

Avaya Solution & Interoperability Test Lab

Application Notes for IPC UnigyV2 with Avaya Aura® Communication Manager 6.2 using QSIG Trunks – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for IPC UnigyV2 to interoperate with Avaya Aura® Communication Manager 6.2 using QSIG trunks.

IPC UnigyV2 is a trading communication solution. In the compliance testing, IPC UnigyV2 used E1 QSIG trunks to Avaya Aura® Communication Manager, for turret users on IPC to reach users on Avaya Aura® Communication Manager and on the PSTN.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps required for IPC UnigyV2 to interoperate with Avaya Aura® Communication Manager 6.2 using QSIG trunks.

The Unigy Platform is a unified trading communications system designed specifically to make the entire trading ecosystem more productive, intelligent and efficient. Based on an SIP-enabled, open and distributed architecture, Unigy utilizes the latest, standards-based technology to create a groundbreaking, innovative Unified Trading Communications (UTC) solution.

Unigy offers a portfolio of devices and applications that serve the entire trading workflow, across the front, middle and back offices.

2. General Test Approach and Test Results

The feature test cases were performed manually. Calls were manually established among IPC turret users with Avaya SIP, Avaya H.323, and/or PSTN users. Call controls were performed from various users to verify the call scenarios.

The serviceability test cases were performed manually by disconnecting and reconnecting the E1 connection to IPC UnigyV2.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing included basic call, basic display, G.711, DTMF, hold/reconnect, call forwarding unconditional/ring-no-answer/busy, blind/attended transfer, and attended conference.

The serviceability testing focused on verifying the ability of IPC UnigyV2 to recover from adverse conditions, such as disconnecting/reconnecting the E1 connection to IPC UnigyV2.

2.2. Test Results

All test cases were executed. The following were the observations on IPC UnigyV2 from the compliance testing.

• After the call is forwarded from the Avaya SIP endpoint to the IPC turret, the turret collects trunk member ID, instead of calling party number.

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2.3. Support

Technical support on IPC UnigyV2 can be obtained through the following:

- **Phone:** (800) NEEDIPC, (203) 339-7800
- Email: systems.support@ipc.com

3. Reference Configuration

As shown in the test configuration below, IPC UnigyV2 at the Remote Site consists of the Media Manager, Converged Communication Manager, Media Gateway, and Turrets. The Media Manager and Converged Communication Manager are typically deployed on separate servers. In the compliance testing, the same server hosted the Media Manager and Converged Communication Manager.

There is a physical connection between the DS1 circuit pack on Avaya Aura® Communication Manager with the IPC Media Gateway. E1 QSIG trunks are used from IPC UnigyV2 to Avaya Aura® Communication Manager, to reach users on Avaya Aura® Communication Manager and on the PSTN.

A five digit Uniform Dial Plan (UDP) was used to facilitate dialing between the Central and Remote sites. Unique extension ranges were associated with Avaya Aura® Communication Manager users at the Central site (7200x and 7202x), and IPC turret users at the Remote site (7205x).

The Avaya Aura® Session Manager was used in the configuration to support Avaya SIP endpoints, and the configuration of Avaya Aura® Session Manager was performed via the web interface of Avaya Aura® System Manager.

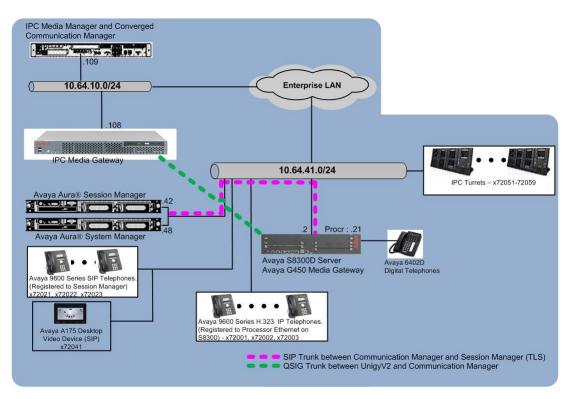


Figure 1: Test Configuration of IPC UnigyV2

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4. Equipment and Software Validated

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

Equipment	Software			
Avaya Aura® Communication Manager on Avaya S8300D Server	R016x.02.0.823.0-20001			
Avaya G450 Media GatewayTN464HP DS1 Interface	HW02 FW024			
Avaya Aura® Session Manager	6.2.2.0.622005			
Avaya Aura® System Manager	6.2.12.0			
Avaya A175 Desktop Video Device (SIP)	1.0.2			
Avaya 96xx Series IP Telephone (H.323)	3.1			
Avaya 96xx Series IP Telephone (SIP)	2.6.4			
IPC UnigyV2				
Media ManagerConverged Communication Manage	02.00.00.00.1495			
 Converged Communication Manage Media Gateway 	02.00.00.00.1495 6.40A.042.004			
Turrets	02.00.00.00.1495			

5. Configure Avaya Aura® Communication Manager

This section provides the procedures for configuring Avaya Aura® Communication Manager. The procedures include the following areas:

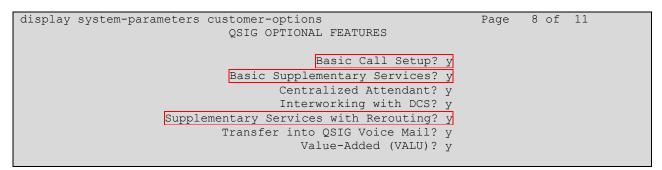
- Verify Communication Manager license
- Administer system parameters special applications
- Administer system parameters features
- Administer system parameters coverage forwarding
- Administer DS1 circuit pack
- Administer ISDN trunk group
- Administer ISDN signaling group
- Administer trunk group members
- Administer route pattern
- Administer public unknown numbering
- Administer uniform dial plan
- Administer AAR analysis
- Administer PSTN trunk group
- Administer tandem calling party number

5.1. Verify Communication Manager License

Log into the System Access Terminal (SAT) to verify that the Communication Manager license has proper permissions for features illustrated in these Application Notes. Use the "display system-parameters customer-options" command. Navigate to **Page 4**, and verify that **ISDN-PRI** is enabled, as shown below.

```
display system-parameters customer-options
                                                             Page 4 of 11
                              OPTIONAL FEATURES
  Emergency Access to Attendant? y
                                                              IP Stations? y
         Enable 'dadmin' Login? y
         Enhanced Conferencing? y
                                                        ISDN Feature Plus? y
                Enhanced EC500? y ISDN/SIP Network Call Redirection? y
   Enterprise Survivable Server? n
                                             ISDN-BRI Trunks? y
     Enterprise Wide Licensing? n
                                                                ISDN-PRI? y
           ESS Administration? y
                                               Local Survivable Processor? n
        Extended Cvg/Fwd Admin? y
                                                    Malicious Call Trace? y
    External Device Alarm Admin? y
                                                 Media Encryption Over IP? n
 Five Port Networks Max Per MCC? n
                                    Mode Code for Centralized Voice Mail? n
              Flexible Billing? n
  Forced Entry of Account Codes? y
                                                 Multifrequency Signaling? y
                                     Multimedia Call Handling (Basic)? y
    Global Call Classification? y
Hospitality (Basic)? y
                                     Multimedia Call Handling (Enhanced)? y
Hospitality (G3V3 Enhancements)? y
                                               Multimedia IP SIP Trunking? y
                     IP Trunks? y
          IP Attendant Consoles? y
       (NOTE: You must logoff & login to effect the permission changes.)
```

Navigate to Page 8, and verify the highlighted QSIG features are enabled, as shown below.



5.2. Administer System Parameters Special Applications

Use the "change system-parameters special-applications" command, and navigate to **Page 3** to enable (SA8440) – Unmodified QSIG Reroute Number.

Under the QSIG call forwarding feature, when a call comes into Communication Manager over the ISDN trunk administered for supplementary service option B and terminates to a station with call forwarding activated to an off-net number, Communication Manager sends an ISDN facility message back to the originating switch. This message contains the complete forward-to number that can include dial plan prefixes and route pattern digit manipulation, etc.

The **Unmodified QSIG ReRoute Number** special application allows the option of bypassing the number manipulation for the forwarded-to party.

```
display system-parameters special-applications
                                                                Page 3 of 10
                             SPECIAL APPLICATIONS
                   (SA8141) - LDN Attendant Queue Priority? n
       (SA8143) - Omit Designated Extensions From Displays? n
            (SA8146) - Display Update for Redirected Calls? n
              (SA8156) - Attendant Priority Queuing by COR? n
               (SA8157) - Toll Free Vectoring until Answer? n
  (SA8201) - Start Time and 4-Digit Year CDR Custom Fields? n
                        (SA8202) - Intra-switch CDR by COS? n
                    (SA8211) - Prime Appearance Preference? n
                      (SA8240) - Station User Admin of FBI? n
                                 (SA8312) - Meet-Me Paging? n
                   (SA8323) - Idle Call Preference Display? n
                        (SA8339) - PHS X-Station Mobility? n
                  (SA8348) - Map NCID to Universal Call ID? n
               (SA8428) - Station User Button Ring Control? n
             (SA8434) - Delay PSTN Connect on Agent Answer? n
                          (SA8439) - Forward Held-Call CPN? n
                 (SA8440) - Unmodified QSIG Reroute Number? y
                                           (SA8475) - SOSM? n
```

5.3. Administer System Parameters Features

Use the "change system-parameters features" command to allow for trunk-to-trunk transfers.

This feature is needed to be able to transfer an incoming call from IPC back out to IPC (incoming trunk to outgoing trunk), and to transfer an outgoing call to IPC to another outgoing trunk to IPC (outgoing trunk to outgoing trunk). For ease of compliance testing, the **Trunk-to-Trunk Transfer** field was set to "all" to enable all trunk-to-trunk transfers on a system wide basis.

Note that this feature poses significant security risk, and must be used with caution. For alternatives, the trunk-to-trunk feature can be implemented on the Class Of Restriction or Class Of Service levels. Refer to [1] for more details.

 change system-parameters features
 Page 1 of 19

 FEATURE-RELATED SYSTEM PARAMETERS

 Self Station Display Enabled? n

 Trunk-to-Trunk Transfer: all

 Automatic Callback with Called Party Queuing? n

 Automatic Callback - No Answer Timeout Interval (rings): 3

 Call Park Timeout Interval (minutes): 10

 Off-Premises Tone Detect Timeout Interval (seconds): 20

 AAR/ARS Dial Tone Required? y

 Music (or Silence) on Transferred Trunk Calls? no

 DID/Tie/ISDN/SIP Intercept Treatment: attendant

 Internal Auto-Answer of Attd-Extended/Transferred Calls: transferred

 Automatic Circuit Assurance (ACA) Enabled? n

Navigate to **Page 16**. Set **Chained Call Forwarding**, to "y" to allow changes to the maximum number of call forwarding hops parameter in **Section 5.4**.

```
change system-parameters features
                                                                Page 16 of 19
                       FEATURE-RELATED SYSTEM PARAMETERS
SPECIAL TONE
                                  Special Dial Tone? n
         Special Dial Tone for Digital/IP Stations: none
REDIRECTION NOTIFICATION
                          Display Notification for Do Not Disturb? n
                          Display Notification for Send All Calls? n
                             Display Notification for Call Forward? n
                    Display Notification for Enhanced Call Forward? n
                        Display Notification for a locked Station? n
         Display Notification for Limit Number of Concurrent Calls? n
                         Display Notification for Posted Messages? n
                               Scroll Status messages Timer(sec.):
Chained Call Forwarding? y
```

5.4. Administer System Parameters Coverage Forwarding

Use the "change system-parameters coverage-forwarding" command. Set **Threshold for Blocking Off-Net Redirection of Incoming Trunk Calls** to the desired value. In the compliance testing, the threshold was disabled so that there will be no blocking on the number of calls being redirected off-net within the Call Forward timer.

```
change system-parameters coverage-forwarding Page 1 of 2

SYSTEM PARAMETERS CALL COVERAGE / CALL FORWARDING

CALL COVERAGE/FORWARDING PARAMETERS

Local Cvg Subsequent Redirection/CFWD No Ans Interval (rings): 2

Off-Net Cvg Subsequent Redirection/CFWD No Ans Interval (rings): 2

Coverage - Caller Response Interval (seconds): 4

Threshold for Blocking Off-Net Redirection of Incoming Trunk Calls: n

Location for Covered and Forwarded Calls: called

PGN/TN/COR for Covered and Forwarded Calls: caller

COR/FRL check for Covered and Forwarded Calls? n

QSIG/SIP Diverted Calls Follow Diverted to Party's Coverage Path? y

COVERAGE
```

Navigate to **Page 2**, and set **Maximum Number Of Call Forwarding Hops** to a value mutually agreeable with IPC.

```
change system-parameters coverage-forwarding Page 2 of 2
SYSTEM PARAMETERS CALL COVERAGE / CALL FORWARDING
COVERAGE OF CALLS REDIRECTED OFF-NET (CCRON)
Coverage Of Calls Redirected Off-Net Enabled? n
Coverage Of Calls Redirected Off-Net Enabled? n
CHAINED CALL FORWARDING
Maximum Number Of Call Forwarding Hops: 6
Station Coverage Path For Coverage After Forwarding: principal
```

5.5. Administer DS1 Circuit Pack

Use the "add ds1 x" command, where "x" is the slot number of the DS1 circuit pack with physical connectivity to IPC. Enter the following values for the specified fields, and retain the default values for the remaining fields.

• Name:	A descriptive name.
• Bit Rate:	"2.048"
• Line Coding:	"hdb3"
 Signaling Mode: 	"isdn-pri"
• Connect:	"pbx"
• Interface:	"peer-master"
Peer Protocol:	"Q-SIG"
• Side:	"a"
• Interface Companding:	"mulaw"
• CRC:	"y"
 Channel Numbering: 	"timeslot"

add ds1 1v7		Page 1 of 1	
	DS1 CIRCUIT	PACK	
Location:	00177	Name: To IPC	
Bit Rate:			
BIL Rale:	2.048	Line Coding: hdb3	
Signaling Mode:	isdn-pri		
Connect:	pbx	Interface: peer-master	
TN-C7 Long Timers?	n	Peer Protocol: Q-SIG	
Interworking Message:	PROGress	Side: a	
Interface Companding:	mulaw	CRC? y	
Idle Code:	11111111 Ch	annel Numbering: timeslot	
1410 0040.	la de la constante de la const	arer Capability: 3.1kHz	
	Der/Anarog Dea	arer capability. S.IKiiz	
		T303 Timer(sec): 4	
	D:	isable Restarts? n	
Slip Detection?	n Near	r-end CSU Type: other	
Echo Cancellation?	n		

5.6. Administer ISDN Trunk Group

Administer an ISDN trunk group to interface with IPC. Use the "add trunk-group n" command, where "n" is an available trunk group number. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- Group Type: "isdn"
- **Group Name:** A descriptive name.
- TAC: An available trunk access code.
- Direction: "two-way"
- Carrier Medium: "PRI/BRI"
- Service Type: "tie"

addtrunk-group	o 71		Page 1 of 21
		TRUNK GROUP	
Group Number:	71	Group Type: isdn	CDR Reports: n
Group Name:	ElQsig-IPC	COR: 1	TN: 1 TAC: 1071
Direction:	two-way	Outgoing Display? n	Carrier Medium: PRI/BRI
Dial Access?	n	Busy Threshold: 255 Night	t Service:
Queue Length:	0		
Service Type:	tie	Auth Code? n	TestCall ITC: rest
	Far	End Test Line No:	
TestCall BCC:	4		

Navigate to **Page 2**. For **Supplementary Service Protocol**, enter "b" for QSIG. For **Digit Handling (in/out)**, enter "enbloc/enbloc". For **Format**, enter "unk-unk". Retain the default values for the remaining fields.

change trunk-group 71	Page 2 of 21
Group Type: isdn	
TRUNK PARAMETERS	
Codeset to Send Display: 6 Code	set to Send National IEs: 6
Max Message Size to Send: 260	
	t Handling (in/out): enbloc/enbloc
Supprementary Service Protocor, D	t handling (in/out). enbioc/enbioc
Trunk Hunt: cyclical	
irunk Hunt: Cyclical	
	Digital Loss Group: 13
Incoming Calling Number - Delete: Insert	: Format: unk-unk
Bit Rate: 1200 Synchros	nization: async Duplex: full
Disconnect Supervision - In? y Out? n	
Answer Supervision Timeout: 0	
Administer Timers? n CONNEC	T Reliable When Call Leaves ISDN? n
XOIP Treatment: auto Delay C	all Setup When Accessed Via IGAR? n
CPN to Send for Redirected Calls: calling	

CRK; Reviewed: BG 12/17/2012 Navigate to **Page 3**. Enable **Send Name**, **Send Calling Number**, and **Send Called/Busy/Connected Number**. For **Format**, enter "unknown". Disable **Modify Reroute Number**?, as shown below.

```
change trunk-group 71
                                                                               3 of 21
                                                                        Page
TRUNK FEATURES
                                           Measured: none Wideband Support
Maintenance Tests? y
Maintenance Tests? 3
          ACA Assignment? n
                                 Internal Alert? n Maintenance Tests: y
Data Restriction? n NCA-TSC Trunk Member: 30
Send Calling Number: y
                                          Send Name: y
Hop Dgt? n
Send EMU Visitor CPN? n
             Used for DCS? n
   Suppress # Outpulsing? n Format: unknown
Outgoing Channel ID Encoding: preferred UUI IE Treatment: service-provider
                                                      Replace Restricted Numbers? n
                                                     Replace Unavailable Numbers? n
                                               Send Called/Busy/Connected Number: y
                                                       Hold/Unhold Notifications? y
              Send UUI IE? y
                                Modify Tandem Calling Number: no
               Send UCID? n
Send Codeset 6/7 LAI IE? y
                                                          Ds1 Echo Cancellation? n
                                                            Modify Reroute Number? n
   Apply Local Ringback? n
 Show ANSWERED BY on Display? y
                                Network (Japan) Needs Connect Before Disconnect? n
```

5.7. Administer ISDN Signaling Group

Administer an ISDN signaling group for the new trunk group to use for signaling. Use the "add signaling-group n" command, where "n" is an available signaling group number. For **Primary D-Channel**, enter the slot number for the DS1 circuit pack from **Section 5.5** and port "16". Set desired values for **Max number of NCA TSC** and **Max number of CA TSC**.

For **Trunk Group for NCA TSC** and **Trunk Group for Channel Selection**, enter the ISDN trunk group number from **Section 5.6**. For **TSC Supplementary Service Protocol**, enter "b" for QSIG. Retain the default values for the remaining fields.

addsignaling-group	71		Page 1 of 1	
	SIGNALING	GROUP		
Group Number: 71	Group Type:	isdn-pri		
	Associated Signaling?	У	Max number of NCA TSC: 30	
	Primary D-Channel:	001V716	Max number of CA TSC: 30	
			Trunk Group for NCA TSC: 71	
Trunk Group	for Channel Selection:	71	X-Mobility/Wireless Type: NON	Ξ
TSC Supplemer	ntary Service Protocol:	b	Network Call Transfer? n	

5.8. Administer Trunk Group Members

Use the "change trunk-group n" command, where "n" is the ISDN trunk group number added in **Section 5.6**. Navigate to **Page 3**. For **NCA-TSA Trunk Member**, enter the highest trunk group member number to use for routing of tandem QSIG call independent signaling connections.

```
Page
change trunk-group 71
                                                                                 3 of 21
TRUNK FEATURES
                                           Measured: none
          ACA Assignment? n
                                                                   Wideband Support? n
                                 Measured. HonoMaintenance Tests? yInternal Alert? nMaintenance Tests? yData Restriction? nNCA-TSC Trunk Member: 30Send Name: ySend Calling Number: yHop Dgt? nSend EMU Visitor CPN? n
             Used for DCS? n
   Suppress # Outpulsing? n Format: natl-pub
 Outgoing Channel ID Encoding: preferred UUI IE Treatment: service-provider
                                                        Replace Restricted Numbers? n
                                                       Replace Unavailable Numbers? n
                                                Send Called/Busy/Connected Number: y
                                                         Hold/Unhold Notifications? y
              Send UUI IE? y
                                Modify Tandem Calling Number: no
                Send UCID? n
 Send Codeset 6/7 LAI IE? y
                                                            Ds1 Echo Cancellation? n
                                                              Modify Reroute Number? n
    Apply Local Ringback? n
 Show ANSWERED BY on Display? y
                                 Network (Japan) Needs Connect Before Disconnect? n
```

Navigate to **Page 5** and **6**. Enter all 30 ports of the DS1 circuit pack into the **Port** fields, and the corresponding **Code** and **Sfx** fields will be populated automatically. Enter the ISDN signaling group number from **Section 5.7** into the **Sig Grp** fields as shown below.

change trunk	-group 71	Page 5 of 21							
change craik	TRUNK GROUP								
	Administered Members (min/max):								
GROUP MEMBER	ASSICNMENTS	Administered Members (min/max): 1/30 Total Administered Members: 30							
GROOT MEMBER	ASSIGNMENTS	Total Administered Hembers. 50							
Port	Code Sfx Name	Night Sig Grp							
1: 001V701	MM710	71							
2: 001V702	MM710	71							
3: 001V703	MM710	71							
4: 001V704	MM710	71							
5: 001V705	MM710	71							
6: 001V706	MM710	71							
7: 001V707	MM710	71							
8: 001V708	MM710	71							
9: 001V709	MM710	71							
10: 001V710	MM710	71							
11: 001V711	MM710	71							
12: 001V712	MM710	71							
13: 001V713	MM710	71							
14: 001V714	MM710	71							
15: 001V715	MM710	71							

change trunk-group 71		Page	6 of 21
	TRUNK GRO	5	
	Adm	inistered Members (min/max):	1/30
GROUP MEMBER ASSIGNMEN	TS	Total Administered Members:	30
Port Code Sf	x Name Night	Sig Grp	
16: 001V717 MM710		71	
17: 001V718 MM710		71	
18: 001V719 MM710		71	
19: 001V720 MM710		71	
20: 001V721 MM710		71	
21: 001V722 MM710		71	
22: 001V723 MM710		71	
23: 001V724 MM710		71	
24: 001V725 MM710		71	
25: 001V726 MM710		71	
26: 001V727 MM710		71	
27: 001V728 MM710		71	
28: 001V729 MM710		71	
29: 001V730 MM710		71	
30: 001V731 MM710		71	

5.9. Administer Route Pattern

Use the "change route-pattern n" command, where "n" is the existing route pattern number to reach IPC, in this case "71". Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Pattern Name:** A descriptive name.
- **Grp No:** The ISDN trunk group number from **Section 5.6**.
- **FRL:** A level that allows access to this trunk, with 0 being least restrictive.
- **TSC:** "y"
- CA-TSC Request: "as-needed"
- Numbering Format: "unk-unk"

chai	nge r	oute-	pat	terr	n 71							I	Page 1	of	3	
					Pattern N	umbei	c: 71	Pat	tern Na	me: (Qsig '	to Un:	igy			
						SCCAN	J? n	Se	ecure S	IP? r	ı					
	Grp	FRL N	ГРА	Pfx	Hop Toll	No.	Insei	rted					D	CS/	IXC	
	No			Mrk	Lmt List	Del	Digit	.s					Q	SIG		
						Dgts							I	ntw		
	71	0												n	user	
2:														n	user	
3:														n	user	
4:														n	user	
5:														n	user	
6:														n	user	
	BCC	: VALU	न	TSC	CA-TSC	TTC	BCTE	Sarte	ico/Foa	tura	DARM	No	Numberi	na '	T.AR	
		2 M 4		100	Request	TIC	DCID	DCIVI	rce/rea	cure	LAIUI		Format	iig .		
	υŢ	2 14 4	VV		Nequest						Sul	byts baddre				
1:	УУ	УУУ	v n	У	as-needed	l rest	5						unk-unk		none	
2:	УУ	УУУ	'n	n		rest	5							1	none	
3:	УУ	УУУ	'n	n		rest	-							j	none	

5.10. Administer Public Unknown Numbering

Use the "change public-unknown-numbering 0" command, to define the calling party number to send to IPC. Add an entry for the trunk group defined in **Section 5.6**. In the example shown below, all calls originating from a 5-digit extension beginning with 7200 and 7202, and routed to trunk group 71 will result in a 5-digit calling number.

```
change public-unknown-numbering 0
                                                                           1 of
                                                                                   2
                                                                    Page
                       NUMBERING - PUBLIC/UNKNOWN FORMAT
                                             Total
Ext Ext
                   Trk
                             CPN
                                              CPN
Len Code
                   Grp(s)
                             Prefix
                                              Len
                                                     Total Administered: 4
                   95
    2
                             303389
                                              10
                                                        Maximum Entries: 240
 4
    7200
                   71
                                               5
                                               5
                   71
    7202
    7203
                   92
                                               5
 5
```

5.11. Administer Uniform Dial Plan

This section provides a sample AAR routing used for routing calls with dialed digits 7205x to IPC. Note that other methods of routing may be used. Use the "change uniform-dialplan 0" command, and add an entry to specify the use of AAR for routing digits 7205x, as shown below.

change unifor	m-dialp	lan ()			Page 1 of 2	
-	-	ונז		-			
UNIFORM DIAL PLAN TABLE							Percent Full: 0
Matching			Insert			Node	
Pattern	Len	Del	Digits	Net	Conv	Num	
7202	5	0		aar	n		
7203	5	0		aar	n		
7204	5	0		aar	n		
7205	5	0		aar	n		

5.12. Administer AAR Analysis

Use the "change aar analysis 0" command, and add an entry to specify how to route calls to 7205x. In the example shown below, calls with digits 7205x will be routed as an AAR call using route pattern "71" from **Section 5.9**.

change aar analysis O						Page 1 of 2				
AAR DIGIT ANALYSIS TABLE										
			Location:	Percent Full: 3						
Dialed	Tot	al	Route	Call	Node	ANI				
String	Min	Max	Pattern	Туре	Num	Reqd				
7202	5	5	92	unku		n				
7205	5	5	71	aar		n				

5.13. Administer PSTN Trunk Group

Use the "change trunk-group n" command, where "n" is the existing ISDN trunk group number used to reach the PSTN, in this case "80".

For **Modify Tandem Calling Number**, enter "tandem-cpn-form" to allow for the calling party number from IPC to be modified.

```
change trunk-group 80
                                                                     Page
                                                                            3 of 21
TRUNK FEATURES
                                        Measured: none Wideband Support
Maintenance Tests? y
Member:
         ACA Assignment? n
                                Measured: none Maintenance Tests?

Internal Alert? n Maintenance Tests?

Data Restriction? n NCA-TSC Trunk Member:
                                       Send Name: y
                                                          Send Calling Number: y
  Used for DCS? n
Suppress # Outpulsing? n Format: natl-pub
                                                         Send EMU Visitor CPN? y
 Outgoing Channel ID Encoding: preferred UUI IE Treatment: service-provider
                                                     Replace Restricted Numbers? n
                                                    Replace Unavailable Numbers? n
                                                          Send Connected Number: n
Network Call Redirection: none
                                                      Hold/Unhold Notifications? n
    Send UUI IE? y Modify Tandem Calling Number: tandem-cpn-form
              Send UCID? n
Send Codeset 6/7 LAI IE? y
                                                        Ds1 Echo Cancellation? n
    Apply Local Ringback? n
                                             US NI Delayed Calling Name Update? n
Show ANSWERED BY on Display? y
                               Network (Japan) Needs Connect Before Disconnect? n
```

5.14. Administer Tandem Calling Party Number

Use the "change tandem-calling-party-num" command, to define the calling party number to send to the PSTN for tandem calls from IPC turret users.

In the example shown below, all calls originating from a 5-digit extension beginning with 73 and routed to trunk group 10, will result in a 10-digit calling number. For **Number Format**, use an applicable format, in this case "pub-unk".

change tandem-calling-party-num Page 1 of 8										
change canacia car										
	CALLI		NUMBER CON NDEM CALLS							
	Incoming									
CPN	Number	Trk			Num	lber				
Len Prefix	Format	Grp(s)	Delete	Insert	For	mat				
5 7205		80		3035383547	pub	-unk				
					Tr ente					

6. Configure IPC Converged Communications Server

This section provides the procedures for configuring IPC Media Manager. The procedures include the following areas:

- Launch Unigy Management System
- Administer media gateway
- Administer trunk groups
- Administer route lists
- Administer dial patterns
- Administer route plans
- Administer Codecs

The configuration of Media Manager is typically performed by IPC installation technicians. The procedural steps are presented in these Application Notes for informational purposes.

6.1. Launch Unigy Management System

Access the Unigy Management System web interface by using the URL "http://ip-address" in an Internet browser window, where "ip-address" is the IP address of the Media Manager. Log in using the appropriate credentials.

The screen below is displayed. Enter the appropriate credentials. Check **I agree with the Terms of Use**, and click **Login**.

In the subsequent screen (not shown), click **Continue**.



6.2. Administer Media Gateway

The screen below is displayed next. Select **Configuration** \rightarrow **Sites** from the top menu.

Configuration System Designer Tools About Help	13:39 EDT-0400 ipctech
unigy.	

The **Sites** information is displayed in the left pane. Select **Trunks** \rightarrow **Media Gateways**, to display a list of media gateway in the lower left pane. Select the applicable media gateway from the listing, in this case "MG".

The **Media Gateway** information is displayed in the upper right pane. Select the applicable physical card, in this case "Slot 1".

The **Media Gateway Module Details** information is displayed in the lower right pane. Select "1 Port TDM" for **Type**, and click **Save**.

Configuration System Designer Tools	⊨ About ⊨ Help		15:46 EDT-0400 ipcte
LIGY. Configu	uration> Sites		Powered by IPC
Instance: All Instance Site Configuration: Location	Media Gateway: MG Module	Port	Channel
Location: All Locations	Slot 1- 1 Port TDM Slot 2- Add Card Slot 3- Add Card	Porti	
Alliance Trunks Media Gateways Communication Devices	Media Gateway Module Details: 1 Por Basic	E TDM	Apply Retrieve Verify
Communication Devices Servers Media Service Media Gateways Name Zone MG Default Zone 1	Module Name 1 Port TDM Type 1 Port TDM Module Number 1	v	Revert Save

In the updated screen, click on a desired **Port** in the upper right pane, in this case "Port 1".

The **Media Gateway Port Details** information is displayed in the lower right pane. For **Protocol Type**, select "E1 QSIG". Retain the default values for the remaining fields.

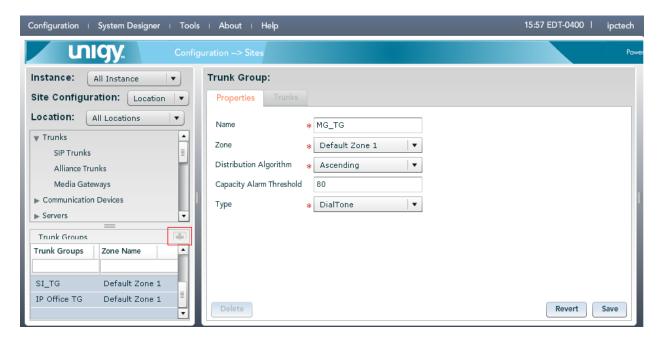
Click **Save** (not shown), followed by **Apply**.

Configuration System Designer Tools	⊨ About ⊨ Help			15:49 EDT-0400 ipctech
Config	uration> Sites			Powered by JPC
Instance: All Instance	Media Gateway: MG			
Site Configuration:	Module	Port		Channel
Location: All Locations	Slot 1- 1 Port TDM	Port1		
▼ Trunks	Slot 2- Add Card			
SIP Trunks	Slot 3- Add Card			
Alliance Trunks	Slot 4- Add Card			
Media Gateways	Slot 5- Add Card			
Communication Devices	Slot 6- Add Card			
▶ Servers				
▶ Media Service	Media Gateway Port Details	n Davit	=	Apply Retrieve Verify
Prototype Devices		S. FORT		Apply Retrieve Verily
SNMP Forwarding	Port Properties ISDN			
▶ Routing				Basic Advanced
	Distant End Name			A
	PBX Trunk Group Reference			
Media Gateways	Trunk Info			
	Protocol Type 🔹	E1 QSIG		
Name Zone	Alliance ICM Trunk			
MG Default Zone 1	Trunk *	ISDN V		
MG Default Zone I	Alliance Site	•		
	Alliance Site IP Address			
	Clock Master *	CLOCK-MASTER-OFF		
	Line Code 🔹	HDB3 V		
	Far End Connection	PBX 🛛 🔻		
	Framing Method *	E1-FRAMING-MFF-CR		
	,			
				T

6.3. Administer Trunk Groups

Select **Routing** \rightarrow **Trunk Groups** (not shown) in the left pane, and click the **Add** icon in the lower left pane to add a new trunk group.

The **Trunk Group** screen is displayed in the right pane. In the **Properties** tab, enter a descriptive **Name**, and click **Save**. Select the **Trunks** tab in the right pane.



The screen is updated with three panes. In the right pane, select the **MG Trunks** tab. In the **Media Gateway** listing, select and expand the applicable media gateway slot and port from **Section 6.2**, and drag the selection to the **Name** column in the middle pane as shown below. Click **Save**.

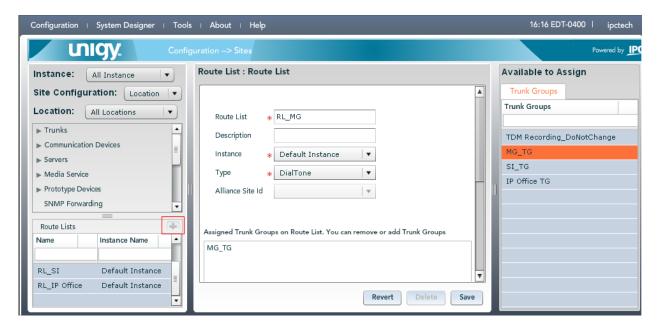
Configuration I System Designer I Tools	I About I Help	16:01 EDT-0400 ipctech
Config	uration> Sites	Powered by
Instance: All Instance	Trunk Group: MG_TG	Available to Assign
Site Configuration: Location Location: All Locations Servers Media Service Prototype Devices SNMP Forwarding Routing Trunk Groups	Properties Trunks Name Channels MG>1 Port TDM>Port1>QSIG/ISDN ⁻ 30	Trunks MG Trunks
Trunk Groups Zone Name Image: Top Recording_ Default Zone 1 MG_TG	Remove Revert Save	

CRK; Reviewed: BG 12/17/2012 Solution & Interoperability Test Lab Application Notes ©2012 Avaya Inc. All Rights Reserved. 20 of 33 UniV2-CM62-Q

6.4. Administer Route Lists

Select **Routing** \rightarrow **Route Lists** in the left pane, and click the **Add** icon in the lower left pane to add a new route list.

The **Route List** screen is displayed in the middle pane. For **Route List**, enter a descriptive name. In the right pane, select the trunk group from **Section 6.3** and drag into the **Assigned Trunk Groups on Route List** sub-section in the middle pane, as shown below. Click **Save**.



6.5. Administer Dial Patterns

Select **Routing** \rightarrow **Dial Patterns** in the left pane, to display the **Dial Patterns** screen in the right pane. Click **Add New** in the upper right pane.

In the **Dial pattern Details** sub-section in the lower right pane, enter the desired **Name** and **Description**. For **Pattern String**, enter the dial pattern to match for Avaya endpoints, in this case "*", meaning any digit. For **Zone**, select "Default Zone 1". Click **Save**.

Configuration System Designer Tool	s i About i He	əlp			16:18 EDT-0400	l ipctech
Confi	guration> Sites					Powered by
Instance: All Instance	Dial Patterns					
Site Configuration: Location	Name	Pattern String	Description	Zone Name		
Location: All Locations	all	*	all	Default Zone 1		
 Trunks Communication Devices 						
 ▶ Servers ▶ Media Service 						
 Prototype Devices SNMP Forwarding 						
▼ Routing Trunk Groups					Add New	Delete
Route Lists	Dial pattern	Details		=		
Dial Patterns Route Plans Trunk Dial Plans Trunk Dial Plan Rules	Properties					
	Name Zone Description Pattern String	* all * Default Zone * all g * *	≥1 ▼			V
=					Revert	Save

6.6. Administer Route Plans

Select **Routing** \rightarrow **Route Plans** in the left pane, and click **Add New** (not shown) in the right pane to create a new route plan.

The screen is updated with three panes, as shown below. In the **Route Plan** middle pane, enter a descriptive **UI Name** and optional **Description**. For **Calling Party**, enter "*" to denote any calling party from UnigyV2. For **Destination**, enter "*" to denote any called party from UnigyV2. Select "Forward" for **Action**. Select "Default Instance" for **Instance**, and click **Save**.

Configuration System Designer Tools	i i About i Help	13:30 EST-0500 ipctech
Config	juration> Sites	Powered by IPC
Instance: All Instance	Route Plan	Available to Assign
Site Configuration: Location	Create New Route Plan	Route Lists
Location: All Locations All Locations All Locations Addition Devices Servers Media Service Prototype Devices SNMP Forwarding Routing Trunk Groups Route Lists Dial Patterns Route Plans Trunk Dial Plan Rules Trunk Dial Plan Rules	UI Name * MM Description Calling Party * * Destination * * Action * Forward • Instance * Default Instance • Route List: Route List: Remove	Name TDM Recording_DoNotChange RL_SI RL_SES RL_MG
	Back Revert Save	

The screen is updated with the newly created route plan. Select the route plan, and click **Edit** under **Route Plan Details** section toward the bottom of the screen (not shown).

Configuration System Designer	Tools	⊨ About ⊨ Help				14:52 EDT-0400 ipctecł
unigy.		uration> Sites				Powered by IPC
Instance: All Instance		Route Plan List of Route Plans				
	•	UI Name	Calling Party	Destination	Action	Instance Name
▼ Routing Trunk Groups	-	MM	*	*	FORWARD	Default Instance
Route Lists						
Dial Patterns	=					
Route Plans Trunk Dial Plans	•				Delete	Add New Revert Save Sequence Change

The screen is updated with three panes again, as shown below. In the right pane, select the route list from **Section 6.4** and drag into the **Route List** sub-section in the middle pane, as shown below. Click **Save**.

Configuration> Sites	Powered by IPC
Instance: All Instance Site Configuration: Location Location: All Locations > Trunks Create New Route Plan > Communication Devices > Servers > Media Service > Prototype Devices SNMP Forwarding > Routing Trunk Groups Route Ists Dial Patterns Route Plans Trunk Dial Plans Trunk Dial Plan Rules Revert Back	Available to Assign Route Lists Name TDM Recording_DoNotChange RL_MG RL_IP Office

6.7. Administer Codecs

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

- Administer codec profile
- Assign codec profile to user
- Assign codec profile to turret

6.7.1. Administer Codec Profile

Select Configuration \rightarrow Enterprise \rightarrow Codecs \rightarrow Codec Profiles, and click Add New in the left pane to create a new codec profile. Provide a profile name, and click Save.

Configuration I System Design	ner I Tools	I About I Help	13:24 EDT-0400	l ipctech
unigy.	Config	ration -> Enterprise	Power	red by IPC
Enterprise	<	Configuration_CodecProfiles	Available to Assign	
Lines and Extensions	<u> </u>		Codecs	
Hunt Group		Profile Name 🛊 AVaya CP	Name	
▼ Codecs	≣			
Codecs			High Def Voice	
Codec Profiles			G711 mu-law	
▶ Voice Recording			Low Bandwidth with V	AD
License Manager			G711 a-law	
CDI Applications	•			
Codec Profiles				
Name	_ - -			
no729				
MS Codecs				
MG Codecs				
Low Bandwidth				
High Definition Voice	•	Delete Remove Revert Save		

After saving the codec profile, the following screen is displayed. In the right pane, select the available codecs and drag into the **Codecs** sub-section in the middle pane, as shown below. Click **Save**.

Configuration System Design	ner I Tools	i About i Help			13:27 EDT-0400 ipctech
unigy.	Config	juration> Enterprise			Powered by IPC
Enterprise	<				Available to Assign
▶ Lines and Extensions					Codecs
Hunt Group		Profile Name 🔹 AVaya CP			Name
▼ Codecs	≣				
Codecs		Codecs			High Def Voice
Codec Profiles					G711 mu-law
▶ Voice Recording		Name	Туре		Low Bandwidth with VAD
License Manager		G711 mu-law	G_711u_law		G711 a-law
CDI Applications		Low Bandwidth with VAD	G_729		3711 a-law
Codec Profiles	4				
Name	-				
High Definition Voice	=				
Low Bandwidth					
All Codecs		Note: List the codec in the order you want th	e device to try to use them.		
MS Codecs					
MG Codecs	Ŧ		Delete Remove Revert	Save	

6.7.2. Assign Codec Profile to User

Select System Designer → End User Configuration, and select a user to associate a codec profile with. Provide a profile name, and click Save.

Configuration I System Designer	1 Tools 1	About I Help 13:3	1 EDT-0400 ipctech
unigy.	System D	Designer> End User Configuration	Powered by IPC
End User Groups	-	Jser: chung	
IPCUserGrp		Trader Face L Speak Privilege Audio Display Soft Cl Perso Lync/	Pulse CDI A
		Maximum digit for the divert to number * 26	•
		Divert Intercom Calls To	
Users		Condition for Intercom Calls Diversion * None 🗸	
Name End User Group		Ring No Answer Duration for Intercom Diversion (sec) 🔹 6	
ipctech		Intercom Diversion Mode * none 🔍	
user15000 IPCUserGrp		Maintain Intercom Divert Upon Log On?	
user15001 IPCUserGrp		Handset Button Press and Release Actions * HANDSET_NONE	
user15002 IPCUserGrp		CODEC Profile Avaya CP 💌	
user15003 IPCUserGrp	_	Handset Select Mode	≣ .
chung IPCUserGrp chung2 IPCUserGrp	- 1	Speaker Retry Time (sec) 10	
		Alternate Handset Selection Timeout (sec) 5	
 Showing 1 - 7 out of 7 records 	>		Revert

6.7.3. Assign Codec Profile to Turret

Navigate to **Configuration** \rightarrow **Sites** \rightarrow **Communication Devices** \rightarrow **Turrets** and select a turret to associate a codec profile with. Click the **VoIP Parame...** tab in the right pane. Select a codec, and click **Save**.

Configuration -> Sites Powerd by IPC Instance: All Instance Site Configuration: Location • Location: All Locations V Communication Devices Soft Clients Pulse Nedia Service Prototype Devices Turrets DSP Devices VPKT Maximum Packet Rate(msec) 10500E0A7069DEA 10500E0A7069DEA 10500E0A7069DEA	Configuration System Designer Too	is I About I Help	13:37 EDT-0400 ipctech
Site Configuration: Location Location: All Locations Communication Devices Allow User CODEC Profile Override Soft Clients Jitter Buffer Pulse DSP Jitter Buffer Minimum Depth(msec) * 0 DSP Jitter Buffer Implementation Mode * Adaptive alg1 VYKT Maximum Packet Rate(msec) * 5 VPKT Maximum Packet Rate(msec) * 30		guration> Sites	Powered by IPC
< Showing 1 - 2 out of 2 records > Revert Save	Site Configuration: Location Location: All Locations Communication Devices Currets Soft Clients Pulse Servers Media Service Prototype Devices Turrets I0500E0A7069DEA 10500E0A7079B588	Gen Current User Audio Param VOIP Parame Inbound Ton Outbound T CODEC Profile Avaya CP <t< th=""><th>SNMP BCP Prefere</th></t<>	SNMP BCP Prefere

After codecs are configured, reboot the turret.

7. Configure IPC Media Gateway

This section provides the procedures for the following configuring:

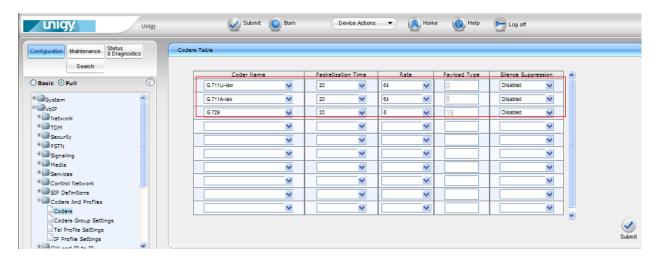
- Administer codecs
- Administer the TDM Bus setting

The configuration of the Media Gateway is typically performed by IPC installation technicians. The procedural steps are presented in these Application Notes for informational purposes.

7.1. Administer Codecs

Access the Media Gateway web interface by using the URL "http://ip-address" in an Internet browser window, where "ip-address" is the IP address of the Media Gateway. Log in using the appropriate credentials.

Navigate to **Configuration** \rightarrow **VOIP** \rightarrow **Coders And Profiles** \rightarrow **Coders** in the left pane. Enter codecs that will be used.



7.2. Administer TDM Bus

Navigate to **Configuration** \rightarrow **VOIP** \rightarrow **TDM** \rightarrow **TDM Bus Settings** in the left pane. Enter codecs that will be used. During the compliance test, MuLaw was utilized. For the TDM Bus Clock Source field, set to Internal, meaning Avaya side is master and IPC side is slave. After the configuration changes, press the **Burn** button, and reset **Media Gateway**.

unigy.	Unigy	Submit 🙆 Burn Device	Actions 🔹 💰 Home 🔞 Help 😁 Log off	
Configuration Maintenance Status & Diagnostic Search	s TDM	Bus Settings		Basic Parameter List 🔺
Basic Full Gystem Gystem TDM TDM Dus Settings Gystev Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Security Secu		PCM Law Select TOM Bus Clock Source TOM Bus PSTN Auto FallBack Clock TOM Bus PSTN Auto Clock Reverting Idle PCM Pattern Idle ABCD Pattern TOM Bus Local Reference TOM Bus Type	Mulaw Internal Enable Disable 285 Qx0F 1 Framers	
Hedia Hedia Services Services Goders And Profiles Coders Group Settings Tel Profile Settings Tel Profile Settings				Sukmit

Note: Interface Compounding in Avaya side is set to mulaw (Refer to Section 5.5)

8. Configure Media Manager

This section provides the procedures for administering codec. Access the Media Manager web interface by using the URL "http://,<ACCM ip-address>/swms" in an Internet browser window. Navigate to Configuration \rightarrow Node Configuration \rightarrow Configure SIP Audio Codec List.

	IPC	- Configuration	
Alarms: Critical:0 Major	r:0 Minor:0		
Configuration Note Configuration Srow Note Configuration Srow Note Configuration Srow Note Configuration Srow NSP Audo Code List Srow NSP Audo Code List Srow NSP Configuration Srow NSP Aget Configuration Srow NSP Aget Configuration Srow NSP Aget Configuration Srow Video Code List Srow Video Recording Configuration Srow Video Code List Srow Video Code List Srow Cile Path Transition Srow Cile Path Tra	Minor:0 Configure SIP Audio C Codec #1: Codec #2: Codec #3: Codec #4: Codec #5: Codec #6: Codec #7: Execute Output Messages:	Podec List	Help?
Templates Configure Media ICMP Configure SIP Audio Codec List	~		

After codecs are prioritized, reboot ACCM.

9. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya Aura® Communication Manager and IPC UnigyV2.

9.1. Verify Avaya Aura® Communication Manager

From the Communication Manager SAT interface, verify the status of the ISDN trunk group by using the "status trunk n" command, where "n" is the ISDN trunk group number administered in **Section 5.6**. Verify that all trunks are in the "in-service/idle" state as shown below.

```
status trunk 71
                                                                                                        Page
                                                                                                                  1
                                          TRUNK GROUP STATUS
Member Port Service State Mtce Connected Ports
                                                     Busy

        0071/001
        001V701
        in-service/idle
        no

        0071/002
        001V702
        in-service/idle
        no

        0071/003
        001V703
        in-service/idle
        no

        0071/004
        001V704
        in-service/idle
        no

0071/005 001V705 in-service/idle
                                                     no
0071/006 001V706 in-service/idle
                                                     no
0071/007 001V707 in-service/idle
                                                     no
0071/008 001V708 in-service/idle
                                                     no
0071/009 001V709 in-service/idle no
0071/010 001V710 in-service/idle no
0071/011 001V711 in-service/idle no
0071/012 001V712 in-service/idle no
0071/013 001V713 in-service/idle
                                                     no
0071/014 001V714 in-service/idle
                                                     no
```

Verify the status of the ISDN signaling groups by using the "status signaling-group n" command, where "n" is the ISDN signaling group number administered in **Section 5.7**. Verify that the signaling group is "in-service" as indicated in the **Group State** and **Level 3 State** fields shown below.

```
status signaling-group 71

STATUS SIGNALING GROUP

Group ID: 71

Group Type: isdn-pri

Signaling Type: facility associated signaling

Group State: in-service

Primary D-Channel

Secondary D-Channel

Port:

Level 3 State: no-link
```

9.2. Verify IPC UnigyV2

From the Media Gateway web interface, select VoIP \rightarrow PSTN Settings \rightarrow Trunk Settings to display the Trunk Settings screen.

Toward the top of the screen, click the applicable trunk port from **Section 6.2**, in this case "1". Verify that the **Trunk Configuration State** is "Active", as shown below.

Mediar Mediar	nt 1000 - MSBG 🛛 🖉 Submit 🧕 Burn	Device Action	s 🔹 🚺 Ho	ne 🙆 Help 😁 Log
Configuration Management Status Search Search O Full	Trunk Settings	1 2		Basic Parameter List 🔺
	General Settings			
€@System	Module ID	1		
POVOIP	Trunk ID	2		
⊕@Network Settings ⊕@Media Settings	Trunk Configuration State	Active		
PSTN Settings	Protocol Type	E1 QSIG	~	
CAS State Machines	✓ Trunk Configuration			
Trunk Settings Trunk Settings Trunk Settings	Clock Master	Generated	~	

10. Conclusion

These Application Notes describe the configuration steps required for IPC UnigyV2 to successfully interoperate with Avaya Aura® Communication Manager 6.2 using QSIG trunks. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

11. Additional References

This section references the product documentation relevant to these Application Notes.

- **1.** *Administering Avaya Aura*® *Communication Manager*, Document 03-300509, Issue 7.0, Release 6.2, July 2012, available at <u>http://support.avaya.com</u>.
- **2.** *UnigyV2 1.1 System Configuration*, Part Number B02200187, Release 00, upon request to IPC Support.

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