



Avaya Solution & Interoperability Test Lab

Application Notes for H.323 video solution with TANDBERG Gatekeeper, 1700 MXP and T150 MXP Endpoints, Codian MCU 4501, and Avaya AuraTM Communication Manager – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for TANDBERG Gatekeeper Release 5.2 to interoperate with Avaya AuraTM Communication Manager Release 5.2. In this configuration, TANDBERG Codian MCU and TANDBERG video endpoints 1700 MXP and T150 MXP register to TANDBERG Gatekeeper. TANDBERG Gatekeeper integration is via H.323 trunks to Avaya AuraTM Communication Manager.

Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab at the request of the Solutions Marketing Team and is supporting the Video Collaboration Solution.

1. Introduction

These Application Notes describe the configuration steps required for TANDBERG Gatekeeper Release 5.2 to interoperate with Avaya Aura™ Communication Manager Release 5.2. In this configuration TANDBERG Codian MCU and TANDBERG video endpoints 1700 MXP and T150 MXP register to TANDBERG Gatekeeper. TANDBERG Gatekeeper integration is via H.323 trunks to Avaya Aura™ Communication Manager.

These Application Notes present a sample configuration with Avaya Aura™ one-X Communicator, Avaya IP Softphone, TANDBERG 150 MXP, and TANDBERG 1700 MXP endpoints. Avaya endpoints register to Avaya Aura™ Communication Manager and TANDBERG endpoints register to TANDBERG gatekeeper.

1.1. Interoperability Compliance Testing

The interoperability compliance testing included basic feature and serviceability testing.

Feature tests focused on:

- Point to point calls with Avaya (audio and video) endpoints and TANDBERG T150 MXP and 1700 MXP with media shuffling enabled.
- Multipoint audio and video calls via the TANDBERG Gatekeeper to the Codian MCU.
- Basic telephony features like hold, un-hold, video start/stop, audio and video mute/unmute and transfer.

The serviceability testing focused on verifying the ability of TANDBERG Gatekeeper and TANDBERG Codian MCU to recover from adverse conditions, such as:

- Server Reset.
- Disconnect/reconnect of Ethernet cable to TANDBERG Gatekeeper and MCU.

1.2. Support

Technical support on TANDBERG can be obtained through the following:

Web: <http://www.TANDBERG.com/contact-TANDBERG-video-conferencing-telepresence.jsp>

2. Network Topology

The configuration in **Figure 1** was used to test TANDBERG Video Solution interoperability with Avaya AuraTM Communication Manager to support Avaya Video Collaboration Solution.

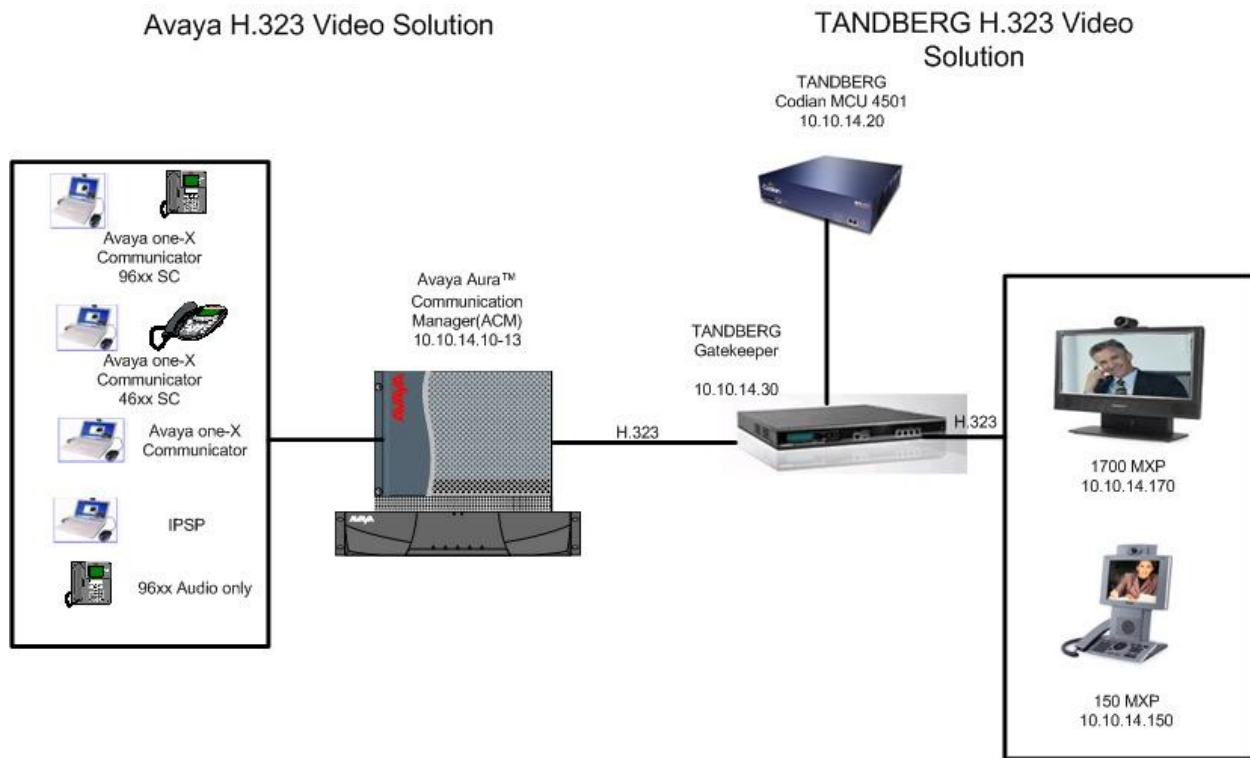


Figure 1: TANDBERG and Avaya H.323 Video Solution

3. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment	Software
Avaya Aura™ Communication Manager	CM 5.2 SP2, Build 02.0.947.3-17584
Avaya Media Gateway G650 IPSI CONTROL-LAN Medpro	FW046 FW032 FW047
Avaya IP Phones 96xx 46xx	2.0 2.9
Avaya Aura™ one-X Communicator	1.0.0.90
Avaya IP Softphone	R6 SP6
TANDBERG Codian MCU	2.4 build 6.13 (1.20)
TANDBERG Gatekeeper	5.2
TANDBERG 1700 MXP	F8.0 Security
TANDBERG T150 MXP	L5.1 Security

4. Configuring Avaya Aura™ Communication Manager

This section provides the procedures for configuring Avaya Aura™ Communication Manager. The configuration page in this section are accessed using Communication System Access Terminal (SAT). Log in with appropriate credentials.

The procedures include the following areas:

- Verify Communication Manager License
- Administer IP Node Name for Communication Manager
- Administer Dial Plan
- Administer Signaling and Trunk
- Administer Routing
- Administer AAR
- Administer Network Region
- Administer Codec Set
- Administer Avaya Aura™ one-X Communicator and Avaya IP Softphone

4.1. Verify Communication Manager License

Verify that the Communication Manager license has proper permissions for features illustrated in these Application Notes. If not then contact the Avaya sales team or business partner for a proper license file.

Enter the **display system-parameters customer-options** command. On Page 2 of the **system-parameters customer-options** form, verify that there are sufficient licenses for the following:

- **Maximum Administered H.323 Trunks** – must be large enough to accommodate the number of H.323 trunks (channels) to the TANDBERG.
- **Maximum Video Capable H.323 Stations** – must be equal to or greater than the number of H.323 video stations.
- **Maximum Video Capable IP Softphones** – must be equal to or greater than the number of Avaya IP Softphones enabled with video capabilities.

display system-parameters customer-options		Page 2 of 10
OPTIONAL FEATURES		
IP PORT CAPACITIES	USED	
Maximum Administered H.323 Trunks: 100	40	
Maximum Concurrently Registered IP Stations: 18000	3	
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: 0	0	
Maximum Video Capable Stations: 100	6	
Maximum Video Capable IP Softphones: 100	4	
Maximum Administered SIP Trunks: 100	10	
Maximum Administered Ad-hoc Video Conferencing Ports: 100	70	
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	1	
Maximum Number of Expanded Meet-me Conference Ports: 0	0	
(NOTE: You must logoff & login to effect the permission changes.)		

4.2. Administer IP Node Name

Enter the **change node-names ip** command and add an entry for the TANDBERG Gatekeeper as shown in the sample configuration screen below. Submit these changes.

change node-names ip		Page 1 of 2
		IP NODE NAMES
Name	IP Address	
Clan	10.10.14.12	
DefaultGW	10.10.14.1	
TGatekeeper	10.10.14.30	
default	0.0.0.0	
medpro	10.10.14.13	
procr	10.10.14.10	

4.3. Administer Dial Plan

Enter the **change dialplan analysis** command. Add an entry for local **ext** (extension), **dac** (dial access code), and **aar** (automatic alternate routing) as shown in the screen below. Submit these changes. 2xxxx series is local extension, 6xxxx is extension of the TANDBERG Endpoints registered to TANDBERG Gatekeeper and 5xxxx is dial in number to TANDBERG Codian MCU from Avaya endpoints via TANDBERG Gatekeeper.

change dialplan analysis			Page 1 of 12
			DIAL PLAN ANALYSIS TABLE
			Location: all
			Percent Full: 1
	Dialed String	Total Length	Call Type
1		3	dac
2		5	ext
3		5	aar
4		5	aar
5		5	aar
6		5	aar

4.4. Administer Signaling and Trunk

Prior to configuring a H.323 trunk group for communication with TANDBERG Gatekeeper, an IP signaling group must be configured. Enter the **add signaling-group 4** command and add an entry for TANDBERG Gatekeeper as shown below in bold. Retain all other default field values.

- Set Group Type to H.323
- Set IP Video to Y
- Set LRQ required to Y
- Set Far-end Node Name to the name you entered for the TANDBERG Gatekeeper system
- Set Far-end Network Region to the appropriate IP network region
- Set Direct IP-IP Audio Connections to Y
- Set IP Audio Hairpinning to Y

add signaling-group 4		Page 1 of 5
SIGNALING GROUP		
Group Number: 4	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: 4
Trunk Group for Channel Selection: 4		
TSC Supplementary Service Protocol: a		
T303 Timer(sec): 10		
H.245 DTMF Signal Tone Duration(msec):		
Near-end Node Name: Clan		Far-end Node Name: TGatekeeper
Near-end Listen Port: 1719		Far-end Listen Port: 1719
Far-end Network Region: 4		
LRQ Required? y	Calls Share IP Signaling Connection? n	
RRQ Required? 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? y	
Enable Layer 3 Test? n	Interworking Message: PROGRESS	
H.323 Station Outgoing Direct Media? n	DCP/Analog Bearer Capability: 3.1kHz	

Enter the **add trunk-group 4** command and add an entry for TANDBERG Gatekeeper as shown below in bold. Retain all other default field values.

```

add trunk-group 4                                     Page 1 of 21
                                     TRUNK GROUP

Group Number: 4          Group Type: isdn          CDR Reports: y
  Group Name: To_Gatekeeper          COR: 1          TN: 1          TAC: 104
    Direction: two-way      Outgoing Display? y      Carrier Medium: H.323
    Dial Access? y          Busy Threshold: 255      Night Service:
    Queue Length: 0
Service Type: tie          Auth Code? n
                               Member Assignment Method: auto
                               Signaling Group: 4
                               Number of Members: 20
  
```

4.5. Administer Routing

Enter the **change route-pattern 4** command and add an entry for TANDBERG Gatekeeper as shown below in bold. Retain all other default field values.

```

change route-pattern 4                               Page 1 of 3
                                     Pattern Number: 4   Pattern Name: TGatekeeper
                                     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: 4      0
2:
3:
4:
5:
6:

                                     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

                                     none
  
```

4.6. Administer AAR

Enter the **change aar analysis 0** command and add an entry for TANDBERG Gatekeeper as shown below in bold. Retain all other default field values.

change aar analysis 0							Page 1 of 2
AAR DIGIT ANALYSIS TABLE							
Location: all							Percent Full: 1
	Dialed String	Total Min	Total Max	Route Pattern	Call Type	Node Num	ANI Req'd
2		7	7	999	aar		n
3		5	5	1	aar		n
4		5	5	2	aar		n
5		5	5	4	aar		n
6		5	5	4	aar		n
7		7	7	999	aar		n
8		7	7	999	aar		n
9		7	7	999	aar		n

4.7. Administer Network Region

Enter the **change ip-network-region 4** command and add entries as shown below in bold. Retain all other default field values.

change ip-network-region 4		Page 1 of 19
IP NETWORK REGION		
Region: 4		
Location: 1		Authoritative Domain: avaya.com
Name: Gatekeeper		
MEDIA PARAMETERS		Intra-region IP-IP Direct Audio: yes
Codec Set: 1		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		
H.323 IP ENDPOINTS		AUDIO RESOURCE RESERVATION PARAMETERS
H.323 Link Bounce Recovery? y		RSVP Enabled? n
Idle Traffic Interval (sec): 20		
Keep-Alive Interval (sec): 5		

4.8. Administer Codec Set

Enter the **change ip-codec-set 1** command and add entries as shown below in bold. Retain all other default field values.

```
change ip-codec-set 1                                     Page 1 of 2

                                IP Codec Set

Codec Set: 1

Audio      Silence      Frames      Packet
Codec      Suppression  Per Pkt    Size(ms)
1: G.711MU          n          2         20

change ip-codec-set 1                                     Page 2 of 2

                                IP Codec Set

                                Allow Direct-IP Multimedia? y
                                Maximum Call Rate for Direct-IP Multimedia: 1920:Kbits
                                Maximum Call Rate for Priority Direct-IP Multimedia: 1920:Kbits
```

4.9. Administer Avaya Aura™ one-X Communicator and IP Softphone

Enter the **add station m** command, where **m** is an unused extension. Enter a descriptive **Name** and set **Type** to **9620**, **IP SoftPhone** to **y** and **IP Video Softphone** to **y**. Repeat the same for Avaya IP Softphone.

```
add station 20003                                         Page 1 of 5

                                STATION

Extension: 20003                                           Lock Messages? n                               BCC: M
Type: 9620                                                 Security Code: 20003                           TN: 1
Port: S00004                                              Coverage Path 1:                               COR: 1
Name: One-XCommunicator                                   Coverage Path 2:
COS: 1

                                Hunt-to Station:

STATION OPTIONS

                                Time of Day Lock Table:
Loss Group: 19                                           Personalized Ringing Pattern: 1
Speakerphone: 2-way                                     Message Lamp Ext: 20003
Display Language: english                               Mute Button Enabled? y
Survivable GK Node Name:
Survivable COR: internal                                 Media Complex Ext:
Survivable Trunk Dest? y                                IP SoftPhone? y

                                IP Video Softphone? y

                                Customizable Labels? y
```

5. Configuring the TANDBERG Gatekeeper

This section provides the procedures for configuring TANDBERG Gatekeeper. The procedures include the following areas:

- Gatekeeper Configuration
- Zone Configuration

5.1. Gatekeeper Configuration

Open a web browser; enter <http://x.x.x.x> for the URL, where x.x.x.x is the IP address of the TANDBERG Gatekeeper. Log in with appropriate credentials.

Click on the **Gatekeeper Configuration** tab and then the **Gatekeeper** sub-tab.

- Enable **Call routed** checkbox
- Enter the **Domain name**
- Leave rest as default as shown in the sample configuration, scroll down to the bottom of the page, and click on **Save**. (Not shown)

TANDBERG

Overview System Status System Configuration **Gatekeeper Configuration** Gatekeeper Authentication Services Zones TraversalZones SubZones Links Pipes Transforms Restrictions Credentials Files

Gatekeeper Configuration

Configuration

Local prefix	<input type="text"/>
Call routed	<input checked="" type="checkbox"/>
Auto discovery	<input type="checkbox"/>
Calls to unknown IP addresses	Direct <input type="button" value="v"/>
Allow calls from unregistered callers	<input checked="" type="checkbox"/>
Fallback alias for unregistered caller destination	<input type="text"/>
Allow forwarding of location requests	<input checked="" type="checkbox"/>
Allow DNS resolution	<input type="checkbox"/>
Time to live (seconds)	<input type="text" value="1800"/>
Call time to live (seconds)	<input type="text" value="120"/>
CPL policy	<input type="checkbox"/>

Downspeeding

Allow downspeeding at total bandwidth limit	<input checked="" type="checkbox"/>
Allow downspeeding at per call bandwidth limit	<input checked="" type="checkbox"/>

Local domain

Domain name	<input type="text" value="avaya.com"/>
-------------	--

5.2. Zone Configuration

To configure a link from the TANDBERG Gatekeeper to Communication Manager, click on the **Gatekeeper Configuration** tab and then the **Zones** sub-tab. Click on **Add New Zone** button.

The screenshot shows the TANDBERG Gatekeeper web interface. The top navigation bar includes tabs for Overview, System Status, System Configuration, and Gatekeeper Configuration. Under Gatekeeper Configuration, there are sub-tabs: Gatekeeper, Authentication, Services, Zones, TraversalZones, SubZones, Links, Pipes, Restrictions, Credentials, and Files. The 'Zones' sub-tab is selected. The main content area is titled 'Zone Configuration'. It features a 'Default Zone' section with a 'Hop count' input field set to '15' and a 'Save' button. Below this is a large table with a header 'Name' and an empty body. At the bottom of the table, there are three buttons: 'Add New Zone' (highlighted with a red box), 'Edit', and 'Delete'. A vertical 'TANDBERG Gatekeeper' logo is visible on the left side of the interface.

Enter a descriptive **Name** and configure **Gatekeeper 1 Address** and **Port**. The **Gatekeeper 1 Address** and **Port** must match the C-LAN IP address from **Section 4.2**. Leave rest as default and click on **Save**.

TANDBERG Gatekeeper

Overview System Status System Configuration **Gatekeeper Configuration** Gatekeeper Authentication Services Zones TraversalZones SubZones Links Pipes Transforms Restrictions Credentials Files

Edit Zone

Configuration

Name	PM	
Gatekeeper 1 Address	10.10.14.12	Port 1719
Gatekeeper 2 Address		Port 1719
Gatekeeper 3 Address		Port 1719
Gatekeeper 4 Address		Port 1719
Gatekeeper 5 Address		Port 1719
Gatekeeper 6 Address		Port 1719
Hop Count	15	
Monitor	On	
Match 1		
Mode	Always Match	
Match 2		
Mode	Disabled	
Match 3		
Mode	Disabled	
Match 4		
Mode	Disabled	
Match 5		
Mode	Disabled	

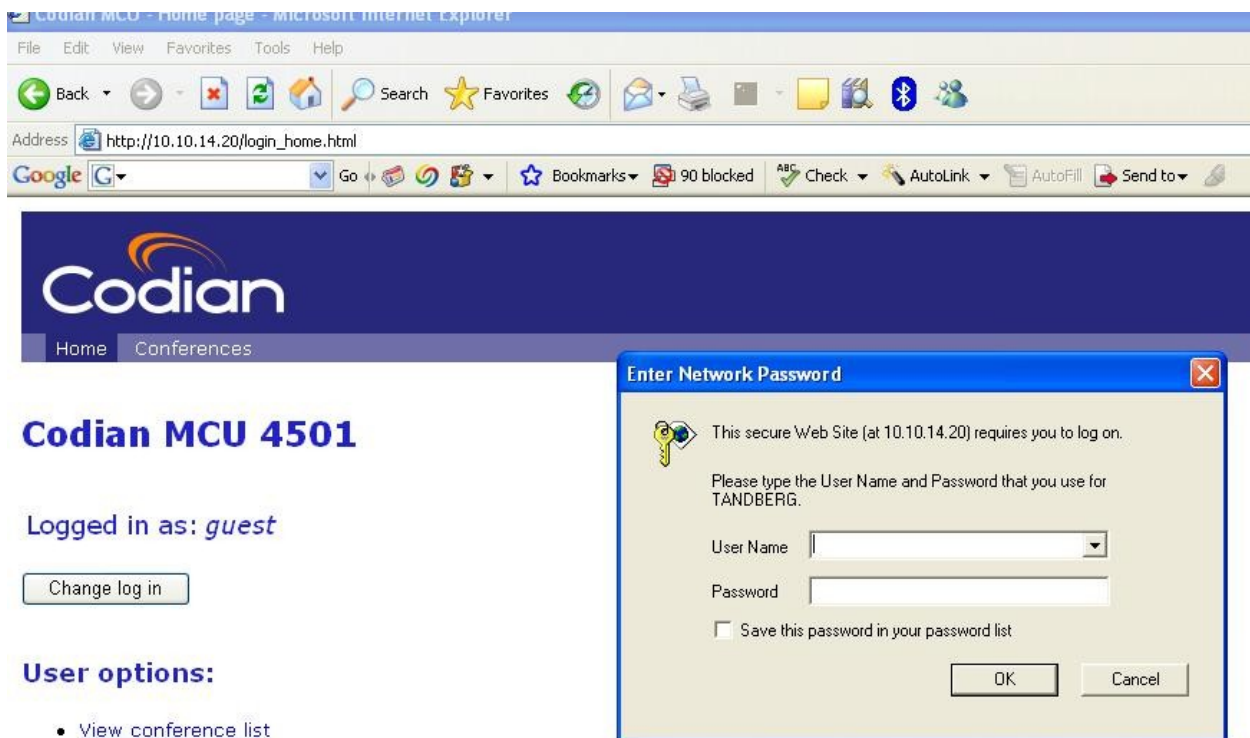
Save Cancel

6. Configuring the TANDBERG Codian MCU

This section provides the procedures for configuring TANDBERG Codian MCU with TANDBERG Gatekeeper which will allow TANDBERG and Avaya endpoints to dial into Codian MCU.

6.1. Registering TANDBERG Codian MCU to TANDBERG Gatekeeper

Open a web browser; enter <http://x.x.x.x> for the URL, where x.x.x.x is the IP address of the TANDBERG Codian MCU. Log in with appropriate credentials



Click on **Settings** tab and then the **Gatekeeper** sub-tab.

- Choose **Enable** from the drop-down menu of **H.323 gatekeeper usage**,
- Set Gatekeeper address to the **IP address of the Gatekeeper**
- Select Gatekeeper registration type to **Terminal/gateway**
- Select Ethernet port association to **Port A**
- Enter a descriptive Name in the **(Mandatory) H.323 ID to register** field
- Enter the MCU Service Prefix as configured in **Section 4.3**. For the sample configuration MCU Service Prefix 55555 is used to dial into Codian MCU from TANDBERG and Avaya endpoints.
- Leave rest as default and click on **Apply changes**.

[Home](#) > **Settings**

Conferences	Gatekeeper	SIP	Streaming	Content	User interface	Time	Upgrade	Shutdown
H.323 gatekeeper settings								
H.323 gatekeeper usage		Enabled ▾						
H.323 gatekeeper address		10.10.14.30						
Gatekeeper registration type		Terminal / gateway ▾						
Ethernet port association		<input checked="" type="checkbox"/> Port A <input type="checkbox"/> Port B						
(Mandatory) H.323 ID to register		Codian						
Use password		<input type="checkbox"/> Password: <input type="text"/>						
Prefix for MCU registrations		<input type="text"/>						
MCU service prefix		55555 (optional)						
ID registration for scheduled conferences		Enabled ▾						
Send resource availability indications		<input type="checkbox"/> Thresholds: <input type="text"/> conferences <input type="text"/> video ports						
<input type="button" value="Apply changes"/>								

7. Configure the TANDBERG Endpoints

The IP address of the TANDBERG Gatekeeper needs to be administered on the TANDBERG endpoints.

7.1. TANDBERG T150 MXP

On the phone press the **Main Menu** button → **Administrator Settings** → **Network** → **H.323 Settings** → **Gatekeeper Settings**

Enter the IP Address of the Gatekeeper under **IP Address** Field.

7.2. TANDBERG 1700 MXP

On the phone press the **Control Panel** button → **Network** → **LAN Settings** → **H.323 Settings**
Select the Gatekeeper Option.

Then navigate to **Gatekeeper Settings** enter the **IP Address** of the **Gatekeeper** under **IP Address** Field.

Upon successful administration of the IP address, the TANDBERG endpoints will automatically be registered to the TANDBERG Gatekeeper.

8. Verification

This section provides the tests that can be performed to verify proper configuration of Avaya Aura™ Communication Manager and TANDBERG Gatekeeper.

8.1. Verify Avaya Communication Manager

On Avaya Aura™ Communication Manager, verify the status of trunk by using the **status trunk 4** command. Verify that the **Service State** is **in-service/idle** as shown below.

status trunk 4				Page 1
TRUNK GROUP STATUS				
Member	Port	Service State	Mtce Connected Ports Busy	
0004/001	T00031	in-service/idle	no	
0004/002	T00032	in-service/idle	no	
0004/003	T00033	in-service/idle	no	
0004/004	T00034	in-service/idle	no	
0004/005	T00035	in-service/idle	no	
0004/006	T00036	in-service/idle	no	
0004/007	T00037	in-service/idle	no	
0004/008	T00038	in-service/idle	no	
0004/009	T00039	in-service/idle	no	
0004/010	T00040	in-service/idle	no	
0004/011	T00041	in-service/idle	no	
0004/012	T00042	in-service/idle	no	
0004/013	T00043	in-service/idle	no	
0004/014	T00044	in-service/idle	no	

On Avaya Aura™ Communication Manager, verify the status of trunk by using the **status signaling-group 4** command. Verify that the **Group State** is **in-service** as shown below.

status signaling-group 4	
STATUS SIGNALING GROUP	
Group ID: 4	Active NCA-TSC Count: 0
Group Type: h.323	Active CA-TSC Count: 0
Signaling Type: facility associated signaling	
Group State: in-service	

8.2. Verify TANDBERG Gatekeeper

Open a web browser; enter <http://x.x.x.x> for the URL, where x.x.x.x is the IP address of the TANDBERG Gatekeeper. Log in with appropriate credentials.

Navigate to **System Status**→**Zones**, and verify Avaya Aura™ Communication Manager Status.

Overview

System Status

System Configuration

Gatekeeper Configuration

Registrations

Registration History

Calls

Call History

Redundancy

Zones

SubZones

Links

Pipes

Event Log

System Information

Zone Status

Name	Calls	Bandwidth	Status
DefaultZone	0	0 kbps / Unlimited kbps	Active
CM	0	0 kbps / Unlimited kbps	Active

Navigate to **System Status**→**Zones**→**Registrations** and verify that TANDBERG Codian and T150 MXP and 1700 MXP endpoints are registered to the gatekeeper.

Overview

System Status

System Configuration

Gatekeeper Configuration

Registrations

Registration History

Calls

Call History

Redundancy

Zones

SubZones

Links

Pipes

Event Log

System Information

Registered Systems

Name	E.164 Alias	IP Address	Type
60005	60005	10.10.14.150	Endpoint
60001	60001	10.10.14.170	Endpoint
Codian		10.10.14.20	Gateway

9. Conclusion

These Application Notes demonstrate how to provision TANDBERG Gatekeeper 5.2 and Avaya Aura™ Communication Manager. In this configuration TANDBERG Codian MCU and TANDBERG video endpoints 1700 MXP and T150 MXP register to TANDBERG Gatekeeper, and TANDBERG Gatekeeper integration is via H.323 trunks to Avaya Aura™ Communication Manager.

10. Additional References

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

[1] [Administering Avaya Aura™ Communication Manager](http://support.avaya.com/css/P8/documents/100059292), Document 03-300509

<http://support.avaya.com/css/P8/documents/100059292>

TANDBERG references are available at www.TANDBERG.com/video-conferencing-support.jsp

[1] TANDBERG 150 MXP Administrators Guide (L5)

[2] TANDBERG 1700 MXP Administrator Guide (F8)

[3] TANDBERG Gatekeeper Administrators Guide

[4] TANDBERG Codian MCU Getting Started

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