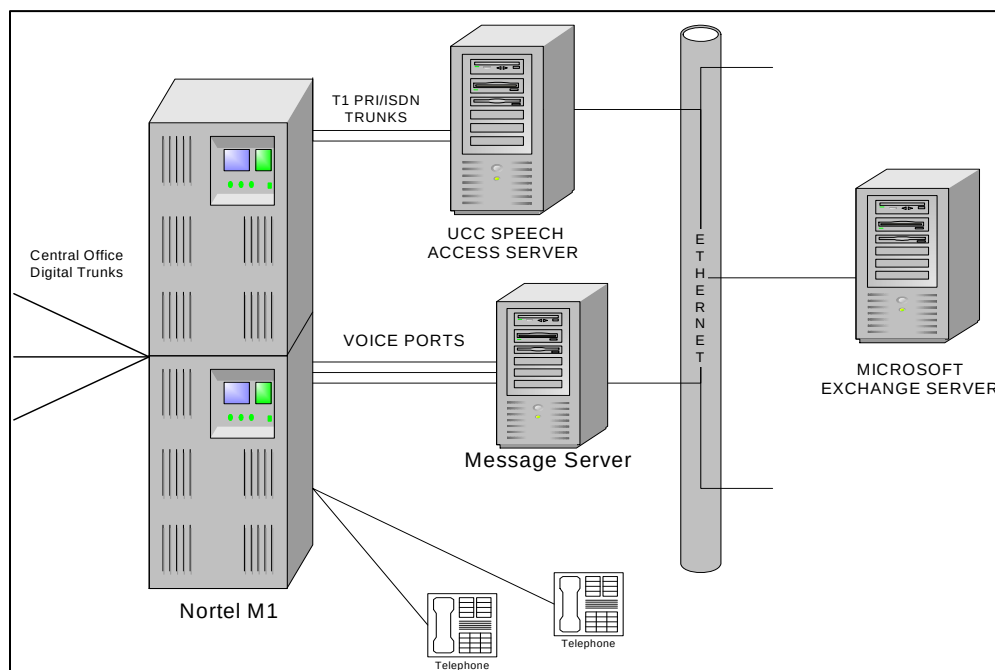


UCC /
Avaya one-X Speech
Server



Configuration Note 3605 – Version D (02/09)

UCC / Avaya one-X Speech for Nortel M1 Option 51C, 61C, and 81C, CS1000 T1 QSIG



With T1 QSIG PRI integration, the pathway between the Nortel M1 and the UCC / Avaya one-X Speech server transmits both call data information and voice communications

1.0 METHOD OF INTEGRATION

Each circuit provides 23 Bearer channels plus a Data channel (23B + D) QSIG PRI in a T1 format between the Nortel M1 and the UCC / Avaya one-X Speech server. Transmission of voice communications is performed over the 23 Bearer channels, with call information transmitted over the Data channel. An RJ-48C cable (pinout diagram provided) provides the pathway from the Nortel M1 switch to the Natural Micro Systems NMS AG4000-2T1/ 800 or AG4000-2T1/1600 (supports 23 channels) or the AG4000-4 T1/1600 (supports 46 channels) voice card within the UCC / Avaya one-X Speech server. Subscribers will be prompted for their account number and password to gain access to the speech server.

¹ AG4000 or AG4040 voice cards must have 8 DSPs per T1 or E1 span (1 DSP equals 100 MIPS, so 8 DSPs would provide 800 MIPS). For example: An AG4000-2E1/1600 (1600 MIPS) support 2 E1 spans or 60 channels, the AG4040-TE/1600 supports 2 T1 or E1 spans with 46 or 60 channels respectively.

Note: The AG4000 cards are manufactured to support T1 or E1 spans, the AG4040 and CG6060 card are software configurable for use with either T1 or E1 spans.

PBX hardware requirements**Cable Pinout****2.0 UCC / AVAYA one-X Speech ORDERING INFORMATION**

Refer to the **UCC / Avaya one-X Speech Site Prep Guide** for details on server hardware and software requirements including supported NMS T1/E1 telephony cards.

3.0 PBX HARDWARE REQUIREMENTS

- NT5D12 Dual PRI or equivalent
- NT5D16BA cable
- NTCK80AA

3.1 DS1 CABLE PINOUT

A DB 15 female connector connects to the UCC / Avaya one-X Speech T1 circuit card. (*note-Do Not Use a standard DS1 cable, we are not connecting to the public network and do not require the use of a CSU)

Pinout's from DB15 Female to RJ45 or 48

<u>DB15</u>		<u>RJ45</u>
9 ← -- R	-- →	1
1 ← -- T	-- →	2
11 ← -- R1	-- →	4
3 ← -- T1	-- →	5

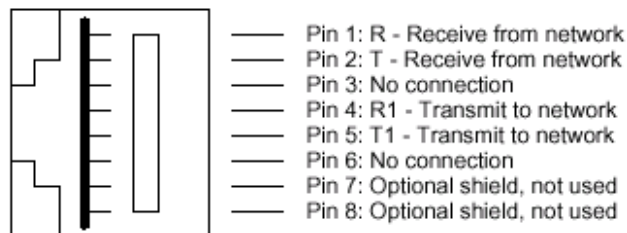
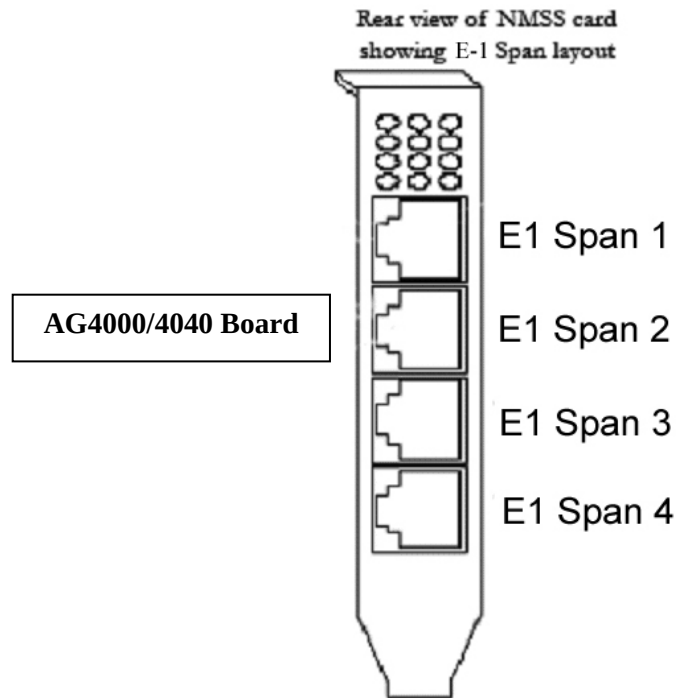
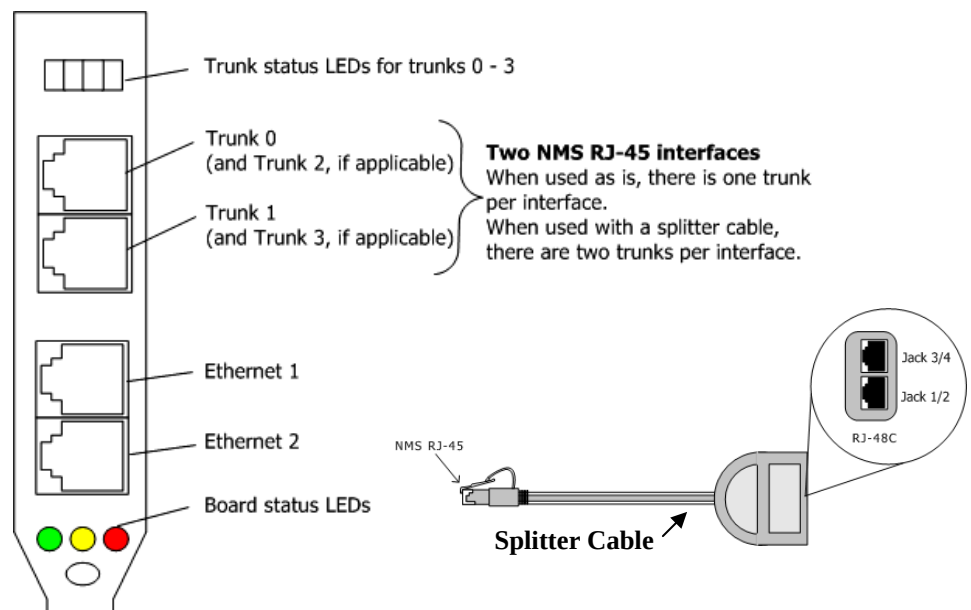


Figure 2. RJ-48C Pinouts



Note: In the diagram the circles shown above the port listed as E-1 Span 1 are LEDs. When using multiple spans, looking at the NMS card in the server, the port closest to these LEDs is span 1, next is span 2, span 3, and span 4.

The diagram below shows the connections for the NMS CG6060 board.



M1 Software Requirements

UCC / Avaya one-X Speech features

Configuring the M1 PRI card that will connect to the UCC / Avaya one-X Speech server

3.2 PBX SOFTWARE REQUIREMENTS

Generic X.11, Release 23 to Release 25 with the following:

- Network Alternate Route Selection (NARS) package 58
- Coordinated Dialing Plan (CDP) package 59
- Flexible Numbering Plan (FNP) package 160
- QSIG Interface (QSIG) package 263
- QSIG-GF Transport (QSIGGF) package 305
- QSIG Supplementary Services (QSIG-SS) package 316
- Primary Rate Access (PRI) package 146
- Multipurpose Serial Data Link (MSDL) package 222

Succession 4.5 (minimum)

4.0 SUPPORTED FEATURES

UCC / Avaya one-X Speech provides a telephone speech user interface to Microsoft Exchange information. Using speech recognition and text-to-speech technology, UCC / Avaya one-X Speech communicates with callers in spoken English, giving them telephone access to most of the functions available from their desktop Outlook software. Using UCC / Avaya one-X Speech, mobile professionals can manage electronic communications and access business computer resources through any telephone. Specifically, UCC / Avaya one-X Speech subscribers can call the system on a telephone and perform functions such as the following:

- Send and receive Voice and E-mail messages
- Check, reply to, and forward Voice and E-mail messages
- Make telephone calls and manage conference calls
- Listen to Tasks and create new Tasks
- Listen to Appointments and create new Appointments
- Look up telephone numbers and addresses in the Outlook Contacts folder or Global Address List

5.0 CONFIGURING THE PBX TO INTEGRATE

The following tasks must be completed when programming the PBX to integrate. They are as follows:

- Verify optional, Q.SIG and Call Routing Packages are installed.
(LD 22)
- Create Trunk Line Coding Format.
(LD 17- CEQU: Change to Common Equipment)
- Create the D-Channel Protocol and Configuration.
(LD 17- ADAN: Action Device And Number)
- Create the Trunk Route Data Block
(LD 16- RDB: Route Data Block)

- Create Trunk Members
(LD 14: Trunk Data Block)
- Create Digit Manipulation Index entries.
(LD 86- DGT: Digit Manipulation)
- Create Route List Block
(LD 86- RLB: Route List)
- Create Coordinated Dialing Plan (CDP) number for UCC / Avaya one-X Speech
(LD 87- CDP Coordinated Dialing Plan)
- Change subscribes' Hunt and Forwarding to new CDP number.
- Configure Link Services.
(LD 96)
- Bring link into service.
(LD 96 and 60)

Note: The following reflect the option 51C administration screens. Screens and parameters may appear different depending on switch software version. Critical entries are in **BOLD**, entries that are installation specific are in *italics*, and entries not shown use the default value.

Verify Optional Features required on the switch

> ld 22

```
REQ   prt
TYPE  pkg
OPTF   1
CUST   2
CDR    4
:
NARS   58
CDP    59
PRA    146
FNP    160
MSDL   222
QSIG   263
QSIGGF 305
QSIG-SS 316
```

Create Trunk Line Coding Format

Note: The following screen parameter samples use 14 as the loop(DLOP), and 11 as the D-Channel.

```
>ld 17
REQ chg
TYPE cequ
MPED
TERM
REMO
TERD
REMD
TERQ
REMQ
XCT
TDS
CONF
MFSD
DLOP 14 24 esf
MODE pri
LCMT
YALM
TRSH 0
DTIC
DLOP
```

Create the D-Channel Protocol and Configuration

```
>ld 17
REQ chg
TYPE adan
ADAN new dch 11
CTYP msdl
DNUM 10
PORT 3
DES SAQSIG
USR pri
IFC isgf
PINX_CUST 0
ISDN_MCNT
CLID
DCHL 14
PRI
OTBF
DRAT
SIDE net
CNEG
```

**Create the Trunk Route Data
Block**

```
RLS
RCAP COLP NDI PRI DV3I
PR_TRIGS CTR2 1 1
PR_TRIGS
PR_RTN
OVLN
OVLS
NASA
TIMR
LAPD
```

```
> ld 16

REQ new
TYPE rdb
CUST 0
ROUT 14
DES SAQSIG
TKTP tie
ESN
CNVT
SAT
RCLS
DTRK yes
BRIP
ISDN yes
MODE pra
IFC isgf
PNI
CHTY
CTYP
INAC
CPFXS
DAPC
INTC
DSEL 3VCE
PTYP pri
AUTO
DNIS
IANI
ICOG iao
SRCH rrb
TRMB yes
STEP
```

ACOD 8214
CLEN 0
TCPP
TARG
BILN
SGRP
OABS
INST
IDC
ANTK
SIGO
CNTL
DRNG
CDR
MUS
EQAR
FRL
OHQ
OHQT
CBQ
AUTH
TTBL
ATAN
PLEV
ALRM

Create Trunk Members

>ld 14

REQ new 23
TYPE tie
TN 14 1
DES SAQSIG
PDCA
PCML
CUST 0
NCOS 7
RTMB 14 1

B-CHANNEL SIGNALING
INC
MNDN
TGAR
AST
CLS dtn
TKID

NEW TRK TN 014 01 RT 14 MB 1

MEM AVAIL: (U/P): 5114376 USED U P: 114508 63147 TOT: 5292031
 DISK SPACE NEEDED: 98 KBYTES
 2MB BACKUP DISKETTE(S) NEEDED: 1 (PROJECTED LD43 - BKO)
 TNS AVAIL: 43 USED: 357 TOT: 400
 AST AVAIL: 40 USED: 0 TOT: 40
 NEW TRK TN 014 02 RT 14 MB 2

MEM AVAIL: (U/P): 5114172 USED U P: 114647 63212 TOT: 5292031
 DISK SPACE NEEDED: 98 KBYTES
 2MB BACKUP DISKETTE(S) NEEDED: 1 (PROJECTED LD43 - BKO)
 TNS AVAIL: 42 USED: 358 TOT: 400
 AST AVAIL: 40 USED: 0 TOT: 40
 :
 :

NEW TRK TN 014 23 RT 14 MB 23

MEM AVAIL: (U/P): 5109888 USED U P: 117566 64577 TOT: 5292031
 DISK SPACE NEEDED: 101 KBYTES
 2MB BACKUP DISKETTE(S) NEEDED: 1 (PROJECTED LD43
 TNS AVAIL: 21 USED: 379 TOT: 400
 AST AVAIL: 40 USED: 0 TOT: 40

Create Digit Manipulation Index entries

> ld 86

(note: This DMI entry provides the 10 digit ANI and FWD number)

REQ new
 CUST 0
 FEAT dgt
 DMI 7
 DEL
 INST
 CTYP **npa**

(note: This DMI entry provides the 2nd coverage point to Voice Mail.)

REQ new
 CUST 0
 FEAT dgt
 DMI 8
 DEL 15
 INST 2992 (note: enter the voice mail pilot number)
 CTYP **LOC**

Create Route List Block

```
>ld 86

REQ  new
CUST  0
FEAT  rlb
RLI   32
ENTR  0
LTER  no
ROUT  14
TOD
CNV
EXP
FRL   0
DMI   7 (note: Enter the first DMI entry created above)
FCI
SBOC  rra
COPT  1
OHQ
CBQ
ENTR  1
LTER  yes
TOD
FRL   0
DMI   8 (note: Enter the second DMI entry created above)
FCI
SBOC
ENTR
ISET
NALT
MFRL
```

Create Coordinated Dialing Plan (CDP) number for UCC / Avaya one-X Speech

```
>ld 87

REQ  new
CUST  0
FEAT  cdp
TYPE  dsc
DSC   2945 (note: Enter UCC / Avaya one-X Speech pilot number)
RLI   32 (note: This is the RLI number created above)
NPA
NXX
DSC
```

**Change subscriber's
Hunt and Forwarding to
new CDP number**

>ld 11

REQ: chg
TYPE: 2616
TN 8 0 10 15
ECHG yes
ITEM fdn 2945
ITEM hunt 2945
ITEM

Configure Link Services

>ld 96
.dis serv 11
.stat serv 11
DCH 011 SERV : DSBL

.enl auto 11

Bring link into service

note: if the card failed to come into service, perform the following steps:

1- Disable D channel.

>ld 96
BACKGROUND SESSION 0 ABORTED.
DCH000
.dis dch 11
.
DCH: 11 RLS CONFIRM TIME: 20:12:00 25/09/2002

stat dch 11
DCH 011 : DSBL RST AUTO
DES : SAQSIG

2-Disable pri and re-enable PRI loop.

>ld 60
.disl 14

OK

.stat 14

PRI* TRK LOOP 14 - DSBL
FFMT/LCMT/YALMT: ESF/B8Z/FDL
.enll 14

PRI000 14 14
DTA023 14

OK

.
DCH: 11 EST CONFIRM TIME: 20:15:54 25/09/2002
stat 14

PRI* TRK LOOP 14 - ENBL
FFMT/LCMT/YALMT: ESF/B8Z/FDL
SERVICE RESTORE: YES
YEL ALM PROCESS: YES
ALARM STATUS : NO ALARM
CH 01 - IDLE TIE 3VCE * CH 02 - IDLE TIE 3VCE *
CH 03 - IDLE TIE 3VCE * CH 04 - IDLE TIE 3VCE *
CH 05 - IDLE TIE 3VCE * CH 06 - IDLE TIE 3VCE *
CH 07 - IDLE TIE 3VCE * CH 08 - IDLE TIE 3VCE *
CH 09 - IDLE TIE 3VCE * CH 10 - IDLE TIE 3VCE *
CH 11 - IDLE TIE 3VCE * CH 12 - IDLE TIE 3VCE *
CH 13 - IDLE TIE 3VCE * CH 14 - IDLE TIE 3VCE *
CH 15 - IDLE TIE 3VCE * CH 16 - IDLE TIE 3VCE *
CH 17 - IDLE TIE 3VCE * CH 18 - IDLE TIE 3VCE *
CH 19 - IDLE TIE 3VCE * CH 20 - IDLE TIE 3VCE *
CH 21 - IDLE TIE 3VCE * CH 22 - IDLE TIE 3VCE *
CH 23 - IDLE TIE 3VCE * CH 24 - DCH 11

3-Return to load 96, verify D-Channel is in the established (EST) state.

>ld 96
BACKGROUND SESSION 0 ABORTED.
DCH000
.stat dch 11
DCH 011 : OPER EST ACTV AUTO
DES : SAQSIG

4-If the D-Channel isn't in the established(EST) state, enabled it.

.enl dch 11
.
DCH: 11 EST CONFIRM TIME: 20:23:20 25/09/2002

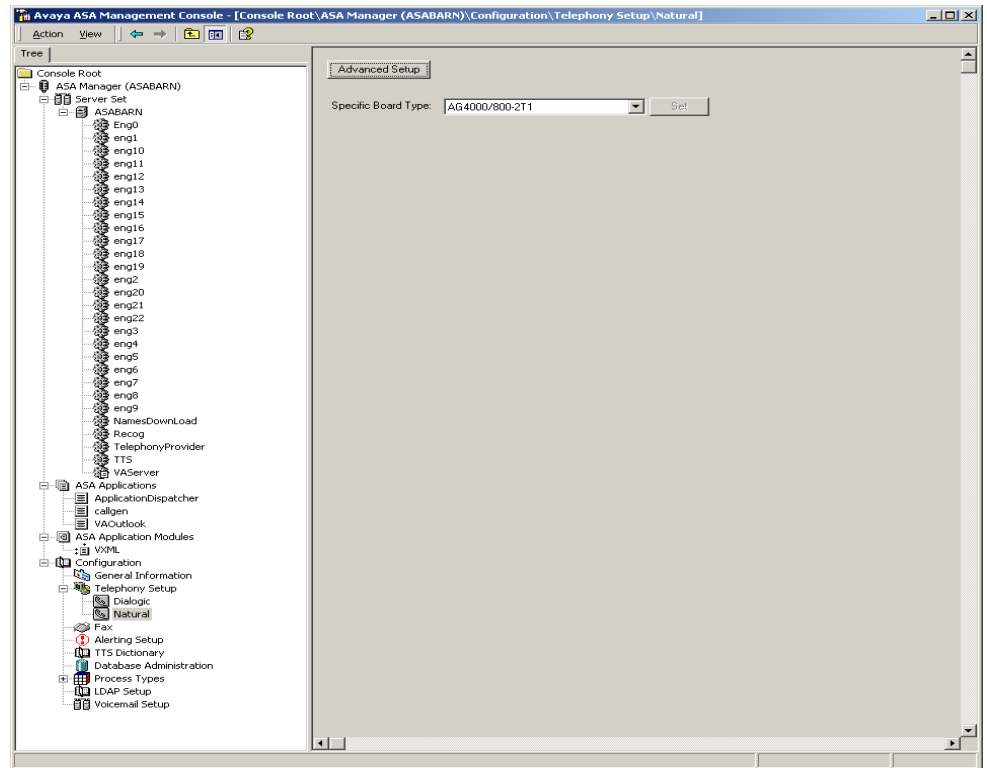
stat dch 11
DCH 011 : OPER EST ACTV
DES : SAQSIG

- continued on next page -

MMC Telephony Requirements

6.0 MMC Telephony Requirements

On the UCC / Avaya one-X Speech Management Console telephony setup panel (Configuration -> Telephony Setup) select the appropriate board installed.



On the UCC / Avaya one-X Speech Management Console telephony setup panel (Configuration -> Telephony Setup->Advanced Setup) select ECMA QSIG for the ISDN variant used.

- continued on next page -

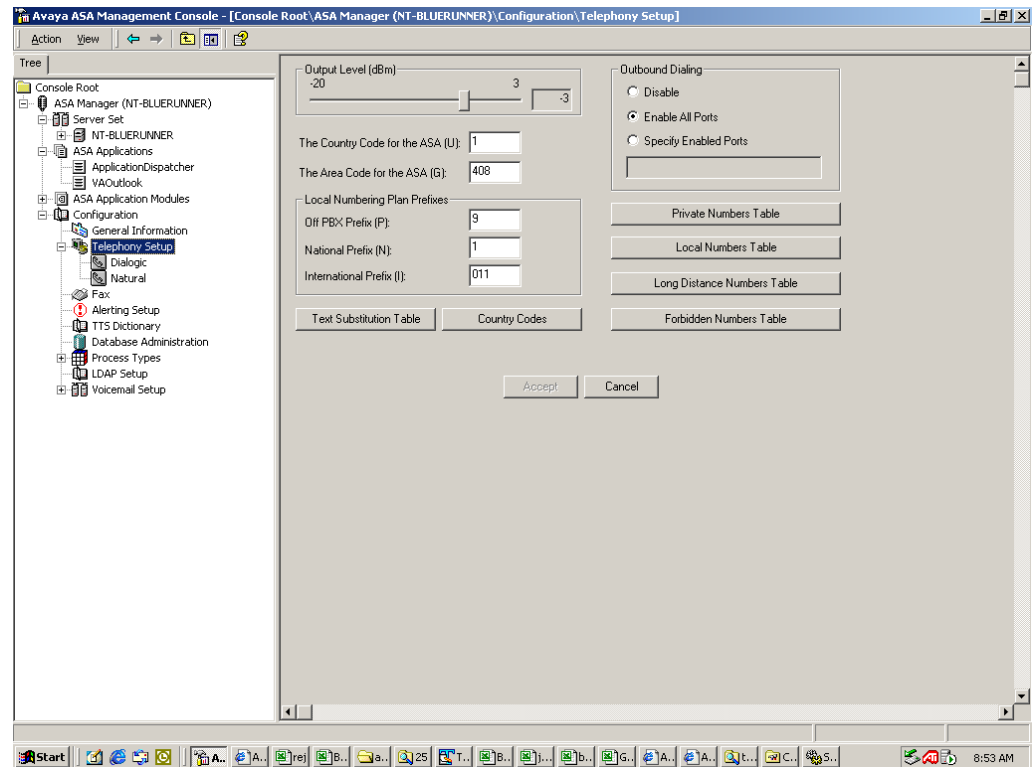
The screenshot shows a Windows-style dialog box titled "Natural Microsystems Advanced Telephony Settings Properties". It has several tabs: "Audio", "Signaling", "Conferencing", "Faxing", "ISDN" (which is selected), "Analog", "H.323", and "SIP". The "ISDN" tab contains the following settings:

- "ISDN Variant Used:" is a dropdown menu set to "ECMA QSIG".
- "Country of ISDN Switch:" is a dropdown menu set to "United States".
- "Number of Active PRI lines:" is a numeric spinner box set to "1".
- "Equipment Termination Type:" is a dropdown menu set to "User Termination".
- "Line Coding:" is a group box containing two radio buttons: "Mu-Law" (which is selected) and "A-Law".

At the bottom of the dialog box are three buttons: "OK", "Cancel", and "Apply".

On the UCC / Avaya one-X Speech Management Console telephony setup panel (Configuration -> Telephony Setup), new fields have been added for long-distance dialing. These fields must be set, or long-distance dialing will not function properly in the UCC / Avaya one-X Speech application. The fields are:

- continued on next page -



To access an outside line:

For local calls, dial: (usually 9, verify code on PBX)

For long distance calls, dial: (91 or 81, verify code on PBX)

Country Code for UCC / Avaya one-X Speech is: (usually North America)

The Area Code for UCC / Avaya one-X Speech is: (area code this UCC / Avaya one-X Speech server resides)

Prefix for International Numbers is: (9011 or 8011, verify code on PBX)

Local Extensions:

- **Max. Extension Length:** (verify on PBX)
- **Extensions Treated As Local Calls:** (typically 911 and 411, verify with customers dial plan)

Refer to the UCC / Avaya one-X Speech Administration Manual to administer the Number Tables.

*****Note: The TelephonyProvider process has to be restarted after administering the MMC Telephony options.**

Testing the NMS installation

7.0 TESTING THE NMS INSTALLATION

To verify the NMS board is working properly, use the trunkmon utility.

Run the digital trunk monitor utility - *trunkmon*

Trunkmon monitors alarms and gathers performance statistics for T1 trunks. A T1 alarm state is entered upon the presence of a Red, Yellow, or Blue alarm.

Status indicator LED's:

The AG 4000 board has three (red, yellow, and green) indicators (LEDs) for each trunk on the end of the bracket board. Each indicator is repeated four times for each of the trunks for a total of 12 indicators (LEDs)

LED	Description
Red	Indicates loss of frame, loss of signal, or bit rate error.
Yellow	Indicates remote loss of frame or remote loss of signaling multiframe.
Green	Indicates proper frame sync to the trunk: all requires framing has been found. This LED is off if one or more of the following conditions exist: - All ones alarm (A1S) - Loss of frame - Loss of signaling multiframe - CRC errors (when board is configured for ESF)

To run *trunkmon*, enter the following at the command prompt:

```
trunkmon -b<board>
```

If no T1 cables are connected to the AG 4000 board, *trunkmon* shows a loss of frame sync (*Frame sync: No Frm*) and an alarm state on all trunks. The red alarm LED on the front panel should be lit for all trunks.

Connect a crossover cable between any two trunks on the AG Quad board. The Frame Sync status should immediately change to *OK* and the green LEDs for those trunks will light. The remote alarm (yellow) LEDs will light to show that the trunk is indicating an alarm state to the other side. About 15 seconds after frame sync has been acquired, both trunks leave the alarm state, *trunkmon* indicates *none* for the alarm status and the red and yellow alarm LEDs go out. The frame sync (green) LEDs remain lit.

Loopback Configuration

The crossover cable connects transmit from one trunk to receive on another trunk by connecting the pins as shown in Figure 3 below.

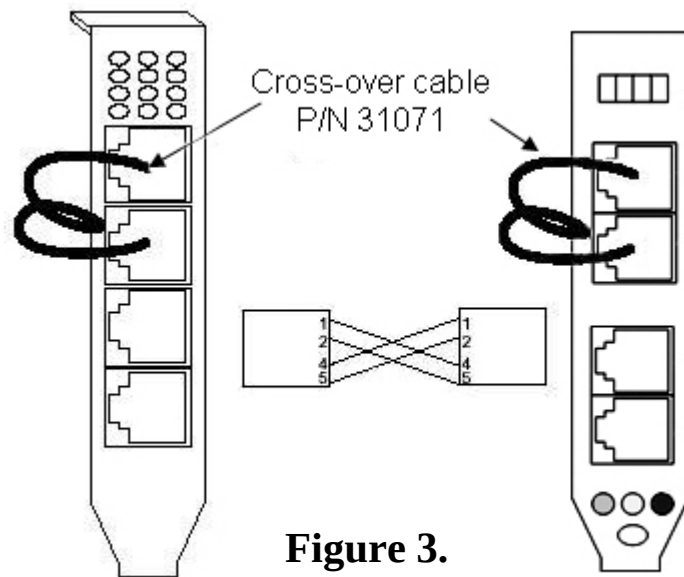


Figure 3.

Note: You can connect the AG4000 or AG4040 board (left side) or CG6060 (right side) in loopback mode to test your digital trunk application without actually connecting to the telephone network. Figure 3 shows the loopback configuration connecting trunk 1 and trunk 2 with cross-over cable P/N 31071 on an AG4000 or AG4040 board.

-continued on next page -

Testing the UCC / Avaya one-X Speech Application

7.1 Testing the Application

- ☐ Create a new Outlook profile for the test mailbox.
- ☐ Send two e-mail messages to the newly created Outlook test mailbox.
- ☐ Send two test voice mail messages to the telephone extension associated with the test mailbox.
- ☐ Create tasks in the Outlook test mailbox **Tasks** folder.
- ☐ Create a contact in the Outlook test mailbox **Contacts** folder.
- ☐ Check the properties of your mailbox to ensure that the contact you created is a valid mailbox address.
- ☐ Call the UCC / Avaya one-X Speech pilot number for your system and enter the account number and password when prompted.
- ☐ Record your name and greeting
- ☐ Speak the following voice commands to the UCC / Avaya one-X Speech server to verify functionality:

Say "Read my messages." Verify first message read.

Say "Mark this message as read." Verify the message has been read

Say "How many tasks do I have?"

Say "Read my appointments," then follow the prompts.

Say "Send a message," then send a message to yourself

Say "Create an appointment," then follow the prompts.

Say "Read my voice mail." Verify the action.

Say "Delete this message," review Deleted Items folder.

Say "Dial a number" speak a telephone number. While the telephone is

ringing, say "Avaya, come back" When UCC / Avaya one-X Speech returns, say "Drop line 1."

Say "Goodbye" and hang up to end the UCC / Avaya one-X Speech session.

-continued on next page -

8.0 CONSIDERATIONS/ALTERNATIVE

8.1 Set the following features:

<u>Number</u>	<u>Feature name</u>
145	ISDN Signaling - DCP (115) - NTWK (148) - PRA (146) /BRI (216) for call pickup Network wide (Rel. 21 or higher)
146	ISDN Primary Rate Access - PBXI (75) - ISDN (145) - DDSP (19) for CLID
147	ISDN Signaling Link - ISDN (145)
148	Advanced Network Service - NARS (58) or CDP (59) - PRA (146) or ISL (147) - NSIG (37) for tandem node

8.2 It is recommended that the incoming /outgoing trunks to the PBX supporting the UCC / Avaya one-X Speech application be digital T1's. This will provide a higher level in clarity when supporting the speech recognition engine.

8.3 UCC / Avaya one-X Speech must be administered on the switch as the first coverage point after the primary destination, (e.g. the user's desk phone), and the user's voicemail as the second coverage point to support the "Reach Me" feature. The switch will pass to UCC / Avaya one-X Speech calling number (i.e. ANI) and redirect number (i.e. original called number). Since the switch call coverage path has been changed to include UCC / Avaya one-X Speech as the first coverage point after the primary destination, if a subscriber has his extension to a Do-Not-Disturb (DND) mode, the call will go to UCC / Avaya one-X Speech. UCC / Avaya one-X Speech will attempt to find the subscriber although his extension is in a DND mode. To prevent this, and achieve equivalent Send All Calls/Do-Not-Disturb functionality, the UCC / Avaya one-X Speech subscriber must use the UCC / Avaya one-X Speech "Hold My Calls" voice command or turn on the GUI Web "Do-Not-Disturb" option.

8.4 When a call goes to cover, the Nortel PBX may supply only a 4-digit DNIS or Called Party ID number. But when a subscriber calls UCC / Avaya one-X Speech directly the Nortel may supply the Calling Party ID as a 10-digit number. For the integration to work with Reach Me the phone number of each subscriber needs to be the 4-digit extension. Then add an Express logon of the

10-digit number in each account so direct calls from extensions would only need to enter their password.

DOCUMENT HISTORY

Revision	Issue Date	Reason for Change
Version A	06/01/07	Initial release.
Version B	03/03/08	Product Name change. UCC to UCC / Avaya one-X Speech
Version C	05/16/08	Updated information to show support of CG6060 board.
Version D	02/16/09	Updated for one-X Speech 5.0 release. Added Succession to minimum supported PBX release, added CS1000 on title page

©2009 AVAYA Inc. All rights reserved. All trademarks identified by the ®, SM and TM are registered trademarks, servicemarks or trademarks respectively. All other trademarks are properties of their respective owners. The above information is based on knowledge available at the time of publication and is subject to change without notice. Printed in U.S.A.

AVAYA Inc.
1033 McCarthy Blvd.
Milpitas, CA 95035
(408) 577- 7000
<http://www.avaya.com>