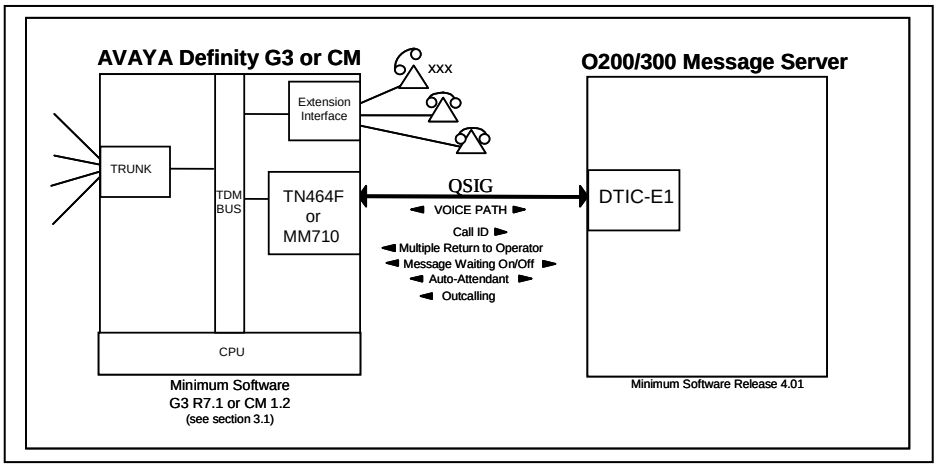
Octel 200/300

Message Server

Configuration Note 6111- Ver. N (05/07)

AVAYA Definity G3 / CM QSIG *(for EMEA or USA)*



1.0 METHOD OF INTEGRATION

With QSIG, one digital pathway between the PBX and the Octel system transmits both call information and voice communications

With QSIG integration, one digital pathway between the PBX and the Octel Voice Server transmits both call information and voice communications. The pathway is provided by a 2 Megabit digital link that provides 32 channels that connect to the DTIC-E1 card. Two of the channels are reserved for synchronization and signaling with the other 30 channels available for voice. The DTIC-E1 card connects directly to the PBX using a QSIG link that makes the Octel Voice Server appear as another PBX on the network. Within one of the reserved channels, routing information is sent so that the destination PBX has information regarding the source of the call and the reason for its arrival. The Octel Voice Server receiving a call now knows what mailbox to direct the call to and can see from the supplementary code who is calling and the reason why the call was delivered to the Voice Server. Message-waiting indication is set and canceled using a supplementary service. Voice is carried through the system in its digital format. This removes the need to convert speech from analog to digital to store it on the disk, and then back to analog to replay it.

2.0 OCTEL ORDERING INFORMATION

Octel requirements

- DTIC-E1 hardware kit (P/N 23-DTIC-QSIG)
- Minimum of Serenade 4.0.0-2 Software Required
- DSP licenses as required.

3.0 PBX HARDWARE REQUIREMENTS

PBX hardware requirements

- TN464C/D/E/F circuit packs, one per DTIC-E1
- MM710 T1/E1 Media Module

3.1 PBX SOFTWARE REQUIREMENTS

PBX software requirements

- Minimum Supported Software: G3V7.1

NOTE: G3V7.1 is the minimum release level for a single voice mail to G3 integration. If this is to support a PBX networked environment, you will need a minimum release of 10.1.
If CM minimum release CM1.2

- The following is a list of PBX software required by QSIG.

- ISDN-PRI
- Private Networking
- Basic Call Setup
- Basic Supplementary Services
- Supplementary Services with Rerouting

4.0 SUPPORTED FEATURES

Supported integration features

- Station Call forward to personal greeting
  - all calls
  - ring-no-answer
  - do-not-disturb
  - busy
  - System Call forward to personal greeting all calls
  - ring-no-answer
  - busy
- Message waiting notification
  - LED
  - Stutter dial tone
- Automated attendant (supervised transfers only)
- Outcalling
- Multiple-return-to-operator
- Direct call (Quick Logon)
- Reply to messages left in telephone answering mode

5.0 CONFIGURING THE AVAYA DEFINITY G3 TO INTEGRATE

The screens shown in this section are taken from an AVAYA Definity G3 administration terminal. **Boldface** fields indicate where required information must be entered. Some parameters may not appear on all software releases. Below is an example of configuration forms required for QSIG integration.

- Make sure all the required software features are enabled on the PBX. This can be done by accessing the System Parameters Customer Options form. Below is an example of that form, with the required features in **boldface**.

Check G3 Software Version.

In this example it is V7

display system-parameters customer-options Page 1 of 4

G3 Version: **V7** Maximum Ports: 1500
Location: 1

Abbreviated Dialing Enhanced List? n	CAS Main? n
Access Security Gateway (ASG)? n	Cvg Of Calls Redirected Off-net? n
Analog Trunk Incoming Call ID? n	DCS (Basic)? n
A/D Grp/Sys List Dialing Start at 01? n	DCS Call Coverage? n
Answer Supervision by Call Classifier? n	DCS with Rerouting? n
ARS? y	DEFINITY Network Admin? n
ARS/AAR Partitioning? y	DS1 MSP? y
ASAI Interface? n	Emergency Access to Attendant? y
ASAI Proprietary Adjunct Links? n	Extended Cvg/Fwd Admin? n
	External Device Alarm Admin? n
Async. Transfer Mode (ATM) Trunking? n	Flexible Billing? n
ATMS? n	Forced Entry of Account Codes? n
Audible Message Waiting? n	Global Call Classification? n
Authorization Codes? n	Hospitality (Basic)? y
CAS Branch? n	Hospitality (G3V3 Enhancements)? n

Shows if the required software features such as ISDN-PRI, Private Networking, etc. as listed in Section 3.1 are set to “y”.

```
display system-parameters customer-options              Page  2 of  4

                                ISDN Feature Plus? y   Restrict Call Forward Off Net? y
                                   ISDN-BRI Trunks? n        Secondary Data Module? n
                                         ISDN-PRI? y      Station and Trunk MSP? y

                                Malicious Call Trace? n  Survivable Remote Processor? n
                                   Mode Code Interface? n        Tenant Partitioning? y
                                Multifrequency Signaling? n  Terminal Trans. Init. (TTI)? y
Multimedia Appl. Server Interface (MASI)? n       Time of Day Routing? y
                                Multimedia Call Handling (Basic)? n  Uniform Dialing Plan? y
                                Multimedia Call Handling (Enhanced)? n  Usage Allocation Enhancements? y

                                Personal Station Access (PSA)? n      Wideband Switching? n
                                                                      Wireless? n

                                Processor and System MSP? n
                                     Private Networking? y
```

```
display system-parameters customer-options              Page  4 of  4

                                     Basic Call Setup? y
                                Basic Supplementary Services? y
                                     Interworking with DCS? n
                                Supplementary Services with Rerouting? y
                                     Value-Added (VALU)? y
```

- Install the TN464F circuit packs, making sure they are “strapped” for 32-channel operation (E-1).

  Verify they are strapped for 75 or 120 ohms, depending upon the cabling used.

  Configure the DS1 circuits as follows:

```
                                DS1 CIRCUIT PACK

                Location:                          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: n
                Idle Code: 11111111                Channel Numbering: timeslot
                                                   DCP/Analog Bearer Capability: 3.1 Khz


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

*** The Interface Companding parameter must match System Parameter 198 on the Octel message server. Use A-law companding for Europe.**

- Configure a Signaling Group that will be assigned to the DS1 channels.

NOTE: MWI will not work across the QSIG link to the Definity if you fail to insert the QSIG link trunk group number (in the example below it's 6) in the field: "Trunk Group for Channel Selection" and "Trunk Group for NCA TSC."

It is recommended a value 1/3rd the max ports be inserted in the field "Max Number of NCA TSC". In our example below, we have used a value of 10, this would be for a 30-port integration using one E-1 QSIG link of 30-ports.

The Signaling Group should be configured as follows:

SIGNALING GROUP

Group Number: 1

Associated Signaling? **y**
Primary D-Channel: 01A0416

Max Number of NCA TSC: **10**
Max Number of CA TSC: 0
Trunk Group for NCA TSC: **6**

Trunk Group for Channel Selection: **6**
Supplementary Service Protocol: **b**

- Create a trunk group, and assign all the newly created DS1 channels to it. If the Octel 200/300 will be configured to perform outcalls, insure that the COR (Class of Restriction) assigned to this trunk group allows for outside trunk access. The trunk group must be configured as follows:

```
                                TRUNK GROUP                          Page 1 of  10

Group Number:  1                          Group Type: isdn                CDR Reports:  y
  Group Name:                               COR:  1                TN:  1      TAC:  61
   Direction: two-way                 Outgoing Display?  y
 Dial Access?n                          Busy Threshold:  99              Night Service:
Queue Length:  0
  Service type: tie                        Auth Code?  n
                                      Far End Test Line No:
TestCall BCC:  4

TRUNK PARAMETERS
          Codeset to Send Display:  0          Codeset to Send TCM, Lookahead:  6
      Max Message Size to Send:  260           Charge Advice:  none
 Supplementary Service Protocol:  b            Digit Handling  (in/out):  enbloc/enbloc
                  Trunk hunt:  cyclical        QSIG Value Added?  n
          Connect to Toll?  n      STT Loss:  normal     DTT to DCO Loss:  normal
    Calling Number - Delete:       Insert:               Numbering Format:  unk-unk
                      Bit rate:  1200      Synchronization:  async          Duplex:  full
 Disconnect Supervision: - In?  y   Out?  n
 Answer Supervision Timeout:  0
```

Tip: If the numbering format is set to **unk-pvt** then the PBX looks to the Private-Numbering Table to build the number. The Network Level must not be left blank (in most cases this is set to **0**) or NO number will be sent.

This is where the PBX builds the called party number for the integration. If it is set to **unknown**, the PBX looks at the Public-Unknown table where an entry is required to build to the number. If there is no entry in this table to build the number, NO number is sent.

For Avaya CM 4.0 and later see related note below

```
                                                                     Page 2 of  10

TRUNK FEATURES

          ACA Assignment?  n          Measured:  none              Wideband Support?  n
                                   Internal Alert?  n             Maintenance Tests?  y
                                 Data Restriction?  n        NCA-TSC Trunk Member:  3
                                     Send Name:  y              Send Calling Number:  y
                 Used for DCS?  n        Hop Dgt?  y
          Suppress # Outpulsing?  n   Numbering Format:  unk-pvt
 Outgoing Channel ID Encoding:  preferred                 UUI IE Treatment:  service-provider
                                                                Send Connected Number:  y
                       Send UCID?  n
        Send Codeset 6/7 LAI  IE?  y

        Path Replacement Method?  Always
```

```
                                                                     Page 3 of  10

                          INCOMING CALL HANDLING TREATMENT

Service/          Called          Called          Del   Insert      Per Call      Night
Feature           Len             Number                            CPN/BN        Serv
```

Page 4 of 10

TRUNK GROUP
Administered Members (min/max) : 1/14
GROUP MEMBER ASSIGNMENT Total Administered Members: 14

	Port	Code	Sfx	Name	Night	Sig Grp
1 :	01A0401	TN464	F			1
2 :	01A0402	TN464	F			1
3 :	01A0403	TN464	F			1
4 :	01A0404	TN464	F			1
5 :	01A0405	TN464	F			1
6 :	01A0406	TN464	F			1
7 :	01A0407	TN464	F			1
8 :	01A0408	TN464	F			1
9 :	01A0409	TN464	F			1
10:	01A0410	TN464	F			1
11:	01A0411	TN464	F			1
12:	01A0412	TN464	F			1
13:	01A0413	TN464	F			1
14:	01A0414	TN464	F			1

- Change the ISDN Numbering - Private Network form so as to configure the PBX for the proper Network Level to be used. Below is a copy of the ISDN Numbering - Private Network form with the required field in **boldface**.

display isdn private-numbering

ISDN NUMBERING - PRIVATE FORMAT

Network Level: **0** PBX Identifier:
Level 2 Code: Deleted Digits: 0
Level 1 Code:

NOTES for Avaya CM 4.0 and later

Network Levels and Level codes are now found in ***system-parameters features*** under ***Parameters for Creating QSIG Selection Numbers***

Note: If the numbering format is set to **unk-pvt** then the PBX looks to the Private-Numbering Table to build the number. Network Level must not be left blank (in most cases this is set to **0**) or NO number will be sent. This is where the PBX builds the proper number (i.e., user's station number) for the integration to open the proper mailbox.

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

ISDN PARAMETERS
 Send Non-ISDN Trunk Group Name as Connected Name? n
 Display Connected Name/Number for ISDN DCS Calls? y
       Send ISDN Trunk Group Name on Tandem Calls? n
                Send Custom Messages Through QSIG? y

                              QSIG/ETSI TSC Extension: 2998
 MWI - Number of Digits Per Voice Mail Subscriber: 4 (see note below)
                                    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? y
                Path Replacement with Measurements? y
                   QSIG Path Replacement Extension: 2798
             Path Replace While in Queue/Vectoring? n

PARAMETERS FOR CREATING
QSIG SELECTION NUMBERS
  Network Level: 0
   Level 2 Code:
   Level 1 Code:
```

NOTE: This parameter must match the number of digits used for mailbox/extension length. For **multiple length extensions** leave this field blank (this requires Avaya CM 2.1 or later). However, please note **MM supports only one mailbox length**.

In **Avaya CM 4.0** the Private Numbering Form is now used to define the number format for **specific** trunk groups. In our example screen below, we have a 4-digit extension length that includes extensions from 2000 thru 5999. The 4-digit number will be part of the QSIG number information that will be passed to the MM for call integration.

If you set numbering format to "unk-pvt" on page 2 of the trunk group form (see earlier in this section), which is for the MM Trunk Group, this form must be completed so the CM knows how to build the *private format* number. For that reason, do not leave the form blank or the MM call integration will fail.

IMPORTANT

This screen supports Private Numbering Plans (PNP) allowing you to specify the digits to be put in the Calling Number information element (IE), the Connected Number IE, and the QSIG Party Number for extensions in the Private Numbering Plan.

Avaya CM supports private-network numbers up to 15 digits in length. If the total number — *including the level 1 and 2 prefixes, the Private Prefix (formerly known as PBX identifier), and the extension* — is more than 15 digits long, neither QSIG Party Numbers nor the information elements are created or sent.

```
change private-numbering 3                                   Page   1 of   2
                          NUMBERING - PRIVATE FORMAT

Ext  Ext            Trk        Private          Total
Len  Code           Grp(s)     Prefix           Len
 4   2              99                          4     Total Administered: 4
 4   3              99                          4        Maximum Entries: 540
 4   4              99                          4
 4   5              99                          4
```

- Create a Route Pattern for the trunk group that was previously created for the DS1 channels. The Route Pattern must be configured as follows:

```
display route-pattern 1

   Grp. FRL NPA Pfx  Hop  Toll  No.  Del  Inserted                    IXC
   No.          Mrk  Lmt  List  Digits    Digits
1: 1    0                                                            user
2:                                                                   user
3:                                                                   user
4:                                                                   user
5:                                                                   user
6:                                                                   user

   BCC VALUE  TSC CA-TSC   ITC  BCIE Service/Feature      Numbering  LAR
   0 1 2 3 4 W       Request                             Format
1: y y y y y n      n             rest                    lev0-pvt    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
```

- Within the AAR Digit Analysis Table, create a dialed string that will map calls to the newly created Route Pattern. The dialed string created in the AAR Digit Analysis Table will be used later in the Hunt Group form that will define the Octel Hunt Group. Below is an example of an AAR dialed string in **boldface**.

```
display aar analysis 23                     Page  1 of  2

                                 Percent Full:  30

    Dialed        Total      Route   Call   Node  ANI
    String        Min Max    Pattern Type   Num   Reqd
 2327300          7   7      1       aar           n
 3                7   7      254     aar           n
 324              7   7      103     aar           n
 383              7   7      102     aar           n
 4                7   7      254     aar           n
 5                7   7      254     aar           n
 6                7   7      254     aar           n
 7                7   7      254     aar           n
 8                7   7      254     aar           n
 9                7   7      254     aar           n
 943              7   7      102     aar           n
```

- Within the AAR Digit Conversion Table, create entries that will allow the Octel server to dial internal extensions over the QSIG link. The example below illustrates AAR Digit Conversion patterns used

in a PBX configured with 4-digit extensions in the7000-7399 range, 7800 - 7999 range, and 8300-8399 ranges.

```
display aar digit-conversion 7                    Page  1 of  2

                                  Percent Full: 19

Matching Pattern    Min  Max  Del  Replacement String  Net  Conv  ANI Req

70xx                4    4    0                       ext  n     n
71xx                4    4    0                       ext  n     n
72xx                4    4    0                       ext  n     n
73xx                4    4    0                       ext  n     n
78xx                4    4    0                       ext  n     n
79xx                4    4    0                       ext  n     n
83xx                4    4    0                       ext  n     n
x11                 3    3    0                       ars  y     n
```

- Configure a Hunt Group to be used as the Call Coverage Point for the Call Coverage Path assigned to the Octel subscribers. This hunt group's extension number is going to be used as the Octel Access Number. Enter the dialed string created previously in the AAR Digit Analysis Table in the "Voice Mail Number" field on page 2 of the Hunt Group form. Also, in the "Routing Digit (e.g. AAR/ARS Access Code)" field of this form, enter your PBX's AAR Access Code as defined on page 1 of the Feature Access Codes form. This hunt group is configured with no members assigned to it, and should be configured as follows:

```
                              HUNT GROUP                    Page 1 of  10

           Group Number: 1                                  ACD? n
             Group Name: VOICEMAIL                          Queue? n
        Group Extension: 3000                               Vector? n
             Group Type: ucd-mia                      Coverage Path:
                     TN: 1                    Night Service Destination:
                    COR: 1                          MM Early Answer? n
          Security Code:
ISDN Caller Display: grp-name
```

```
                              HUNT GROUP                    Page 2 of  10

                                        Message Center: qsig-mwi
                                    Voice Mail Number: 2327300
Routing Digits (e.g. AAR / ARS Access Code) : 100
                                    LWC Reception: none
```

NOTE: Please ensure system parameter 313 contains the same number as entered for the Voice Mail Number in the Hunt Group page 2. The example above would mean 2327300 is entered in sys par 313.

```
                                HUNT GROUP                    Page 3 of 10

Group Number: 1                 Group Extension: 3000         Group Type: ucd-mia
Member Range Allowed: 1 - 200 Administered Members (min / max) : 0 /0
                                Total Administered Members: 0

GROUP MEMBER ASSIGNMENTS
        Ext      Name                        Ext      Name
 1 :                                14:
 2 :                                15:
 3 :                                16:
 4 :                                17:
 5 :                                18:
 6 :                                19:
 7 :                                20:
 8 :                                21:
 9 :                                22:
10:                                 23:
11:                                 24:
12:                                 25:
13:                                 26:
```

- Access the Feature-Related system parameter form, and assign a phantom endpoint extension for QSIG TSC (Temporary Signaling Connections). Enter any valid, unassigned extension. Below is an example of that form, with the required parameter in **boldface**.

```
display system-parameters features                    Page  6 of  9
                FEATURE-RELATED SYSTEM PARAMETERS

ISDN PARAMETERS

Send Non-ISDN Trunk Group Name as Connected Name? n
Display Connected Name/Number for ISDN DCS Calls? n
Send ISDN Trunk Group Name on Tandem Calls? n

                                  QSIG TSC Extension: 87300
                          Path Replacement with Measurements? y
          MWI - Number of Digits Per AUDIX Subscriber: 4 (see MWI Note below)
                                  Feature Plus Ext:
```

MWI NOTE: This parameter must match the number of digits used for mailbox/extension length; otherwise MWI will not work.
For **multiple length extensions** leave this field blank.
Important: The option to leave this field blank requires Avaya CM 2.1 and later.

Note: As shown above in the *system-parameters features* screen you must have ***Path Replacement with Measurements*** set to "***y***" or path replacement will not work.

- Create a Call Coverage Path that will be assigned to the subscribers' stations. This Call Coverage Path will have the Octel Hunt Group as the Call Coverage Point. Below is an example of a Call Coverage Path.

```
display coverage path 73


          Coverage Path Number: 73
                                        Hunt after Coverage? n
               Next Path Number:        Linkage

COVERAGE CRITERIA

     Station/Group Status  Inside Call  Outside Call
                  Active?        n            n
                    Busy?        y            y
                Don't Answer?    y            y      Number of Rings: 4
                     All?        n            n
DND/SAC/Goto Cover?           y            y

COVERAGE POINTS

  Terminate to Coverage Pts. with Bridged Appearances? n

  Point1: h1          Point2:          Point3:
  Point4:             Point5:          Point6:
```

- Configure the subscribers' stations, assigning the newly created Call Coverage Path to them. Make sure that the "**LWC Reception**" field within the station form is set to "**msa-spe**". Single Line sets should have field "**Message Waiting Indicator**" set to "**led**" or "**neon**", depending on the type of telephone set used. Also, the "**Number of Rings**" field should be set to a minimum of 4 rings, so as to allow Personal Assistance to work properly.

6.0 CONFIGURING THE OCTEL SYSTEM

Configure the following System Parameters for the AVAYA Definity G3 integration:

6.1 SYSTEM PARAMETER TABLE

- Set System Parameter 3: PBX TYPE = 3 (AT&T)
  PBX Model = 3 (SYSTEM 75)

NOTE: Do not select "DEFINITY - ITAL" as PBX Type. This choice is intended for message servers installed in Italy.

- Set System Parameter 26: DOUBLE-INTERUPTED RINGBACK= NO

- Set System Parameter 33: PBX INITIALIZE CODE = NONE
- Set System Parameter 45: SYS. RELOAD FWD STRING = NONE
- Set System Parameter 46: SYS. RELOAD CANCEL-FWD STRING = NONE
- Set System Parameter 79: LAMP MW “ON” PRE-EXT DIGITS=NONE
- Set System Parameter 80: LAMP MW “ON” POST-EXT DIGITS=NONE
- Set System Parameter 81: LAMP MW “OFF” PRE-EXT DIGITS=NONE
- Set System Parameter 82: LAMP MW “OFF” POST-EXT DIGITS=NONE
- Set System Parameter 86: CALLERS GET MUSIC ON HOLD = NO

NOTE: Make sure this parameter is set to “NO” even if the PBX provides Music on Hold.

- Set System Parameter 112: DTMF A ON CX AND MX PORTS = NO
- Set System Parameter 117: RINGBACKS BEFORE ANSWERING AX PORT = 0
- Set System Parameter 130: DTMF A ON FORWARDED CALLS = NO
- Set System Parameter 170: INTEGRATION LAMP ON/OFF LINKS MUST MATCH = NO

NOTE: Make sure this parameter is set to “NO”. Message waiting operation will not function if parameter is set to “YES”.

- Set System Parameter 198: PCM ENCODING FOR SYSTEM = 1 where 0 (MU-LAW) or 1 (A-LAW)

NOTE: Make sure this parameter matches the DS1 Circuit Pack configuration in PBX.

- Set System Parameter 306: DPNSS/QSIG: VOICE MAIL ORIGINATING LINE ID = Enter a fictitious number that is not valid within the PBX numbering plan. This number

will be received as the calling party ID on call records for calls originating from the Octel message server that forward back into the message server, i.e. automated attendant calls, etc. If no value is entered, default value of 4000 is used.

- Set System Parameter 309: ENHANCED LAMP MWI "ON" PRE-EXTENSION DIGITS = NONE
- Set System Parameter 310: ENHANCED LAMP MWI "ON" POST-EXTENSION DIGITS = NONE
- Set System Parameter 311: ENHANCED LAMP MWI "OFF" PRE-EXTENSION DIGITS = NONE
- Set System Parameter 312: ENHANCED LAMP MWI "OFF" POST-EXTENSION DIGITS = NONE
- Set System Parameter 313: DPNSS/QSIG: VOICE MAIL DESTINATION ADDRESS = Enter number entered in the "Voice Mail Number" field on page 2 of the Hunt Group form for the Octel Hunt Group.

6.2 SLOTS TABLE

The Slots table allows the configuration of each line card and its associated ports.

Adding DTIC-E1

- From UPDATE, use the 'A SLOT' command, entering the slot number in which the card has been inserted.

  Card Type = 54 (DTC17-QSIG)
  LSPTAB = 33 (QSIG_SLV)
  Clock = 1st card installed – Primary
  2nd card installed – Secondary
  3rd card installed – Tertiary
  4th card installed - Leave blank
  5th card installed - Leave blank

- Enter information for each PORT. This should be entered/formatted as:

EXTENSION NUMBER connected to each port (1-8 digits), CLASS-OF-SERVICE (0-511), ANSWER MODE (AX, CX, MX), USE PORT FOR MESSAGE WAITING AND NETWORK OUTCALLING (Y/N), QSIG Priority Parameter (A/B).

Extension number should be set at - **None**
Test channel should be set at - **No**
Setting of the QSIG priority (the " A/B" column) should be set to **B**, giving the PBX priority on a glare condition.

example: n,254,AX,Y,B

SLOT CARD TYPE - 54 (DTC17-QSIG)

PORT	EXTENSION#	COS	MODE	OUTCALL	TEST	A/B	SYS
1	n	254	AX	YES	NO	B	1
2	n	254	AX	YES	NO	B	2
3	n	254	AX	YES	NO	B	3
4	n	254	AX	YES	NO	B	4
5	n	254	AX	YES	NO	B	5
6	n	254	AX	YES	NO	B	6
7	n	254	AX	YES	NO	B	7
8	n	254	AX	YES	NO	B	8
9	n	254	AX	YES	NO	B	9
10	n	254	AX	YES	NO	B	10
11	n	254	AX	YES	NO	B	11
12	n	254	AX	YES	NO	B	12
13	n	254	AX	YES	NO	B	13
14	n	254	AX	YES	NO	B	14
15	n	254	AX	YES	NO	B	15
16	n	254	AX	YES	NO	B	16
17	n	254	AX	YES	NO	B	17
18	n	254	AX	YES	NO	B	18
19	n	254	AX	YES	NO	B	19
20	n	254	AX	YES	NO	B	20
21	n	254	AX	YES	NO	B	21
22	n	254	AX	YES	NO	B	22
23	n	254	AX	YES	NO	B	23
24	n	254	AX	YES	NO	B	24
25	n	254	AX	YES	NO	B	25
26	n	254	AX	YES	NO	B	26
27	n	254	AX	YES	NO	B	27
28	n	254	AX	YES	NO	B	28
29	n	254	AX	YES	NO	B	29
30	n	254	AX	YES	NO	B	30

LSP table : QSIG_SLV
PRIMARY SYNC RECEIVER OF CLOCK

6.3 ROUTE TABLE

If the Route Table is configured to support a networking application, the dialing string needs to be modified for this integration.

In most common configurations, an access of 9EDXXX-YYY-ZZZZ would represent a “9” to dial outside the switch, an “E” to expect dial tone, and a D for a short delay. With QSIG integration, however, the first “D” in the dialing string is a signal to wait for a status message from the PBX (CONNECT, BUSY, etc.).

The Octel message server will stop dialing numbers after a “D” is detected within the dialing string, and will instead outpulse subsequent digits or * / # in DTMF format. In the example above, the Octel message server would only dial “9”. Because of this, and because dial tone is not expected on QSIG channels, this dialing pattern needs to be modified to 9XXX-YYY-ZZZZ.

NOTE: Other places where the “E” and “D” characters are typically used are in Information Table, Index 17 (offsite prefix digits), and possibly Index 30 (group fax number).

6.4 INFORMATION TABLE

Index 17 of the Information Table contains the digits needed to access a trunk to complete a pager or message waiting outcall. Depending on the configuration, it may also contain the phone number to reach the pager company. As with the Route Table, the “E” for "Expect Dialtone" is not needed. The “D” character, however, may be required, although it no longer specifies "delay" in the same way. The first “D” in a QSIG outdial string is a signal to (1) wait for a CONNECT message from the PBX to proceed and (2) dial out additional characters as DTMF digits.

The most common application is pager outcall. Here are two examples:

1. assume a dial string of 92437622D1234#. In this example, Information Table Index 17 contains the “9”, mailbox 1234 has an outdial string 2437622D1234 (the “D” is entered from the mailbox by pressing *), Information Table Index 20 is set to YES, and System Parameter 259 contains the “#”. Pauses or delay characters after the first “D” are treated as actual delays.

2. assume a dial string of 92437622DDD1234#, where more delays are needed before the pager company accepts input. In this example, the system "dials" 92437622 and waits for the PBX to send a CONNECT message or other call status (BUSY, VACANT...). After the CONNECT message is received, the second “D” is treated as a signal to wait for a duration equal to five times the value in System Parameter 28. The third “D” is an additional delay, and then the server sends out 1234# in DTMF signaling and disconnects.

NOTE: If the requirement is just to call an offsite number, the digits of that number can be entered without any “D” character, and the CONNECT message will be processed properly. However, if there are any non-numeric characters required after the off-site number is dialed (e.g., the dial string ends with a #), or if any numbers must be output in DTMF format, there MUST be a “D” character after the number dialed in the outcall string. Failure to adhere to this requirement will result in a Type 42 hardware error.

The Information table can also be used to provide support for the Priority Calling feature.

This feature allows for calls to ring at a station without going to call coverage. Information Table Index 6 is configured with the Priority Calling feature access code as programmed on the PBX (feature-related system parameter form, page 2). This digit string will be dialed ahead of the extension number by the O200/300 platform. The PBX, upon receiving those digits, will ring the station without providing call coverage. Information Table Index 7 controls the number of rings before reconnecting to the caller.

6.5 PORT COS TABLE

Since this is not a DTMF integration, do not assign Attributes 62 and 68 to any port classes of service.

6.6 COS TABLE

As with other adaptive integrations, classes of service assigned to mailbox users with extensions on the switch are generally assigned Attribute 6 (Call Extension First Before Playing Greeting) and Attribute 15 (Transfer to a Ringing Extension). If Attribute 15 is not assigned, when the called party answers the phone, they will hear “Connecting...” (typical of a supervised transfer). Unlike previous integrations, connection to the caller is made as soon as the call is answered; there is no need to press a key on the DTMF keypad to speed the connection.

With this integration, Attribute 34 (Transfer Calls without Checking for Busy or No Answer) is handled in exactly the same way as Attribute 15 (Transfer to a Ringing Extension). If a busy signal or a fast busy is encountered in a QSIG transfer, the message server will abort the transfer and prompt the caller regarding the busy/fast busy status.

6.7 APPLICATION DELAY TABLE

The Application Delay table contains the timing values used by the Octel 200/300 server.

The Application Delay Table for AVAYA should be correct if the PBX type of “AT&T SYSTEM 75” is selected in System Parameter 3, with the exception that the following delays must be changed. Contact Technical Support to make the changes (Level 9 access is needed to change these Application Delay values).

129	2000
130	2000
136	15000
137	3500

Determining ring cycles with a QSIG/DPNSS integration (all PBX's):

Ring cycles are calculated by multiplying index 7 of the Information table with the average ringback [on] added to the average ringback [off]

Single ringback (sys param 26 set to N)

i.e. (index 7)*(average ring time)

average ring time = $\frac{\text{application delay 53+54}}{2} + \frac{\text{application delay 55+56}}{2}$

If sys 26 is set to Y for double interrupted ringback, then delays 61-68 are averaged.

An example of this formula listed below:

Assume Information table index 7 is set to 3

APPLICATION DELAY TABLE.

INDEX	DELAY (msec.)
53	2200
54	1100
55	3300
56	2700

Using the application delay's above:

(53+54) 2200+1100=3300/2=1650 -ringback on

(55+56) 3300+2700=6000/2=3000 -ringback off

Total =4650 (1 ring cycle) x 3 (index 7) =13950

The value 13950 means the server waits 13.950 secs. for an answer.

The value of 1 ring cycle is 4.650 secs.

6.8 LSP TABLE

The LSP table (Line Scanning Processor Table) is used to download certain variables to the line cards. The LSP table used for a line card is assigned in the configuration of the 'Slots' table.

6.9 TRANSLATION TABLE

Entries in the Translation Table enable the Octel message server to convert digits received from the PBX to a different sequence of digits. If the AVAYA PBX is part of a larger switch network and the call records sent to the Octel server reflect a Node ID as well as the actual extension numbers, the Node ID must be stripped off using the Translation Table.

Following is an example of an entry for a switch with extensions in the 1XXX range and a call record that shows Node ID 41:

Device Type	Digit(s) Absorbed	Digit(s) Inserted
CPI	41	None

7.0 INSTALLING THE DTIC-E1 CARDS

Installing the DTIC-E1 cards

Refer to the installation instructions for additional information.

Check that the system is running S4.0 or higher (If it is not, an upgrade is required first. STOP). Also, load the most current QSIG software image file to the Octel server. This file can be downloaded from Octel Online, at the following URL's:

http://oww.corp.octel.com/ooinside/ssp/spatches/spatchdex.htm
(Octel Online, Internal user access) or
https://support.octel.com/ssp/spatches/spatchdex.htm
(Octel Online, Service Partners Section)

List ALL and capture to a PC for reference.
Print Application Delays and SLOTS tables. Remove analogue line card(s) from the slots table.
Replace analogue line card(s) with DTIC- E1 card.

Set up system parameters

Check and modify the Application Delay table if needed (Level 9 access is needed to change these Application Delay values).

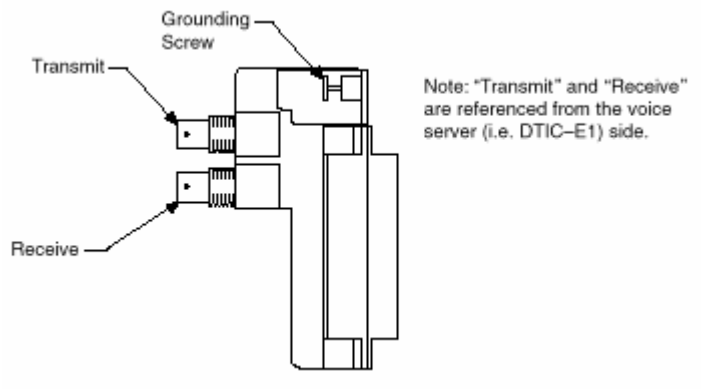
All table setup and modifications are required to be done in an UPDATE section logged in with the maintenance password.

The Hardware kit for the QSIG installation (P/N 23-DTIC-QSIG) consists of three parts.

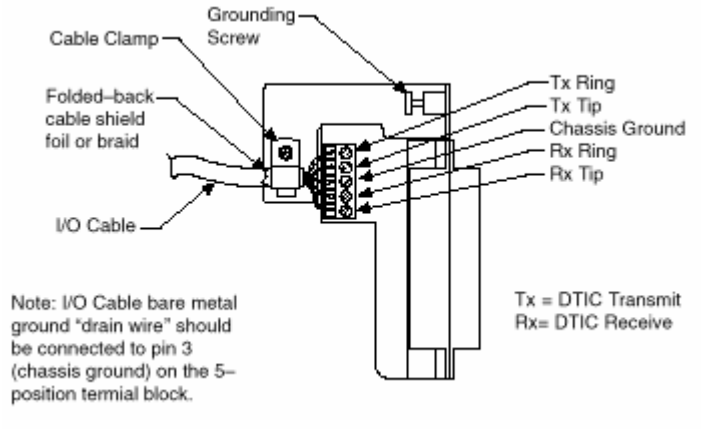
- DTIC-E1 (P/N 300-6048-003)
- 75-ohm 25-pair to BNC adapter (P/N 300-6069-001)
- 120-ohm 25-pair to 5-pos. Term. Block adapter (P/N 300-6075-001)

The 120-ohm 25-pair to 5-position terminating block adapter (P/N 300-6075-001) is preferred for this application.

Below are the diagrams for the 75-ohm and 120-ohm DTIC-E1 adapters.



75-ohm 25-pair to BNC adapter (P/N 300-6069-001)



120-ohm 25-pair to 5-pos. Terminal Block adapter (P/N 300-6075-001)

The DTIC-E1 card can be installed in any of the slots which would normally house an analogue or FAX card, (i.e. slots 1-6 on a Serenade 200, slots 1-11 on a Serenade 300).

As with all other line cards, the DTIC-E1 card can be hot plugged.
The DTIC-E1 card can be installed and configured with the system in-service; however, the system will need to be rebooted with a RESTA to activate the configuration.

For specific information on the DTIC-E1 card, including how to connect the E1 link(s), refer to the Installation and Maintenance Manual, Volume IV, Chapters 9 and 10.

NOTE: If all ports go into an "error" state after installing the card and connecting the E1 circuit to it, try reversing the transmit and receive pairs. Another indication of a circuit reversal is a type 33 error in the hardware error table.

7.1 TESTING THE INSTALLATION

Testing the installation when complete

- Create two mailboxes associated with two test extensions. Record a name and personal greeting for each mailbox. Put a different security code on each mailbox.
- Call forward the test extensions to the Octel system access number.
- Using one test extension, call the Octel Access number. You should hear "Please enter your security code". Enter the security code and verify that the correct mailbox has been accessed.
- Using one test extension, call the other test extension. You should hear the personal greeting.
- Leave a message. Verify that the message waiting indicator turns on.
- Verify that transfer to attendant works properly.
- Call the voice-processing module from a test extension. Log onto the mailbox.
- Review the message in the mailbox.
- Delete the message. Verify that the message waiting indicator turns off.

8.0 CONSIDERATIONS

Important notes regarding this integration

8.1 QSIG Integration does not support forwarding from a Vector. Currently, if calls are routed from a vector to the QSIG link(s) connected to the Octel server, the call will not pass the VDN as the called party ID. Applications requiring calls that are routed from vectors to mailboxes on the Octel server can be configured so as to route calls to phantom extensions (X-ports) configured to call-cover all-calls to the Octel hunt group.

8.2 Outcalls to pagers placed over analog trunks may fail. If the CO connecting the analog trunks to the PBX does not provide answer supervision, the Octel server will not outpulse DTMF digits to the pager terminal. This problem can be eliminated by installing a Call Classifier board in the PBX (if one is not already installed), enabling system parameter customer-option "Answer Supervision by Call Classifier", and enabling "Answer Supervision" in the Trunk Group associated with the outgoing analog trunks accessed during the outcalls. Outcalls over digital trunks are not affected.

8.3 Transfers to ringing use additional ports. When performing unsupervised transfers, and the transferred-to extension forwards back to the Octel server, additional ports are tied up on the Octel server, as "Path Replacement" does not occur. Two additional

ports are used for each number dialed through the automated attendant, and all these ports are in use until the transferred call is answered or the caller disconnects from the message server. Customers should consider implementing supervised transfers, or installing additional ports. Note that with supervised transfers, callers are not provided with music on hold, but are instead prompted to wait during the silence. The called party will hear a "Connecting" prompt as he/she answers the call.

8.4 Octel 200/300 Voice Servers can support multiple AVAYA Definity PBX's in a "centralized" voicemail arrangement only if all PBX's are connected using QSIG. If AVAYA Definity PBX's use DCS for networking, QSIG integration cannot provide full functionality to remote PBX subscribers.

8.5 Message Waiting Interrogation is a feature that allows the Definity PBX to request message waiting indicator status of subscribers' stations from the Octel 200/300 Voice Server. The following conditions will result in the PBX requesting message waiting indicators status:

- **Switch reload**. 15 minutes after a switch reload, a message waiting interrogation request will be sent to the Octel 200/300 Voice Server.
- **Interruption of service on a QSIG link**. 15 minutes after service is re-established on the QSIG link, a message waiting interrogation request is sent to the Octel 200/300 Voice Server.
- **Scheduled daily maintenance routine.** Once daily, during the scheduled maintenance period (usually around 1:00 A.M. on most switches), a message waiting interrogation request is sent to the Octel 200/300 Voice Server.

8.6 When multiple Definity PBX's are arranged in a QSIG network, care must be taken to configure the QSIG tie trunks properly. In order to provide full feature functionality to all subscribers, the trunk group(s) assigned to the QSIG tie trunks connecting all Definity PBX's in the network must match the configuration of the trunk group form (page 1 and 2 of the form) assigned to the Serenade QSIG trunks. An example of the trunk group administration form is illustrated on page 5 of this document.

8.7 Users calling into voice messaging systems using QSIG integration from off-PBX locations/long distance may experience several seconds of silence before they hear the greeting from their voice messaging system. We have found that first sending the call to a vector and then on to the appropriate hunt group or pilot number will provide the user with audible ringing tone during the call connect sequence.

Revision	Issue Date	Reason for Change
Version G	6/03	Updated Drawing on page 1; added PBX hardware requirements for CM PBXs; added sidebar text, and changed screen shot for signaling group page 5.
Version H	3/4/04	Added new consideration 8.7
Version I	4/16/04	Added note for *Path Replacement with Measurements* set to "***y*** "in *feature-related system parameters* screen.
Version J	11/24/04	Modified Application Delaly parameters in Section 6.7 as follows: Replaced 138 with value of 15000 and 139 with value of 15000 (as they applied to DPNSS integrations) with parameters 136 with value of 15000 and 137 with value of 3500.
Version K	04/25/05	Added note in sidebar regarding page 2 numbering format of Trunk Group configuration in Section 6.0
Version L	01/05/06	Changed 3rd bullet in Octel ordering information to read "DSP licenses as required."
Version M	02/01/07	Changed in Section 5.0 - Added note for multiple length extensions on system-parameter features screen.
Version N	05/21/07	Added new screens for Avaya CM 4.0 and related private-numbering format; updated sidebars; changed Dial Access parameter in trunk group screen to N. Changed trunk group page 1 numbering format to unk-unk in screen shot.

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