

Avaya Solution & Interoperability Test Lab

# Application Notes for Configuring Interalia XMU+ with Avaya Aura<sup>™</sup> Communication Manager using Line-Side T1 – Issue 1.0

## Abstract

These Application Notes describe the configuration steps for provisioning Interalia's XMU+ system to successfully interoperate with Avaya Aura<sup>™</sup> Communication Manager using Line-Side T1. XMU+ is a voice application platform that supports multiple applications.

Information in these Application Notes has been obtained through DevConnect Compliance Testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

# 1 Introduction

These Application Notes describe the compliance tested configuration using Interalia's XMU+ solution with Avaya Aura<sup>TM</sup> Communication Manager using Line-Side T1. The XMU+ is a microprocessor-based voice application platform that supports multiple applications simultaneously on a port-by-port basis. Typical XMU+ applications supported with Line side connectivity are as follows:

- ACD/UCD announcements
- Auto attendant
- Voicemail/IVR Failover
- Information Lines

The Interalia system used for the test will consist of a XMU+ server connected to Avaya Aura<sup>TM</sup> Communication Manager via a Line Side T1 on the Avaya G650 Media Gateway. A DS1 card in the Avaya G650 Media Gateway is set to the T1 dipswitch and is used to connect to the Interalia system. Link Failure\Recovery was also tested to ensure successful reconnection on link failure.

## 1.1 Interoperability Compliance Testing

The interoperability compliance test included both feature functionality and serviceability testing. The feature functionality testing focused on verifying that the voice application response is activated in various scenarios and testing includes:

- Verification of connectivity between XMU+ and Avaya Aura<sup>TM</sup> Communication Manager
- Verification that interactive voice response occurs in various telephony operations using ACD announcement application
- Verification that interactive voice response occurs in various telephony operations using Voicemail application
- Verification that interactive voice response occurs in various telephony operations using Information Lines application
- Failover testing of the XMU+ system and Avaya Aura<sup>TM</sup> Communication Manager

The serviceability testing focused on verifying the ability of the XMU+ system to recover from disconnection such as power supply failure.

## 1.2 Support

Technical support can be obtained for Interalia's XMU+ as follows;

- Email: <u>support@interalia.com</u>
- Website: www.interalia.com
- Phone: +1 800 531 0115 (Toll Free)

# 2 Reference Configuration

**Figure 1** shows the network topology during compliance testing. An Avaya S8500B Server running Communication Manager with an Avaya G650 Media Gateway was used as the hosting PBX. XMU+ is connected to the Communication Manager using the DS1 board set to Line-side T1.



Figure 1: Network Topology

# 3 Equipment and Software Validated

All the hardware and associated software used in the compliance testing is listed below.

Equipment	Software Version
Aveve S8500P Server	Avaya Aura <sup>™</sup> Communication Manager
Avaya 38500B Server	5.2.1 (R015x.02.1.016.4)
Avaya G650 Media Gateway	
- IPSI TN2312BP	HW15, FM49
- CLAN TN799DP	HW01, FM34
- IP Media Processor TN2602AP	HW02, FM49
- DS1 Interface TN246CP	HW02, FM024
- Analog Line TN793CP	HW09, FW10
Avaya 96xx Telephones (H.323)	
9630	3.0
Interalia XMU+	Firmware version: V6.82
	Software: XMUCOM+ V7.25
- Line-Side T1 Card	PT # 47367 – T24

#### Table 1: Hardware and Software Version Numbers

## 4 Configure Avaya Aura<sup>™</sup> Communication Manager

The configuration and verification operations illustrated in this section were all performed using Communication Manager System Administration Terminal (SAT). The information provided in this section describes the configuration of Avaya Aura<sup>™</sup> Communication Manager for this solution. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 9**. The configuration operations described in this section can be summarized as follows:

- Verify System Parameters Customer Options
- Add DS1 Board
- Add DS1FD Stations
- Add Announcements
- Administer COR
- Confirm country Setting
- Administer Hunt Group, Vector and VDN
- Administer Agent Logins
- Administer Stations
- Add Feature Access Codes

The configuration of the PRI interface to the PSTN is outside the scope of these Application Notes.

#### 4.1 Verify System Parameters Customer Options

Use the **display system-parameters customer-options** command to verify that Communication Manager has permissions for features illustrated in these Application Notes. On **Page 6**, verify the following customer options are set to **y** as shown below.

- ACD? to y
- Vectoring (Basic)? to y
- Expert Agent Selection (EAS)? to y

display system-parameters customer-option. CALL CENTER OPTI	s Page 6 of 11
Call Center Rei	ease: 5.0
ACD? y	Reason Codes? n
BCMS (Basic)? y	Service Level Maximizer? n
BCMS/VuStats Service Level? n	Service Observing (Basic)? y
BSR Local Treatment for IP & ISDN? n	Service Observing (Remote/By FAC)? n
Business Advocate? n	Service Observing (VDNs)? n
Call Work Codes? n	Timed ACW? n
DTMF Feedback Signals For VRU? n	Vectoring (Basic)? y
Dynamic Advocate? n	Vectoring (Prompting)? n
Expert Agent Selection (EAS)? y	Vectoring (G3V4 Enhanced)? n
EAS-PHD? n	Vectoring (3.0 Enhanced)? n
Forced ACD Calls? n	Vectoring (ANI/II-Digits Routing)? n
Least Occupied Agent? n	Vectoring (G3V4 Advanced Routing)? n
Lookahead Interflow (LAI)? n	Vectoring (CINFO)? n
Multiple Call Handling (On Request)? n	Vectoring (Best Service Routing)? n
Multiple Call Handling (Forced)? n	Vectoring (Holidays)? n
PASTE (Display PBX Data on Phone)? n	Vectoring (Variables)? n

Use the command **display system-parameters features** for verification of feature parameters. On **Page 11**, verify that the **Expert Agent Selection (EAS) Enabled?** option is set to **y** as shown below.

display system-parameters features	Page 11 of 17
FEATURE-RELATED SYSTEM	PARAMETERS
CALL CENTER SYSTEM PARAMETERS	
EAS	
Expert Agent Selection (EAS) Enabled?	У
Minimum Agent-LoginID Password Length:	
Direct Agent Announcement Extension:	Delay:
Message Waiting Lamp Indicates Status For:	station

#### 4.2 Add DS1 Board

A DS1 board is set up as the Line-Side T1 connection. Ensure that the physical board on the G650 is set to 120 ohms and 24 channels. On Communication Manager use the command; **add ds1 n** to add the DS1 card where **n** is the physical slot number on the G650. Set the values to correspond to those expected on the physical XMU+ system.

- Name: Enter in a descriptive name, T1 Board is used in this case.
- Bit Rate: This is set to 1.544
- Line Coding: Set this value to b8zs to correspond to the XMU+ value used
- Signaling Mode: This is set to robbed-bit.

```
add ds1 01a10
                                                                       1 of
                                                                              2
                                                                Page
                                DS1 CIRCUIT PACK
           Location: 01A10
                                                      Name: T1 Board
           Bit Rate: 1.544
                                              Line Coding: b8zs
  Line Compensation: 1
                                              Framing Mode: esf
      Signaling Mode: robbed-bit
Interface Companding: mulaw
          Idle Code: 11111111
      Slip Detection? n
                                        Near-end CSU Type: other
  Echo Cancellation? n
```

#### 4.3 Add DS1FD Stations

A number of DS1FD stations were added to the Line-Side T1 board. To add a station use the command **add station n** where **n** is a valid extension in the dial plan table in Communication Manager. Set the values as follows:

- **Type:** This is set to **DS1FD**
- **Port:** Enter in one of the 24 available port numbers on the T1 card, in this case **01a1001.**
- Name: Enter a descriptive name, such as LineSide 1

```
add station 5010
                                                                 Page
                                                                        1 of
                                                                                4
                                     STATION
Extension: 5010
                                         Lock Messages? n
                                                                         BCC: 0
    Type: DS1FD
                                         Security Code:
                                                                          TN: 1
    Port: 01A1001
                                       Coverage Path 1:
                                                                         COR: 1
    Name: LineSide 1
                                       Coverage Path 2:
Hunt-to Station:
                                                                         COS: 1
                                                                       Tests? y
STATION OPTIONS
                                           Time of Day Lock Table:
             Loss Group: 4
   Off Premises Station? y
      R Balance Network? n
          Survivable COR: internal
   Survivable Trunk Dest? y
```

#### 4.4 Add Announcements

An announcement is added for each music or message to be played by the XMU+. Use the command; **add announcement n** where **n** is a valid extension under the provisioned dial plan. Add an **Annc Name**, in this case **ACD2**. The **Annc Type** is set to **ds1-fd** and the **Port** is set to a valid T1 port, in this case, **01a1005**.

add announcement 5050		Page	1 of	1
	ANNOUNCEMENTS/AUDIO SOURCES			
Extension: 5050 Annc Name: ACD2 Annc Type: dsl-fd Port: 01a1005	COR: 1 TN: 1 Queue? y Queue Length: 0			

Repeat the above process to create two more announcements. The list of announcements created is shown below by using the **list announcement** command.

list announcement				
	ANNOU	NCEMENTS/AUDIO SOURCES		
Announcement			Source	Num of
Extension	Туре	Name	Pt/Bd/Grp	Files
3100	integrated	monday night	01A08	1
3200	integrated	Greeting 1st Hold	01A08	1
3300	integrated	PC3 Inbound	01A08	1
5040	ds1-fd	ACDI	01A1004	1
5050	ds1-fd	ACD2	01A1005	1
5060	ds1-fd	ACD3	01A1006	1
6070	analog	IVR1	01A0507	1
6100	analog	IVR2	01A0510	1

#### 4.5 Administer COR

Set the Class of Restriction (COR) for the stations to be used in compliance testing to enable music on hold for these stations. Use the command **change cor 1** where **1** is the COR assigned to the stations in **Section 4.9**. On **Page 1**, set the parameter **Hear System Music on Hold?** to **y**.

```
change cor 1
                                                                                            Page
                                                                                                      1 of 23
                                           CLASS OF RESTRICTION
                     COR Number: 1
              COR Description:
                               FRL: 0
                                                                                      APLT? y
  Can Be Service Observed? y Calling Party Restriction: none
an Be A Service Observer? y Called Party Restriction: none
Can Be A Service Observer? y

      Can Be A Service Observer: y
      Canted Tally Reserved and y

      Partitioned Group Number: 1
      Forced Entry of Account Codes? n

      Priority Queuing? n
      Direct Agent Calling? y

      Restriction Override: none
      Facility Access Trunk Test? n

       Restricted Call List? n
                                                               Can Change Coverage? n
                                                        Fully Restricted Service? n
                Access to MCT? y
Group II Category For MFC: 7
            Send ANI for MFE? n
                                                          Add/Remove Agent Skills? y
                                                         Automatic Charge Display? n
                MF ANI Prefix:
Hear System Music on Hold? y PASTE (Display PBX Data on Phone)? n
                                  Can Be Picked Up By Directed Call Pickup? y
                                                   Can Use Directed Call Pickup? y
                                                   Group Controlled Restriction: inactive
```

#### 4.6 Confirm Country Setting

Ensure that the country options set for the Communication Manager correspond to the call progress tones set in Section 5.2. Use the command display tone-generation. On Page 1 ensure that the Base Tone Generator Set value is set to the country option expected, in this case the value is set to 1.

```
    display tone-generation
    Page
    1 of
    21

    TONE GENERATION

    Base Tone Generator Set: 1

    440Hz
    PBX-dial Tone? n
    440Hz Secondary-dial Tone? n
```

#### 4.7 Administer Hunt Group, Vector and VDN

Administer a hunt group, vector and Vector Directory Number (VDN). The VDN and vector were created to route to the XMU+ for the purpose of the compliance testing.

#### 4.7.1 Hunt Group

Enter the **add hunt-group n** command where **n** is an unused hunt group number. On **Page 1** of the **Hunt Group** form, assign a **Group Name** and **Group Extension** valid under the provisioned dial plan. Set the following options to **y** as shown below.

- ACD to y
- Queue to y
- Vector to y

add hunt-group 1		Pag	re	1 of	3	
	UTINIT	CROTIR				
	HONI	GROUF				
Group Number:	1	ACD?	v			
Concern Norma	-	0	-			
Group Name:	XMU	Queue?	У			
Group Extension:	3090	Vector?	У			
Group Type:	ucd-mia					
T	1					
1 IN •	1					
COR:	1	MM Early Answer?	n			
Security Code:		Local Agent Preference?	n			
TSDN/STD Callor Display.		2				
15DN/SIF Caller Display.						
Queue Limit:	unlimited					
Calls Warning Threshold:	Port:					
Time Warning Threshold:	Port:					

On Page 2, set the Skill field to y as shown below.

add hunt-group 1 Page 2 of 3 HUNT GROUP Skill? Y AAS? n Measured: internal Supervisor Extension: Controlling Adjunct: none Redirect on No Answer (rings): Redirect to VDN: Forced Entry of Stroke Counts or Call Work Codes? N

#### 4.7.2 Vector

Enter the **change vector n** command, where **n** is set to **1**. Enter the vector steps to queue to the **Skill 1** as shown below. If skill 1 is unavailable the vector is routed through to the announcements residing on the T1 ports.

```
change vector 1
                                                                   Page
                                                                           1 of
                                                                                  6
                                   CALL VECTOR
    Number: 1
                              Name: IVR
                                                                           Lock? n
    Basic? y EAS? y G3V4 Enhanced? y ANI/II-Digits? y ASAI Routing? y
Prompting? y LAI? y G3V4 Adv Route? y CINFO? y BSR? y Holidays? y
Variables? y 3.0 Enhanced? y
01 queue-to skill 1 pri m
02 wait-time 6 secs hearing music
03 announcement 5040
04 wait-time 6 secs hearing music
05 queue-to skill 1 pri m
06 announcement 5050
07 wait-time 6 secs hearing music
08 queue-to skill 1 pri m
09 announcement 5050
10 wait-time6secs hearing music11 goto step09if unconditionally
12 disconnect after announcement
change vector 1
                                                                           2 of
                                                                   Page
                                                                                  6
                                   CALL VECTOR
13 stop
```

#### 4.7.3 Vector Directory Number (VDN)

Enter the **add vdn n** command, where **n** is an unused VDN number. The VDN chosen is **1800**. On **Page 1** assign a **Name \*** for the VDN, set the **Destination** to **Vector Number** as **1** and **1**<sup>st</sup> **Skill** to **1**.

```
add vdn 1800
                                                                   Page
                                                                          1 of
                                                                                 3
                            VECTOR DIRECTORY NUMBER
                             Extension: 1800
                                 Name*: IVR
                           Destination: Vector Number
                                                              1
                    Allow VDN Override? n
                                   COR: 1
                                   TN*: 1
                              Measured: none
                            1st Skill*: 1
                            2nd Skill*:
                            3rd Skill*:
* Follows VDN Override Rules
```

14

#### 4.8 Administer Agent Logins

Enter the **add agent-loginID n** command; where **n** is a valid extension under the provisioned dial plan. The agent **Login ID** chosen is **6001** and the **Password** is set to **6001**. Enter a descriptive name for the agent in the **Name** field. Ensure the **COR** field is set to **1** which relates to the COR configured in **Section 4.5**.

add agent-loginID 6001		Page 1	of 2
5 5	AGENT	LOGINID	
Login ID:	6001	AAS?	n
Name:	IVR Agent 1	AUDIX?	n
TN:	1	LWC Reception:	spe
COR:	1	LWC Log External Calls?	n
Coverage Path:		AUDIX Name for Messaging:	
Security Code:			
		LoginID for ISDN/SIP Display?	n
		Password:	6001
		Password (enter again):	6001
		Auto Answer:	station
		MIA Across Skills:	system
		ACW Agent Considered Idle:	system
		Aux Work Reason Code Type:	system
		Logout Reason Code Type:	system
Max	kimum time age	ent in ACW before logout (sec):	system
		Forced Agent Logout Time:	:
WARNING: Agent must	log in again	Forced Agent Logout Time: before changes take effect	:

On **Page 2**, specify the list of skills assigned to the login and the skill level for each of them in the **SN/SL** field as shown below. In this case set the Skill Number, **SN** to **1** and the Skill Level, **SL** to **1**.

Add	ager	nt-loginID	6001				Page	2 of	2
				AGENT	LOGINID				
	D	irect Agent	Skill:			Se	rvice Obje	ective?	n
Call	L Har	ndling Pref	erence: sk	ill-level		Local	Call Prefe	erence?	n
	SN	RL <b>SL</b>	SN	RL SL	SN	RL SL	SN	RL SL	
1:	1	1	16:		31:		46:		
2:			17:		32:		47:		

#### 4.9 Administer Stations

A number of stations were set up and used as agent phones during the compliance testing. Use the command; **add station n** where **n** is a free extension according to the dial plan. On **Page 1**, set the **Type** to **9630** and enter in a name in the **Name** field. Set the **COR** to **1** to correspond with **Section 4.5**.

add station 3000		Page	1 of	E 5	
		STATION			
Extension: 3000 <b>Type: 9630</b> Port: S00002 <b>Name: S1</b>		Lock Messages? n Security Code: 3000 Coverage Path 1: Coverage Path 2:		BCC: TN: COR: COS:	0 1 <b>1</b> 1
STATION OPTIONS		Hunt-to Station:			
Loss Group:	19	Time of Day Lock Table: Personalized Ringing Pattern: Message Lamp Ext:	1 3000		
Speakerphone: Display Language: Survivable GK Node Name:	2-way english	Mute Button Enabled? Button Modules:	О Л		
Survivable COR: Survivable Trunk Dest?	internal y	Media Complex Ext: IP SoftPhone?	n		

#### 4.10 Add Feature Access Codes

Feature Access Codes are added on the Communication Manager for logging in agents for the purposes of compliance testing. Enter the command **change feature-access-codes** and on **Page 5** add the following values to the Automatic Call Distribution Features:

#2

#7

After Call Work Access Code	#8
-----------------------------	----

|--|

- Aux Work Access Code #4
- Login Access Code #6
- Logout Access Code #5
- Manual-in Access Code



# 5 Configure the XMU+

The following section documents the necessary steps taken to configure the XMU+ to Communication Manager.

### 5.1 Installing XMU+

Start the install of the XMU+ by opening the zip file **xmucom7.25sftw.zip** and running the **setup.exe** file as shown.

WinZip ·	xmuco	m7.25s	ftw.z	ip								
Actions	View .	Jobs Op	itions	Help								
	-	R	0	Ro	R	2		9	R	1		
New	Open	Favo	rites	Add	Extract	Mail	Encrypt	View	Install	Wizard	View Style	
Name				Туре 🔺	Mo	dified		Size Ratio	Packed	Path		
				incon ripp								

A **Preparing to Install** screen appears below.



A welcome screen appears next. Click Next to continue with the install.



On the **Customer Information** screen enter in the **User Name** and **Organization** and click **Next**.

XMUCOM+ V7.25 - InstallShield Wizard	
Eustomer Information	
Please enter your information.	
User Name:	
Avaya	
Organization:	
Avaya	
Tostall this application for:	
Appreciation for the uses this computer (all users)	
Only for me (Avaya)	
stallShield	

Choose your install destination on the Destination Folder screen and click Next.



Review the selected settings and click Install.

eady to Install the Program The wizard is ready to begin insta	llation.	
If you want to review or change a exit the wizard.	any of your installation se	ettings, click Back. Click Cancel to
urrent Settings: Setun Type:		
Typical		
Destination Folder:		
C:\Program Files\		
User Information:		
Name: Avaya		
Company: Avaya		
peter and		

A screen appears showing the status of the install.

stalling	XMUCOM+ ¥7.25
The prog	ram reacures you selected are being installed.
P	Please wait while the InstallShield Wizard installs XMUCOM+ V7.25. This may take several minutes. Status:

A screen appears to indicate the successful install of the product. Click Finish to complete it.

🔀 XMUCOM+ V7.25 - Inst	allShield Wizard 🛛 🕅
	InstallShield Wizard Completed
	The InstallShield Wizard has successfully installed XMUCOM+ V7.25. Click Finish to exit the wizard.
	<back cancel<="" finish="" td=""></back>

Restart the pc to allow configuration changes to take effect. Choose the Yes button to restart.



## 5.2 Configuring the XMU+

Open the XMUCOM+ program in the installed directory. Select File  $\rightarrow$  New  $\rightarrow$  XMU+ Configuration.



The **Config Builder** form is displayed which is the main IVR\Auto-Attendant configuration screen. Populate this form with music and message files. A completed form is displayed below.

Communica	ation Configura	ation Administration	Window About			
		ബിസി ലി				
Config Bu	ilder					
		141 V.Z				
Config Bu	uilder: Parti	tion 1				
MSG	CMD LIST	DATE TIME XEER	STYLE DTME AUTO VOX MOH PAAS TABLE NIS	DBN D	TR   Quick Nor	te l
internet internet						
Partition	View Edit		Integrity Check Find Node(s) Call Flow View MSG Dire	ctory Refr	Partition	1
	Chat an	Incate	[New]	Detail	MSC 1	
#	Status	Node	Label		: PI3G 1	1
1		MSG 1	Greeting	_		
2		MSG 2	Options	LABEL	1	Greeting
3		MOG 4	Press 1,2,3, choice	MAX_L	ENGTH(sec):	0
7		MSG 4	Invalid selection	STATE	:	ON
5		MSG 5	Please hold for XIT	DTME:		IGNORE
7		MSG 0	Busy 1	Backur	to Elach Memory	VEC
/		MSG 7	Busy 2	Dackup	o cops	165
8		MSG 8	No Answer	ACCES	S CODE:	
9		MSG 9	If you know the no. dial now	FILE N	AME:	P01M001.WAV
10		MSG 10	Information menu options	DIREC	TORY:	C: Documents and Settings gadams. INTERU
12		MSG 11	Company address msg	COMM	ENT:	
12		MSG 12	Company FAX details msg			
13		MSG 13	Mistrai music	-1		
14		CMD 1	Invalid selection node			
15		CMD 2	MOH pause 10 seconds	_1		
16		XFER I	Sales ext 3000			
1/		XFER 2	Accts ext 3001	<u> </u>		
18		XFER 3	tech support 3005			
19		XFER 4	Reception ext U	— 1		
20		AFER 5	Auto transfer			
21		STILE 1	Plind 500ms			
22		STILE 2	Dartial 500mg	_		
23	_	DTME 1	Faruar 20000s			
27 25		UTST 1	List of messages			
26	*		Main TVR greeting			
27		AUTO 2	Main IVR - no greeting msg			
28	*	MOH 1	MOH channel 1			
20		MOH 2	MOH 2			
		10112				
				_		

Note the highlighted entries in the screen above with an \* as their **Status**. Once the configuration is built the line card needs to be set to Auto 1 as this is the starting node and is shown by the \* against its status in the screen shot above.

By double clicking the AUTO 1 entry from the Config builder screen the AUTO 1 entry below will appear so the settings can be reviewed and edited. Double-click the entry for the **Node** displaying **AUTO 1** to open it for editing and the **AUTO Node Editor** screen appears as shown below. It displays set **Prompts**, **Actions** and **Exceptions**.

AUTO Node Editor						
II II	AUTO 1 💌 1 of 2	2 🕨 🕨		Label:	Main IVR greeting	
Prompts				Exception	s	
Order	Command/Node	Label			Command/Node	Label
1	MSG 1	Greeting		Timeout	XFER 4	Reception ext 0
2	MSG 9	If you know the		Invalid	CMD 1	Invalid selection
3	MSG 2	Options	-	Abort	XFER 4	Reception ext 0
Add Incort	Domovo Edit	1 10		*	NOOP	
Adu Insert	Remove Eur	Op	'n	#	NOOP	
Actions	Command/Node	Label				Edit Default
1-1	XFER 1	Sales ext 3000		Numb	er of Digits:	5 💌
2-2	XFER 2	Accts ext 3001		Terminating Digits		
3-3	XFER 3	tech support 3005		Terminating Digit:		No 💌
4-4	DTMF 1	Information Menu		Retry Limit:		1 🔻
3000-3010	XFER 5	Auto transfer				
62000-63000	XFER 5	Auto transfer		Selec	tion Time Out(sec):	5 💌
Add Insert Quick Assign	Remove Edit	Up Dow	'n	Digit	Time Out(sec):	2
	[	OK Car	ncel	Apply		

In order to manage a call, the XMU+ will monitor for a busy or no answer indication, this is achieved by setting the Style node. This can be accessed through the **STYLE** tab as highlighted below. Within the configuration builder note the transfer styles that require setting (Blind, Partial or Supervised).

#         S           #         S           1         2           3         4           5         6           7         8	er: Partition 1 LIST DATE ew Edit itatus No Mi Mi Mi Mi Mi Mi Mi Mi Mi Mi Mi Mi Mi	TIME XFER STY	LE DTMF AUTO VOX MOH PAAS TABLE NIS tegrity Check Find Node(s) Call Flow View MSG Direct Label Greeting Options	DBN DIR Quick No ory Refresh Partition ( Detail: MSG 1	de
#         S           1         2           3         4           5         6           7         8	IST DATE	TIME XFER STY	LE DTMF AUTO VOX MOH PAAS TABLE NIS tegrity Check Find Node(s) Call Flow View MSG Direct Label Greeting Options	DBN DIR Quick No ory Refresh Partition	
Imss         CMD           Partition         Vie           #         S           1         2           3         4           5         6           7         8	LIST DATE	TIME XFER STY	LE         DTMF         AUTO         VOX         MOH         PAAS         TABLE         NIS         1           tegrity Check         Find Node(s)         Call Flow View         MSG Direct           Label         Greeting         Options         Greeting	DBN DIR Quick No ory Refresh Partition	
Partition Vie # S 1 2 3 4 5 6 7 8	itatus No Mi Mi Mi Mi Mi Mi	Dete SG 1 SG 2 SG 3	Label Greeting Ootions	ory Refresh Partition	1
Partition         Vie           #         S           1         2           3         4           5         6           7         8	itatus No Mi Mi Mi	ode SG 1 SG 2 SG 3	Label Greeting Ootions	Detail: MSG 1	
# S 1 2 3 4 5 6 6 7 8	itatus No Mi Mi Mi Mi	ode SG 1 SG 2 SG 3	Label Greeting Options	Detail: M5G 1	T
# S 1 2 3 4 5 5 6 7 8	itatus No M M M M M M	ode SG 1 SG 2 SG 3	Label Greeting Options	Detail: MSG 1	1
1 2 3 4 5 6 7 8	MS MS MS MS	SG 1 SG 2 SG 3	Greeting Options		
2 3 4 5 6 7 8	MS MS MS	SG 2 SG 3	Options		
3 4 5 6 7 8	M: M:	SG 3		LABELS	Greeting
4 5 6 7 8	M		Press 1,2,3, choice	MAX I ENCTH(res)	0. County
5 6 7 8	M	SG 4	Invalid selection	MAX_LENGTH(SEC);	0
6 7 8		SG 5	Please hold for xfr	STATE:	ON
7 8	M	SG 6	Busy 1	DTMF:	IGNORE
8	M	SG 7	Busy 2	Backup to Flash Memory:	YES
	M	SG 8	No Answer	ACCESS CODE:	
9	M	5G 9	If you know the no. dial now	FILE NAME:	P01M001.WAV
10	M	SG 10	Information menu options	DIRECTORY:	C:\Documents and Settings\gadams.INTERUK
11	M	SG 11	Company address msg	COMMENT:	
12	M	5G 12	Company FAX details msg		
13	M	5G 13	Mistral music	_	
14	C	MD 1	Invalid selection node	_ ]	
15	CI	MD 2	MOH pause 10 seconds	- 1	
16	XF	-ER 1	Sales ext 3000	- 1	
1/	XH	-ER Z	Accts ext 3001	- 1	
18	XF	TER 3	tech support 3005	- 1	
19		TER 4	Reception ext 0	-1	
20	AF CT	THE	Auto transfer	- 1	
21	51	TVIED	Plind 500ms	- 1	
22	10	TVIE 2	Partial 500mc	- 1	
24	51	TME 1	Information Menu		
25	LT	ST 1	List of messages		
26 *	- ΔI	UTO 1	Main IVR greeting		
27	AL	UTO 2	Main IVR - no greeting msg		
28 *	= M	OH 1	MOH channel 1		
29	M	OH 2	MOH 2		
1945.1		NGC 475 GBC			

By double clicking the **Style 1** entry from the Config builder screen the Style 1 entry below will appear so the settings can be reviewed and edited. As the T1 card is using the North American PBX settings the transfer style shows the **Hook Flash (msec)** being set as **500ms** in order to perform the transfer / retrieval of a call.

abel: Full 500r	ns
Supervised	
C BLIND	C PARTIAL       FULL
	C ENHANCED
look Flash (msec):	500 💌
ransfer:	
Disconnect:	
Threshold:	Low
Retrieve:	[,]
Busy Retry (sec):	4
Num Retries:	3 •
Ring Limit:	8 🔻
Busy On (msec):	500 -
Busy Off (msec):	500 -
Ring On (msec):	1000
Ring Off (msec)	2000

Alter the Hook Flash values according to the call progress tones set for country option as referred to in **Section 4.6**.

During the monitoring of a call, it is possible to inform the caller of their progress. In the main configuration builder window you can edit calls transfers i.e. Xfer 2. Click on the **XFER** node as highlighted in the diagram below.

Carles Pro	1000001				
Config Bu	llider				
Config B	uilder: Partit	ion 1			
(meen)				pour la pro la cumura	e f
: MSG :	CMD LIST	DATE TIME XFER S	TYLE DIMP AUTO VOX MOH PAAS TABLE NIS	DBN DIR QUICK NOC	
Partition	View Edit		Integrity Check Find Node(s) Call Flow View MSG Direc	tory Refresh Partition	1
			1	- r	
#	Status	Node	Label	Detail: MSG 1	
1		MSG 1	Greeting	P.	
2		MSG 2	Options	LABEL:	Greeting
3		MSG 3	Press 1,2,3, choice	MAX_LENGTH(sec):	0
4		MSG 4	Invalid selection	STATE	ON
5	-	MSG 5	Please hold for xfr	DTME	ICNORE
6		MSG 6	Busy 1	Dirin.	IGNORE
/	-	MSG /	Busy 2	Backup to Flash Memory:	TES
8		MSG 8	No Answer	ACCESS CODE:	
10		MSG 9	If you know the no. dial now	FILE NAME:	P01M001.WAV
10	-	MSG 10	Company address msg	DIRECTORY:	C:\Documents and Settings\gadams.INTERUK
17		MSG 12	Company EAX details msg	COMMENT:	
12		MSG 13	Mistral music	- 1	
14		CMD 1	Invalid selection node	-	
15		CMD 2	MOH nause 10 seconds	-	
16		XEER 1	Sales ext 3000		
17		XEER 2	Accts ext 3001	- 1	
18		XFER 3	tech support 3005	- 1	
19		XFER 4	Reception ext 0		
20		XFER 5	Auto transfer		
21		STYLE 1	Full 500ms		
22		STYLE 2	Blind 500ms		
23		STYLE 3	Partial 500ms		
24		DTMF 1	Information Menu		
25		LIST 1	List of messages		
26	*	AUTO 1	Main IVR greeting		
27		AUTO 2	Main IVR - no greeting msg		
28	*	MOH 1	MOH channel 1		
29		MOH 2	MOH 2		
				- 1	

By double clicking the XFER 2 entry from the Config builder screen highlighted in the screen above the **XFER 2** entry below will appear so the settings can be reviewed and edited. During the transfer to the extension, if the extension is busy, messages 6 and 7 (**MSG 6** and **MSG 7**) will play according to the Xfer Style. If there is no answer then the **No Answer** message (**MSG 8**) will play.

	1999 Anna Anna Anna Anna Anna Anna Anna A	
: 3001		
e: STYLE	1 Full 500ms	
ceptions		
	Command/Node	Label
Hold	MSG 5	Please hold for xfr
ЮН	NOOP	
Busy 1	MSG 6	Busy 1
Busy 2	MSG 7	Busy 2
lo Answer	MSG 8	No Answer
Answer	BEEP	
		544   D.5.

Note that whilst carrying out the fully supervised transfers the status mode on the front of the XMU+ display can indicate the B, b, B etc or R, r, R as an indication of the call progression.

## 5.3 Configuring XMU+ cards

As the XMU+ can house multiple cards, the screen below shows an example of the XMU+ card configuration in a large XMU+ chassis. The first card is a standard DSP Hybrid 01 line card, followed by an MOH card and then two empty spaces as the T1 card can only reside in the first or fifth slot.

Ele Communication Configuration Memory About	🔀 XHUCOM+ Version 7.25 - C\Documents and Settings\gadams.INTERUK\Desktop\Avaya\Auto IVR T1.xmp	_ 8 ×
Image:	Ele <u>Communication</u> Configuration Administration <u>Window</u> About	
Image: Section Section Section Stating Node       Volume Mode       NIS Option EWT Option       Label         Image: Section Section Section Section Stating Node       Volume Mode       NIS Option EWT Option       Label         Image: Section Se		
Edit       Close	XMU+ Card Configuration	
Card No. Card Type       Line       Partition       Starting Node       Volume       Mode       NIS Option       EWT Option       Label         B       2       MOH       B       4       No Card       B	XMU+ Card Configuration	
Edit Close	Card No.         Card Type         Line         Partition         Starting Node         Volume         Mode         NIS Option         EWT Option         Label           田         1         Hydrid-01         Hydrid-	
	Edit Close	

Select the first card and then edit the card by clicking **Edit** to show the details below. The first card is the Hybrid-01

X	Card Edit	or							×
	Hybrid-0							Default Edit.line(s)	
1									1
	Input	Partition	Starting Node	Volume	Mode	NIS Option	EWT Option	Label	L
	1	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
	2	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
	3	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
	4	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
	5	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
	6	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
	7	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
	8	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled		L
									1
			Γ	ОК	Ca	ncel	Apply		
			L						
				n la	1- Hybrid-01	<b>T</b> 10	f5 🕨 💵	1	
					J1-119010-01				

The fifth card is the T1 card, notice how this card takes up slots 5, 6, 7 as indicated by the three tabs present, as each slot is addressing 8 lines hence 3x8 = 24 channels.

X	ard Edit	or						X		
	T1							Default Edit line(s)		
5	6	7								
	Input	Partition	Starting Node	Volume	Mode	NIS Option	EWT Option	Label		
	1	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
	2	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
	3	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
	4	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
	5	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
	6	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
	7	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
	8	Partition 1	AUTO 1	High	R= 1	Disabled	Disabled			
OK Cancel Apply										
	14 4 5-T1 <b>V</b> 50f5 b bl									

The following screen shows ACD messaging configuration on the XMU+ T1 card. The **Starting Node** reads **CMD1** in first slot and **MSG 2** in second slot. ACD messaging was also tested on the XMU+ T1 card. The ports used in the compliance test are as follows: Port 1=5010, Port 2=5020, Port 3=5030, Port 4=5040, Port 5=5050, Port 6=5060. These ports are shown in the screen below.

🔀 Card Editor										
T1 Default Edit line(s)										
5	5 6 7									
	Input	Partition	Starting Node	Volume	Mode	NIS Option	EWT Option	Label		
	1	Partition 1	CMD 1	High	R= 1	Disabled	Disabled	port 5010		
	2	Partition 1	MSG 2	High	R= 1	Disabled	Disabled	port 5020		
	3	Partition 1	LIST 1	High	R= 1	Disabled	Disabled	port 5030		
	4	Partition 1	CMD 1	High	R= 1	Disabled	Disabled	port 5040		
	5	Partition 1	MSG 2	High	R= 1	Disabled	Disabled	port 5050		
	6	Partition 1	LIST 1	High	R= 1	Disabled	Disabled	port 5060		
	7	Partition 1	EMPTY	High	R= 1	Disabled	Disabled			
	8	Partition 1	EMPTY	High	R= 1	Disabled	Disabled			
OK     Cancel     Apply       IM     5-T1     5 of 5										

Each of the CMD and MSG nodes can be represented by a number of steps e.g. CMD 1 consists of Table 1 followed by MSG 1 which is a Greeting message.

X CMD Node Editor									
H	< CMD 1 V	1of 1 → ▶I							
Label:	ACD message - Gree	ting							
Actions									
Order	Command/Node	Label							
1	TABLE 1	Time of greeting							
2	MSG 1	Greeting							
Add	Insert Remove	Edit Up (							
Ouick A	ssion	Down							
OK Cancel Apply									

Solution & Interoperability Test Lab Application Notes 2010 Avaya Inc. All Rights Reserved

Table 1 in the screen below shows a series of actions to be taken at different times of the day.

_	de Edito	TABLE 1	1of1 → →	
Label:	Time of	greeting		
Mode:	Time		<b>•</b>	
Invalid:	NOOP	• •	-	
Continue:	MSG	▼ 1 ▼		
Actions				_
Range		Command/Node	Label	_
00:00 - 12	2:00	MSG 7	Good morning	
12:00 - 18	3:00	MSG 8	Good afternoon	
18:00 - 23	3:59	MSG 9	Good evening	_
Add	Inser	t Remove f	Edit Up	
Add Quick /	Inser Assign	t Remove f	Edit Up Down	

# 6 General Test Approach and Test Results

The test approach was to validate the correct operation of typical interactive voice response applications such as ACD Announcements, Voicemail etc. The following results were obtained:

- Confirmation that interactive voice messages are played as expected in different call scenarios
- Confirmation that messages and music are routed successfully as expected
- Confirmation of good quality audio in all test cases
- Successful recovery of XMU+ after failover testing
- Successful recovery of Communication Manager after failover testing.

The tests were all functional in nature and performance testing was not included. All the test cases passed successfully.

# 7 Verification Steps

This section provides the tests that can be performed to verify correct configuration of Communication Manager and XMU+ configuration using Line-Side T1.

## 7.1 Verify Avaya Aura<sup>™</sup> Communication Manager Status

The following steps can ensure that the communication between Communication Manager and the XMU+ is functioning correctly via the Line-Side T1.

#### 7.1.1 Test DS1 Board

Test the DS1 board to ensure connectivity by running the command **test board 01a10** where 01a10 is the DS1 board located on slot 10 in the G650 cabinet as set up in **Section 4.2**. The DS1FD stations 5010 and 5020 on the T1 ports are in use.

test board 01a10								
TEST RESULTS								
Port	Mtce Name	Alt. Name	Test No.	Result	Error Code			
01A10	UDS1-BD		138	PASS				
01A10	UDS1-BD		139	PASS				
01A10	UDS1-BD		140	PASS				
01A10	UDS1-BD		141	PASS				
01A10	UDS1-BD		142	PASS				
01A10	UDS1-BD		143	PASS				
01A10	UDS1-BD		144	PASS				
01A10	UDS1-BD		145	PASS				
01A10	UDS1-BD		146	PASS				
01A10	UDS1-BD		1227	ABORT	1951			
01A1001	OPS-LINE	5010	312	PASS				
01A1001	OPS-LINE	5010	36	PASS				
01A1023	OPS-LINE	5020	312	PASS				
01A1023	OPS-LINE	5020	36	PASS				

#### 7.1.2 Status of DS1FD Stations

Check the status of the DS1FD stations set up in Section 4.3 by running the command status station 5010. On Page 1 the Service State is in-service/on-hook.

```
status station 5010
                                                                           1 of
                                                                    Page
                                                                                   4
                              GENERAL STATUS
     Administered Type: DS1FD
                                           Service State: in-service/on-hook
       Connected Type: N/A
          Port: 01A1001Parameter Download: not-applicableCall Parked? noSAC Activated? noCut Off Act? noSAC Activated? no
     Ring Cut Off Act? no
Active Coverage Option: 1
                                     one-X Server Status: N/A
                                 Off-PBX Service State: N/A
         EC500 Status: N/A
  Message Waiting:
   Connected Ports:
 Limit Incoming Calls? no
                                                 HOSPITALITY STATUS
User Cntrl Restr: none
                                              Awaken at:
Group Cntrl Restr: none
                                               User DND: not activated
                                              Group DND: not activated
                                            Room Status: non-guest room
```

#### 7.2 Verify XMU+ Status

The Status window, as highlighted below, on the display on the front of the XMU+, can be used to verify the communication of the XMU+. It is accessible by pressing the right arrow to enter the Status window. This shows the call flow as calls are made and received by the interactive voice response system.



#### 8 Conclusion

These Application Notes describe the configuration steps required for Interalia XMU+ to successfully interoperate with Avaya Aura<sup>™</sup> Communication Manager 5.2.1 using Line-Side T1. All functionality and serviceability test cases were completed successfully.

#### **Additional References** 9

This section references the Avaya and Interalia XMU+ product documentation that are relevant to these Application Notes. Product documentation for Avaya products may be found at

http://support.avaya.com

- 1. Administering Avaya Aura<sup>TM</sup> Communication Manager, Release 5.2; Document No. 03-300509, May 2009
- 2. DEFINITY Enterprise Communications Server Release 9 System Description 555-233-200, Issue 2, November 2000

The Interalia documentation can be found at the following location: http://www.interalia.com/Products/XMU/XMU-Overview

#### ©2010 Avaya Inc. All Rights Reserved.

Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by  $\mathbb{R}$  and  $\mathbb{T}M$  are registered trademarks or trademarks, respectively, of Avaya Inc. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at <u>devconnect@avaya.com</u>.