	< None >	÷)	
Tunneled Protocol ^a	None	÷	
QSIG Variant*	No Changes	+	
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VCS Control Configuration

Create a neighbor zone on the VCS Control / Expressway-C towards CUCM.

Choose **Configuration > Zones > Zones** and click **New** in order to add the zone.

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These zone settings are design dependent.

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Peer 3 address	0	
Peer 4 address	j j	
Peer 6 address	L .	
Peer 6 address	ý.	
Advanced		
Zone profile	Cisco Unified Communications Manager (5.6.1 or later)	

Create zone Cancel

Ensure that the **Calls to unknown IP addresses** parameter is set to **Indirect** on the VCS Control / Expressway-C. In order to do so, choose **Configuration > Dial Plan > Configuration**.

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Configuration			
Calls to unknown IP addresses		Indext 1 (j)	
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VCS Expressway Configuration

In the Calls to unknown IP addresses drop-down list, choose **Direct** on the VCS Expressway / Expressway-E. A search rule is not required on the VCS Expressway / Expressway-E in order to route IP-based calls.

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Configuration										
Calls to unknown IP addresses	Direct 🗘 👔									
Fallback alias										

Option 1 - Add a Suffix to the IP Address

On CUCM, add a SIP route pattern in order to send calls with the suffix as **vcs.domain** to the VCS Control/Expressway-C trunk.

Choose Call Routing > SIP Route Pattern and click Add New.

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CISCO For Cisco Unified Communications Solutions	admin Search Documentation About Logout
System Call Routing Media Resources Advanced Features	Device - Application - User Management - Bulk Administration - Help -
Find and List SIP Route Patterns	
Add New	
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SIP Route Pattern	Rows per Page 50 ÷
Find SIP Route Pattern where IPv4 Pattern the begins with	Find Clear Filter
No active query. Please enter you	ir search criteria using the options above.
Add New	

Set the SIP route pattern settings as shown here.

IPV4 Pattern: vcs.domain

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iystem 👻 Call Routing	👻 Media Resi	ources + Advanced Features +	Device •	Application •	User Management 👻	Bulk Administration 👻	Help +
IP Route Pattern O	Configuration				Related Links	Back To Find/List	: Go
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Status							
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IPv4 Pattern*	vcs.domain						
IPv6 Pattern							
Description							
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SIP Trunk/Route List	* VCS_trunk		:)(Edit)			
Block Pattern							
Calling Party Transl	formations						
Use Calling Party's	s External Phon	e Mask					
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Prefix Digits (Outgoin	ng Calls)						
Calling Line ID Preser	ntation*	Default		•			
Calling Line Name Pre	esentation*	Default		:			
Connected Party Tr	ansformations						
	esentation*	Default		:			
Connected Line ID Pri							

On the VCS Control / Expressway-C, transform the strip domain portion of an alias when an IP address is dialed.

Choose Configuration > Dial Plan > Transforms and click New.

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Tra	insfor	ms							You are here: Configuration	Dial plan • Ti	ransforms
	Prio	ority =	State	Description		Pattern	Туре	Behavior	Replace	Actions	
Ne	De	ete Ena	ble Disable	Select all Unsele	ct all			Transforms are app	plied in priority order, with 1 be	ing the highes	st priority

Create the transform as shown here.

Pattern String: (.*)\.(.*)\.(.*)\.(.*)@vcs.domain

Replace String: \1.\2.\3.\4

CISCO Cisco TelePresence Video Communication Server Control

Sta	itus Sys	lem	Configuration	Applications	Users	Maintenance		(2) Help. Op Logout
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P	Pattern behavi	or			Replace	•		
F	Replace string				\1.\2.\3\.)4	1		
s	State				Enabled	•		

Create transform Cancel

On the VCS Control / Expressway-C you need a search rule that sends the call to the VCS Expressway / Expressway-E when an IP address is dialed.

Choose Configuration > Dial Plan > Search Rules and click New.

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Create this search rule towards the VCS Expressway / Expressway-E.

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Option 2 - Turn the IP Address into a String

On the CUCM add a route pattern to send calls with pattern !*!*!*! to the VCS Control / Expressway-C trunk.

Choose Call Routing > Route/Hunt > Route Pattern and click Add New.

Cisco Unified CM Administration For Cisco Unified Communications Solutions	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 +										
Find and List Route Patterns											
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Find Route Patterns where Pattern	Find Clear Filter 🖶 🚍										
No active query. Please enter your search criteria using the options above.											
Add New											

Add a new route pattern as shown here.

Route Pattern: !*!*!*!

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System +	Cell Routing - Media R	Resources +	Advanced Features +	Device +	Application +	User Management 👻	Bulk Administration	- Help	-			
Route Pat	tern Configuration								Related Links:	Back To F	ind/List	÷ 😡
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Apply	Call Blocking Percentage											
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External Call Control Profile None > *												
Allow	Device Override 🗹 Prov	ide Outside D	Dial Tone 🗍 Allow Ove	rlap Sendi	ng 🖂 Urgent P	riority						
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Requir	e Client Matter Code											

Note: The !*!*!*! might cause delays with processing other Route Patterns so care needs to be taken when you use this pattern. A good way would be to put this Route Pattern in a separate partition and only have the endpoints that need to dial IP addresses access to this partition .

On the VCS Control / Expressway-C you need a transform that modifies the alias with "*" to "." when an IP address is dialed.

Choose Configuration > Dial Plan > Transforms and click New.

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Create the transform as shown here.

Pattern String: (\d\d?\d?)(*)(\d\d?\d?)(*)(\d\d?\d?)(*)(\d\d?\d?)(.*)

Replace String: \1.\3.\5.\7

atus System Configuration Applica	ations Users Maintenance (2) Or
reate transform	You are here: Configuration > Dial plan > Transforms > Create transform
Configuration	
Priority	1 ()
Description	Transform to modify * to . for ip-address dialing.
Pattern type	Regex : ()
Pattern string	(\d\d?\d?)(*)(\d\d?\d?)(*)(\d\d?\d?\d?\d?\d?\d?\d?\d?\d?\d?\d?\d?\d
Pattern behavior	Replace :
Replace string	11/3//5//7

Create transform Cancel

On the VCS Control / Expressway-C you need a search rule that sends the call to the VCS Expressway / Expressway-E when an IP address is dialed.

Choose Configuration > Dial Plan > Search Rules and click New.

	CISCO Cisco TelePresence Video Communication Server Control														
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j	New	Delete	Enable Disab	Selec	tal Ur	select all					Search rules	are applied i	n priority orde	ar, with 1 being	the highest priority

Create this search rule towards the VCS Expressway / Expressway-E.

Note: If SIP UDP mode is enabled, the VCS Expressway / Expressway-E initiates the SIP

call as a native call first. In case the destination device does not respond to the SIP invite, the VCS Expressway / Expressway-E continues to run the SIP UDP call until the standard call negotiation timeout (approximately 32 seconds). It then fall backs to an H.323 interworking call as designed behavior.

Verify

Use this section to confirm that your configuration works properly.

Once the previous steps are completed, dial the IP address as a string or the IP address with the domain appended (this is dependent on the configuration option you selected) and see if the call to the far end works.

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

Collect detailed System Diagnostic Interface / Signal Distribution Layer (SDI / SDL) logs from the CUCM and "debug level" diagnostic logs from the VCS-Control / Expressway-C and VCS-Expressway / Expressway-E. Provide these logs to the Cisco Technical Assistance Center (TAC) for analysis if the calling does not work after the previous configuration steps are completed.