

## Cisco Unified Communications Manager SIP Trunk Configuration Guide

Valcom PagePro SIP (Session Initiation Protocol) Paging Servers, models VIP-201 and VIP-204, are compatible with Cisco Unified Communications Manager as either a Third-party SIP Device (Basic or Advanced) or as a SIP Trunk. This configuration guide provides information for configuring the PagePro server as a trunk endpoint. The screen illustrations are based on a Cisco Unified Communications Manager server version 8.5, but the instructions are similar for other versions. The following steps outline the typical configuration process.

1. Navigate your web browser to the IP address of your Cisco Unified Communications Manager server and login. Go to the "System" menu, and then click "Security", then click "SIP Trunk Security Profile".

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Device	Mobility	•									
DHCP		•									
LDAP		•									
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Applica	ation Server		Phone Security Profile								
Licens	ing	•	SIP Trunk Security Profile								
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2. Click on "Add New"

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System 👻	Call Routing 👻	Media Resources	✓ Advanced Features ▼	Device 🔻	Application 👻	User Management 🤜	Bulk Administration	✓ Help ✓		
Find and L	List SIP Trun	k Security Pro	files							
Add N	ew									
SIP Tru	nk Security P	rofile								
Find SIP T	runk Security I	Profile where Na	me 🔻 begins with	•		Find Clear	Filter 🕂 📼	]		
			No active que	y. Please e	enter your sear	ch criteria using the	options above.			
Add Net	w									



- 3. On the SIP Trunk Security Profile Configuration screen, enter the appropriate values for the trunk. For Valcom devices, the Outgoing Transport Type must be UDP. The Incoming Port defaults to 5060, but can be changed. If it is changed here, then it must also be changed to the same value in the Valcom device configuration. Required information:
  - A) Enter "Name\*" (ex. Valcom SIP Trunk)
  - B) For "Device Security Mode", select "Non Secure" from the dropdown list
  - C) For "Incoming Transport Type\*", select "TCP+UDP" from the dropdown list
  - D) For "Outgoing Transport Type\*" select "UDP" from the dropdown list
  - E) The "Incoming Port\*" should be left at the default of 5060, unless it is also changed in the Valcom device.
  - F) Click the "Save" button when all fields have been entered.

Save         Status         Status: Ready         - SIP Trunk Security Profile Information         Name*       Valcom SIP Trunk         Description       Trunk connection to VIP-204         Device Security Mode       Non Secure         Incoming Transport Type*       TCP+UDP         Incoming Transport Type UpP       ▼         Enable Digest Authentication       Nonce Validity Time (mins)*         Nonce Validity Time (mins)*       500         X.509 Subject Name       Incoming Port*         Incoming Port*       5060         Cacept Out-of-Dialog REFER**       Accept Unsolicited Nutrification         Accept Unsolicited Nutrification       Accept Unsolicited Nutrification         Accept Unsolicited Nutrification       Accept Unsolicited Nutrification         Accept Replaces Header       Transmit Security Status	SIP Trunk Security Profile	e Configuration	Related Links: Back To Find/List 🔻 G
Status: Ready  Status: Ready  SIP Trunk Security Profile Information Name* Valcom SIP Trunk Description Trunk connection to VIP-204 Device Security Mode Non Secure   Coutgoing Transport Type* CP+UDP  Coutgoing Transport Type UDP  Coutgoing Transport Type Coutgoing Perture Coutgoin	Save		
Status         Status: Ready              SIP Trunk Security Profile Information            Name*     Valcom SIP Trunk        Description     Trunk connection to VIP-204        Device Security Mode     Non Secure        Incoming Transport Type*     TCP+UDP         Outgoing Transport Type*      UDP         Enable Digest Authentication    Nonce Validity Time (mins)*         Source    Subject Name         Incoming Port*     Source    Accept Our-of-Dialog REFER**  Accept Unsolicited Notification     Accept Unsolicited Notification Accept Replaces Header     Transmit Security Status    Save  * indicates required item.			
- SIP Trunk Security Profile Information Name* Valcom SIP Trunk Description Trunk connection to VIP-204 Device Security Mode Non Secure TCP+UDP V Outgoing Transport Type UDP V C Enable Digest Authentication Nonce Validity Time (mins)* 600 X.509 Subject Name Incoming Port* 5060 Enable Application Level Authorization Accept Presence Subscription Accept Out-of-Dialog REFER** Accept Unsolicited Notification C Accept Replaces Header Transmit Security Status  Save	Status: Ready		
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Device Security Mode Non Secure   Incoming Transport Type* TCP+UDP   Outgoing Transport Type UDP   Image:	Description	Trunk connection to VIP-204	
Incoming Transport Type TCP+UDP   Outgoing Transport Type UDP   Cutogoing Port* 5060  Cutogoing	Device Security Mode	Non Secure	
Outgoing Transport Type   UDP   Enable Digest Authentication   Nonce Validity Time (mins)*   600   X.509 Subject Name   Incoming Port*   5060   Enable Application Level Authorization   Accept Presence Subscription   Accept Out-of-Dialog REFER**   Accept Unsolicited Notification   Accept Replaces Header   Transmit Security Status     Save     * - indicates required item.	Incoming Transport Type*	TCP+UDP -	
	Outgoing Transport Type	UDP -	
Nonce Validity Time (mins)* 600  X.509 Subject Name Incoming Port* 5060 Enable Application Level Authorization Accept Presence Subscription Accept Out-of-Dialog REFER** Accept Unsolicited Notification Accept Replaces Header Transmit Security Status  Save  * - indicates required item.	Enable Digest Authentica	tion	
X.509 Subject Name Incoming Port* 5060 Enable Application Level Authorization Accept Presence Subscription Accept Out-of-Dialog REFER** Accept Unsolicited Notification Accept Replaces Header Transmit Security Status Save	Nonce Validity Time (mins)*	600	]
Incoming Port* 5060 Carlos Application Level Authorization Accept Presence Subscription Accept Out-of-Dialog REFR** Accept Unsolicited Notification Accept Replaces Header Transmit Security Status Save * - indicates required item.	X.509 Subject Name		
Enable Application Level Authorization  Accept Presence Subscription  Accept Out-of-Dialog REFER**  Accept Unsolicited Notification  Accept Replaces Header  Transmit Security Status  Save	Incoming Port*	5060	
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Accept Out-of-Dialog REFER** Accept Unsolicited Notification Accept Replaces Header Transmit Security Status	Accept Presence Subscrip	ption	
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Save	Transmit Security Status		
<ul> <li>Save</li> <li>indicates required item.</li> </ul>			
i) *- indicates required item.	Save		
(1) *- indicates required item.			
-	1 *- indicates required it	em.	
👔 **If this profile is associated with an EMCC SIP trunk, Accept Out-of-Dialog REFER is enabled regardless of the setting on this page	i **If this profile is asso	ciated with an EMCC SIP trunk, Accept Out-of-Dialog R	EFER is enabled regardless of the setting on this page

4. The Trunk Security Profile just created will be used when creating the Trunk. Go to the "Device" menu, then click on "Trunk".

Cisco Unified CM Administration For Cisco Unified Communications Solutions			Navigation Cisco Unified CM Administration 👻 Go
System - Call Routing - Media Resources - Advanced Features -	Device 👻	Application 👻 User Manager	nent 🕶 Bulk Administration 👻 Help 👻
	CTI Ro	oute Point	
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Cisco Unified CM Administration	Gatev	way	
System version: 8.5.1.12900-7	Phone	e	AL ZU
	Trunk	t i i i i i i i i i i i i i i i i i i i	
	Remot	te Destination	
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5. On the Find and List Trunks page, click on "Add New".

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System 👻	Call Routing 👻	Media Resources 👻	Advanced Features 👻	Device 👻	Application -	User Management 👻	Bulk Administration 👻	Help 👻	
Find and I	List Trunks								
Add N	lew								
Trunks									
Find Trunk	ks where Dev	ice Name	▼ begins with ▼	Select iter	m or enter sea	Find Clear Filter	÷ =		
			No active que	ry. Please e	enter your sear	ch criteria using the o	ptions above.		
Add Ner	w								

- 6. Enter the Trunk Information.
  - A) Select "SIP Trunk" for Trunk Type
  - B) Select "SIP" for Device Protocol
  - C) Select "None" for Trunk Service Type (not all versions have this parameter)
  - D) Select "Next" at the top or bottom of the screen

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System 👻	Call Routing	Media Resources 👻	Advanced Features 👻	Device 👻	Application -	User Management 👻	Bulk Administration	1 🔻	Help 👻		
Trunk Con	figuration								Related Links: Back	To Find/List	- Go
Next											
i Status	s: Ready										
Trunk In Trunk Type	e*	SIP Trunk		•							
Device Pro	otocol*	SIP		-							
Trunk Serv	vice Type*	None(Default)		•							
Next											
(i) *- inc	dicates requ	ired item.									
-											

- 7. On the Trunk Configuration page, enter the specific device information. Configuration items on the web page marked with an asterisk (\*) are required entries. Complete those items with values appropriate for your site, particularly for items such as Device Pool, Calling Search Space, Location, etc. The device-specific items are mostly in the SIP Information area near the bottom of the screen.
  - A) In the Destination Address field, enter the IP address and Port assigned to the Valcom PagePro server
  - B) Confirm the Codec selection is "711ulaw"
  - C) For SIP Trunk Security Profile, select the profile created in Step 3 (example: Valcom SIP Trunk)
  - D) Select "Standard SIP Profile" for the SIP Profile
  - E) DTMF Signaling Method should be "RFC 2833"
  - F) Click the "Save" button when all items have been entered



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System   Call Routing   Media Resources   Advanced Features   D	evice • Application • User Management • Bulk Administration • Help •
Trunk Configuration	Related Links: Back To Find/List 🔻 Go
Save	
- Device Information	×
Product:	SIP Trunk
Device Protocol:	SIP None(Default)
Device Name*	PagePro-VIP-201
Description	Valcom PagePro Server
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
Media Termination Point Required	
Retry Video Call as Audio	
Path Replacement Support	
Transmit UTF-8 for Calling Party Name	
Transmit UTF-8 Names in QSIG APDU	
Unattended Port	
SRTP Allowed - When this flag is checked, Encrypted TLS needs to information.	b be configured in the network to provide end to end security. Failure to do so will expose keys and other
Consider Traffic on This Trunk Secure*	When using both sRTP and TLS 🔹
Route Class Signaling Enabled*	Default 🔻
Use Trusted Relay Point*	Default 👻
PSTN Access	
Run On All Active Unified CM Nodes	

- SIP Information									
Destination									
Destination Address is an SRV									
Destination Address	Dest	ination Address IPv6	Destination	Port					
1* 192.168.96.129			5060	+ -					
MTP Preferred Originating Codec*	711ulaw								
Presence Group* Standard Presence group									
SIP Trunk Security Profile*	Valcom SIP Trunk	-							
Rerouting Calling Search Space	< None >	-							
Out-Of-Dialog Refer Calling Search Space	< None >	•							
SUBSCRIBE Calling Search Space	< None >	•							
SIP Profile*	Standard SIP Profile	•							
DTMF Signaling Method*	RFC 2833	•							
Normalization Script < None > Enable Trace Parameter Name 1	• Pi	arameter Value							
Geolocation Configuration Geolocation < None >	•								
Geolocation Filter < None >	•								
Send Geolocation Information									
Save									
i **- Device reset is not required for o	hanges to Packet Capture Mode a	nd Packet Capture Duration							



8. With the Trunk device created, a Route Pattern will need to be created to send calls to the trunk. Go to the "Call Routing" menu, then click on "Route/Hunt", then click on "Route Pattern"

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System 👻	Call Routing 👻 Media Resources 🤜	Advanced Features - Device - Application - User Management -	Bulk Administration 👻 Help 👻
	AAR Group		Related Links: Back To Find/List
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	SIP Route Pattern	Route List	
	Intercom	Route Pattern	
	Class of Control	·	
	Client Matter Codes	Line Group	
	Forced Authorization Codes	Hunt List	
	Translation Pattern	Hunt Pilot	
	Call Park	1	
	Directed Call Park		
	Call Pickup Group		
	Directory Number		
	Meet-Me Number/Pattern		
	Dial Plan Installer		
	Route Plan Report		
	Transformation	•	
	Mobility	•	
	Logical Partition Policy Configural	ion	
	Call Control Discovery	•	
	External Call Control Profile		

9. On the Find and List Route Patterns screen, click on "Add New".

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Find and I	List Route Pa	tterns											
Add N	lew												
Route P	atterns												
Find Route	Patterns wher	e Pattern	▼ begins with ▼			Find	Clear Filter	• + =	-				
			No active que	y. Please e	nter your sear	rch criteria	using the o	ptions above	e.				
Add Ne	w												



 Configuration items on the Route Pattern Configuration web page marked with an asterisk (\*) are required entries. Complete those items with values appropriate for your site, particularly for items such as Device Pool, Calling Search Space, Location, etc.

Complete the following steps:

- A) Enter a Route Pattern appropriate for the Directory Numbers that will be assigned to the Valcom PagePro. For our example "600X" will be used to route all numbers from 6000 to 6009 to the Valcom trunk.
- B) For the Gateway/Route List, select the Valcom trunk device that was created in Step 7. Our example device is named "PagePro-VIP-201".
- C) Confirm the Route Option selection is "Route this pattern"
- D) Call Classification should be "OnNet"
- E) Provide Outside Dial Tone options should be unchecked
- F) Select "Save" at the top or bottom of the screen.

System - Call Routing - Media Resources - A	dvanced Features - Device - Application - User Mana	gement 👻 Bulk Administration 👻	Help 👻
Route Pattern Configuration			Related Links: Back To Find/List 🔻 Go
Save			
Status			
(1) Status: Ready			
- Pattern Definition			
Route Pattern*	600X		
Route Partition	< None >		
Description	Valcom PagePro 6000-6009	]	
Numbering Plan	Not Selected 🔻		
Route Filter	< None > v		
MLPP Precedence*	Default 🔻		
Resource Priority Namespace Network Domain	< None >		
Route Class*	Default •		
Gateway/Route List	PagePro-VIP-201	(Eait)	
	Route this pattern		
Call Classification*	Block this pattern No Error		
Convet	Y		
Allow Device Override Provide Outside L			
Authorization Level*			-
Require Client Matter Code			
Require Client Hatter Code			

This completes the configuration on the Cisco Communications Manager.



11. Open the VIP-102B IP Solutions Setup Tool interface for the Valcom PagePro device.

Note: The information presented here is limited to configuration of the "SIP" tab in the VIP-102B IP Solutions Setup Tool for the Valcom PagePro server. More information on Valcom VIP device configuration, such as IP address assignment, relay activation, etc, may be found in the VIP-102B Reference Manual. This document may be downloaded from our website at <u>http://www.valcom.com</u>

- A) On the SIP tab, set the SIP Mode to "Trunk" using the dropdown box in the upper right corner
- B) For this example, the trunk connection is not using authentication, so the Authentication Name or Secret fields do not need to be completed. At a minimum, required entries are the SIP Server Port and at least one Extension (phone number). The SIP Server Port must match the Destination Port in the SIP Information for the trunk created in Step 7. The SIP Server field can be used to document which SIP server this PagePro is connected with.

Summary	Properties Network (	Channels	Relays	Group	Membership	SIP	
						SIP Mode	Trunk 🔻
	Phone Number:						
	Authentication Name:	_					
	Secret:	_					
		192 1	68 97 44				Register:
	Outbound Proxy:						
	SIP Server Port:	5060			SIP Port:	506	2
	Outbound Port:	5060			RTP Port:	200	00
	Extensions: (10 present)	)					
							]
							Add
							Add <u>R</u> ange
							Edit
							<u>D</u> elete
							Delete Al
							<u>C</u> ancel

- C) For our example, we are using a range of Extensions (phone numbers). These can be entered in one operation using the "Add Range" button. Clicking that button brings up the dialog box shown below.
- D) In the Lower Extension field, enter the beginning phone number (6000 for our example)
- E) In the Upper Extension field, enter the ending phone number (6009 for our example)
- F) Other options in this window may be selected if desired. Any other options, such as Night Ring or an Audio Group assignment, will be applied to all of the Extensions in the range.



G) Click the OK button to create the range of Extensions and return to the main SIP window.

SIP Extension	×					
Lower Extension:	6000					
Upper Extension:	6009					
Night Ring:						
Pre-Announce Tone:	V Store and Play: Play Count: 1 V					
Announce To:	Available					
Audio Groups:	9889 - JD Test					
<u>A</u> I <u>N</u> one						
QK Qancel						

H) After entering the range, the main SIP window will display the Extensions this PagePro server will recognize. Other extensions may be added at any time. Extensions do not have to be in a contiguous range.

ummary	Properties	Network	Channels	Relays	Group	Membership	SIP		
							SIP Mode	e: Trunk	•
	Phone Numb	er:							
	Authenticatio	n Name:							
	Secret:								
	Realm:								
	SIP Server:		192.	168.98.40				Register:	
	Outbound Pr	oxy:							
	SIP Server P	ort:	5060	)		SIP Port:	50	52	
	Outbound Po	ort:	5060	)		RTP Port	: 20	000	
	Extensions:	(10 presen	t)						
	6001 6002							Add	
	6003 6004 - Night	t Ring-9998	3					Add Rang	ie
	6005 - Store 6006	&Play-9997	7					Edit	
	6007 6008							Delete	
	6009								
								Delete A	
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- I) To associate an Extension to a paging group or to set a feature such as Night Ring on an Extension, highlight the individual Extension to be modified, then click the Edit button. This will display the dialog box shown below. Functions such as Night Ring or Store and Play can be enabled by checking the box for that option. Paging Groups that have been created in the system will be displayed in the Audio Groups box. To associate this SIP Extension with an audio group, click the checkbox beside the desired group number.
- J) Click the OK button when done.

SIP Extension	×						
Extension:	6002						
Description:							
Night Ring:							
Pre-Announce Tone:	Store and Play: Play Count: 1 v (i)						
Announce To:	Available 🔹						
Audio Groups:	♥ 9889 - JD Test ● 9999						
<u>All</u> <u>N</u> one							
QK Qancel							

When all configuration options have been set as desired, update the PagePro device configuration using the update commands from the Communications menu of the VIP-102B IP Solutions tool.

To verify operation, use a telephone on the Communications Manager to call one of the phone numbers assigned to the Valcom PagePro server and confirm the call is connected.