AVAYA

Avaya Solution and Interoperability Test Lab

Application Notes for Configuring Avaya Communication Manager and Avaya Modular Messaging to Support IPC Information Systems Alliance MX using QSIG – Issue 1.0

Abstract

These Application Notes describe how to configure Avaya Communication Manager and Avaya Modular Messaging to support the IPC Information Systems Alliance MX using QSIG.

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.

RJP; Reviewed:
SPOC 6/2/2008

Solution & Interoperability Test Lab Application Notes
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IPC_ACM_MM_QSIG

1. Introduction

These Application Notes describe how to configure Avaya Communication Manager and Avaya Modular Messaging to support the IPC Information Systems Alliance MX using QSIG.

The Alliance MX is a voice technology product designed to provide a high resiliency platform for provision of telephony and other associated services to financial traders.

The Alliance MX provides its users with connectivity to various telephone transport services. Included in the transport services is digital connectivity (E1) for connection within the private network where the signaling protocol is QSIG.

QSIG is a peer equal signaling system used to control voice communication and other services between two or more private automatic branch exchanges (PABXs). In Alliance MX, QSIG is normally utilised for connectivity between the Alliance MX and an associated PABX so that routed voice communication can be established between the two entities. In addition to simplistic routed voice communication (basic call), the Alliance MX supports other supplementary services and additional network functions (ANFs) where if the interconnected entity also supports these services interoperability and function of these services can be achieved. The supplementary services and ANFs supported by Alliance MX are:

- Provision and display of both calling and connected party name and number.
- Restriction of provision and display of both calling and connected party name and number.
- Transfer, with informational phases.
- Call forward (busy, unconditional and no reply), with informational phases, by either forward switch methodology or reroute methodology.
- Message Waiting Indication (MWI).

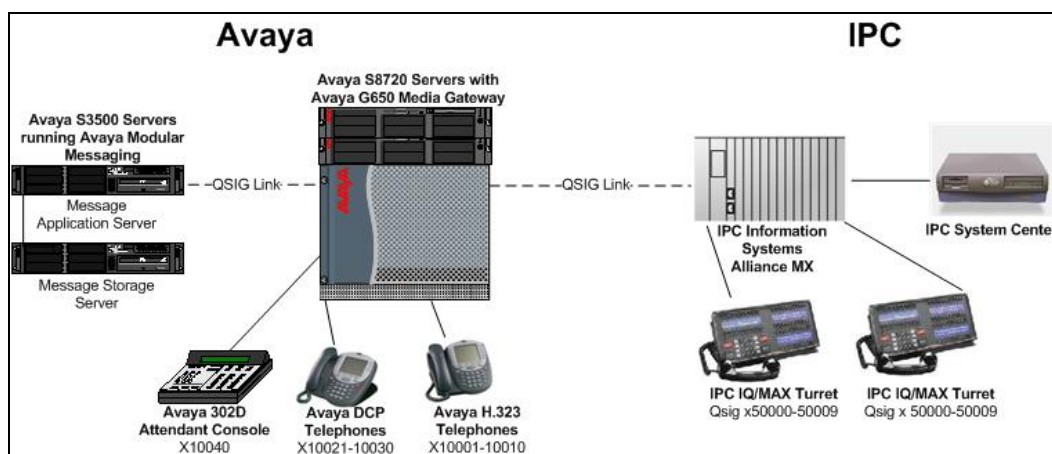**Figure 1** shows the compliance tested configuration.

Figure 1: Network Diagram of the Compliance Tested Configuration

2. Equipment and Software Validated

The following hardware and software versions were used for this configuration:

Equipment	Software
Avaya S8720 Servers	Avaya Communication Manager 5.0.0 Build 825.4.2

Avaya G650 Media Gateway
  TN799DP C-LAN
  TN2302AP MEDPRO
  2 x TN2464CP DS-1
	N/A
	HW01 FW024
	HW08 FW031
	HW02 FW019

Avaya 4610SW/4621SW IP Telephones	2.8 (H.323)
Avaya 2410/2420 Digital Telephones	---
Avaya 302D Attendant Console	---
Avaya Modular Messaging Avaya S3500 Server Avaya S3500 Server	 Message Application Server 3.1 Build 435.0 Message Storage Server 3.1 Build 12.1
IPC Information Systems Alliance MX	Alliance Release 15
Sun Blade 150	Sun Solaris 5.10 IPC System Center - Alliance Release 15
IPC IQ/MAX Turrets	Alliance Release 15

Table 1– Equipment and Version Validated

3. Avaya Communication Manager

The steps in this section describe the configuration for Avaya Communication Manager to support the Alliance MXusing QSIG.

3.1. Configure Avaya Communication Manager Licenses and Features

Step	Description
1.	Use the "**display system-parameters special-applications**" SAT command. On page 3, verify that "(SA8440) - Unmodified QSIG Reroute Number?" is set to "y".

```
display system-parameters special-applications          Page   3 of   7
                         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) - Russian SOSM? n
```

Step	Description
2.	Use the "**display system-parameters customer-options**" SAT command. On page 4, verify that "ISDN-PRI" is set to "y".

```
display system-parameters customer-options              Page   4 of  10
                         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? n
       Enterprise Survivable Server? n              ISDN-BRI Trunks? n
          Enterprise Wide Licensing? n                    ISDN-PRI? y
             ESS Administration? n         Local Survivable Processor? n
           Extended Cvg/Fwd Admin? n              Malicious Call Trace? n
       External Device Alarm Admin? n         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? n     Multimedia Call Handling (Basic)? n
                Hospitality (Basic)? y  Multimedia Call Handling (Enhanced)? n
  Hospitality (G3V3 Enhancements)? n           Multimedia IP SIP Trunking? n
                         IP Trunks? y


                IP Attendant Consoles? n
           (NOTE: You must logoff & login to effect the permission changes.)
```

Step	Description
	On Page 5, verify that "Private Networking" and "Uniform Dialing Plan" are both set to "y". ``` display system-parameters customer-options Page 5 of 10 OPTIONAL FEATURES Multinational Locations? y Station and Trunk MSP? y Multiple Level Precedence & Preemption? n Station as Virtual Extension? n Multiple Locations? y System Management Data Transfer? n Personal Station Access (PSA)? n Tenant Partitioning? n PNC Duplication? y Terminal Trans. Init. (TTI)? n Port Network Support? y Time of Day Routing? n Posted Messages? n TN2501 VAL Maximum Capacity? y Uniform Dialing Plan? y Private Networking? y Usage Allocation Enhancements? y Processor and System MSP? n Processor Ethernet? y Wideband Switching? n Wireless? n Remote Office? n Restrict Call Forward Off Net? y Secondary Data Module? y ``` On Page 8, verify that "Basic Call Setup", "Basic Supplementary Services", "Centralized Attendant", "Supplementary Services with Rerouting" and "Transfer into QSIG Voice Mail" are all set to "y". ``` display system-parameters customer-options Page 8 of 10 QSIG OPTIONAL FEATURES Basic Call Setup? y Basic Supplementary Services? y Centralized Attendant? y Interworking with DCS? n Supplementary Services with Rerouting? y Transfer into QSIG Voice Mail? y Value-Added (VALU)? n ```

Step	Description
3.	Use the "**change system-parameters features**" command. The output of Page 8 of the "**change system-parameters features**" SAT command is used to show the configuration after the module was added (modified fields are shown in bold type).

```
change system-parameters features                              Page   8 of  17
                        FEATURE-RELATED SYSTEM PARAMETERS

 ISDN PARAMETERS
                                                          PARAMETERS FOR CREATING
   Send Non-ISDN Trunk Group Name as Connected Name? n    QSIG SELECTION NUMBERS
   Display Connected Name/Number for ISDN DCS Calls? n      Network Level: 0
        Send ISDN Trunk Group Name on Tandem Calls? n       Level 2 Code:
                                                            Level 1 Code:


                          QSIG/ETSI TSC Extension: 10099
   MWI - Number of Digits Per Voice Mail Subscriber: 5
                                    Feature Plus Ext:
                                 National CPN Prefix:
                            International CPN Prefix:
                            Pass Prefixed CPN to ASAI? n
       Unknown Numbers Considered Internal for AUDIX? n
               USNI Calling Name for Outgoing Calls? n
                   Path Replacement with Measurements? y
                     QSIG Path Replacement Extension:
                Path Replace While in Queue/Vectoring? n
```

3.2. Configure QSIG Link to Alliance MX

Step	Description
1.	Use the "**add ds1**" SAT command to configure the TN2464CP DS1 Circuit Pack that will be used for the QSIG connection between Avaya Communication Manager and the Alliance MX. The output of the "**change ds1**" SAT command is used to show the configuration after the module was added (modified fields are shown in bold type).

```
change ds1 01A09                                               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: 11111111          Channel Numbering: timeslot
                                  DCP/Analog Bearer Capability: 3.1kHz

                                      T303 Timer(sec): 4


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

Step	Description
2.	Use the "**add signaling-group**" SAT command to add a signaling group for the QSIG connection between Avaya Communication Manager and the Alliance MX. The output of the "**change signaling group**" SAT command is used to show the configuration after the signaling group was added (modified fields are shown in bold type).

```
change signaling-group 43                                          Page   1 of   1
                              SIGNALING GROUP

  Group Number: 43              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: 43
             Trunk Group for Channel Selection: 43
             TSC Supplementary Service Protocol: b
```

Step	Description
3.	Use the "**add trunk-group**" SAT command to add a QSIG trunk between Avaya Communication Manager and the Alliance MX. The output of the "**change trunk-group**" SAT command is used to show the configuration after the trunk group was added (modified fields are shown in bold type).

```
change trunk-group 43                                              Page   1 of  21
                              TRUNK GROUP

Group Number: 43                   Group Type: isdn        CDR Reports: y
  Group Name: IPC                        COR: 1      TN: 1       TAC: 743
   Direction: two-way      Outgoing Display? n      Carrier Medium: PRI/BRI
 Dial Access? y            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
```

Page 2 of the trunk group form is shown below.

```
change trunk-group 43                                              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    Charge Advice: none
  Supplementary Service Protocol: b     Digit Handling (in/out): overlap/enbloc
       Digit Treatment:                                 Digits:
           Trunk Hunt: ascend
                                           Digital Loss Group: 13
Incoming Calling Number - Delete:     Insert:              Format:
            Bit Rate: 1200        Synchronization: async    Duplex: full
 Disconnect Supervision - In? y  Out? n
 Answer Supervision Timeout: 0
          Administer Timers? n
```

Step	Description
	Page 3 of the trunk group form is shown below.

```
change trunk-group 43                                       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: 1
                                        Send Name: y      Send Calling Number: y
             Used for DCS? n           Hop Dgt? n       Send EMU Visitor CPN? n
    Suppress # Outpulsing? y    Format: private
Outgoing Channel ID Encoding: preferred     UUI IE Treatment: service-provider

                                               Replace Restricted Numbers? y
                                             Replace Unavailable Numbers? n
                                               Send Connected Number: y
                                             Hold/Unhold Notifications? y
             Send UUI IE? y              Modify Tandem Calling Number? n
             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
```

| | Page 4 of the trunk group form is shown below. |

```
change trunk-group 43                                       Page   4 of  21
                    QSIG TRUNK GROUP OPTIONS

   TSC Method for Auto Callback: drop-if-possible
           Diversion by Reroute? y
                 Path Replacement? y
Path Replacement with Retention? n
        Path Replacement Method: better-route
                            SBS? n
  Display Forwarding Party Name? y
     Character Set for QSIG Name: eurofont
             QSIG Value-Added? n
```

| | Page 5 of the trunk group form is shown below. |

```
change trunk-group 43                                       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: 01A0901  TN2464 C                                  43
 2: 01A0902  TN2464 C                                  43
 3: 01A0903  TN2464 C                                  43
 4: 01A0904  TN2464 C                                  43
 5: 01A0905  TN2464 C                                  43
 6: 01A0906  TN2464 C                                  43
 7: 01A0907  TN2464 C                                  43
 8: 01A0908  TN2464 C                                  43
 9: 01A0909  TN2464 C                                  43
10: 01A0910  TN2464 C                                  43
11: 01A0911  TN2464 C                                  43
12: 01A0912  TN2464 C                                  43
13: 01A0913  TN2464 C                                  43
14: 01A0914  TN2464 C                                  43
15: 01A0915  TN2464 C                                  43
```

Step	Description
	Page 6 of the trunk group from is shown below.

```
change trunk-group 43                                        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: 01A0917   TN2464 C                                  43
 17: 01A0918   TN2464 C                                  43
 18: 01A0919   TN2464 C                                  43
 19: 01A0920   TN2464 C                                  43
 20: 01A0921   TN2464 C                                  43
 21: 01A0922   TN2464 C                                  43
 22: 01A0923   TN2464 C                                  43
 23: 01A0924   TN2464 C                                  43
 24: 01A0925   TN2464 C                                  43
 25: 01A0926   TN2464 C                                  43
 26: 01A0927   TN2464 C                                  43
 27: 01A0928   TN2464 C                                  43
 28: 01A0929   TN2464 C                                  43
 29: 01A0930   TN2464 C                                  43
 30: 01A0931   TN2464 C                                  43
```

3.3. Configure QSIG Link to Avaya Modular Messaging

Step	Description
1.	Use the "**add ds1**" SAT command to configure the TN2464CP DS1 Circuit Pack that will be used for the QSIG connection between Avaya Communication Manager and Avaya Modular Messaging. The output of the "**change ds1**" SAT command is used to show the configuration after the module was added (modified fields are shown in bold type).

```
change ds1 02a06                                         Page   1 of   1
                              DS1 CIRCUIT PACK

             Location: 02A06                        Name: MM
             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? n
             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
```

Step	Description
2.	Use the "**add signaling-group**" SAT command to add a signaling group for the QSIG connection between Avaya Communication Manager and Avaya Modular Messaging. The output of the "**change signaling group**" SAT command is used to show the configuration after the signaling group was added (modified fields are shown in bold type).

```
change signaling-group 1                                     Page   1 of   1
                              SIGNALING GROUP

  Group Number: 1                Group Type: isdn-pri
                       Associated Signaling? y        Max number of NCA TSC: 5
                         Primary D-Channel: 02A0616    Max number of CA TSC: 5
                                                     Trunk Group for NCA TSC: 1
         Trunk Group for Channel Selection: 1
         TSC Supplementary Service Protocol: b
```

Step	Description
3.	Use the "**add trunk-group**" SAT command to add a QSIG trunk between Avaya Communication Manager and Avaya Modular Messaging. The output of the "**change trunk-group**" SAT command is used to show the configuration after the trunk group was added (modified fields are shown in bold type).

```
change trunk-group 1                                         Page   1 of  21
                               TRUNK GROUP

Group Number: 1                     Group Type: isdn      CDR Reports: y
  Group Name: MM                            COR: 1      TN: 1       TAC: 701
   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
```

Page 2 of the trunk group form is shown below.

```
change trunk-group 1                                         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      Charge Advice: none
   Supplementary Service Protocol: b     Digit Handling (in/out): enbloc/enbloc

            Trunk Hunt: cyclical

                                              Digital Loss Group: 13
Incoming Calling Number - Delete:     Insert:               Format:
             Bit Rate: 1200        Synchronization: async    Duplex: full
 Disconnect Supervision - In? y  Out? n
 Answer Supervision Timeout: 0
         Administer Timers? n
```

Step	Description
	Page 3 of the trunk group form is shown below.

```
change trunk-group 1                                          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: 1
                                          Send Name: y      Send Calling Number: y
               Used for DCS? n                Hop Dgt? n    Send EMU Visitor CPN? n
      Suppress # Outpulsing? y    Format: unk-pvt
     Outgoing Channel ID Encoding: preferred    UUI IE Treatment: service-provider

                                                     Replace Restricted Numbers? n
                                                   Replace Unavailable Numbers? n
                                                       Send Connected Number: y
                                                    Hold/Unhold Notifications? y
               Send UUI IE? y              Modify Tandem Calling Number? n
                Send UCID? n
     Send Codeset 6/7 LAI IE? y                    Ds1 Echo Cancellation? n
                                                   Modify Reroute Number? y

         Apply Local Ringback? n
     Show ANSWERED BY on Display? y
                          Network (Japan) Needs Connect Before Disconnect? n
```

Page 4 of the trunk group form is shown below.

```
change trunk-group 1                                          Page   4 of  21
                    QSIG TRUNK GROUP OPTIONS

     TSC Method for Auto Callback: drop-if-possible
           Diversion by Reroute? y
              Path Replacement? y
    Path Replacement with Retention? n
          Path Replacement Method: better-route
                             SBS? n
    Display Forwarding Party Name? y
       Character Set for QSIG Name: eurofont
                QSIG Value-Added? n
     QSIG-Value Coverage Encoding: Standard
```

Page 5 of the trunk group form is shown below.

```
change trunk-group 1                                          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: 02A0601  TN2464 C                                1
   2: 02A0602  TN2464 C                                1
   3: 02A0603  TN2464 C                                1
   4: 02A0604  TN2464 C                                1
   5: 02A0605  TN2464 C                                1
   6: 02A0606  TN2464 C                                1
   7: 02A0607  TN2464 C                                1
   8: 02A0608  TN2464 C                                1
   9: 02A0609  TN2464 C                                1
  10: 02A0610  TN2464 C                                1
  11: 02A0611  TN2464 C                                1
  12: 02A0612  TN2464 C                                1
  13: 02A0613  TN2464 C                                1
  14: 02A0614  TN2464 C                                1
  15: 02A0615  TN2464 C                                1
```

Step	Description
	Page 6 of the trunk group from is shown below.

```
change trunk-group 1                                      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: 02A0617   TN2464 C                                     1
 17: 02A0618   TN2464 C                                     1
 18: 02A0619   TN2464 C                                     1
 19: 02A0620   TN2464 C                                     1
 20: 02A0621   TN2464 C                                     1
 21: 02A0622   TN2464 C                                     1
 22: 02A0623   TN2464 C                                     1
 23: 02A0624   TN2464 C                                     1
 24: 02A0625   TN2464 C                                     1
 25: 02A0626   TN2464 C                                     1
 26: 02A0627   TN2464 C                                     1
 27: 02A0628   TN2464 C                                     1
 28: 02A0629   TN2464 C                                     1
 29: 02A0630   TN2464 C                                     1
 30: 02A0631   TN2464 C                                     1
```
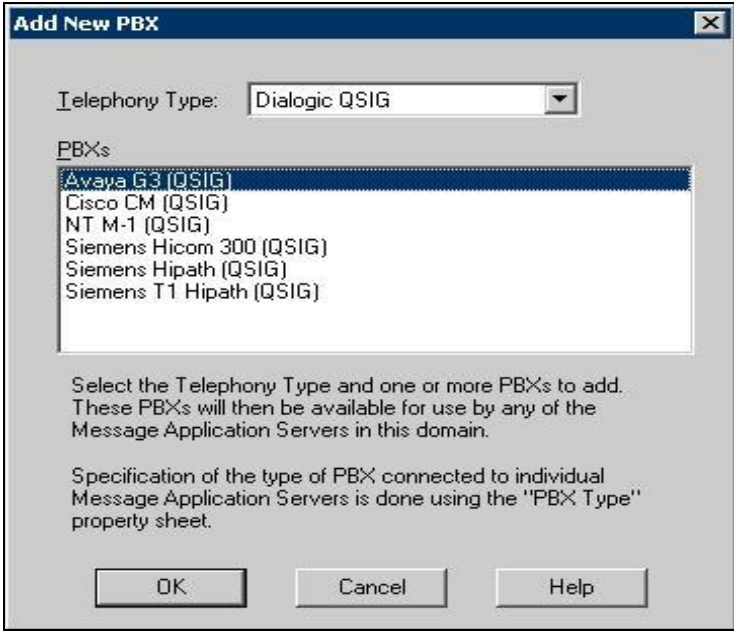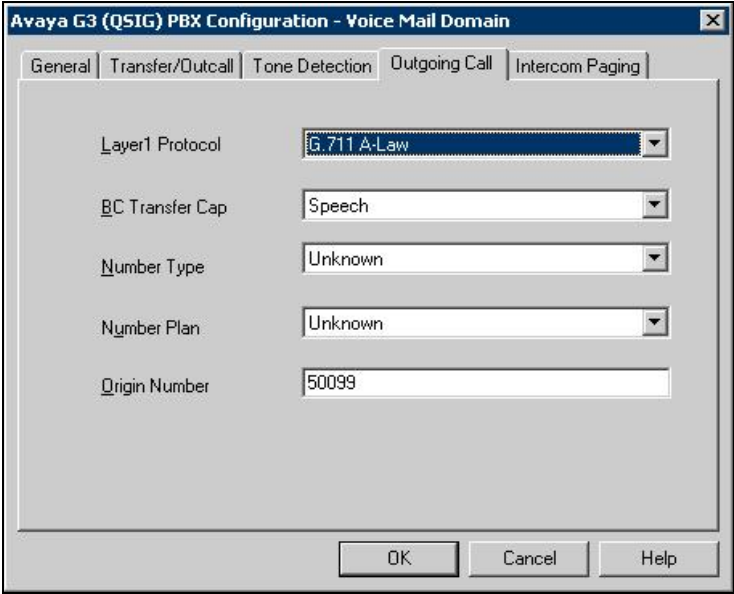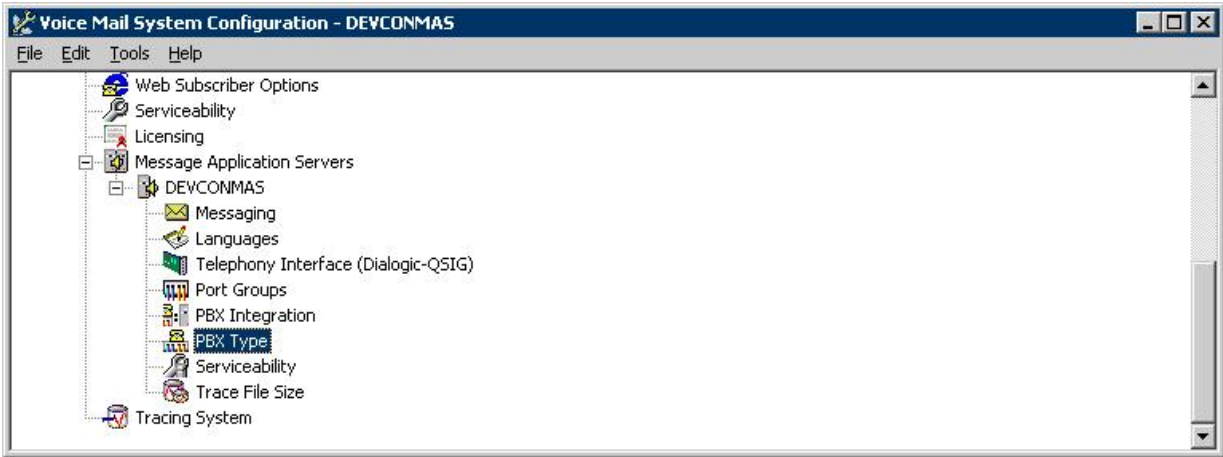
3.4. Configure Call Routing

Step	Description
1.	Use the "**change dialplan analysis**" SAT command to define the number range for the IPC turrets. Add an entry in the Dial Plan Analysis Table for 5-digit numbers beginning with "5" to use the Uniform Dial Plan (UDP) table.

```
change dialplan analysis                                  Page   1 of  12
                            DIAL PLAN ANALYSIS TABLE
                                                    Percent Full:    3

        Dialed   Total  Call    Dialed   Total  Call    Dialed   Total  Call
        String   Length Type    String   Length Type    String   Length Type
         1          5    ext
         2          5    ext
         3          5    ext
         4          5    ext
         5          5    udp
         6          5    ext
         7          3    dac
         8          6    ext
         9          1    fac
         *          3    fac
         #          3    fac
```
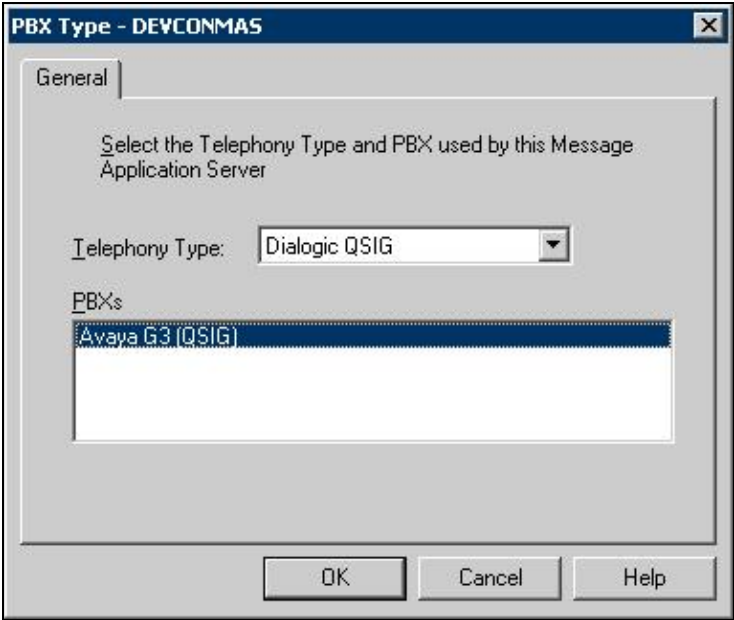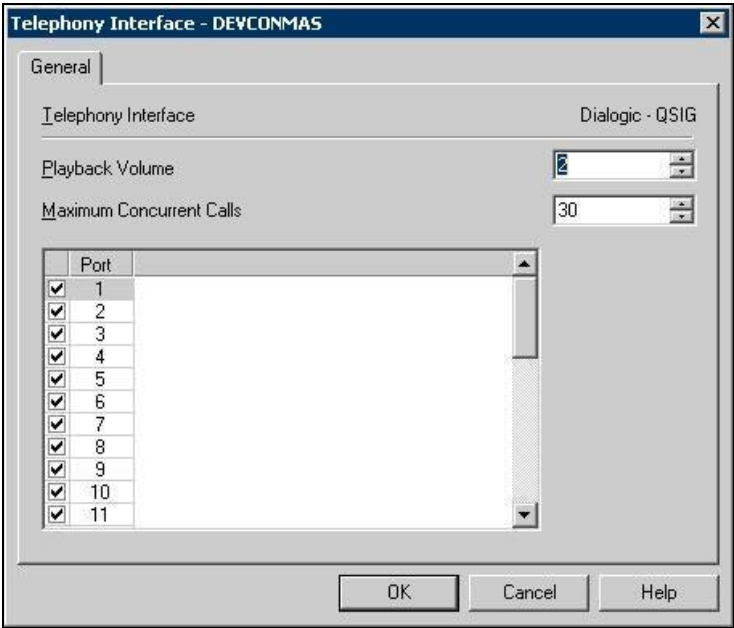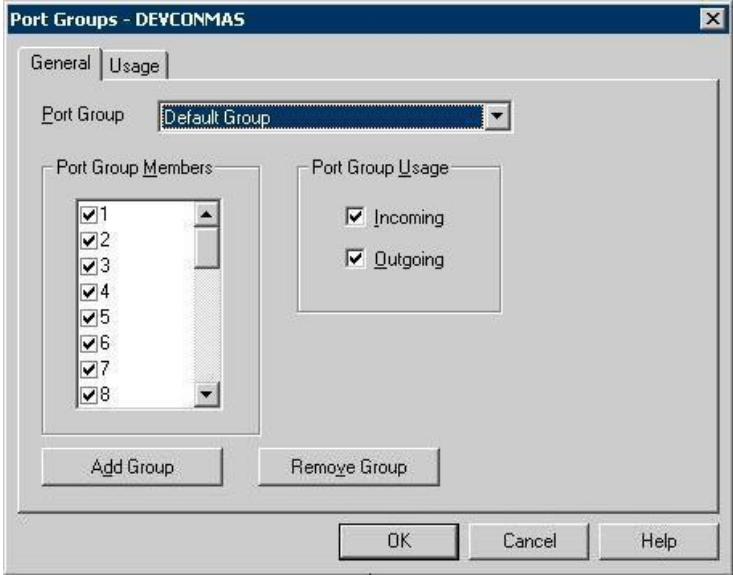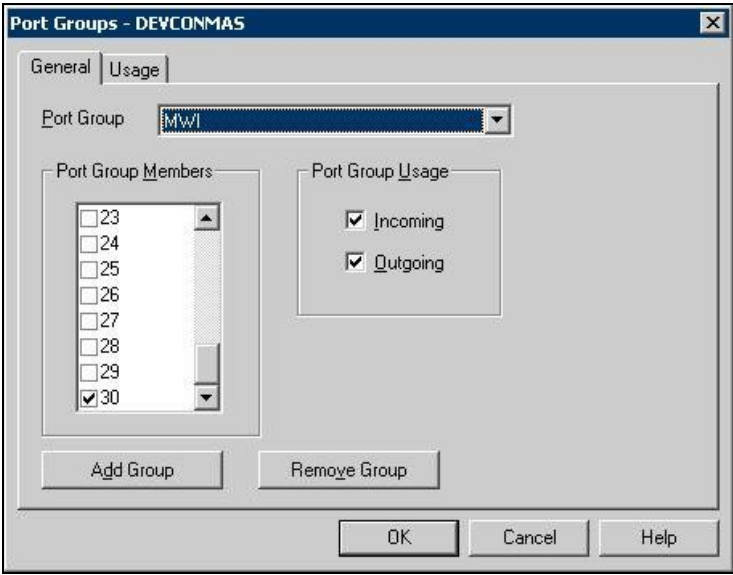
Step	Description
2.	Use the "**change uniform-dialplan**" SAT command to add an entry to route 5-digit numbers beginning with "5" using Alternate Automatic Routing (AAR).

```
change uniform-dialplan 5                                    Page   1 of   2
                        UNIFORM DIAL PLAN TABLE
                                                      Percent Full: 0

   Matching                     Insert              Node
   Pattern          Len Del     Digits       Net Conv Num
   5                 5   0                    aar   n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
                                                    n
```

Step	Description
3.	Use the "**change route-pattern**" SAT command to route calls for pattern "5" using trunk group 43 which is the QSIG trunk between Avaya Communication Manager and the Alliance MX. The output of the "**change route-pattern**" SAT command is used to show the configuration after the module was added (modified fields are shown in bold type).

```
change route-pattern 5                                       Page   1 of   3
                    Pattern Number: 5    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
                             Dgts                                 Intw
 1: 43   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  none      rest                            unk-unk   none
 2: y y y y y n  n            rest                                      none
 3: y y y y y n  n            rest                                      none
 4: y y y y y n  n            rest                                      none
 5: y y y y y n  n            rest                                      none
 6: y y y y y n  n            rest                                      none
```

Step	Description
4.	Use the "**change route-pattern**" SAT command to route calls for pattern "1" using trunk group 1 which is the QSIG trunk between Avaya Communication Manager and Avaya Modular Messaging. The output of the "**change route-pattern**" SAT command is used to show the configuration after the module was added (modified fields are shown in bold type).

```
change route-pattern 1                                         Page   1 of   3
                      Pattern Number: 1    Pattern Name: mm
                               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: 1     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  none       rest                               unk-unk   none
 2: y y y y y n  n             rest                                         none
 3: y y y y y n  n             rest                                         none
 4: y y y y y n  n             rest                                         none
 5: y y y y y n  n             rest                                         none
 6: y y y y y n  n             rest                                         none
```

Step	Description
5.	Use the "**change aar analysis**" SAT command to specify which route pattern to use based upon the number dialed. Add an entry in the AAR Digit Analysis Table to route 5-digit calls beginning with "5" using route pattern "5" via the QSIG trunk between Avaya Communication Manager and the Alliance MX. Add another entry in the AAR Analysis Table to route 5-digit calls of dialed string "50099" using route pattern "1" via the QSIG trunk between Avaya Communication Manager and Avaya Modular Messaging. **N.B.** It is important to note that the AAR entry is the only number to which IPC turrets should call forward to if they wish to divert their calls to Avaya Modular Messaging.

```
change aar analysis 5                                        Page   1 of   2
                         AAR DIGIT ANALYSIS TABLE
                                                     Percent Full:    3

           Dialed          Total      Route    Call   Node ANI
           String         Min  Max   Pattern   Type   Num  Reqd
    5                      5    5      5        aar         n
    50099                  5    5      1        aar         n
    6                      7    7      254      aar         n
    7                      7    7      254      aar         n
    8                      7    7      254      aar         n
```
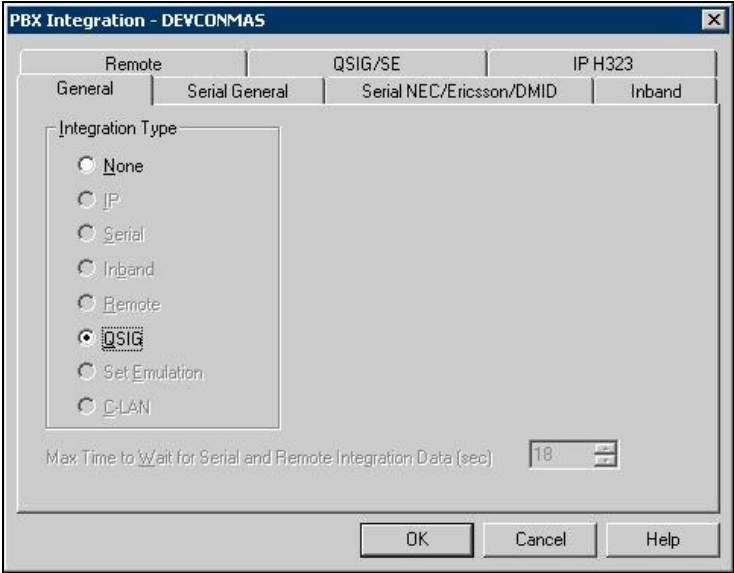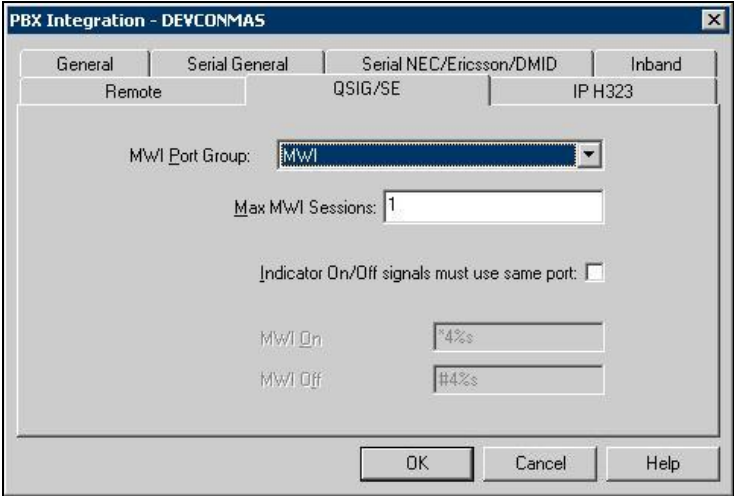
4. Configure Avaya Modular Messaging

Step	Description
1.	Select **Start > Programs > Avaya Modular Messaging > Voice Mail System Configuration**. Expand Voice Mail Domains and the administered domain name ("devconuk" in the screenshot below). Right-click on **PBXs** and select "Add New PBX Type" from the drop down menu.

On the **Add New PBX** screen, select "Dialogic QSIG" from the **Telephony Type** drop down box, then select "Avaya G3 (QSIG)" from the **PBXs** box. Select **OK** when completed.

Step	Description
2.	On the **Voice Mail System Configuration** screen (see **Step 1** for screenshot), double-click on **PBXs**. On the **Avaya G3 (QSIG) PBX Configuration** screen, select the **Outgoing Call** tab. In the **Layer1 Protocol** field, select "G.711 A-Law" or "G.711 Mu-Law" depending on the **Interface Companding** method selected in **Section 3.3 (Step 1)**. Select **OK** when completed
3.	On the **Voice Mail System Configuration** screen expand **Message Application Servers** and the host name of the MAS to be configured ("DEVCONMAS" in the screenshot below). Double-click on **PBX Type**.

Step	Description
	On the **PBX Type** screen select "Dialogic QSIG" from the **Telephony Type** drop down box then select "Avaya G3 (QSIG)" from the **PBXs** box. Select **OK** when completed.
4.	On the **Voice Mail System Configuration** screen (see **Step 3** for screenshot), double-click on **Telephony Interface (Dialogic-QSIG)**. On the **Telephony Interface** screen, enter "30" in the **Maximum Concurrent Calls** field and ensure all the **Port** checkboxes are checked. Select **OK** when completed.

Step	Description
5.	On the **Voice Mail System Configuration** screen (see **Step 3** for screenshot), double-click on **Port Groups**. On the **Port Groups** screen, select "Default Group" from the **Port Group** drop down box and ensure all the checkboxes are checked in the **Port Group Members** box. Also ensure that both the **Incoming** and **Outgoing** checkboxes are checked. Select **Add Group** to add a port group for MWI. On the **Add New Group** screen (not shown), enter a descriptive name for the group and select **OK** to return to the **Port Groups** screen. Select the port group that was just created from the **Port Group** drop down box ("MWI" in the screenshot below). Check the last port's checkbox in the **Port Group Members** box ("30" in the screenshot below). Also ensure that both the **Incoming** and **Outgoing** checkboxes are checked. Select **OK** when completed.

Step	Description
6.	On the **Voice Mail System Configuration** screen (see **Step 3** for screenshot), double-click on **PBX Integration**. On the **PBX Integration** screen, select the **General** tab and ensure the **QSIG** radio button is selected.

Select the **QSIG/SE** tab and select the port group created for MWI (in **Step 5**) from the **MWI Port Group** drop down box. Enter "1" in the **Max MWI Sessions** field. Select **OK** when completed.

5. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the Alliance MX's ability to request and respond to Avaya Communication Manager and Avaya Modular Messaging features over a QSIG link.

The serviceability testing focused on verifying the Alliance MX's ability to recover from an outage condition, such as busying out the QSIG link and disconnecting the cable for the QSIG link.

5.1. General Test Approach

All feature and serviceability test cases were performed manually. The verification included viewing call states on the Avaya telephones and IPC turrets and viewing QSIG traces.

5.2. Test Results

All test cases were executed and a number of observations were made. These observations and the impact they have on the interoperability of the systems can be viewed in the IPC test schedule document in reference [3].

6. Verification Steps

The following steps can be used to verify that Avaya Communication Manager and Avaya Modular Messaging are configured correctly to support the Alliance MX using QSIG.

Step	Description

1.	In Avaya Communication Manager, to verify that either of the trunk groups are up, use the "**status trunk x**" SAT command, where "x" is the number of the trunk group. Verify, for each trunk, that **Service State**, shows "in-service/idle" on an idle system.
	
	<pre>status trunk 43 Page 1
	
	                        TRUNK GROUP STATUS
	
	Member Port Service State Mtce Connected Ports
	                                      Busy
	
	0043/001 02A0601 in-service/idle no
	0043/002 02A0602 in-service/idle no
	0043/003 02A0603 in-service/idle no
	0043/004 02A0604 in-service/idle no
	0043/005 02A0605 in-service/idle no
	0043/006 02A0606 in-service/idle no</pre>

2.	To verify end-to-end connectivity and configuration, call-forward one of the IPC turrets to voicemail, then call the IPC turret from an Avaya Communication Manager station. The call should route to the mailbox of the IPC turret.

7. Conclusion

These Application Notes describe how to configure Avaya Communication Manager and Avaya Modular Messaging to support the IPC Information Systems Alliance MX using QSIG.

8. Support

For technical support on IPC Information Systems Alliance MX, contact the IPC System Support Group on:

- Phone: +1 203 339 7000.
- Email: systems.support@ipc.com

9. Additional References

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

[1] *Documentation for Avaya Communication Manager (5.0), Media Gateways and Servers,* January 2008, available at:
http://support.avaya.com

[2] *Modular Messaging for the Avaya Message Storage Server (MSS) Configuration Release 3.1 Installation and Upgrades,* February 2007, available at
http://support.avaya.com

[3] *ISO QSIG Interworking Test Schedule Between IPC MX Dealerboard Release 15 and Avaya Communication Manager Rel.5.0,* February 2008, available on request from:
mark.rideout@ipc.com

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