



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for IPC Alliance MX 15.03 with Patch 07a with Avaya Aura® Communication Manager 6.0.1 using QSIG Trunks – Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required for IPC Alliance MX 15.03 with Patch 07a to interoperate with Avaya Aura® Communication Manager 6.0.1 using QSIG trunks.

IPC Alliance MX is a trading communication solution. In the compliance testing, IPC Alliance MX 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 Alliance MX 15.03 with Patch 07a to interoperate with Avaya Aura® Communication Manager 6.0.1 using QSIG trunks.

IPC Alliance MX is a trading communication solution. In the compliance testing, IPC Alliance MX 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.

## 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, H.323, Avaya Digital, and/or PSTN users. Call controls were performed from the various users to verify the various call scenarios.

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

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/G.729, hold/reconnect, DTMF, call forwarding unconditional/ring-no-answer/busy, blind/attended transfer, and attended conference.

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

### 2.2. Test Results

All test cases were executed and passed.

### 2.3. Support

Technical support on IPC Alliance MX can be obtained through the following:

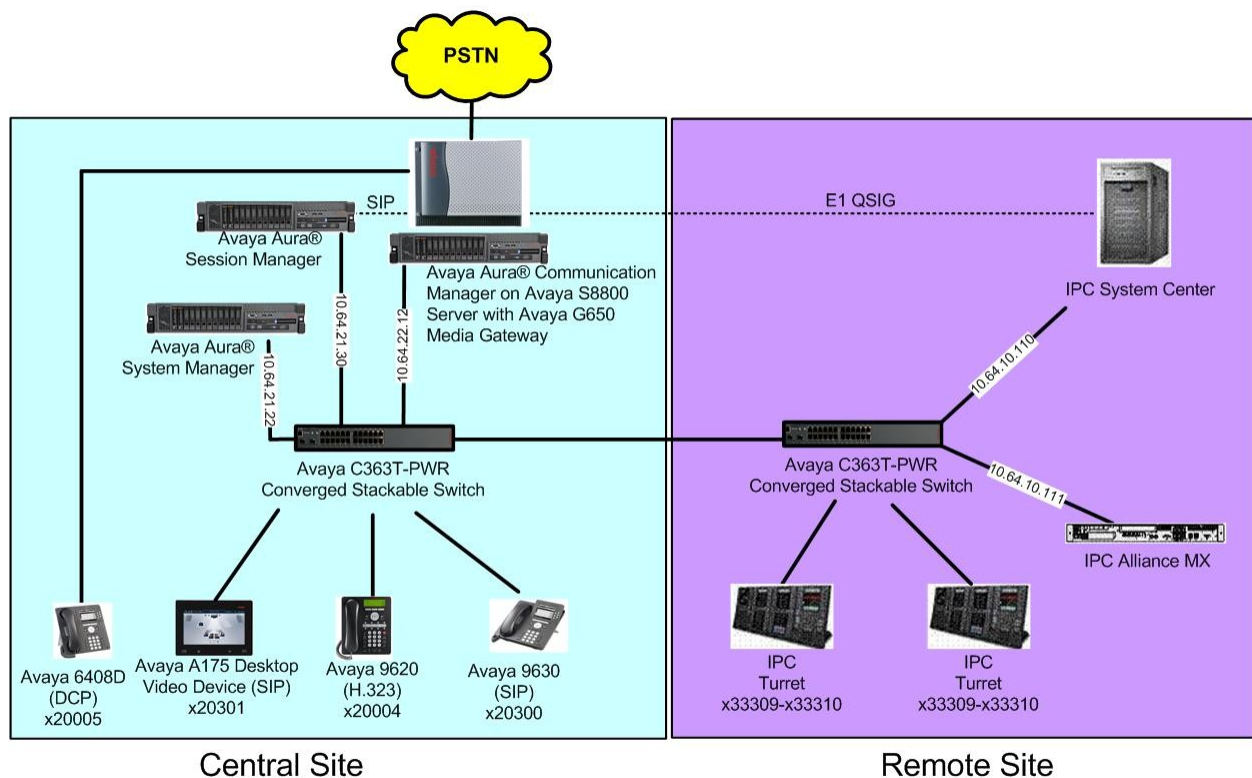
- **Phone:** (800) NEEDIPC, (203) 339-7800
- **Email:** [systems.support@ipc.com](mailto:systems.support@ipc.com)

### 3. Reference Configuration

As shown in **Figure 1**, IPC Alliance MX at the Remote Site consists of Alliance MX, System Center, and Turrets.

There is a physical connection between the DS1 circuit pack on Avaya Aura® Communication Manager and the QSIG card on IPC System Center. E1 QSIG trunks are used from IPC Alliance MX 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 (20xxx), and IPC turret users at the Remote site (333xx).



**Figure 1: Test Configuration of IPC Alliance**

## 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 S8800 Server	6.0.1(R016x.00.1.510.1) with special patch 19358
Avaya G650 Media Gateway <ul style="list-style-type: none"><li>• TN799DP C-LAN Circuit Pack</li><li>• TN2302AP IP Media Processor</li><li>• TN464F</li></ul>	HW01 FW038 HW20 FW120 000010
Avaya 9620 IP Telephone (H.323)	3.1
Avaya 9630 IP Telephone (SIP)	2.6.4
Avaya 6408D Digital Telephone	NA
Avaya A175 Desktop Video Device (SIP)	1.0.2
IPC <ul style="list-style-type: none"><li>• Alliance MX</li><li>• System Center<ul style="list-style-type: none"><li>○ QSIG Line Card</li></ul></li><li>• Turrets</li></ul>	15.03.00.07a 15.03.00.07a  15.03.00.07a 15.03.00.07a

## 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 ISDN 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? n
  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
  Global Call Classification? y      Multimedia Call Handling (Basic)? 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.

```
display system-parameters customer-options                               Page 8 of 11
                                QSIG OPTIONAL FEATURES
                                Basic Call Setup? y
                                Basic Supplementary Services? y
                                Centralized Attendant? y
                                Interworking with DCS? y
                                Supplementary Services with Rerouting? y
                                Transfer into QSIG Voice Mail? y
                                Value-Added (VALU)? y
```

## 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 with 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.

```
change system-parameters special-applications                          Page 3 of 9
                                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? y
      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: attd
      Internal Auto-Answer of Attd-Extended/Transferred Calls: transferred
      Automatic Circuit Assurance (ACA) Enabled? n

      Abbreviated Dial Programming by Assigned Lists? n
      Auto Abbreviated/Delayed Transition Interval (rings): 2
      Protocol for Caller ID Analog Terminals: Bellcore
      Display Calling Number for Room to Room Caller ID Calls? N
```

Navigate to **Page 16. Enable Chained Call Forwarding**, 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
      Criteria for Logged Off/PSA/TTI Stations? n
      Keep Held SBA at Coverage Point? y
      External Coverage Treatment for Transferred Incoming Trunk Calls? n
      Immediate Redirection on Receipt of PROGRESS Inband Information? n
      Maintain SBA At Principal? y
      QSIG VALU Coverage Overrides QSIG Diversion with Rerouting? n
      Station Hunt Before Coverage? n
FORWARDING
      Call Forward Override? n
      Coverage After Forwarding? y
```

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

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:** “alaw”
- **CRC:** “y”
- **Channel Numbering:** “timeslot”

```
add ds1 1a09                                     Page 1 of 1
DS1 CIRCUIT PACK

Location: 01A09                                Name: IPC
Bit Rate: 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: alaw                      CRC? y
Idle Code: 01010100                           Channel Numbering: timeslot
DCP/Analog Bearer Capability: 3.1kHz

T303 Timer(sec): 4
Disable Restarts? n

Slip Detection? y                             Near-end CSU Type: other
```

## 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”

```
add trunk-group 9                                     Page 1 of 21
                                     TRUNK GROUP

Group Number: 9                                     Group Type: isdn                                     CDR Reports: n
Group Name: El Qsig                                     COR: 1                                     TN: 1                                     TAC: *009
Direction: two-way                                     Outgoing Display? n                                     Carrier Medium: PRI/BRI
Dial Access? n                                     Busy Threshold: 255                                     Night 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.

```
add trunk-group 9                                     Page 2 of 21
    Group Type: isdn

TRUNK PARAMETERS
    Codeset to Send Display: 6                                     Codeset to Send National IEs: 6
    Max Message Size to Send: 260
    Supplementary Service Protocol: b                                     Digit Handling (in/out): enbloc/enbloc

    Trunk Hunt: cyclical
                                     Digital Loss Group: 13
Incoming Calling Number - Delete:                                     Insert:                                     Format: unk-unk
    Bit Rate: 1200                                     Synchronization: async                                     Duplex: full
Disconnect Supervision - In? y Out? n
Answer Supervision Timeout: 0
    Administer Timers? n                                     CONNECT Reliable When Call Leaves ISDN? n
    XOIP Treatment: auto                                     Delay Call Setup When Accessed Via IGAR? n
```

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.

<b>add trunk-group 9</b>		Page 3 of 21
TRUNK FEATURES		
ACA Assignment? n	Measured: none	Wideband Support? n
	Internal Alert? n	Maintenance Tests? y
	Data Restriction? n	NCA-TSC Trunk Member:
	Send Name: y	Send Calling Number: y
Used for DCS? n	Hop Dgt? n	Send EMU Visitor CPN? n
Suppress # Outpulsing? n	Format: unknown	
Outgoing Channel ID Encoding: preferred	UI IE Treatment: service-provider	
	Replace Restricted Numbers? n	
	Replace Unavailable Numbers? n	
	Send Called/Busy/Connected Number: y	
	Hold/Unhold Notifications? y	
Send UI IE? y	Modify Tandem Calling Number: no	
Send UCID? n		
Send Codeset 6/7 LAI IE? y	Dsl 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 0** 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.

<b>add signaling-group 9</b>		Page 1 of 1
SIGNALING GROUP		
Group Number: 9	Group Type: isdn-pri	
Associated Signaling? y		Max number of NCA TSC: 5
Primary D-Channel: 01A0916		Max number of CA TSC: 5
		Trunk Group for NCA TSC: 9
Trunk Group for Channel Selection: 9	X-Mobility/Wireless Type: NONE	
TSC Supplementary 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.

```
change trunk-group 9                                     Page 3 of 21
TRUNK FEATURES
  ACA Assignment? n                                     Measured: none      Wideband Support? n
                                     Internal Alert? n      Maintenance Tests? y
                                     Data Restriction? n    NCA-TSC Trunk Member: 29
                                     Send Name: y          Send Calling Number: y
                                     Hop Dgt? n           Send EMU Visitor CPN? n
  Used for DCS? n                                     Format: unknown
  Suppress # Outpulsing? n
  Outgoing Channel ID Encoding: preferred             UII IE Treatment: service-provider

                                     Replace Restricted Numbers? n
                                     Replace Unavailable Numbers? n
                                     Send Called/Busy/Connected Number: y
                                     Hold/Unhold Notifications? y
  Send UII IE? y                                     Modify Tandem Calling Number: no
  Send UCID? n
  Send Codeset 6/7 LAI IE? y                         Dsl 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 29 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 0** into the **Sig Grp** fields as shown below.

```
change trunk-group 9                                     Page 5 of 21
TRUNK GROUP
  Administered Members (min/max): 1/29
  Total Administered Members: 29
GROUP MEMBER ASSIGNMENTS
  Port   Code Sfx Name      Night      Sig Grp
1: 01A0901 TN464 F
2: 01A0902 TN464 F
3: 01A0903 TN464 F
4: 01A0904 TN464 F
5: 01A0905 TN464 F
6: 01A0906 TN464 F
7: 01A0907 TN464 F
8: 01A0908 TN464 F
9: 01A0909 TN464 F
10: 01A0910 TN464 F
11: 01A0911 TN464 F
12: 01A0912 TN464 F
13: 01A0913 TN464 F
14: 01A0914 TN464 F
15: 01A0915 TN464 F
```

## TRUNK GROUP

Administered Members (min/max): 1/29

## GROUP MEMBER ASSIGNMENTS

Total Administered Members: 29

	Port	Code	Sfx	Name	Night	Sig	Grp
16:	01A0917	TN464	F			9	
17:	01A0918	TN464	F			9	
18:	01A0919	TN464	F			9	
19:	01A0920	TN464	F			9	
20:	01A0921	TN464	F			9	
21:	01A0922	TN464	F			9	
22:	01A0923	TN464	F			9	
23:	01A0924	TN464	F			9	
24:	01A0925	TN464	F			9	
25:	01A0926	TN464	F			9	
26:	01A0927	TN464	F			9	
27:	01A0928	TN464	F			9	
28:	01A0929	TN464	F			9	
29:	01A0930	TN464	F			9	
30:							

## 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 “9”. 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”

Pattern Number: 9 Pattern Name: IPC

SCCAN? n Secure SIP? n

Grp	FRL	NPA	Pfx	Hop	Toll	No.	Inserted	DCS/	IXC
No			Mrk	Lmt	List	Del	Digits	QSIG	
								Intw	

1:	9	0						n	user
2:								n	user
3:								n	user
4:								n	user
5:								n	user
6:								n	user

BCC	VALUE	TSC	CA-TSC	ITC	BCIE	Service/Feature	PARM	No.	Numbering	LAR
0	1	2	M	4	W			Dgts	Format	

1:	y	y	y	y	y	n	y	as-needed	rest	unk-unk	none
2:	y	y	y	y	y	n	n		rest		none
3:	y	y	y	y	y	n	n		rest		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 2 and routed to trunk group 9 will result in a 5-digit calling number.

change public-unknown-numbering 0					Page 1 of 2
NUMBERING - PUBLIC/UNKNOWN FORMAT					
Ext	Ext	Trk	CPN	Total	
Len	Code	Grp(s)	Prefix	CPN	
				Len	
5	2	9		5	Total Administered: 3
					Maximum Entries: 9999

## 5.11. Administer Uniform Dial Plan

This section provides a sample AAR routing used for routing calls with dialed digits 33xxx 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 33xxx, as shown below.

change uniform-dialplan 0					Page 1 of 2
UNIFORM DIAL PLAN TABLE					
					Percent Full: 0
Matching			Insert	Node	
Pattern	Len	Del	Digits	Net Conv	Num
33	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 33xxx. In the example shown below, calls with digits 33xxx will be routed as an AAR call using route pattern “9” from **Section 0**.

change aar analysis 0					Page 1 of 2
AAR DIGIT ANALYSIS TABLE					
Location: all					Percent Full: 1
Dialed	Total	Route	Call	Node	ANI
String	Min	Max	Pattern	Type	Num
					Reqd
33	5	5	9	aar	n

### 5.13. Administer ISDN 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 “99”. Navigate to **Page 3**.

For **Modify Tandem Calling Number**, enter “tandem-cpn-form” to allow for the calling party number from IPC to be modified. By enabling this feature, the calling party number will be sent to PSTN when call is coming from IPC side via a SIP trunk.

change trunk-group 99			Page 3 of 21		
TRUNK FEATURES					
ACA Assignment? n		Measured: none		Wideband Support? n	
				Maintenance Tests? y	
		Data Restriction? n		NCA-TSC Trunk Member:	
		Send Name: y		Send Calling Number: y	
Used for DCS? n				Send EMU Visitor CPN? n	
Suppress # Outpulsing? n		Format: public			
Outgoing Channel ID Encoding: preferred		UII 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 UII IE? y		Modify Tandem Calling Number: tandem-cpn-form			
Send UCID? n					
Send Codeset 6/7 LAI IE? y		Dsl 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 3 and routed to trunk group 99 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
CALLING PARTY NUMBER CONVERSION					
FOR TANDEM CALLS					
CPN		Trk		Number	
Len	Prefix	Grp(s)	Delete	Insert	Format
5	3	99	all	3035381202	pub-unk

## 6. Configure IPC Alliance MX

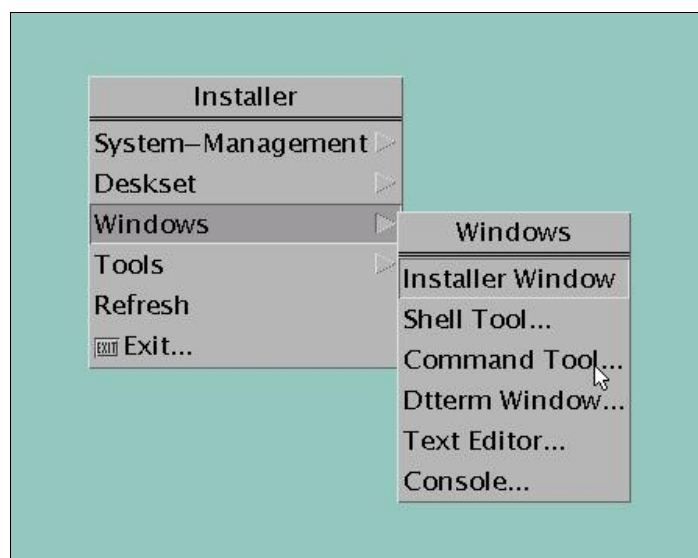
This section provides the procedures for configuring IPC Alliance MX. The procedures include the following areas:

- Launch Iview
- Administer wire groups

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

### 6.1. Launch Iview

From the Alliance MX console, right-click and select **Windows > Command Tool** from the pop-up boxes.

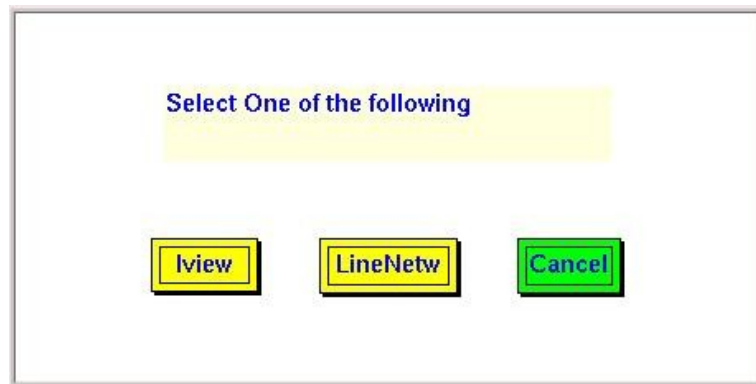


The **cmdtool** screen is displayed. Enter “**iview &**”, as shown below.



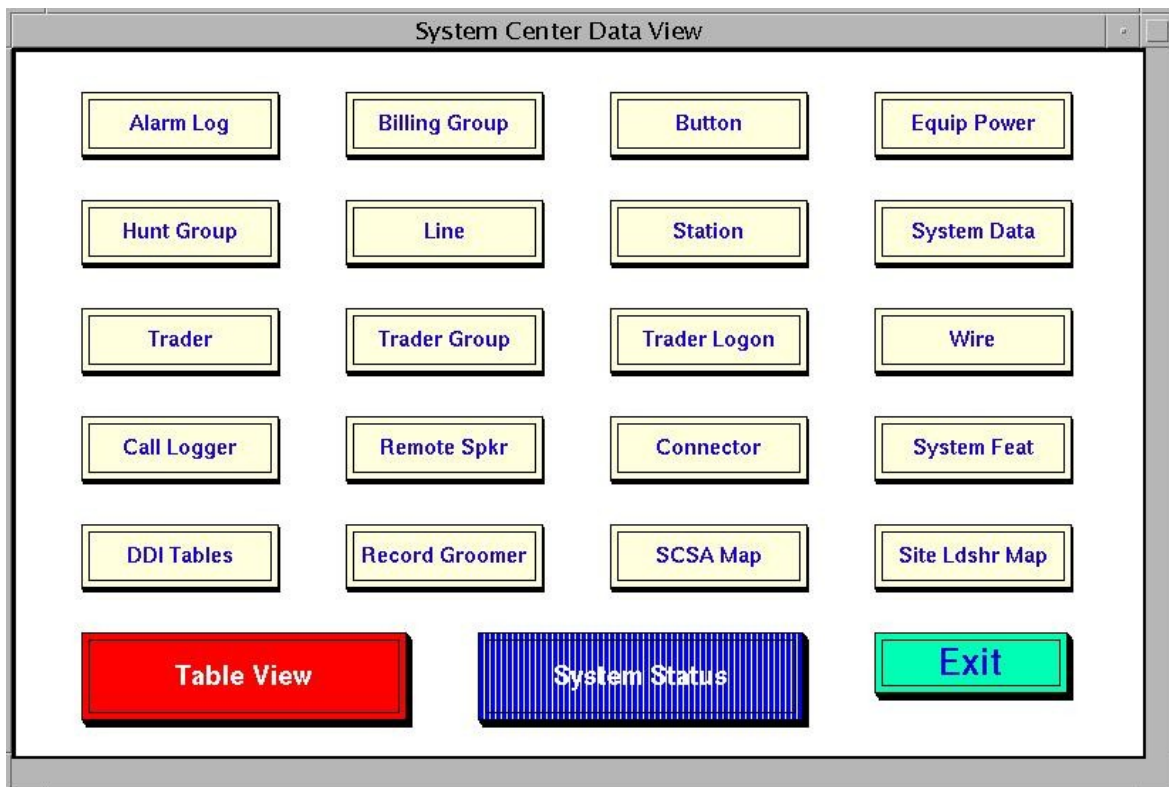


In the pop-up box shown below, click **Iview**.

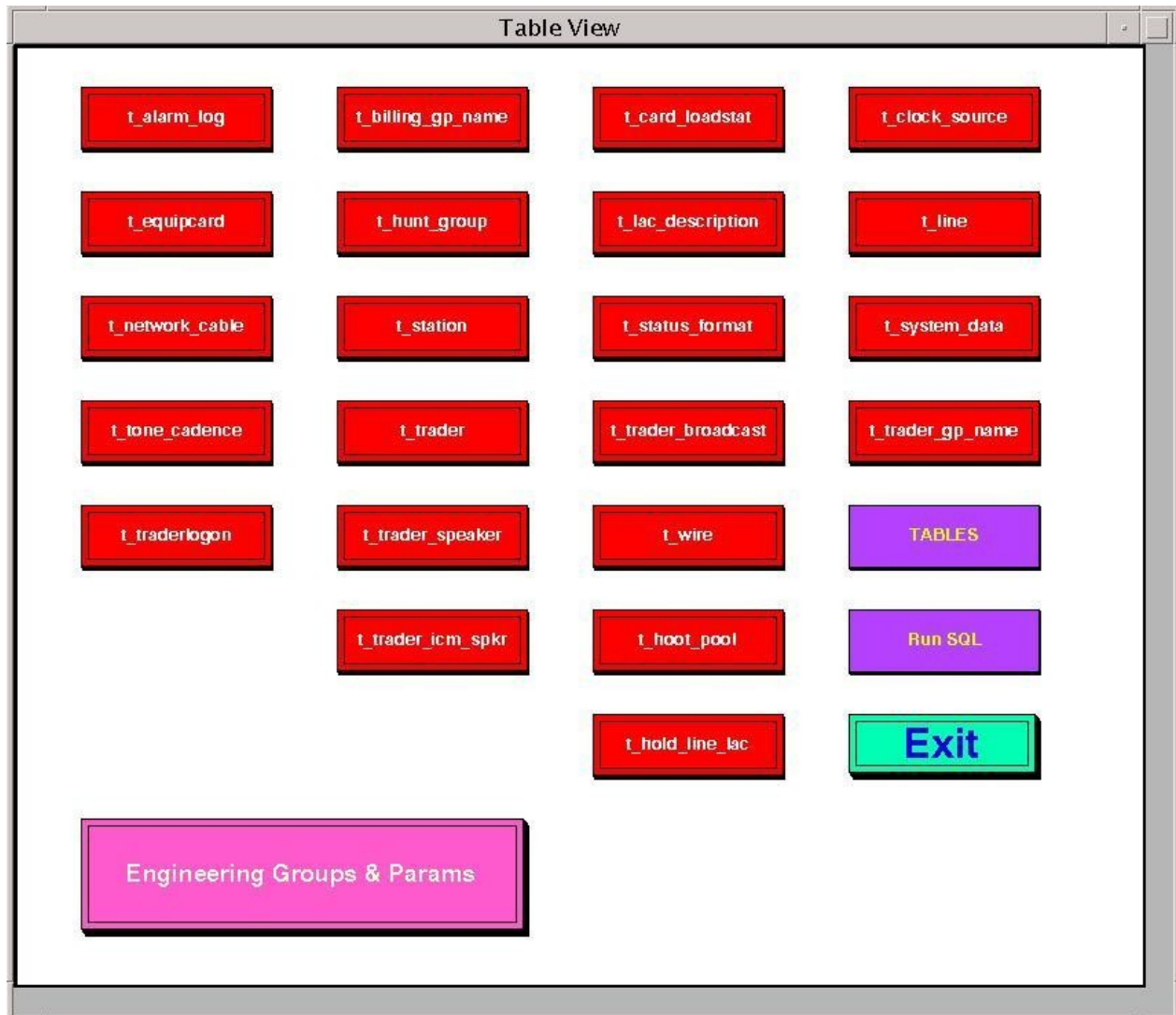


## 6.2. Administer Wire Groups

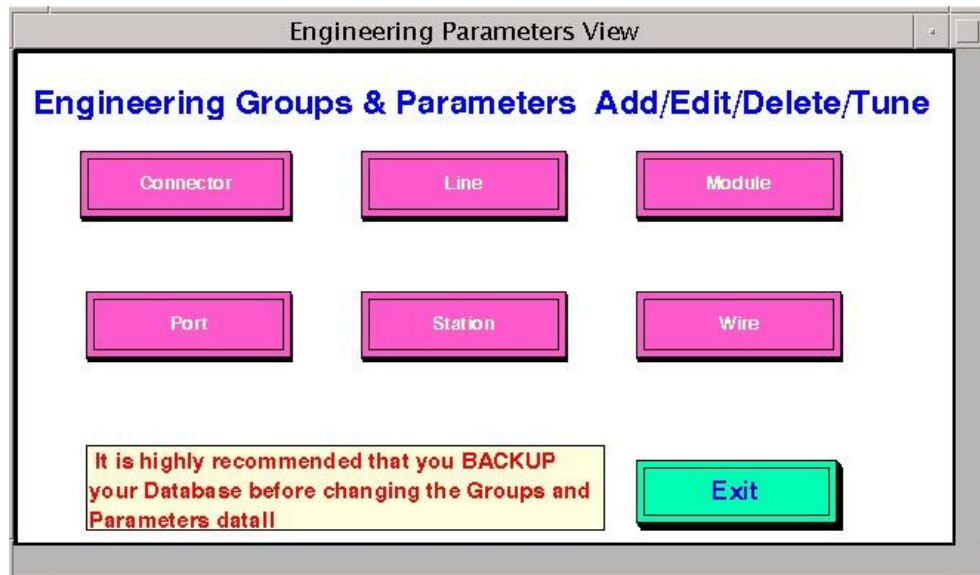
The **System Center Data View** screen is displayed. Click **Table View**.



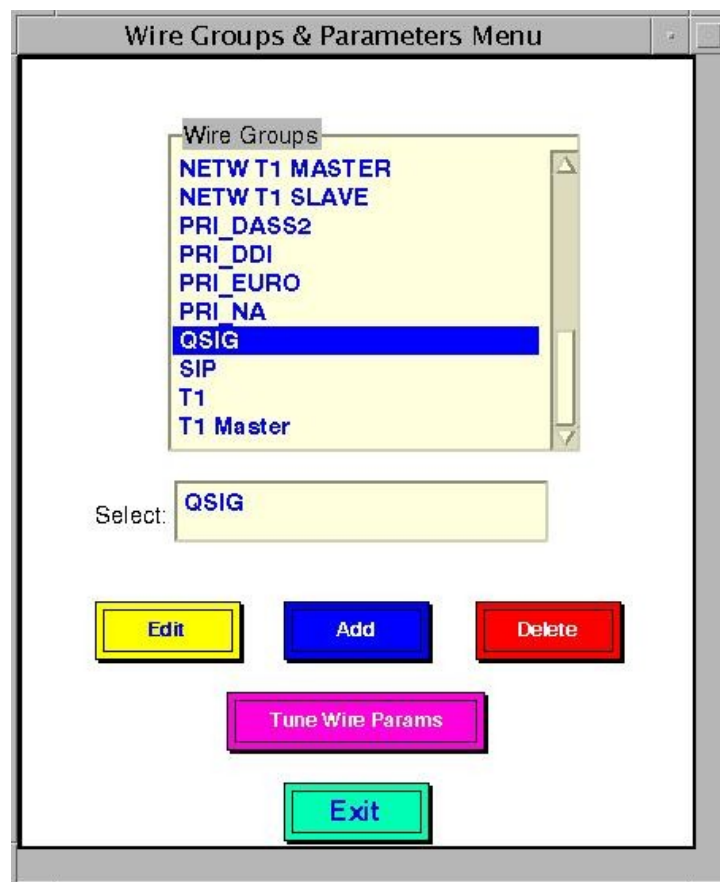
The **Table View** screen is displayed. Click **Engineering Groups & Params**.



The **Engineering Parameters View** screen is displayed next. Click **Wire**.



The **Wire Groups & Parameters Menu** screen is displayed. In the **Wire Groups** sub-section, scroll down and select "QSIG". Click **Edit**.



The **p\_Wire Edit Group** screen is displayed next. Scroll down the screen as necessary to locate the entry with **Param Id** of “142”. Double click on the corresponding **Param Value** field, and enter “1” to denote IPC as the slave in the ISDN connection.

Locate the entry with **Param Id** of “143”. Double click on the corresponding **Param Value** field, and enter “1” to enable **CRC4\_ENABLE**.

p_Wire Edit Group							
F76							
	D	E	F	G	H	I	J
1	Param Value	Param Min	Param Max	Param Name	Param Description	Param Type	Param Id
75	32767	1	32767	DSP_TERM_ATTEN	DSP TERM threshold	number	141
76	1	0	1	TIMING_MODE	0=Master, 1=Slave; Used on any T1 or E1	enum	142
77	1	0	1	CRC4_ENABLE	CRC4 Enable; 0=Disable, 1=Enable for E1	enum	143
78	3	1	26	BUILD_TYPE	0=none; defined in Compatibility Base	enum	147
79	3	1	85	CARD_TYPE	Card Type Required for this wire	enum	163

Scroll down the screen as necessary to locate the entry with **Param Id** of “327”. Double click on the corresponding **Param Value** field, and enter “1” to enable Alliance to send tones.

Locate the entry with **Param Id** of “358”. Double click on the corresponding **Param Value** field, and enter “2” for **VIRTUAL\_MASTER**.

p_Wire Edit Group							
D148							
	D	E	F	G	H	I	J
1	Param Value	Param Min	Param Max	Param Name	Param Description	Param Type	Param Id
137	1	0	1	SUPV_TONES	0=Carrier Sends Tones, 1=MX Sends Tones	number	327
138	8	1	10	PRI_PROTOCOL	Picking List Available	enum	328
139	0	0	2	SERV_IND_CODE	0=Telephony, 1=Categ. 1, 2=Categ. 2	number	329
140	2000	10	32767	HDLC_TX_DET_TIME	HDLC error detect time (msec)	number	350
141	80	1	32767	HDLC_TX_DET_THR	HDLC error detect threshold	number	351
142	2000	10	32767	HDLC_TX_CLR_TIME	HDLC error clear time (msec)	number	352
143	72	0	32767	HDLC_TX_CLR_THR	HDLC error clear threshold	number	353
144	2000	10	32767	HDLC_RX_DET_TIME	HDLC error detect time (msec)	number	354
145	80	1	32767	HDLC_RX_DET_THR	HDLC error detect threshold	number	355
146	2000	10	32767	HDLC_RX_CLR_TIME	HDLC error clear time (msec)	number	356
147	72	0	32767	HDLC_RX_CLR_THR	HDLC error clear threshold	number	357
148	2	1	2	VIRTUAL_MASTER	PBX A/X = 1, PBX B/Y = 2	number	358
149	0	-5	5	TERM_SHIFT	gain/loss into ipc network	enum	362

Scroll down the screen as necessary to locate entries with **Param Id** of “364-374” and “603-604”. Double click on the corresponding **Param Value** field, and set the values as shown below.

- **INTERDIGIT\_TO:** “0”
- **PBX\_PROVIDER:** “2”
- **CHANNEL\_TIMESLOT:** “2”
- **VM\_SERVER:** “2”
- **CFT1\_TIMEOUT:** “10000”
- **MAX\_DIVERTS:** “6”
- **FS\_ENABLE:** “3”
- **FS\_DELAY:** “200”
- **DDI\_TIMEOUT:** “2000”
- **Type of Number:** “1”
- **Numbering Plan:** “1”
- **BEARER\_CAP\_IE\_CODE:** “1”
- **COMPANDING\_METHOD:** “0”

Note that the MAX\_DIVERTS value should match the maximum number of call forwarding hops from **Section 5.4**.

Follow the system load procedure in [2] to reboot the QSIG trunk card.

p_Wire Edit Group							
D164							
	D	E	F	G	H	I	J
1	Param Value	Param Min	Param Max	Param Name	Param Description	Param Type	Param Id
151	0	0	32	INTERDIGIT_TO	interdigit timeout for enbloc signaling	number	364
152	2	1	7	PBX_PROVIDER	7/DEF,AVYA,NRTL,ERISN,MITL,SMNS,CS21	enum	365
153	2	1	2	CHANNEL_TIMESLOT	CHANNEL = 1, TIMESLOT = 2	number	366
154	2	1	5	VM_SERVER	1-5,NONE,AUDIX,NORTEL,OCTEL,DEFAULT	enum	367
155	10000	200	20000	CFT1_TIMEOUT	Time(msec) to Wait for Response to Dvrt	number	368
156	6	1	15	MAX_DIVERTS	Max Number of Diverts per Call	number	369
157	3	0	4	FS_ENABLE	0-4/Off, Imm&Busy, RNA, All, Always FS	number	370
158	200	200	10000	FS_DELAY	Time(msec) to Wait B4 Forward Switching	number	371
159	2000	200	10000	DDI_TIMEOUT	Time(msec) to Wait for Next Digit	number	372
160	1	1	5	Type of Number	1-5/UNKNOWN,INTL,NAT,LOC,OVERLAP	number	373
161	1	1	4	Numbering Plan	1-4/UNKNOWN,E.164,E.163,PRIVATE	number	374
162	1	1	5	LN_RECORDS	1-5/NONE,MX_PBX,MWI,DISC,All	enum	375
163	1	0	1	BEARER_CAP_IE_CODE	0-1/u-Law, A-Law Companding Value in Bea	number	603
164	0	0	1	COMPANDING_METHOD	0-1/A-Law, u-Law Actual Companding Metho	number	604
165	1	0	1	Send * and #	OFF = 0, ON = 1	number	662
166	1	0	1	DDI_RINGBACK	European = 0, United States = 1	number	665
167							

## 7. Verification Steps

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

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 9				Page	1
TRUNK GROUP STATUS					
Member	Port	Service State	Mtce Connected Ports Busy		
0009/001	01A0901	in-service/idle	no		
0009/002	01A0902	in-service/idle	no		
0009/003	01A0903	in-service/idle	no		
0009/004	01A0904	in-service/idle	no		
0009/005	01A0905	in-service/idle	no		
0009/006	01A0906	in-service/idle	no		
0009/007	01A0907	in-service/idle	no		
0009/008	01A0908	in-service/idle	no		
0009/009	01A0909	in-service/idle	no		
0009/010	01A0910	in-service/idle	no		
0009/011	01A0911	in-service/idle	no		
0009/012	01A0912	in-service/idle	no		
0009/013	01A0913	in-service/idle	no		
0009/014	01A0914	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 0**. Verify that the signaling group is “in-service” as indicated in the **Group State** and **Level 3 State** fields shown below.

status signaling-group 9		STATUS SIGNALING GROUP	
Group ID: 9		Active NCA-TSC Count: 0	
Group Type: isdn-pri		Active CA-TSC Count: 0	
Signaling Type: facility associated signaling			
<b>Group State: in-service</b>			
Primary D-Channel			
Port: 01A0916	<b>Level 3 State: in-service</b>		



## 8. Conclusion

These Application Notes describe the configuration steps required for IPC Alliance MX 15.03 to successfully interoperate with Avaya Aura® Communication Manager 6.0.1 using QSIG trunks. All feature and serviceability test cases were completed.

## 9. Additional References

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

1. *Administering Avaya Aura™ Communication Manager*, Document 03-300509, Issue 6.0, Release 6.0, June 2010, available at <http://support.avaya.com>.
2. *IPC PATCH 15.03.00.07a Install Guide*, Revision Number 7, April 2011, available upon request to IPC Support.

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