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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.

CRK; Reviewed:
BG 12/17/2012

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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.

2.3. Support

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

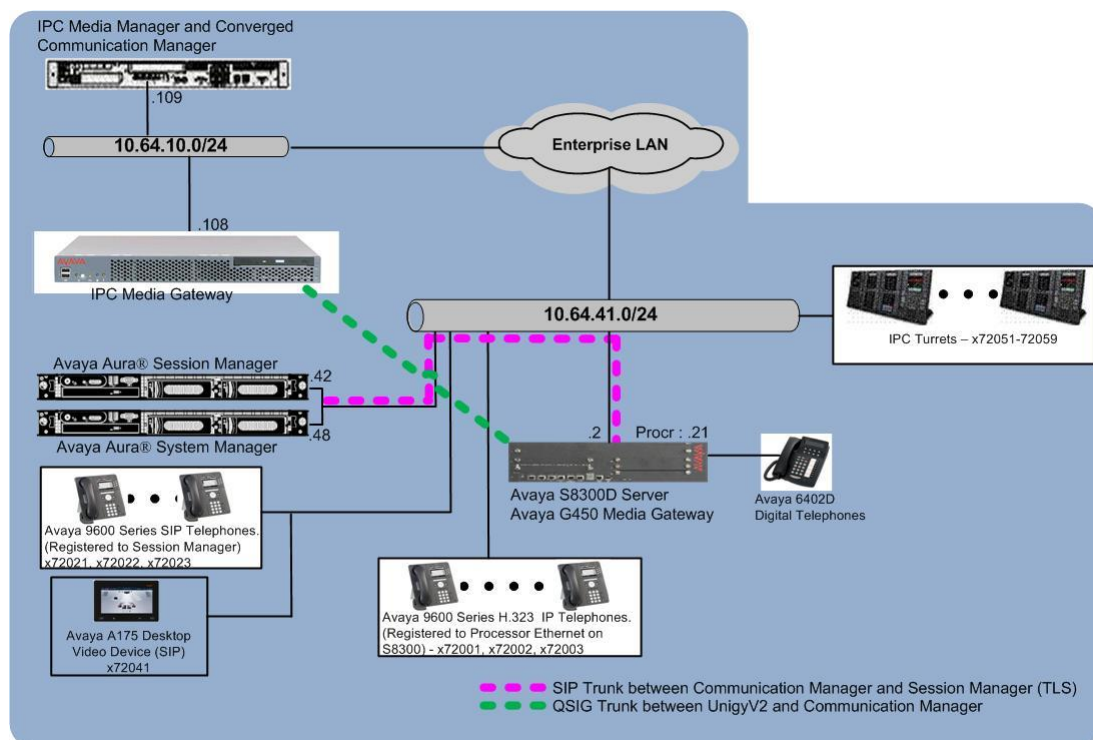- **Phone:** (800) NEEDIPC, (203) 339-7800
- **Email:** systems.support@ipc.com

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 Gateway • TN464HP 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 Manager • Converged Communication Manage • Media Gateway • Turrets	 02.00.00.00.1495 02.00.00.00.1495 6.40A.042.004 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
        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. 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




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: 001V7                          Name: To 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: mulaw                            CRC? y
         Idle Code: 11111111          Channel Numbering: timeslot
                      DCP/Analog Bearer Capability: 3.1kHz

                                     T303 Timer(sec): 4
                                     Disable Restarts? n


     Slip Detection? n          Near-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 71                                               Page   1 of  21
                              TRUNK GROUP

Group Number: 71                       Group Type: isdn        CDR Reports: n
  Group Name: E1Qsig-IPC                     COR: 1      TN: 1       TAC: 1071
    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.

```
change trunk-group 71                                           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
 CPN to Send for Redirected Calls: calling
```

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                                         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: 30
                                      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      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? y        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: 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 71                                        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: 30
                                       Send Name: y       Send Calling Number: y
           Used for DCS? n              Hop Dgt? n       Send EMU Visitor CPN? 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
                              TRUNK GROUP
                                 Administered Members (min/max):   1/30
GROUP MEMBER ASSIGNMENTS                Total Administered Members:  30

      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 GROUP
                                   Administered Members (min/max):   1/30
GROUP MEMBER ASSIGNMENTS                   Total Administered Members:  30

        Port    Code Sfx 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"

```
change route-pattern 71                                          Page   1 of   3
                    Pattern Number: 71  Pattern Name: Qsig to Unigy
                             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: 71   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    Request                                  Dgts Format
                                                                Subaddress
 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 7200 and 7202, and routed to trunk group 71 will result in a 5-digit calling number.

```
change public-unknown-numbering 0                        Page   1 of   2
                    NUMBERING - PUBLIC/UNKNOWN FORMAT
                                          Total
Ext Ext           Trk     CPN             CPN
Len Code          Grp(s)  Prefix          Len
                                              Total Administered: 4
  4 2             95      303389          10     Maximum Entries: 240
  5 7200          71                       5
  5 7202          71                       5
  5 7203          92                       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 uniform-dialplan 0                                Page   1 of   2
                     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 0                                    Page   1 of   2
                     AAR DIGIT ANALYSIS TABLE
                          Location: all       Percent Full: 3

        Dialed         Total      Route    Call   Node  ANI
        String         Min  Max   Pattern  Type   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
         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                           Send EMU Visitor CPN? y
   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 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
                      CALLING PARTY NUMBER CONVERSION
                           FOR TANDEM CALLS
                         Incoming                         Outgoing
      CPN                 Number   Trk                    Number
 Len  Prefix              Format   Grp(s)     Delete  Insert      Format
 5    7205                         80                 3035383547  pub-unk
```

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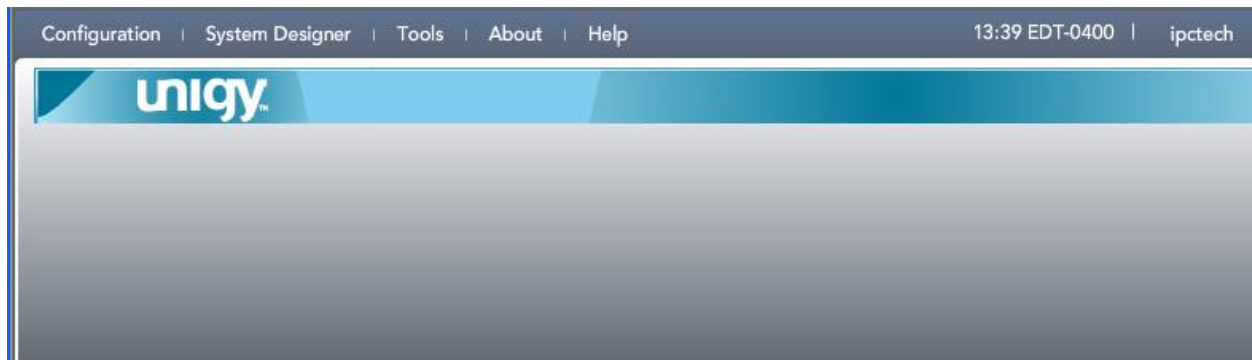
The **Sites** information is displayed in the left pane. Select **Trunks → Media Gateways**, to display a list of media gateway in the lower left pane. Select the applicable media gateway from the listing, in this case "MG".

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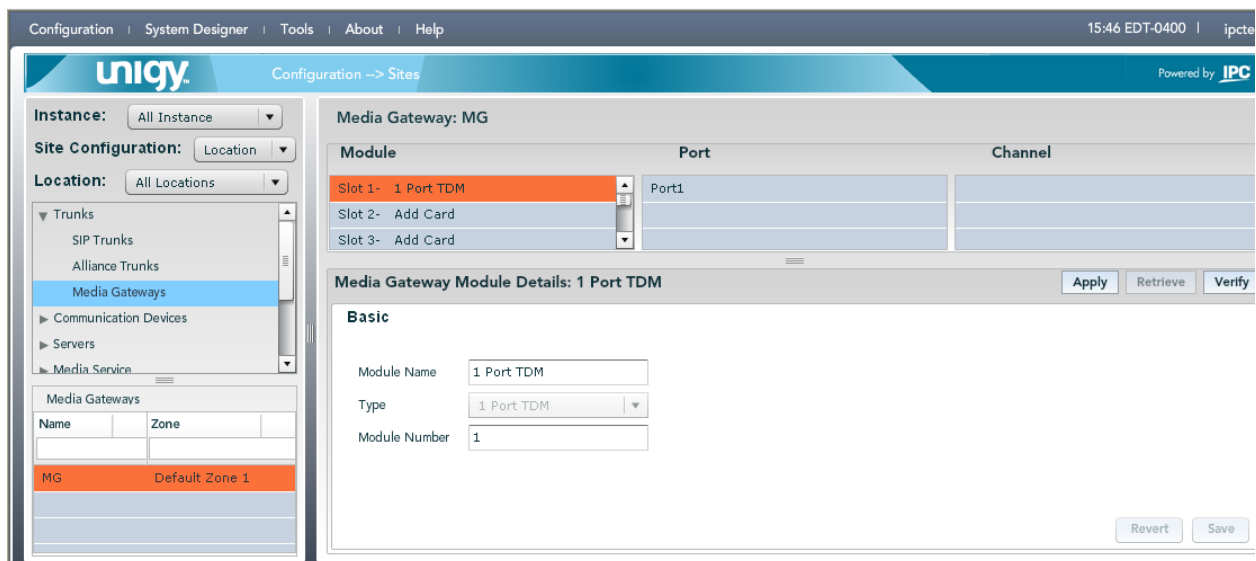
In the updated screen, click on a desired **Port** in the upper right pane, in this case "Port 1".

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**.

6.3. Administer Trunk Groups

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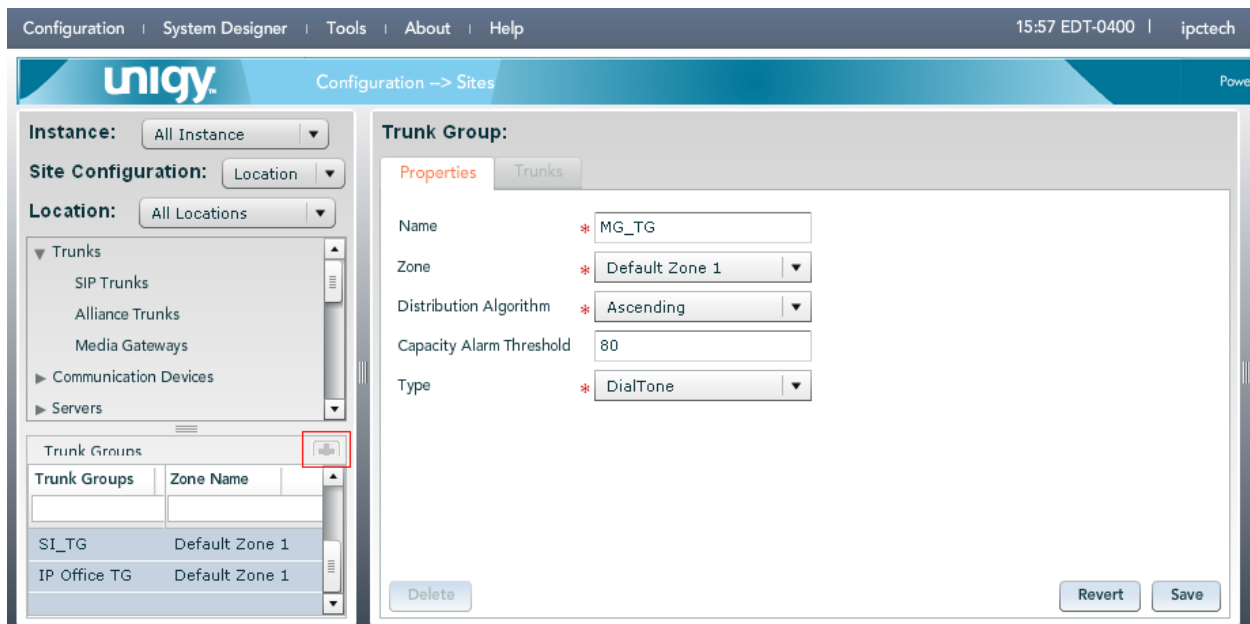
The screen is updated with three panes. In the right pane, select the **MG Trunks** tab. In the **Media Gateway** listing, select and expand the applicable media gateway slot and port from **Section 6.2**, and drag the selection to the **Name** column in the middle pane as shown below. Click **Save**.

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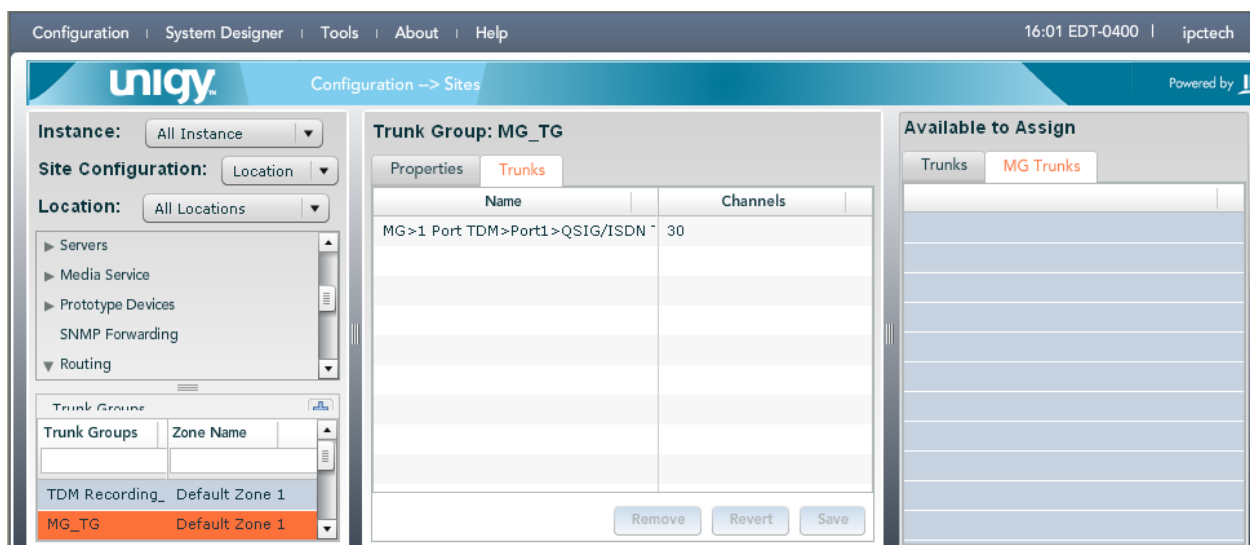
6.4. Administer Route Lists

Select **Routing → 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**.
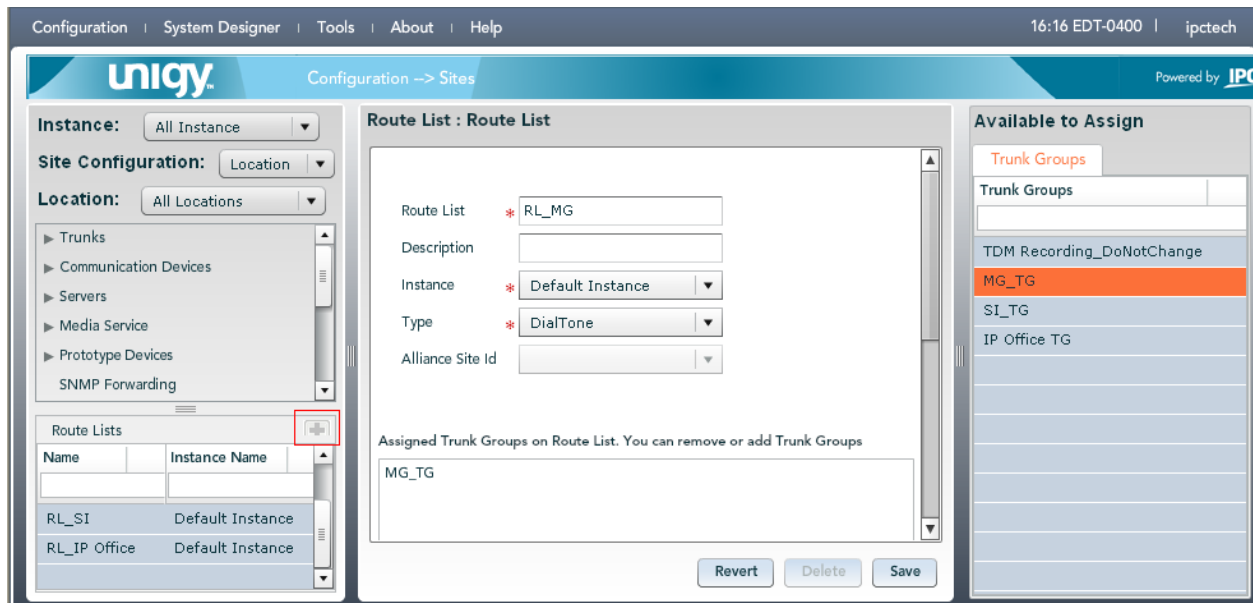
6.5. Administer Dial Patterns

Select **Routing → 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**.

6.6. Administer Route Plans

Select **Routing → 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**.

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).

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**.

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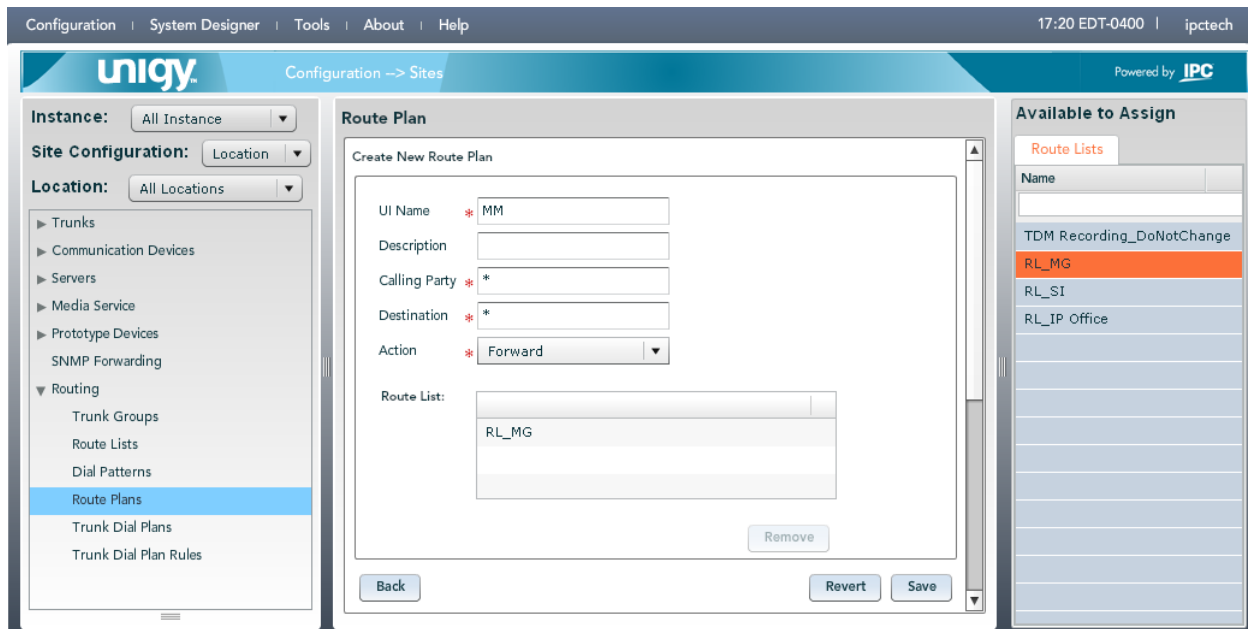
6.7. Administer Codecs

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** → **Enterprise** → **Codecs** → **Codec Profiles**, and click **Add New** in the left pane to create a new codec profile. Provide a profile name, and click **Save**.
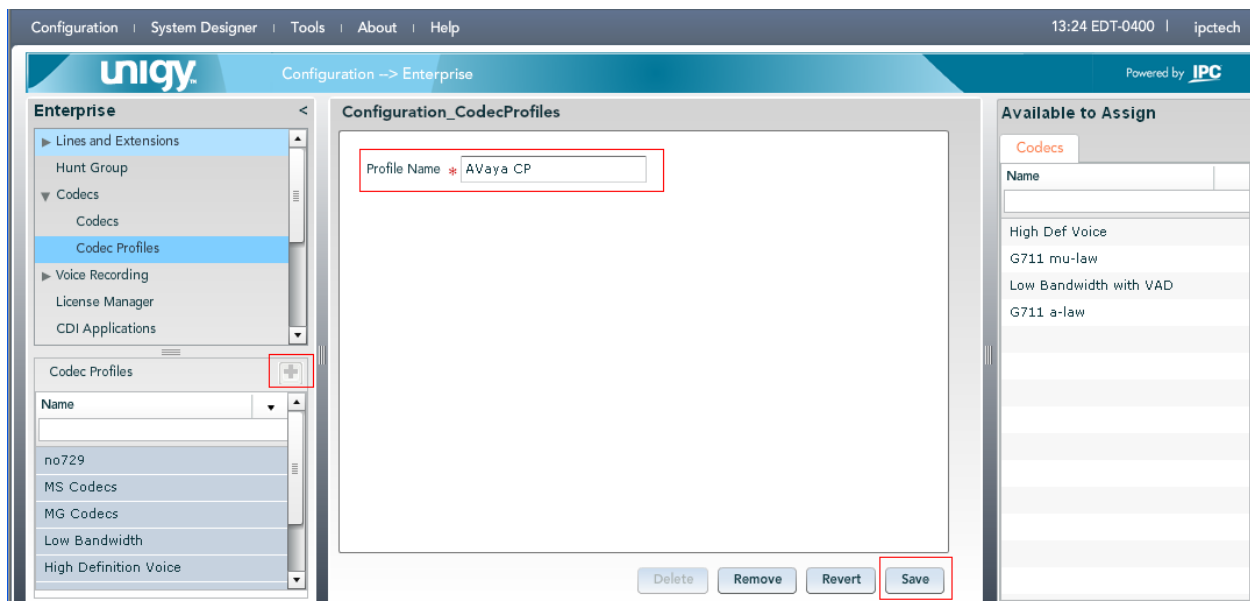
After saving the codec profile, the following screen is displayed. In the right pane, select the available codecs and drag into the **Codecs** sub-section in the middle pane, as shown below. Click **Save**.
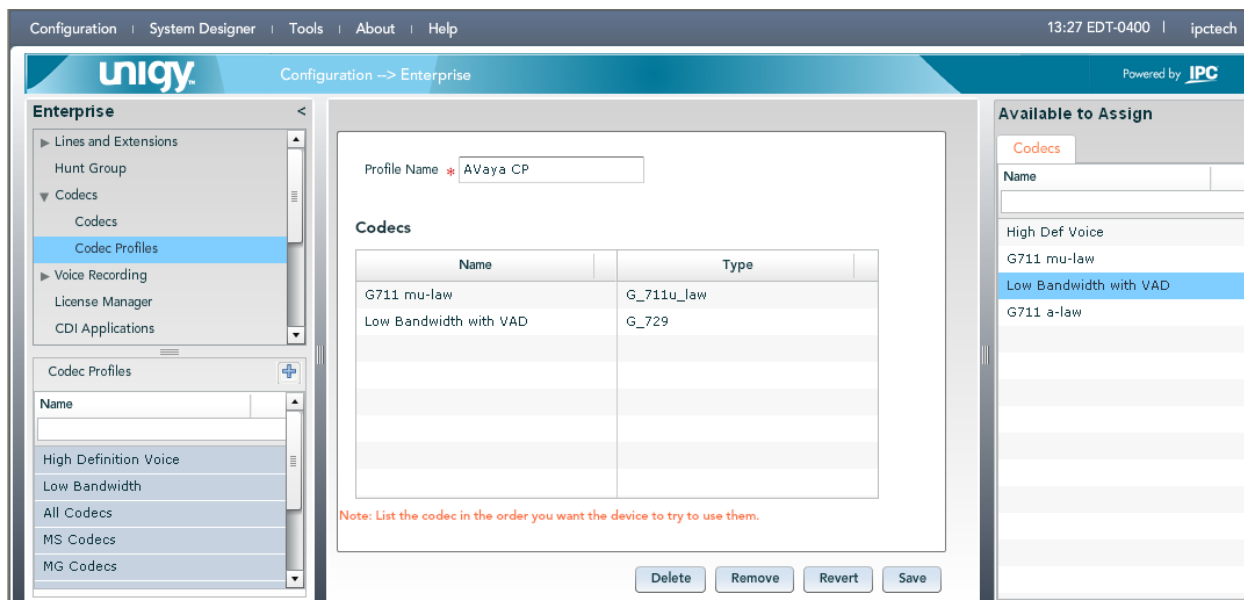
6.7.2. Assign Codec Profile to User

Select **System Designer→ End User Configuration**, and select a user to associate a codec profile with. Provide a profile name, and click **Save**.
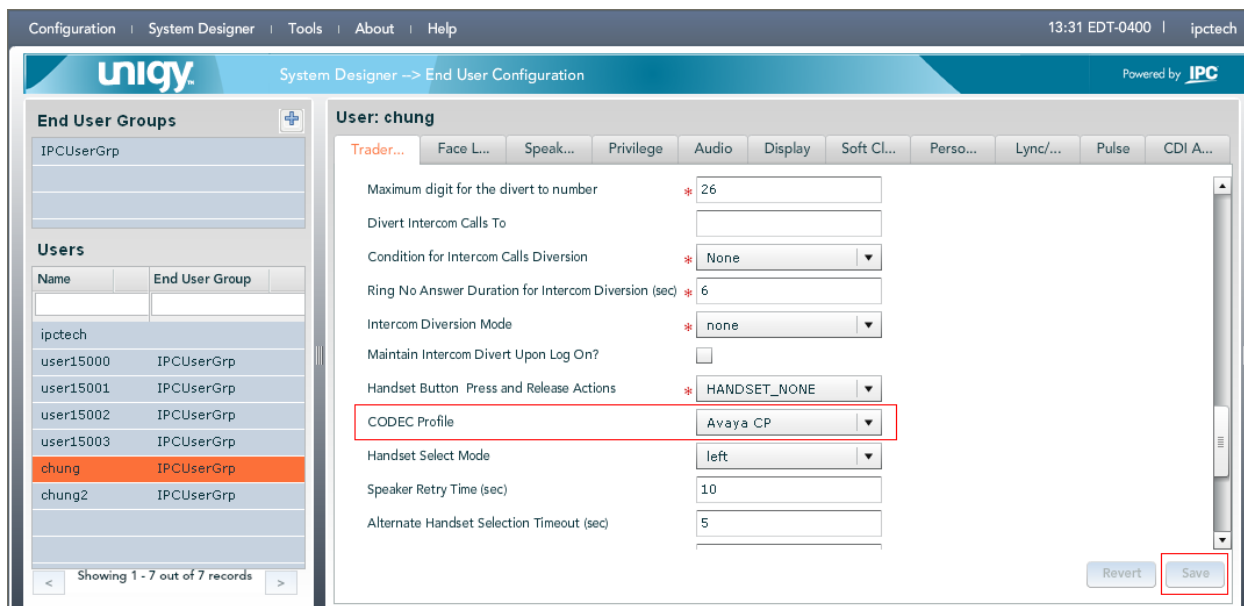
6.7.3. Assign Codec Profile to Turret

Navigate to **Configuration→ Sites → Communication Devices → 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**.
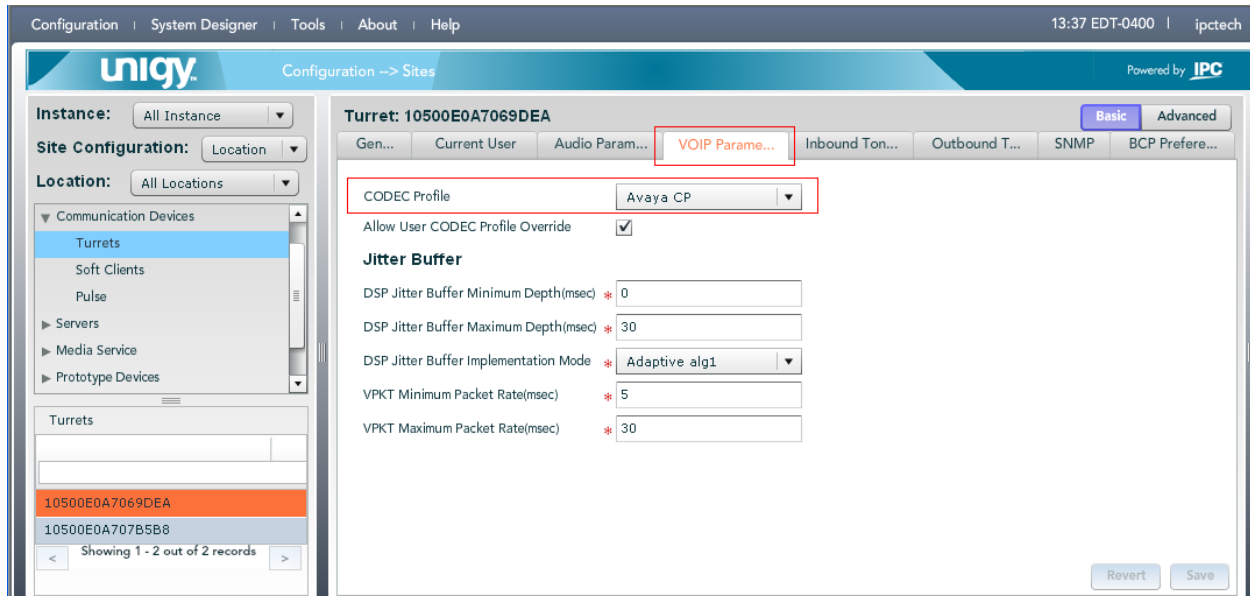
After codecs are configured, reboot the turret.

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 → VOIP → Coders And Profiles → Coders** in the left pane. Enter codecs that will be used.

7.2. Administer TDM Bus

Navigate to **Configuration → VOIP → TDM → 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**.
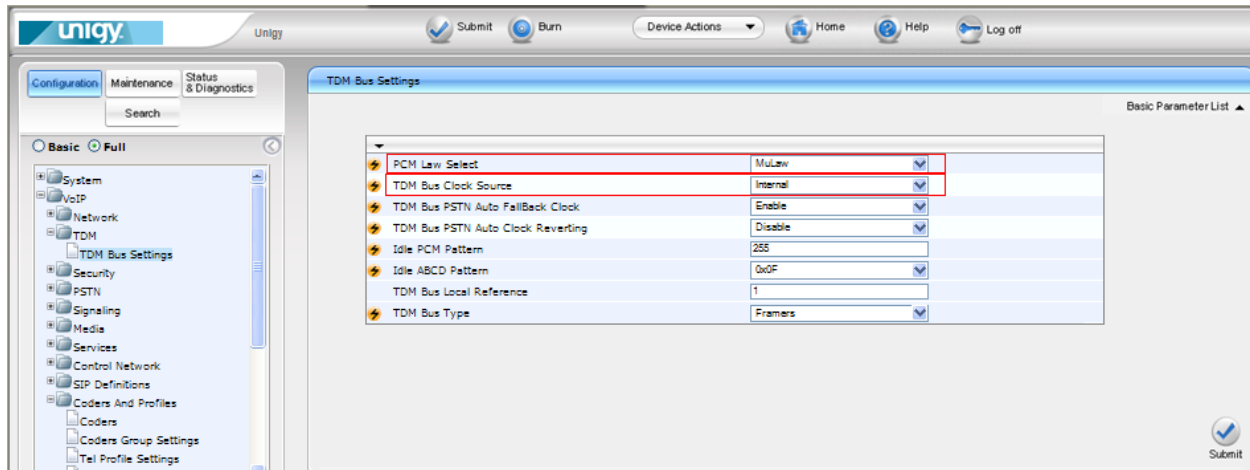
Note: *Interface Compounding in Avaya side is set to mulaw (Refer to Section 5.5)*

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 → Node Configuration → 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                          Active NCA-TSC Count: 0
    Group Type: isdn-pri                     Active CA-TSC Count: 0
 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 → PSTN Settings → 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.

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 http://support.avaya.com.

2. *UnigyV2 1.1 System Configuration*, Part Number B02200187, Release 00, upon request to IPC Support.

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