



Configuring H.323 Connectivity Between Avaya Communication Manager and the Tandberg Video Communication Server - Issue 0.1

Abstract

These Application Notes describe the procedures for configuring connectivity between Avaya Communication Manager and the Tandberg Video Communication Server (VCS) functioning as a gatekeeper. Employing this configuration enables call origination/termination with video between endpoints registered to Avaya Communication Manager and endpoints registered to the Tandberg VCS.

1. Introduction

These Application Notes describe the procedures for configuring connectivity between Avaya Communication Manager and the Tandberg Video Communication Server (VCS) functioning as a gatekeeper. Employing this configuration enables call origination/termination with video between endpoints registered to Avaya Communication Manager and endpoints registered to the Tandberg VCS.

Figure 1 illustrates the sample configuration utilized for these Application Notes. Avaya Communication Manager is comprised of a pair of Avaya S8710 Servers and an Avaya G650 Media Gateway. Avaya Communication Manager provides enterprise telephony features and media gateway functionality for the H.323 video enabled endpoints present in this sample configuration. Avaya Communication Manager is provisioned for call origination via H.323 signaling to the Tandberg VCS.

The Tandberg VCS provides internal video control and administration for H.323 devices and is provisioned for call origination via H.323 signaling to Avaya Communication Manager. The Tandberg VCS provides:

- H.323 gatekeeper functionality.
- Bandwidth management on both a per-call and a total usage basis, configurable separately for calls within the local subzones and to neighboring systems and zones.
- Automatic negotiation for calls that exceed the available bandwidth.
- Up to 2500 registrations.
- Up to 500 non-traversal calls.
- Up to 100 traversal calls.
- Up to 200 neighboring zones.

H.323 Signaling

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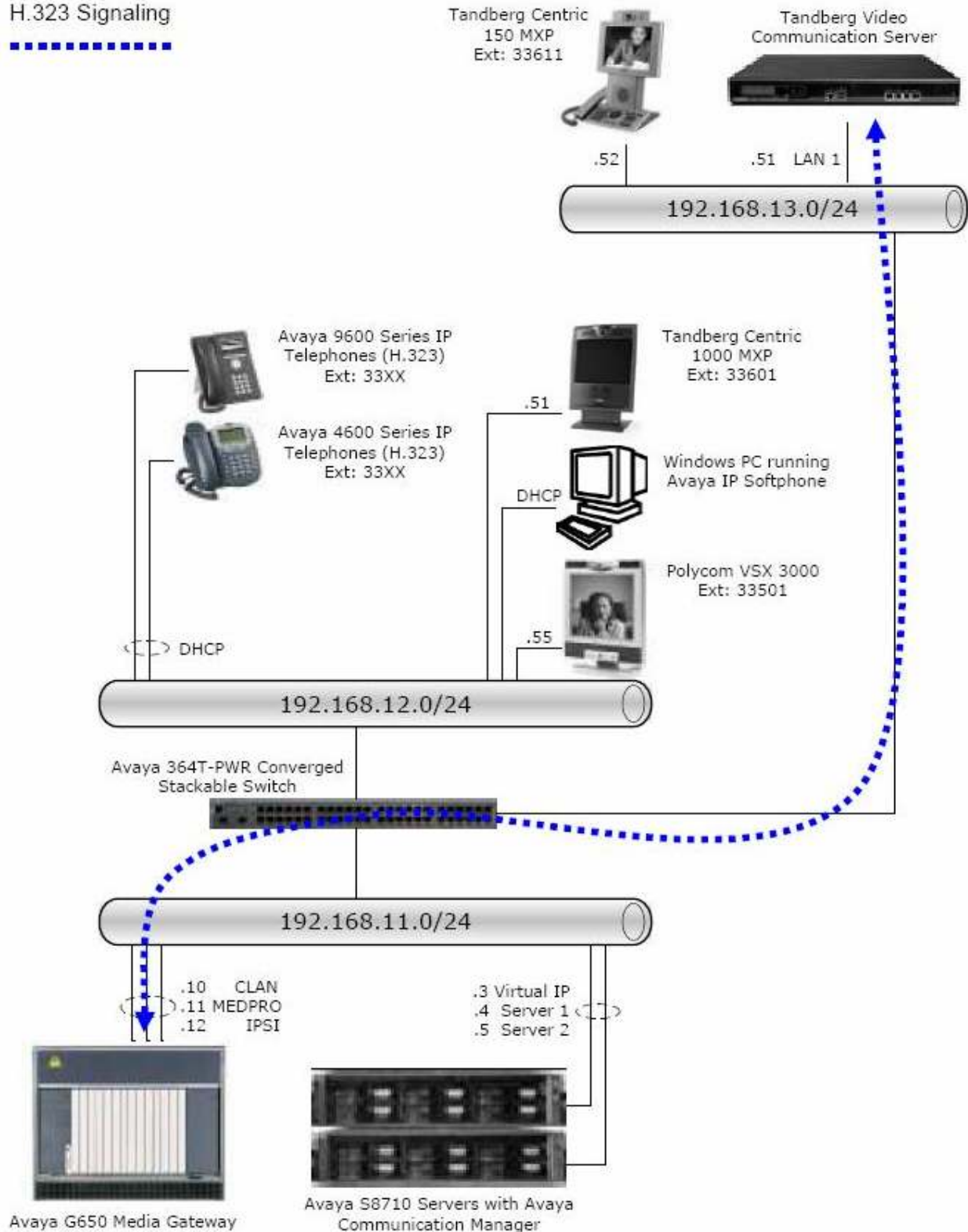


Figure 1: Sample Configuration

2. Equipment and Software Validated

The following equipment and software versions are used for this sample configuration:

Equipment	Software Version
Avaya S8710 Servers	Avaya Communication Manager 5.0 (R015x.00.0.825.4)
Avaya G650 Media Gateway <ul style="list-style-type: none">• Avaya TN2312BP (IPSI)• Avaya TN799DP (C-LAN)• Avaya TN2302AP (MEDPRO)	HW12 FW042 HW01 FW026 HW20 FW117
Avaya 4600 Series IP Telephones	2.8 (H.323)
Avaya 9600 Series IP Telephones	1.5 (H.323)
Avaya IP Softphone	6.0.0.25
Tandberg Video Communication Server	X2.0

Table 1: Equipment and Software Versions

3. Avaya Communication Manager Configuration

This section describes the configuration for enabling Avaya Communication Manager to interoperate with the Tandberg VCS.

Avaya Communication Manager was administered from the System Access Terminal (SAT). In these Application Notes the SAT screens are shown with a gray shaded background. In some instances, the information from the original screen has been edited or annotated for brevity or clarity in presentation. For example, entries and/or fields in the SAT screens that were either modified or were required for these Application Notes are displayed with boldface type. Refer to [1] and [2] for additional information regarding the administration of Avaya Communication Manager.

3.1. Verify Licensing

The following steps verify licensing on Avaya Communication Manager that is required to support the configuration described in these Application Notes. If a required feature is not enabled or there is insufficient capacity, contact an authorized Avaya account representative to make the appropriate changes.

Step	Description
3.1.1	<p>Issue the command “display system-parameters customer-options” and proceed to page 2. Verify that the licensing to support video and H.323 trunking is sufficient.</p> <pre> display system-parameters customer-options Page 2 of 10 OPTIONAL FEATURES IP PORT CAPACITIES Maximum Administered H.323 Trunks: 800 60 Maximum Concurrently Registered IP Stations: 12000 13 Maximum Administered Remote Office Trunks: 0 0 Maximum Concurrently Registered Remote Office Stations: 0 0 Maximum Concurrently Registered IP eCons: 0 0 Max Concur Registered Unauthenticated H.323 Stations: 100 0 Maximum Video Capable Stations: 100 16 Maximum Video Capable IP Softphones: 100 7 Maximum Administered SIP Trunks: 800 175 Maximum Administered Ad-hoc Video Conferencing Ports: 100 3 Maximum Number of DS1 Boards with Echo Cancellation: 0 0 Maximum TN2501 VAL Boards: 10 0 Maximum Media Gateway VAL Sources: 0 0 Maximum TN2602 Boards with 80 VoIP Channels: 128 0 Maximum TN2602 Boards with 320 VoIP Channels: 128 0 Maximum Number of Expanded Meet-me Conference Ports: 0 0 (NOTE: You must logoff & login to effect the permission changes.) </pre>

3.2. Configure Connectivity

This section describes the steps for configuring H.323 connectivity between Avaya Communication Manager and the Tandberg VCS.

Step	Description																																								
3.2.1a	Issue the command “ change ip-codec-set <n> ”, where n is the number of a codec set. Add entries for audio codecs that are supported on the Tandberg VCS. For this sample configuration, a single entry for G.711MU is added as displayed.																																								
	<div>change ip-codec-set 1<div>Page1 of 2</div></div> <div>IP Codec Set</div> <div>Codec Set: 1</div> <table><thead><tr><th></th><th>Audio Codec</th><th>Silence Suppression</th><th>Frames Per Pkt</th><th>Packet Size (ms)</th></tr></thead><tbody><tr><td>1:</td><td>G.711MU</td><td>n</td><td>2</td><td>20</td></tr><tr><td>2:</td><td></td><td></td><td></td><td></td></tr><tr><td>3:</td><td></td><td></td><td></td><td></td></tr><tr><td>4:</td><td></td><td></td><td></td><td></td></tr><tr><td>5:</td><td></td><td></td><td></td><td></td></tr><tr><td>6:</td><td></td><td></td><td></td><td></td></tr><tr><td>7:</td><td></td><td></td><td></td><td></td></tr></tbody></table>		Audio Codec	Silence Suppression	Frames Per Pkt	Packet Size (ms)	1:	G.711MU	n	2	20	2:					3:					4:					5:					6:					7:				
		Audio Codec	Silence Suppression	Frames Per Pkt	Packet Size (ms)																																				
1:	G.711MU	n	2	20																																					
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3:																																									
4:																																									
5:																																									
6:																																									
7:																																									

Step	Description															
3.2.1b	Proceed to Page 2 and enable direct IP multimedia as displayed. The Maximum Call Rate for Direct-IP Multimedia field is the combined audio and video transmit/receive rate for a call. This field is utilized to limit the bandwidth used for calls within an IP network region. For these Application Notes, default settings were used for the maximum call rate fields.															
	<div>change ip-codec-set 1<div>Page2 of 2</div></div> <div>IP Codec Set</div> <div><div>Allow Direct-IP Multimedia? y</div><div>Maximum Call Rate for Direct-IP Multimedia: 384:Kbits</div><div>Maximum Call Rate for Priority Direct-IP Multimedia: 384:Kbits</div></div> <table><thead><tr><th></th><th>Mode</th><th>Redundancy</th></tr></thead><tbody><tr><td>FAX</td><td>relay</td><td>0</td></tr><tr><td>Modem</td><td>off</td><td>0</td></tr><tr><td>TDD/TTY</td><td>US</td><td>3</td></tr><tr><td>Clear-channel</td><td>n</td><td>0</td></tr></tbody></table>		Mode	Redundancy	FAX	relay	0	Modem	off	0	TDD/TTY	US	3	Clear-channel	n	0
		Mode	Redundancy													
FAX	relay	0														
Modem	off	0														
TDD/TTY	US	3														
Clear-channel	n	0														

Step	Description
3.2.2	<p>Issue the command “change ip-network-region <n>”, where n is the number of an IP network region and administer settings as displayed.</p> <ul style="list-style-type: none"> Enter a descriptive name for the Ip network region in the Name field. Enter the number of the IP codec set provisioned in Step 3.2.1 in the Codec Set field. Verify that the Inter-region IP-IP Direct Audio field is set to yes. This will allow direct IP-to-IP audio connectivity between video enabled endpoints registered to Avaya Communication Manager and the Tandberg VCS. <p><i>Note: The Inter-region IP-IP Direct Audio field should be set to yes, otherwise video may not set-up.</i></p> <ul style="list-style-type: none"> Use default settings for remaining fields.
	<pre> change ip-network-region 1 Page 1 of 19 IP NETWORK REGION Region: 1 Location: Authoritative Domain: avaya.com Name: Avaya MEDIA PARAMETERS Codec Set: 1 Intra-region IP-IP Direct Audio: yes Inter-region IP-IP Direct Audio: yes UDP Port Min: 2048 IP Audio Hairpinning? n UDP Port Max: 3329 DIFFSERV/TOS PARAMETERS RTCP Reporting Enabled? y Call Control PHB Value: 46 RTCP MONITOR SERVER PARAMETERS Audio PHB Value: 46 Use Default Server Parameters? y Video PHB Value: 26 802.1P/Q PARAMETERS Call Control 802.1p Priority: 6 Audio 802.1p Priority: 6 Video 802.1p Priority: 5 AUDIO RESOURCE RESERVATION PARAMETERS H.323 IP ENDPOINTS RSVP Enabled? n H.323 Link Bounce Recovery? y Idle Traffic Interval (sec): 20 Keep-Alive Interval (sec): 5 Keep-Alive Count: 5 </pre>

Step	Description								
3.2.3	Issue the command “ change node-names ip ” and add an entry to map the IP address corresponding to the Tandberg VCS to descriptive name. Verify that an entry exists for the Control LAN (CLAN) interface on the Avaya G650 Media Gateway.								
	<div>change node-names ip<div>Page1 of 2</div></div>								
	<div><div>IP NODE NAMES</div><table><thead><tr><th>Name</th><th>IP Address</th></tr></thead><tbody><tr><td>CLAN-1A02</td><td>192.168.11.10</td></tr><tr><td>MEDPRO-1A03</td><td>192.168.11.11</td></tr><tr><td>Tandberg-VCS</td><td>192.168.13.51</td></tr></tbody></table></div>	Name	IP Address	CLAN-1A02	192.168.11.10	MEDPRO-1A03	192.168.11.11	Tandberg-VCS	192.168.13.51
	Name	IP Address							
CLAN-1A02	192.168.11.10								
MEDPRO-1A03	192.168.11.11								
Tandberg-VCS	192.168.13.51								

Step	Description
3.2.4	<p>Issue the command “add signaling-group <n>”, where n is the number of an unallocated signaling group and administer settings as displayed.</p> <ul style="list-style-type: none"> To enable H.323 connectivity, set the Group Type field to h.323. To enable video, set the IP Video field to y. Enter the node name for the CLAN (see Step 3.2.3) in the Near-end Node Name field. Enter the node name of the Tandberg VCS provisioned in Step 3.2.3 in the Far-end Node Name field. Enter the number of the IP network region provisioned in Step 3.2.2 in the Far-end Network Region field. Verify that the Direct IP-IP Audio Connections field to y to enable direct IP-to-IP audio connectivity for video enabled endpoints utilizing this signaling group. <i>Note: The Direct IP-IP Audio Connections field should be set to y, otherwise video may not set-up.</i> Use default settings for remaining fields.
	<pre> add signaling-group 20 Page 1 of 1 SIGNALING GROUP Group Number: 20 Group Type: h.323 Remote Office? n Max number of NCA TSC: 0 SBS? n Max number of CA TSC: 0 IP Video? y Priority Video? n Trunk Group for NCA TSC: Trunk Group for Channel Selection: TSC Supplementary Service Protocol: a T303 Timer(sec): 10 Near-end Node Name: CLAN-1A02 Far-end Node Name: Tandberg-VCS Near-end Listen Port: 1719 Far-end Listen Port: 1719 Far-end Network Region: 1 LRQ Required? y Calls Share IP Signaling Connection? n RRQ Required? n H245 Control Addr On FACility? n Bypass If IP Threshold Exceeded? n H.235 Annex H Required? n DTMF over IP: out-of-band Direct IP-IP Audio Connections? y Link Loss Delay Timer(sec): 90 IP Audio Hairpinning? n Enable Layer 3 Test? n Interworking Message: PROGress H.323 Outgoing Direct Media? n DCP/Analog Bearer Capability: 3.1kHz </pre>

Step	Description
3.2.5	<p>Issue the command “add trunk-group <n>”, where n is the number of an unallocated trunk group and administer settings as displayed.</p> <ul style="list-style-type: none"> • Set the Group Type field to isdn. • Enter a descriptive name for the trunk group in the Group Name field. • Enter a number in the TAC (Trunk Access Code) field that is consistent with the configuration for the dial plan. • Set the Carrier Medium field to H.323. • Set the Service Type field to tie. <ul style="list-style-type: none"> ○ Set the Member Assignment Method: field to auto. ○ Enter the number of the signaling group provisioned in Step 3.2.4 in the Signaling Group field. ○ Set the Number of Members field to a value that supports the expected call load for this trunk. • Use default settings for remaining fields.
	<div> <div>add trunk-group 20</div> <div>Page 1 of 21</div> </div> <div> <div>TRUNK GROUP</div> <div> <div>Group Number: 20</div> <div>Group Name: Tandberg VCS</div> <div>Direction: two-way</div> <div>Dial Access? n</div> <div>Queue Length: 0</div> <div>Service Type: tie</div> </div> <div> <div>Group Type: isdn</div> <div>COR: 1</div> <div>Outgoing Display? n</div> <div>Busy Threshold: 255</div> <div>Auth Code? n</div> </div> <div> <div>CDR Reports: y</div> <div>TN: 1</div> <div>Carrier Medium: H.323</div> <div>Night Service:</div> </div> <div> <div>Member Assignment Method: auto</div> <div>Signaling Group: 20</div> <div>Number of Members: 10</div> </div> </div>

Step	Description
3.2.6	<p>Issue the command “change signaling-group <n>”, where n is the number of the signaling group provisioned in Step 3.2.4. Add the trunk group provisioned in Step 3.2.5 to this signaling group as displayed.</p> <pre> change signaling-group 20 Page 1 of 5 SIGNALING GROUP Group Number: 20 Group Type: h.323 Remote Office? n Max number of NCA TSC: 0 SBS? n Max number of CA TSC: 0 IP Video? y Trunk Group for NCA TSC: Priority Video? n Trunk Group for Channel Selection: 20 TSC Supplementary Service Protocol: a T303 Timer(sec): 10 Near-end Node Name: CLAN-1A02 Far-end Node Name: Tandberg-VCS Near-end Listen Port: 1719 Far-end Listen Port: 1719 Far-end Network Region: 1 LRQ Required? y Calls Share IP Signaling Connection? n RRQ Required? n H245 Control Addr On FACility? n Bypass If IP Threshold Exceeded? n H.235 Annex H Required? n DTMF over IP: out-of-band Direct IP-IP Audio Connections? y Link Loss Delay Timer(sec): 90 IP Audio Hairpinning? n Enable Layer 3 Test? n Interworking Message: PROGress H.323 Outgoing Direct Media? n DCP/Analog Bearer Capability: 3.1kHz </pre>

3.3. Configure Call Routing

This section describes the steps for configuring call routing from Avaya Communication Manager to the Tandberg VCS. For this sample configuration, Automatic Alternate Routing (AAR) without Feature Access Code (FAC) is utilized to route calls to the Tandberg VCS. Note that other forms of call routing may be utilized.

Step	Description
3.3.1	<p>Issue the command “change route-pattern <n>”, where n is the number of an unallocated route pattern. Administer settings to utilize the trunk group provisioned in Step 3.2.5 to route calls to the Tandberg VCS.</p> <ul style="list-style-type: none"> Enter a descriptive name for the route pattern in the Pattern Name field. Enter the number of the trunk group that was provisioned in Step 3.2.5 in the Grp No field. To disable restrictions for call routing via this route pattern, set the Facility Restriction Level (FRL) field to the lowest setting. Use default settings for remaining fields.
	<pre> change route-pattern 20 Pattern Number: 20 Pattern Name: Tandberg VCS SCCAN? n Secure SIP? n Grp FRL NPA Pfx Hop Toll No. Inserted DCS/ IXC No Mrk Lmt List Del Digits QSIG Dgts Intw 1: 20 0 2: 3: 4: 5: 6: n user n user n user n user n user n user BCC VALUE TSC CA-TSC ITC BCIE Service/Feature PARM No. Numbering LAR 0 1 2 M 4 W Request Dgts Format Subaddress 1: y y y y y n n rest none 2: y y y y y n n rest none 3: y y y y y n n rest none 4: y y y y y n n rest none 5: y y y y y n n rest none 6: y y y y y n n rest none </pre>

Step	Description														
3.3.2	<p>Issue the command “change aar analysis x” and add entries in the table to utilize the route pattern provisioned in Step 3.3.1.</p> <ul style="list-style-type: none">• Enter a number in the Dialed String field to associate with the appropriate route pattern.• Enter the number of the route pattern provisioned in Step 3.3.1 in the Route Pattern field.• Configure additional fields with boldface type as displayed and use default settings for remaining fields.														
	<div><div>change aar analysis 3</div><div><div>AAR DIGIT ANALYSIS TABLE</div><div>Location: all</div><div>Percent Full: 1</div></div></div> <table><tr><th>Dialed String</th><th>Total Min</th><th>Total Max</th><th>Route Pattern</th><th>Call Type</th><th>Node Num</th><th>ANI Reqdn</th></tr><tr><td>33</td><td>5</td><td>5</td><td>20</td><td>aar</td><td></td><td>n</td></tr></table>	Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Reqdn	33	5	5	20	aar		n
Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Reqdn									
33	5	5	20	aar		n									

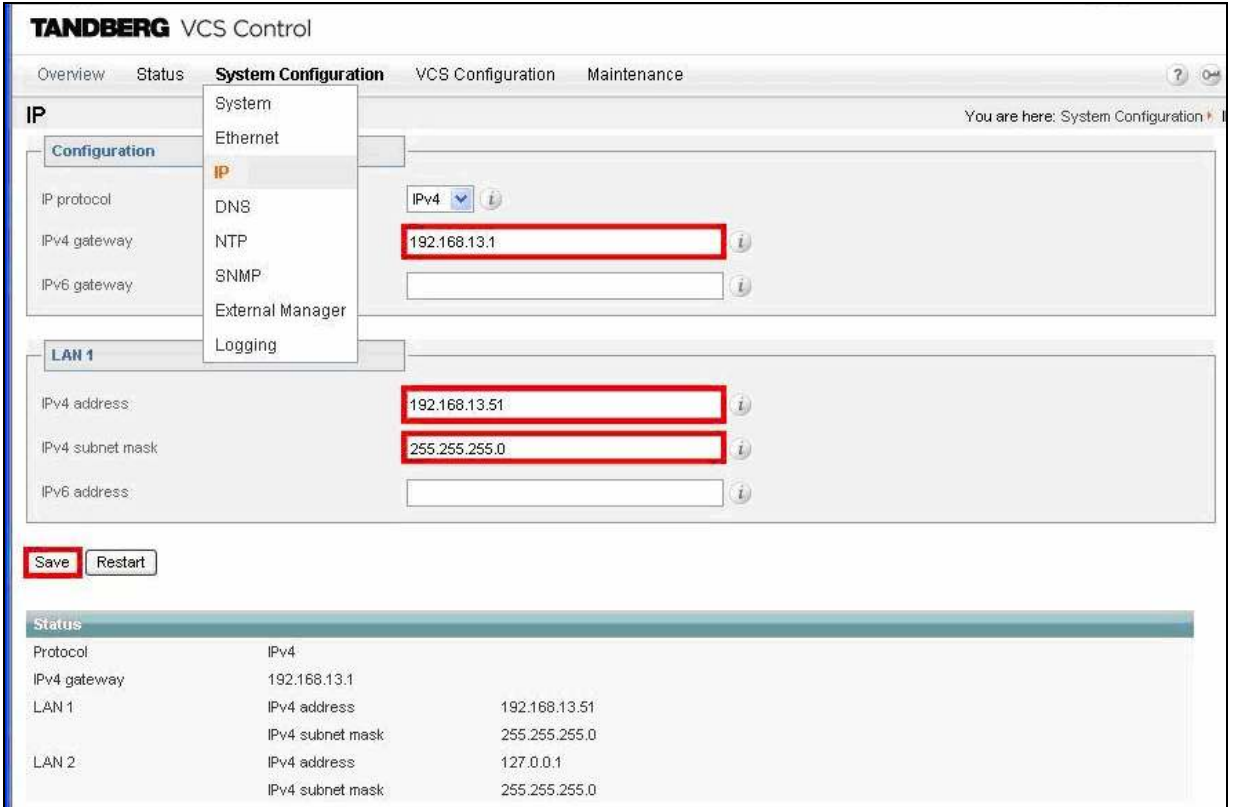
4. Tandberg Video Communication Server Configuration

This section describes the configuration for enabling the Tandberg VCS to interoperate with Avaya Communication Manager. The Tandberg VCS is administered and maintained from a web interface over a secure connection using a standard web browser. To access the web interface, enter **https://<Tandberg VCS IP Address or Fully Qualified Domain Name (FQDN)>** into the web browser's Uniform Resource Locator (URL) bar. Refer to [4] for additional information regarding the administration of the Tandberg VCS.

4.1. Configure Connectivity

This section describes the steps for configuring connectivity between the Tandberg VCS and Avaya Communication Manager.

Step	Description
4.1.1	<p>To enable IP connectivity with the network, configure settings as follows:</p> <ul style="list-style-type: none">• From the Tandberg VCS web interface, select System Configuration → IP.• Provision settings as displayed.• Click Save.



TANDBERG VCS Control

Overview Status **System Configuration** VCS Configuration Maintenance

You are here: System Configuration

IP

Configuration

IP protocol: IPv4

IPv4 gateway: 192.168.13.1

IPv6 gateway:

LAN 1

IPv4 address: 192.168.13.51

IPv4 subnet mask: 255.255.255.0

IPv6 address:

Save Restart

Status

Protocol	IPv4
IPv4 gateway	192.168.13.1
LAN 1	IPv4 address: 192.168.13.51
	IPv4 subnet mask: 255.255.255.0
LAN 2	IPv4 address: 127.0.0.1
	IPv4 subnet mask: 255.255.255.0

Step	Description
4.1.2	<p>To enable H.323 connectivity with Avaya Communication Manager, configure settings as follows:</p> <ul style="list-style-type: none"> From the Tandberg VCS web interface, select VCS Configuration → Protocols → H.323. Provision settings as displayed. Click Save.

TANDBERG VCS Control

Overview Status System Configuration **VCS Configuration** Maintenance

H.323 You are here: VCS Configuration > Protocols > H.323

Configuration

H.323 mode: **On**

Gatekeeper

Registration UDP port: **1719**

Registration conflict mode: **Reject**

Call signaling TCP port: **1720**

Call signaling port range start: **15000**

Call signaling port range end: **19999**

Time to live: **320**

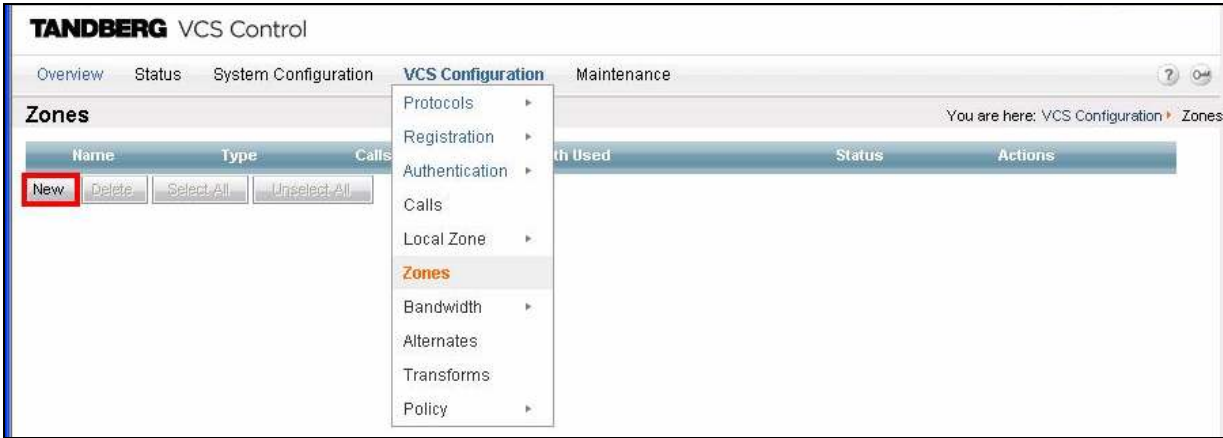
Call time to live: **120**

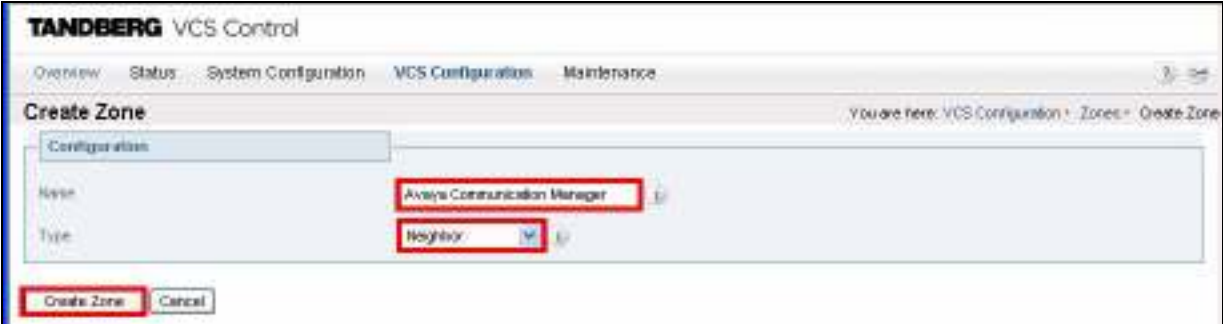
Auto discover: **Off**

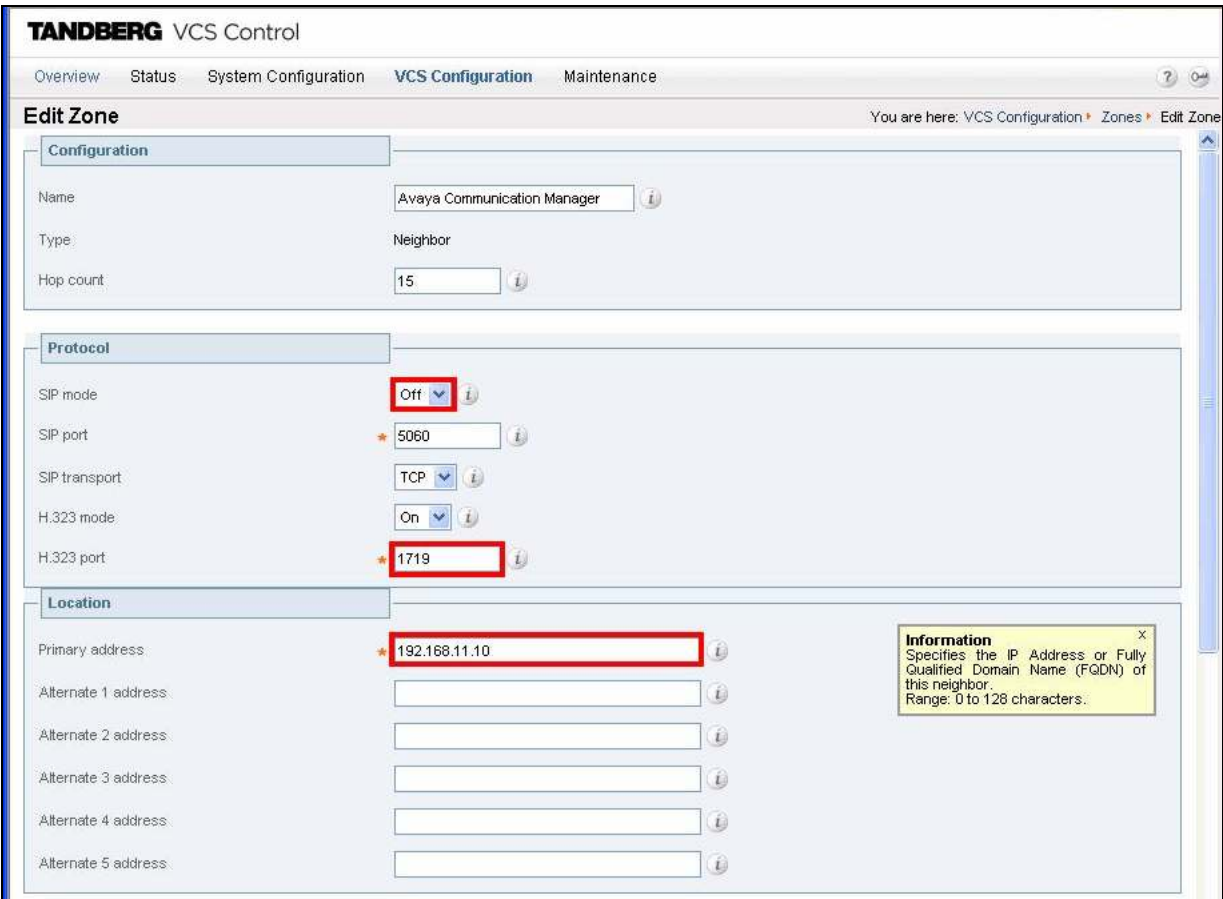
Save

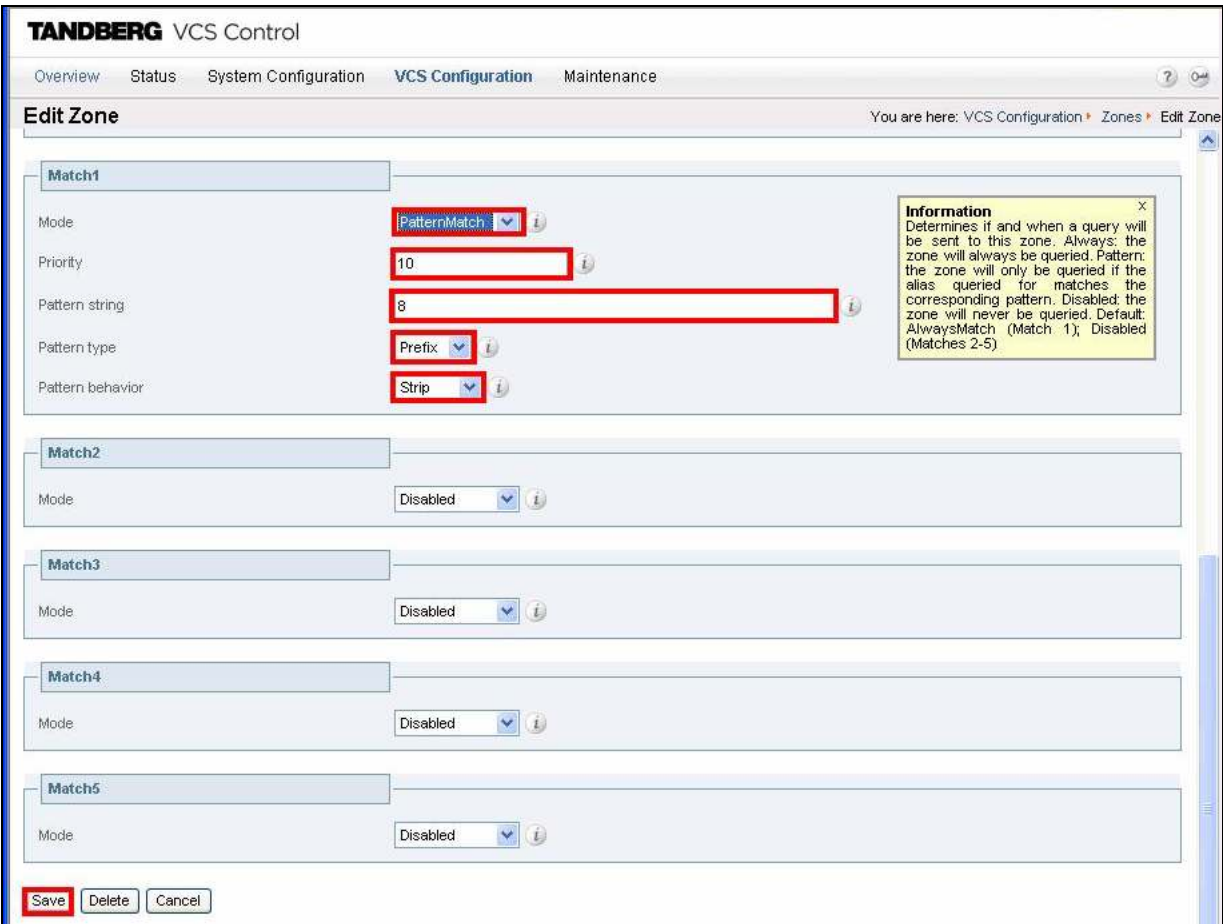
H.323 Status

Registration	Status	Active
	IPv4 address	192.168.13.51:1719
Call signaling	Status	Active
	IPv4 address	192.168.13.51:1720
Assent	Call signaling status	Inactive
H.460.18	Call signaling status	Inactive

Step	Description
4.1.3	<p>To enable H.323 connectivity with Avaya Communication Manager, add a Zone as follows:</p> <ul style="list-style-type: none"> From the Tandberg VCS web interface, select VCS Configuration → Zones. Click New. 


Step	Description
4.1.4	<p>To enable H.323 connectivity with Avaya Communication Manager, configure settings as follows:</p> <ul style="list-style-type: none"> • Enter a descriptive name for the zone in the Name field. • Select the Neighbor from the drop-down list for the Type field. • Click Create Zone. 

Step	Description
4.1.5a	<p>To enable H.323 connectivity with Avaya Communication Manager, provision settings as displayed and scroll down.</p>  <p>The screenshot displays the TANDBERG VCS Control interface for editing a zone. The breadcrumb trail indicates the path: VCS Configuration > Zones > Edit Zone. The configuration is divided into three sections: Configuration, Protocol, and Location. In the Configuration section, the Name is 'Avaya Communication Manager', Type is 'Neighbor', and Hop count is '15'. The Protocol section shows 'SIP mode' set to 'Off', 'SIP port' as '5060', 'SIP transport' as 'TCP', 'H.323 mode' as 'On', and 'H.323 port' as '1719'. The Location section lists the 'Primary address' as '192.168.11.10' and provides five empty fields for alternate addresses. An information tooltip on the right states: 'Specifies the IP Address or Fully Qualified Domain Name (FQDN) of this neighbor. Range: 0 to 128 characters.'</p>

Step	Description
4.1.5b	<p>To enable call routing to Avaya Communication Manager, provision settings as displayed and click Save.</p>  <p>The screenshot displays the 'TANDBERG VCS Control' interface, specifically the 'Edit Zone' configuration page. The breadcrumb trail indicates the path: 'You are here: VCS Configuration > Zones > Edit Zone'. The page contains five match configuration sections, labeled Match1 through Match5. Match1 is the active configuration, showing the following settings: Mode is 'PatternMatch' (highlighted with a red box), Priority is '10' (highlighted with a red box), Pattern string is '8' (highlighted with a red box), Pattern type is 'Prefix' (highlighted with a red box), and Pattern behavior is 'Strip' (highlighted with a red box). Matches 2, 3, 4, and 5 are all set to 'Disabled' mode. At the bottom of the page, there are three buttons: 'Save' (highlighted with a red box), 'Delete', and 'Cancel'. An 'Information' popup is visible on the right side of the page, explaining the 'AlwaysMatch' and 'Disabled' modes.</p>

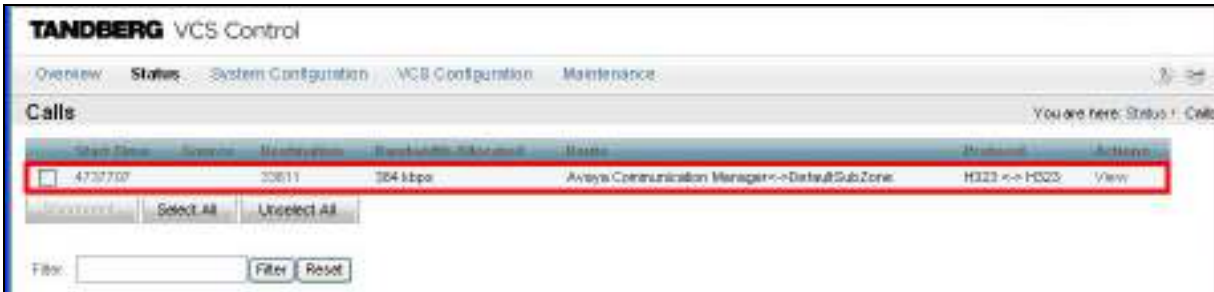
5. Verification Steps

The following steps were used to verify the administrative steps presented in these Application Notes and are applicable for similar configurations in the field.

Step	Description
6.1	Verify H.323 connectivity between Avaya Communication Manager and the Tandberg VCS by retrieving status regarding the trunk group provisioned in Step 3.2.5 . <ul style="list-style-type: none">From a SAT session, issue the command “status trunk <n>”, where n is the number of the trunk group to verify.Verify that all members in the trunk group are in-service/idle.
6.2	Verify H.323 connectivity between the Tandberg VCS and Avaya Communication Manager by retrieving status regarding the zone provisioned in Step 4.1.5a . From the Tandberg VCS web interface, select Status → Zones and verify the status of the zone provisioned in Step 4.1.5a is Active . 

Step	Description																																		
6.3	<p>Validate signaling and media connectivity for call origination from Avaya Communication Manager to the Tandberg VCS. This is accomplished by verifying that the trunk group and zone provisioned in Step 3.2.5 and Step 4.1.5a respectively are utilized when a call from a video enabled endpoint registered to Avaya Communication Manager calls a video enabled endpoint registered to the Tandberg VCS.</p> <ul style="list-style-type: none">From a SAT session, issue the command “list trace tac <n>”, where n is the TAC defined for the trunk group.From a video enabled endpoint registered to Avaya Communication Manager, dial 833611 to call the video enabled endpoint registered to the Tandberg VCS. <p><i>Note: The trace below shows that 833611 was dialed and utilized the call routing and trunk group provisioned in Section 3 to route the call to the Tandberg VCS. Also, note the sequence to enable direct IP-to-IP audio connectivity between the endpoints (192.168.13.52, 192.168.12.107) involved in this call. Initially, the endpoint registered to the Tandberg VCS (192.168.13.52) is connected to the Media Processor (MEDPRO, 192.168.11.11). Due to the provisioning that enabled direct IP-to-IP audio connectivity as well as congruency for the codec and DTMF requirements on the endpoints, Avaya Communication Manager allowed direct IP-to-IP audio connectivity for this call. Also note that video sets-up (using H.264) between the video enabled endpoints registered to Avaya Communication Manager (192.168.12.143) and the Tandberg VCS (192.168.13.52).</i></p>																																		
<div>list trace tac 120<div>Page1</div></div> <div>LIST TRACE</div> <table><thead><tr><th>time</th><th>data</th></tr></thead><tbody><tr><td>10:56:24</td><td>dial 833611 route:AAR</td></tr><tr><td>10:56:24</td><td>route-pattern 20 preference 1 cid 0x1089</td></tr><tr><td>10:56:24</td><td>seize trunk-group 20 member 7 cid 0x1089</td></tr><tr><td>10:56:24</td><td>Setup digits 33611</td></tr><tr><td>10:56:24</td><td>Calling Number & Name NO-CPNumber NO-CPName</td></tr><tr><td>10:56:24</td><td>Proceed trunk-group 20 member 7 cid 0x1089</td></tr><tr><td>10:56:25</td><td>Alert trunk-group 20 member 7 cid 0x1089</td></tr><tr><td>10:56:26</td><td>active trunk-group 20 member 7 cid 0x1089</td></tr><tr><td>10:56:26</td><td>G711MU ss:off ps:20 rn:1/1 192.168.13.52:2346 192.168.11.11:2412</td></tr><tr><td>10:56:26</td><td>xoip: fax:Relay modem:off tty:US 192.168.11.11:2412 uid:0x50082</td></tr><tr><td>10:56:37</td><td>G711MU ss:off ps:20 rn:1/1 192.168.13.52:2346 192.168.12.107:2940</td></tr><tr><td>10:56:37</td><td>G711MU ss:off ps:20 rn:1/1 192.168.12.107:2940 192.168.13.52:2346</td></tr><tr><td>10:56:37</td><td>Video: H264 192.168.13.52:2348 192.168.12.143:2690</td></tr><tr><td></td><td>logChl:40 sessId:2 bw:6400 tx/rx:3200</td></tr><tr><td>10:56:38</td><td>Video: H264 192.168.12.143:2690 192.168.13.52:2348</td></tr><tr><td></td><td>logChl:2 sessId:2 bw:6400 tx/rx:3200</td></tr></tbody></table>		time	data	10:56:24	dial 833611 route:AAR	10:56:24	route-pattern 20 preference 1 cid 0x1089	10:56:24	seize trunk-group 20 member 7 cid 0x1089	10:56:24	Setup digits 33611	10:56:24	Calling Number & Name NO-CPNumber NO-CPName	10:56:24	Proceed trunk-group 20 member 7 cid 0x1089	10:56:25	Alert trunk-group 20 member 7 cid 0x1089	10:56:26	active trunk-group 20 member 7 cid 0x1089	10:56:26	G711MU ss:off ps:20 rn:1/1 192.168.13.52:2346 192.168.11.11:2412	10:56:26	xoip: fax:Relay modem:off tty:US 192.168.11.11:2412 uid:0x50082	10:56:37	G711MU ss:off ps:20 rn:1/1 192.168.13.52:2346 192.168.12.107:2940	10:56:37	G711MU ss:off ps:20 rn:1/1 192.168.12.107:2940 192.168.13.52:2346	10:56:37	Video: H264 192.168.13.52:2348 192.168.12.143:2690		logChl:40 sessId:2 bw:6400 tx/rx:3200	10:56:38	Video: H264 192.168.12.143:2690 192.168.13.52:2348		logChl:2 sessId:2 bw:6400 tx/rx:3200
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Step	Description
6.4	Verify status for call origination from Avaya Communication Manager to the Tandberg VCS. From the Tandberg VCS web interface, select Status → Calls and verify the status of the call initiated in Step 6.3 .



TANDBERG VCS Control

Overview **Status** System Configuration VCS Configuration Maintenance

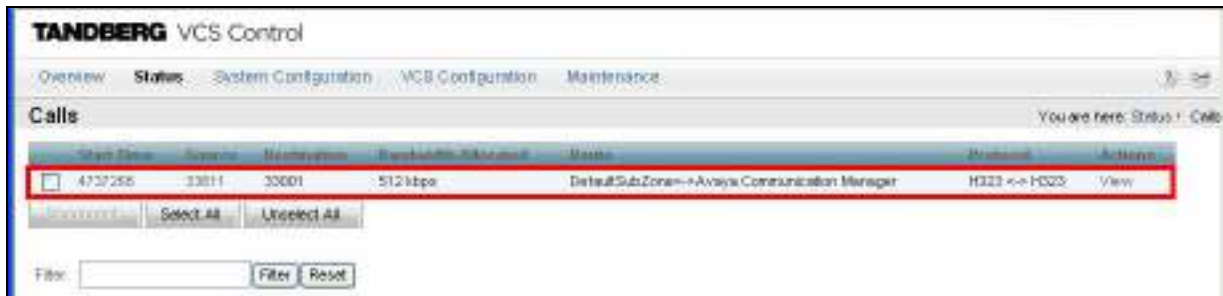
Calls You are here: Status > Calls

	Start Time	Source	Destination	Bandwidth (Kbps)	Route	Protocol	Action
<input type="checkbox"/>	4/27/2007	33611	384 kbps	Avaya Communication Manager ↔ DefaultSubZone	H323 ↔ H323	View	

Filter:

Step	Description																																																																																																																																										
6.5	Below is a call flow of the scenario that was initiated in Step 6.3 . This trace is intended to display the provisioning presented in these Application Notes.																																																																																																																																										
<table><tr><th>Time</th><th>192.168.11.10</th><th>192.168.12.143</th><th>192.168.13.51</th><th>192.168.13.52</th><th>Comment</th></tr><tr><td>6.635</td><td>(1720) →</td><td>H.225.0 → (26535)</td><td></td><td></td><td>CS: empty</td></tr><tr><td>6.637</td><td>(1720) ←</td><td>H.225.0 ← (26535)</td><td></td><td></td><td>CS: empty</td></tr><tr><td>6.641</td><td>(1720) →</td><td>H.225.0 → (26535)</td><td></td><td></td><td>CS: empty CS: empty</td></tr><tr><td>6.842</td><td>(1720) →</td><td>H.225.0 → (26535)</td><td></td><td></td><td>CS: empty CS: empty CS: empty</td></tr><tr><td>8.978</td><td>(1720) →</td><td>H.225.0 → (26535)</td><td></td><td></td><td>CS: empty</td></tr><tr><td>8.979</td><td>(1719) →</td><td>H.225.0 → (1719)</td><td></td><td></td><td>RAS: locationRequest</td></tr><tr><td>8.993</td><td>(1719) ←</td><td>H.225.0 ← (1719)</td><td></td><td></td><td>RAS: requestInProgress</td></tr><tr><td>8.993</td><td>(1719) ←</td><td>H.225.0 ← (1719)</td><td></td><td></td><td>RAS: locationConfirm</td></tr><tr><td>9.115</td><td>(23419) →</td><td>H.225.0 → (1720)</td><td></td><td></td><td>CS: setup OpenLogicalChannel</td></tr><tr><td>9.138</td><td>(23419) ←</td><td>H.225.0 ← (1720)</td><td></td><td></td><td>CS: callProceeding</td></tr><tr><td>9.175</td><td></td><td></td><td>(15483) →</td><td>H.225.0 → (1720)</td><td>CS: setup</td></tr><tr><td>9.187</td><td></td><td></td><td>(1719) →</td><td>H.225.0 → (1719)</td><td>RAS: admissionRequest</td></tr><tr><td>9.211</td><td></td><td></td><td>(1719) →</td><td>H.225.0 → (1719)</td><td>RAS: admissionConfirm</td></tr><tr><td>9.517</td><td></td><td></td><td>(15483) →</td><td>H.225.0 → (1720)</td><td>CS: alerting</td></tr><tr><td>9.538</td><td>(23419) ←</td><td>H.225.0 ← (1720)</td><td></td><td></td><td>CS: alerting</td></tr><tr><td>9.555</td><td>(1720) →</td><td>H.225.0/H.245 → (26535)</td><td></td><td></td><td>CS: facility sendTerminalCapabilitySet</td></tr><tr><td>9.558</td><td>(1720) ←</td><td>H.225.0/H.245 ← (26535)</td><td></td><td></td><td>CS: facility terminalCapabilitySet masterSlaveDetermination</td></tr><tr><td>9.574</td><td>(1720) →</td><td>H.225.0/H.245 → (26535)</td><td></td><td></td><td>CS: facility terminalCapabilitySetAck</td></tr><tr><td>9.759</td><td>(1720) →</td><td>H.225.0/H.245 → (26535)</td><td></td><td></td><td>CS: facility masterSlaveDeterminationAck</td></tr><tr><td>9.759</td><td>(1720) ←</td><td>H.225.0/H.245 ← (26535)</td><td></td><td></td><td>CS: facility masterSlaveDeterminationAck</td></tr><tr><td>10.577</td><td></td><td></td><td>(15483) →</td><td>H.225.0 → (1720)</td><td>CS: connect</td></tr><tr><td>10.605</td><td>(23419) ←</td><td>H.225.0 ← (1720)</td><td></td><td></td><td>CS: connect</td></tr></table>		Time	192.168.11.10	192.168.12.143	192.168.13.51	192.168.13.52	Comment	6.635	(1720) →	H.225.0 → (26535)			CS: empty	6.637	(1720) ←	H.225.0 ← (26535)			CS: empty	6.641	(1720) →	H.225.0 → (26535)			CS: empty CS: empty	6.842	(1720) →	H.225.0 → (26535)			CS: empty CS: empty CS: empty	8.978	(1720) →	H.225.0 → (26535)			CS: empty	8.979	(1719) →	H.225.0 → (1719)			RAS: locationRequest	8.993	(1719) ←	H.225.0 ← (1719)			RAS: requestInProgress	8.993	(1719) ←	H.225.0 ← (1719)			RAS: locationConfirm	9.115	(23419) →	H.225.0 → (1720)			CS: setup OpenLogicalChannel	9.138	(23419) ←	H.225.0 ← (1720)			CS: callProceeding	9.175			(15483) →	H.225.0 → (1720)	CS: setup	9.187			(1719) →	H.225.0 → (1719)	RAS: admissionRequest	9.211			(1719) →	H.225.0 → (1719)	RAS: admissionConfirm	9.517			(15483) →	H.225.0 → (1720)	CS: alerting	9.538	(23419) ←	H.225.0 ← (1720)			CS: alerting	9.555	(1720) →	H.225.0/H.245 → (26535)			CS: facility sendTerminalCapabilitySet	9.558	(1720) ←	H.225.0/H.245 ← (26535)			CS: facility terminalCapabilitySet masterSlaveDetermination	9.574	(1720) →	H.225.0/H.245 → (26535)			CS: facility terminalCapabilitySetAck	9.759	(1720) →	H.225.0/H.245 → (26535)			CS: facility masterSlaveDeterminationAck	9.759	(1720) ←	H.225.0/H.245 ← (26535)			CS: facility masterSlaveDeterminationAck	10.577			(15483) →	H.225.0 → (1720)	CS: connect	10.605	(23419) ←	H.225.0 ← (1720)			CS: connect
Time	192.168.11.10	192.168.12.143	192.168.13.51	192.168.13.52	Comment																																																																																																																																						
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Step	Description
6.6	<p>Validate signaling and media connectivity for call origination from the Tandberg VCS to Avaya Communication Manager. This is accomplished by verifying that the zone and trunk group provisioned in Step 4.1.5a and Step 3.2.5 respectively are utilized when a call from a video enabled endpoint registered to the Tandberg VCS calls a video enabled endpoint registered to Avaya Communication Manager.</p> <ul style="list-style-type: none"> From a SAT session, issue the command “list trace tac <n>”, where n is the TAC defined for the trunk group. From a video enabled endpoint registered to Tandberg VCS, dial 833001 to call the video enabled endpoint registered to Avaya Communication Manager. <p><i>Note: The trace below shows that 33001 was called and utilized the call routing and trunk group provisioned in Section 4 to route the call to Avaya Communication Manager. Also, note the sequence to enable direct IP-to-IP audio connectivity between the endpoints (192.168.13.52, 192.168.12.107) involved in this call. Initially, both endpoints are connected to the Media Processor (MEDPRO, 192.168.11.11). Due to the provisioning that enabled direct IP-to-IP audio connectivity as well as congruency for the codec and DTMF requirements on the endpoints, Avaya Communication Manager allowed direct IP-to-IP audio connectivity for this call. Also note that video sets-up (using H.264) between the video enabled endpoints registered to Avaya Communication Manager (192.168.12.143) and the Tandberg VCS (192.168.13.52).</i></p>
<div>list trace tac 120</div> <div>Page 1</div> <div>LIST TRACE</div> <div> <div>time</div> <div>data</div> <div> 10:54:15 Calling party trunk-group 20 member 1 cid 0x1087 10:54:15 Calling Number & Name 33611 T150 10:54:15 active trunk-group 20 member 1 cid 0x1087 10:54:15 dial 33001 10:54:15 ring station 33001 cid 0x1087 10:54:15 G711MU ss:off ps:20 rn:1/1 192.168.12.107:2940 192.168.11.11:2392 10:54:15 xoip: fax:Relay modem:off tty:US 192.168.11.11:2392 uid:0x8ca0 10:54:20 active station 33001 cid 0x1087 10:54:20 G711MU ss:off ps:20 rn:1/1 192.168.13.52:2330 192.168.11.11:2388 10:54:20 xoip: fax:Relay modem:off tty:US 192.168.11.11:2388 uid:0x5007c 10:54:21 G711MU ss:off ps:20 rn:1/1 192.168.13.52:2330 192.168.12.107:2940 10:54:21 G711MU ss:off ps:20 rn:1/1 192.168.12.107:2940 192.168.13.52:2330 10:54:21 Video: H264 192.168.13.52:2332 192.168.12.143:2690 logChl:40 sessId:2 bw:6400 tx/rx:3200 10:54:22 Video: H264 192.168.12.143:2690 192.168.13.52:2332 logChl:2 sessId:2 bw:6400 tx/rx:3840 </div> </div>	

Step	Description														
6.7	<p>Verify status for call origination from the Tandberg VCS to Avaya Communication Manager. From the Tandberg VCS web interface, select Status → Calls and verify the status of the call initiated in Step 6.6.</p>  <p>The screenshot shows the 'TANDBERG VCS Control' web interface. The 'Status' tab is selected, and the 'Calls' sub-tab is active. A table displays call information, with one call highlighted by a red box:</p> <table><tr><th>Call ID</th><th>Source</th><th>Destination</th><th>Bandwidth (kbps)</th><th>Media</th><th>Protocol</th><th>Action</th></tr><tr><td>4727255</td><td>33011</td><td>33001</td><td>512 kbps</td><td>DefaultSubZone-->Avaya Communication Manager</td><td>H323 <--> H323</td><td>View</td></tr></table> <p>Below the table are buttons for 'Select All' and 'Unselect All'. At the bottom, there is a 'Filter' input field and 'Filter' and 'Reset' buttons.</p>	Call ID	Source	Destination	Bandwidth (kbps)	Media	Protocol	Action	4727255	33011	33001	512 kbps	DefaultSubZone-->Avaya Communication Manager	H323 <--> H323	View
Call ID	Source	Destination	Bandwidth (kbps)	Media	Protocol	Action									
4727255	33011	33001	512 kbps	DefaultSubZone-->Avaya Communication Manager	H323 <--> H323	View									

Step	Description
6.8	Below is a call flow of the scenario that was initiated in Step 6.6 . This trace is intended to display the provisioning presented in these Application Notes.

Time	192.168.13.52	192.168.13.51	192.168.11.10	192.168.12.143	Comment
7.219	(1719) → H.225.0 → (1719)				RAS: admissionRequest
7.234	(1719) → H.225.0 → (1719)				RAS: requestInProgress
7.234		(1719) → H.225.0 → (1719)			RAS: locationRequest
7.261		(1719) → H.225.0 → (1719)			RAS: locationConfirm
7.282	(1719) → H.225.0 → (1719)				RAS: admissionConfirm
7.319	(11274) → H.225.0 → (1720)				CS: setup
7.343	(11274) → H.225.0 → (1720)				CS: callProceeding
7.355		(1719) → H.225.0 → (1719)			RAS: locationRequest
7.381		(1719) → H.225.0 → (1719)			RAS: locationConfirm
7.428		(15480) → H.225.0 → (1720)			CS: setup
7.446		(15480) → H.225.0 → (1720)			CS: callProceeding
7.464			(1720) → H.225.0 → (25535)		CS: empty
7.542		(15480) → H.225.0 → (1720)			CS: alerting
7.561	(11274) → H.225.0 → (1720)				CS: alerting
7.758			(1720) → H.225.0 → (25535)		CS: empty CS: empty CS: empty CS: empty CS: empty
9.125			(1720) → H.225.0 → (25535)		CS: empty
9.128			(1720) → H.225.0 → (25535)		CS: empty
9.133			(1720) → H.225.0 → (25535)		CS: empty
9.135		(15480) → H.225.0 → (1720)			CS: connect
9.137		(1719) → H.225.0 → (1719)			RAS: bandwidthRequest
9.150		(1719) → H.225.0 → (1719)			RAS: bandwidthReject
9.162	(11274) → H.225.0 → (1720)				CS: connect

6. Conclusion

These Application Notes present a sample configuration comprised of Avaya Communication Manager and the Tandberg Video Communication Server (VCS) functioning as a gatekeeper. Employing this configuration enables call origination/termination with video between endpoints registered to Avaya Communication Manager and endpoints registered to the Tandberg VCS.

7. Additional References

Avaya references are available at <http://support.avaya.com>.

- [1] Administrator Guide for Avaya Communication Manager, Issue 3.1, Doc ID: 03-300509, February 2007.
- [2] Administration for Network Connectivity for Avaya Communication Manager, Issue 12, Doc ID: 555-233-504, February 2007.
- [3] IP Softphone Release 6.0 User Reference, Issue 1, Doc ID: N/A, May 2007

Tandberg references are available at: <http://www.tandberg.com/>.

- [4] Tandberg Video Communication Server Administrator Guide, Doc ID: D14049.02, March 2008.

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