



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for DiVitas Mobile Unified Communications with Avaya Modular Messaging – Issue 1.0**

### **Abstract**

These Application Notes describe the configuration steps required to provide voicemail coverage to DiVitas Clients registered to DiVitas Mobile Unified Communications using Avaya Modular Messaging. The DiVitas solution provides the seamless convergence of WiFi and cellular networks enabling roaming (back and forth) between the two networks. The DiVitas Server accesses voicemail from Avaya Modular Messaging using the IMAP interface. The DiVitas Clients running on Nokia E- and N-Series mobile handsets can then retrieve, playback, and delete voicemail messages using their visual voicemail application. DiVitas Clients are mapped to desktop phones on Avaya Communication Manager.

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 configuration steps required to provide voicemail coverage to DiVitas Clients registered to DiVitas Mobile Unified Communications (Mobile UC) using Avaya Modular Messaging. The DiVitas solution provides the seamless convergence of WiFi and cellular networks enabling roaming (back and forth) between the two networks. The DiVitas Server accesses voicemail from Avaya Modular Messaging using the IMAP interface. The DiVitas Clients running on Nokia E- and N-Series mobile handsets can then retrieve and playback voicemail messages using their visual voicemail application. DiVitas Clients are mapped to desktop phones on Avaya Communication Manager.

The focus of these Application Notes is on how to enable voicemail coverage for the DiVitas Clients. This solution requires that the configuration described in [5], *Application Notes for DiVitas Mobile Unified Communications and Avaya Communication Manager and Avaya SIP Enablement Services*, is also implemented.

## 1.1. Interoperability Compliance Testing

The focus of the interoperability compliance test was to verify that the DiVitas Server can access voicemail messages stored in the Message Storage Server (MSS) of Avaya Module Messaging using the IMAP interface, and that the DiVitas Client running on Nokia E71 mobile handsets can retrieve, playback, and delete the voicemail message on their visual voicemail application. The general test approach was to verify the following functionality:

- Voicemail coverage for the DiVitas Clients in WiFi mode<sup>1</sup>.
- Leaving voicemail for DiVitas Clients and verifying through the visual voicemail application that there are new messages.
- Retrieving and playing back the voicemail message on the DiVitas Client.
- Verifying that deleting the voicemail message through the DiVitas Client visual voicemail application also deletes the message from the MSS.
- Verifying that logging into Modular Messaging and deleting voicemail messages also deletes it from the DiVitas Client visual voicemail application.
- Reply/forward messages when logged into Modular Messaging.
- Testing of the Find Me and Call Me features on Modular Messaging with the DiVitas Clients.

## 1.2. Support

For technical support on the DiVitas Mobile Unified Communications Solution and how to configure dual mode handsets connected to it, consult the support pages at <http://www.divitas.com/support.html> or contact technical support at:

- Telephone: (866) 857-6087
- E-Mail: [support@divitas.com](mailto:support@divitas.com)

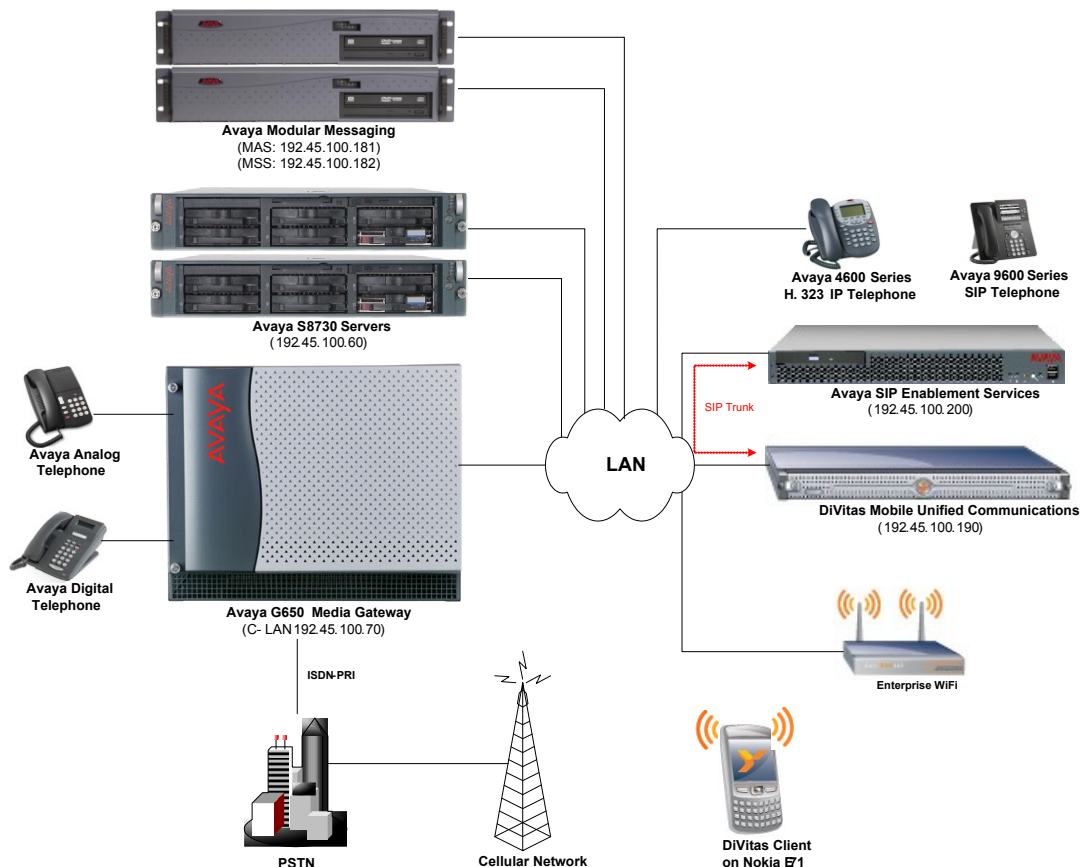
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<sup>1</sup> A DiVitas Client in cellular mode can only retrieve voicemail messages when it uses a Cellular Data Channel (CDC) to communicate with the DiVitas Server. In this configuration, a Cellular Voice Channel (CVC) was used. See the note in Section 2 for more information on CVC.

## 2. Reference Configuration

**Figure 1** illustrates a sample configuration consisting of a pair of Avaya S8730 Servers running Avaya Communication Manager, an Avaya G650 Media Gateway, Avaya Modular Messaging, Avaya SIP Enablement Services (SES), and dual-mode wireless telephones registered with DiVitas Mobile Unified Communications. Avaya Modular Message consisted of a Message Application Server (MAS) and a Message Storage Server (MSS). Each DiVitas Client was paired with an H.323 IP telephone on Avaya Communication Manager. A SIP trunk was established between the DiVitas Mobile UC Server and Avaya SES and the DiVitas Mobile UC Server was configured as a trusted host in Avaya SES. The Avaya G650 Media Gateway connected to the PSTN via an ISDN-PRI trunk. The Avaya G650 Media Gateway connected to the LAN via an ISDN-PRI trunk.

**Note:** While a DiVitas Client is in Cellular mode, it communicates with the DiVitas Mobile UC Server through a Cellular Voice Channel (CVC). The DiVitas Client places a call using a PSTN number assigned to the DiVitas Mobile UC Server. CVC enables the client to make and receive voice calls and use voice features such as hold and resume. CVC supports multiple simultaneous calls and is used when the Cellular Data Channel (CDC) is not available, which requires a public IP address assigned to the DiVitas Mobile UC Server. In this configuration, a CVC was used which doesn't allow retrieving voicemail messages when a DiVitas Client in Cellular mode. This requires a CDC.



**Figure 1: DiVitas Mobile Unified Communications with Avaya SIP-based Network**

### 3. Equipment and Software Validated

The following equipment and software/firmware were used for the sample configuration provided:

Equipment	Software/Firmware
Avaya Modular Messaging (MAS & MSS)	5.0
Avaya S8730 Server with G650 Media Gateway	Avaya Communication Manager 5.1.1 (R015x.01.1.415.1) with Service Pack 2.01 (Patch 19688)
Avaya SIP Enablement Services	5.1.1. (SES-5.1.1.1-415.1)
Avaya 4600 Series IP Telephones	2.8 (H.323)
Avaya 9600 Series IP Telephones	2.0.4 (SIP)
Avaya 6400 Series Digital Telephones	--
Avaya Analog Telephones	--
DiVitas Mobile Unified Communications	2.7.0.0.18
DiVitas Client on Nokia E71	2.7.0.0.18

**Table 1: Equipment and Software Validated**

## 4. Configure Avaya Communication Manager

This section provides the procedures for configuring Avaya Communication Manager. The procedures include the following areas:

- Verify Customer Options for H.323/QSIG Trunking
- Configure H.323 IP Trunk to Avaya Modular Messaging
- Administer QSIG TSC and Extension Length
- Create Hunt Group (Pilot Number) and Coverage Path
- Configure Call Routing to Avaya Modular Messaging
- Create Voicemail Subscribers

Avaya Communication Manager was configured using the System Access Terminal (SAT). Refer to [1] for additional details.

### 4.1. Verify Customer Options for H.323/QSIG Trunking

Avaya Modular Messaging supports various PBX integrations, such as SIP, ISDN/QSIG, and H.323/QSIG. In this configuration, an H.323/QSIG integration was implemented. For this solution, the following software features must be enabled in the **System Parameters Customer Options** form on Avaya Communication Manager.

- IP Trunk & IP Station Ports
- ISDN-PRI
- H.323 Trunks
- Private Networking
- QSIG Features:
  - Basic Call Setup
  - Basic Supplementary Services
  - Supplementary Services with Rerouting
  - Transfer into QSIG Voice Mail
  - Value-Added (VALU)

### 4.2. Configure H.323 IP Trunk to Avaya Modular Messaging

This section covers the configuration of the H.323 IP trunk between Avaya Communication Manager and Avaya Modular Messaging, including the IP node names, IP network region, and IP codec set.

In the **IP Node Names** form, associate a name with the IP addresses of Avaya Modular Messaging and the C-LAN board in the Avaya G650 Media Gateway.

change node-names ip		Page 1 of 2
IP NODE NAMES		
Name	IP Address	
clan2	192.45.100.70	
DEVMA5	192.45.100.181	

**Figure 2: IP Nodes Names**

Define the IP network region. Although IP-IP direct audio is enabled in the IP network region, it will be disabled on the H.323 IP signaling group so that calls to Avaya Modular Messaging are not shuffled. IP codec set '1' is assigned to the region.

```

change ip-network-region 1                                     Page 1 of 19

                                IP NETWORK REGION

Region: 1
Location: 1           Authoritative Domain: example.com
Name: Avaya region
MEDIA PARAMETERS                      Intra-region IP-IP Direct Audio: yes
  Codec Set: 1                      Inter-region IP-IP Direct Audio: yes
    UDP Port Min: 2048                      IP Audio Hairpinning? n
    UDP Port Max: 65531
DIFFSERV/TOS PARAMETERS              RTCP Reporting Enabled? n
  Call Control PHB Value: 34
    Audio PHB Value: 46
    Video PHB Value: 26
802.1P/Q PARAMETERS
  Call Control 802.1p Priority: 7
    Audio 802.1p Priority: 6
    Video 802.1p Priority: 5      AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                      RSVP Enabled? n
  H.323 Link Bounce Recovery? y
  Idle Traffic Interval (sec): 20
  Keep-Alive Interval (sec): 5
  Keep-Alive Count: 5

```

**Figure 3: IP Network Region**

In the **IP Codec Set** form, select the audio codec type supported for calls routed to Avaya Modular Messaging. The form is accessed via the **change ip-codec-set 1** command. Note that IP codec set '1' was specified in IP Network Region '1' shown in **Figure 3**. The default settings of the **ip-codec-set** form are shown below.

```

change ip-codec-set 1                                     Page 1 of 2

                                IP Codec Set

Codec Set: 1

Audio      Silence      Frames      Packet
Codec      Suppression   Per Pkt   Size(ms)
1: G.711MU      n           2        20
2:
3:

```

**Figure 4: IP Codec Set**

Create the signaling group for the H.323 IP trunk. For the **Near-end Node Name**, specify the name assigned to the C-LAN, and for the **Far-end Node Name**, specify the name assigned to Messaging Application Server (MAS). For the Far-end Network Region, enter the number of the region configured in **Figure 3**. Set the **Direct IP-IP Audio Connections** field to 'n' to disable shuffling for calls to Avaya Modular Messaging. Configure the other fields as shown below. Note that the Trunk Group for NCA TSC and Trunk Group for Channel Selection fields are populated after the trunk group is configured in the next step. For this example, signaling group 250 was selected.

change signaling-group 250		Page 1 of 1
SIGNALING GROUP		
Group Number: 250	<b>Group Type: h.323</b>	
	Remote Office? n	<b>Max number of NCA TSC: 10</b>
	SBS? n	<b>Max number of CA TSC: 10</b>
IP Video? n		<b>Trunk Group for NCA TSC: 250</b>
<b>Trunk Group for Channel Selection: 250</b>		
<b>TSC Supplementary Service Protocol: b</b>		Network Call Transfer? n
T303 Timer(sec): 10		
<b>Near-end Node Name: clan2</b>	<b>Far-end Node Name: DEVMAS</b>	
<b>Near-end Listen Port: 1720</b>	<b>Far-end Listen Port: 1720</b>	
	<b>Far-end Network Region: 1</b>	
LRQ Required? n	Calls Share IP Signaling Connection? n	
RRQ Required? n		
Media Encryption? n	Bypass If IP Threshold Exceeded? n	
	H.235 Annex H Required? n	
<b>DTMF over IP: out-of-band</b>	<b>Direct IP-IP Audio Connections? n</b>	
Link Loss Delay Timer(sec): 90	IP Audio Hairpinning? n	
Enable Layer 3 Test? n	Interworking Message: PROgress	
	DCP/Analog Bearer Capability: 3.1kHz	

**Figure 5: Signaling Group**

Configure the **Trunk Group** form as shown in **Figure 6**. Set the **Group Type** field to *isdn*, and set the **Carrier Medium** to *H.323*. Configure the **Service Type** field to *tie*, specify the signaling group associated with this trunk group in the **Signaling Group** field, and specify the **Number of Members** supported by this trunk group. Configure the other fields in bold and accept the default values for the remaining fields.

change trunk-group 250		Page 1 of 21
TRUNK GROUP		
Group Number: 250	<b>Group Type: isdn</b>	CDR Reports: y
<b>Group Name: DEVMAS</b>	COR: 1	TN: 1 <b>TAC: 150</b>
Direction: two-way	Outgoing Display? n	<b>Carrier Medium: H.323</b>
Dial Access? n	Busy Threshold: 255	Night Service:
Queue Length: 0		
Service Type: tie	Auth Code? n	
	<b>Member Assignment Method: auto</b>	
	<b>Signaling Group: 250</b>	
	<b>Number of Members: 30</b>	

**Figure 6: Trunk Group – Page 1**

On Page 2, set the **Supplementary Service Protocol** field to 'b' to enable QSIG signaling.

change trunk-group 250		Page 2 of 21
Group Type: isdn		
TRUNK PARAMETERS		
Codeset to Send Display: 6	Codeset to Send National IEs: 6	
	Charge Advice: none	
<b>Supplementary Service Protocol: b</b>	Digit Handling (in/out): enbloc/enbloc	
	Digital Loss Group: 18	
Incoming Calling Number - Delete:	Insert:	Format:
Disconnect Supervision - In? y Out? n		
Answer Supervision Timeout: 0		
	CONNECT Reliable When Call Leaves ISDN? n	

**Figure 7: Trunk Group – Page 2**

On Page 3 of the trunk group form, set the **Format** field to *public*. This field specifies the format of the calling party number sent to the far-end. Configure the other fields in bold as shown below.

change trunk-group 250		Page 3 of 21
TRUNK FEATURES		
ACA Assignment? n	Measured: none	
	Internal Alert? n	Maintenance Tests? y
	Data Restriction? n	<b>NCA-TSC Trunk Member: 1</b>
	Send Name: y	<b>Send Calling Number: y</b>
Used for DCS? n	Hop Dgt? n	Send EMU Visitor CPN? n
Suppress # Outpulsing? n	<b>Format: public</b>	
	UII IE Treatment: service-provider	
	Replace Restricted Numbers? n	
	Replace Unavailable Numbers? n	
	Send Connected Number: n	
	Hold/Unhold Notifications? y	
Send UII IE? y	Modify Tandem Calling Number? n	
Send UCID? n		
Send Codeset 6/7 LAI IE? y		

**Figure 8: Trunk Group – Page 3**

Configure the **Public/Unknown Numbering Format** form to send the calling party number to Avaya Module Messaging. Add an entry so that the 5-digit extension of voicemail subscribers is sent to the voicemail system.

change public-unknown-numbering 2		Page 1 of 2
NUMBERING - PUBLIC/UNKNOWN FORMAT		
Ext	Ext	Trk
Len	Code	Grp(s)
		CPN
		Prefix
		Total
		CPN
		Len
<b>5</b>	<b>2</b>	<b>250</b>
		<b>5</b>
Total Administered: 22		
Maximum Entries: 9999		

**Figure 9: Public Unknown Numbering Format**



### 4.3. Administer QSIG TSC and Extension Length

In the **Feature-Related System Parameters** form, configure an available extension in the **QSIG/ETSI TSC Extension** field. Specify the length of mailbox extensions in the **MWI – Number of Digits Per Voice Mail Subscriber**. In this example, 5-digit extensions are used.

change system-parameters features		Page 8 of 17
FEATURE-RELATED SYSTEM PARAMETERS		
ISDN PARAMETERS		
Send Non-ISDN Trunk Group Name as Connected Name? n		PARAMETERS FOR CREATING
Display Connected Name/Number for ISDN DCS Calls? n		QSIG SELECTION NUMBERS
Send ISDN Trunk Group Name on Tandem Calls? n		Network Level: 0
		Level 2 Code:
		Level 1 Code:
<b>QSIG/ETSI TSC Extension: 24155</b>		
<b>MWI - Number of Digits Per Voice Mail Subscriber: 5</b>		
Feature Plus Ext:		
National CPN Prefix:		
International CPN Prefix:		
Pass Prefixed CPN to ASAI? n		
Unknown Numbers Considered Internal for AUDIX? n		
USNI Calling Name for Outgoing Calls? n		
Path Replacement with Measurements? y		
QSIG Path Replacement Extension: 24151		
Send QSIG Path Replacement Conf. Event to ASAI? y		
Path Replace While in Queue/Vectoring? n		

### 4.4. Create Hunt Group and Coverage Path

Configure a hunt group to be used as the call coverage point for voicemail subscribers. On Page 1 of the hunt group, specify a descriptive name and assign an available extension to the hunt group.

change hunt-group 55		Page 1 of 60
HUNT GROUP		
Group Number: 55	ACD? n	
Group Name: DEVMAS	Queue? n	
Group Extension: 25108	Vector? n	
Group Type: ucd-mia	Coverage Path:	
TN: 1	Night Service Destination:	
COR: 1	MM Early Answer? n	
Security Code:	Local Agent Preference? n	
ISDN/SIP Caller Display: mbr-name		

Figure 10: Hunt Group – Page 1

Configure Page 2 of the hunt group, as shown below. Set the **Message Center** field to *qsig-mwi* and specify the **Voice Mail Number**. In this example, the Modular Messaging pilot number is 25108. Calls to Modular Messaging are routed using AAR as specified by the routing digit of '8' (i.e., AAR feature access code).

change hunt-group 55		Page 2 of 60
HUNT GROUP		
LWC Reception: none	AUDIX Name:	
<b>Message Center: qsig-mwi</b> <b>Send Reroute Request: n</b> <b>Voice Mail Number: 25108</b>		
<b>Routing Digits (e.g. AAR/ARS Access Code): 8</b>	Provide Ringback? n	
TSC per MWI Interrogation? n		

**Figure 11: Hunt Group – Page 2**

Set up a coverage path for the subscribers' extensions. Increase the number of rings so that calls to DiVitas Clients in Cellular mode will ring before covering to voicemail. In this example, setting the **Number of Rings** field to '5' provided enough time for a DiVitas Client in Cellular mode to answer the call, if available. Set the **Point1** field to the voicemail hunt group configured above.

change coverage path 55		Page 1 of 1
COVERAGE PATH		
Coverage Path Number: 55		
Cvg Enabled for VDN Route-To Party? n	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
All?	n	n
DND/SAC/Goto Cover?	y	y
Holiday Coverage?	n	n
<b>Number of Rings: 5</b>		
COVERAGE POINTS		
Terminate to Coverage Pts. with Bridged Appearances? n		
<b>Point1: h55</b>	Rng: 2	Point2:
Point3:	Point4:	
Point5:	Point6:	

**Figure 12: Voicemail Coverage Path**

## 4.5. Call Routing to Avaya Modular Messaging

This section describes how to route calls to Avaya Modular Messaging. When calls cover to voicemail or a subscriber calls the voicemail system using the pilot number (25108), the call is routed using AAR as specified on the second page of the voicemail hunt group configured in Section 4.4. In the **AAR Digit Analysis Table**, add an entry for the voicemail pilot number. In this example, the call is routed over Route Pattern 250.

change aar analysis 25						Page	1 of	2
AAR DIGIT ANALYSIS TABLE								
Location: all						Percent Full:	1	
Dialed String	Total Min	Max	Route Pattern	Call Type	Node Num	ANI Reqd		
25108	5	5	250	aar		n		

**Figure 13: AAR Digit Analysis Table**

Route Pattern 250 routes calls over the H.323 IP trunk to the MAS. As-needed CA-TSCs are enabled for the route preference.

change route-pattern 250												Page	1 of	3
Pattern Number: 250 Pattern Name: DEVMAS														
SCCAN? n Secure SIP? n														
Grp	FRL	NPA	Pfx	Hop	Toll	No.	Inserted					DCS/	IXC	
No			Mrk	Lmt	List	Del	Digits					QSIG		
Dgts												Intw		
1:	250	0										n	user	
2:											n	user		
3:											n	user		
4:											n	user		
5:											n	user		
6:											n	user		
BCC VALUE TSC CA-TSC ITC BCIE Service/Feature PARM No. Numbering LAR														
0	1	2	M	4	W	Request						Dgts	Format	
												Subaddress		
1:	Y	Y	Y	Y	Y	n	Y	as-needed	rest				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	

## 4.6. Create Voicemail Subscribers

This section describes how to map a desktop IP phone on Avaya Communication Manager to a DiVitas Client running on a Nokia E71 handset. This would allow a desktop phone and the DiVitas Client to ring simultaneously when a call is received. The call can then be answered by either the desktop phone or the DiVitas Client. If a call is answered on the DiVitas Client, the call can still be picked up on the appropriate call appearance on the desktop phone. However, if the call is answered on the desktop phone, the call can no longer be picked up on the DiVitas Client.

Configure a station as shown in **Figure 15**. In this example, the station maps to an H.323 IP phone with an extension of 24511. The DiVitas Client has an extension of 8524511 and is configured in **Figure 34**. The station and the DiVitas Client *must* have different extensions.

**Note:** To call a DiVitas Client, the 5-digit extension of the desktop phone mapped to it is dialed, not the 7-digit extension assigned to it on the DiVitas Mobile UC Server. This also applies to a DiVitas Client calling another DiVitas Client.

add station 24511		Page 1 of 5
STATION		
Extension: 24511	Lock Messages? n	BCC: 0
Type: 4610	Security Code: XXXXX	TN: 1
Port: IP	Coverage Path 1: 55	COR: 1
Name: DiVitas24511	Coverage Path 2:	COS: 1
	Hunt-to Station:	
STATION OPTIONS		
Loss Group: 19	Time of Day Lock Table:	
	Personalized Ringing Pattern: 1	
	Message Lamp Ext: 24511	
Speakerphone: 2-way	Mute Button Enabled? y	
Display Language: english		
Survivable GK Node Name:		
Survivable COR: internal	Media Complex Ext:	
Survivable Trunk Dest? y	IP SoftPhone? n	
	Customizable Labels? y	

**Figure 15: Station – Page 1**

change station 24511		Page 2 of 5
STATION		
FEATURE OPTIONS		
LWC Reception: spe	Auto Select Any Idle Appearance? n	
LWC Activation? y	Coverage Msg Retrieval? y	
LWC Log External Calls? n	Auto Answer: none	
CDR Privacy? n	Data Restriction? n	
Redirect Notification? y	Idle Appearance Preference? n	
Per Button Ring Control? n	Bridged Idle Line Preference? n	
Bridged Call Alerting? n	Restrict Last Appearance? n	
Active Station Ringing: single	EMU Login Allowed? n	
H.320 Conversion? n	<b>Per Station CPN - Send Calling Number?</b>	
Service Link Mode: as-needed		
Multimedia Mode: enhanced		
<b>MWI Served User Type: qsig-mwi</b>	Display Client Redirection? n	
	Select Last Used Appearance? n	
	Coverage After Forwarding? s	
	Direct IP-IP Audio Connections? y	
Emergency Location Ext: 24511	Always Use? n IP Audio Hairpinning? y	

**Figure 16: Station – Page 2**

## 5. Configure Avaya Modular Messaging

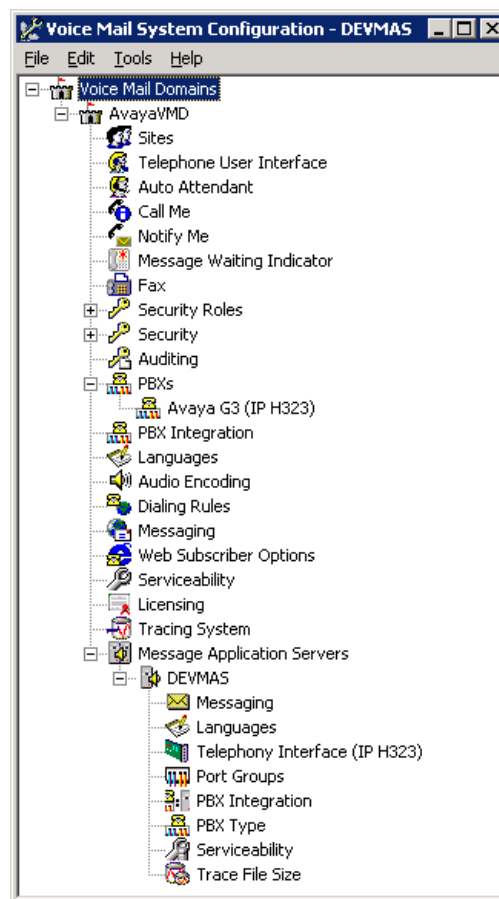
This section provides the procedures for configuring Avaya Modular Messaging, including the Message Application Server (MAS) and the Message Storage Server (MSS). The procedures include the following areas:

- Configure the Message Waiting Indicator on the MAS.
- Configure an H.323 IP trunk between the MAS and Avaya Communication Manager.
- Enable the IMAP interface on the MSS.
- Configure subscribers on the MSS.

For complete coverage of Modular Messaging installation and configuration, refer to [4]. This section only focuses on the items listed above.

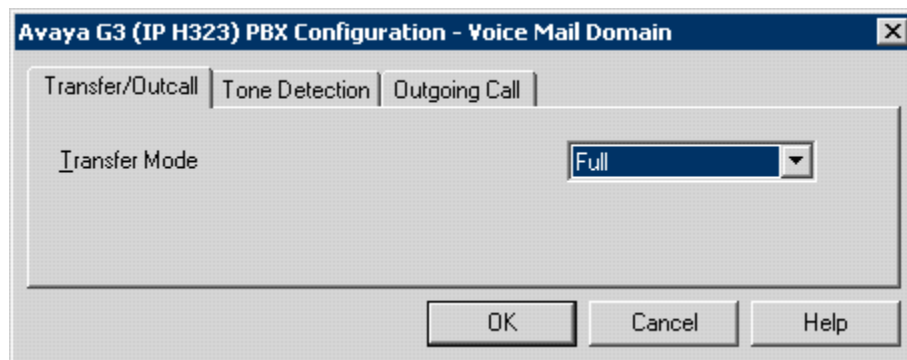
### 5.1. Configure Message Application Server (MAS)

Configuration of the Messaging Application Server (MAS) was performed using the **Voice Mail System Configuration** application. To launch the application, navigate to **Programs → Avaya Modular Messaging → Voice Mail System Configuration** from the MAS. Expand all the fields so that all the applicable options are visible as shown below.



**Figure 17: Voice Mail System Configuration**

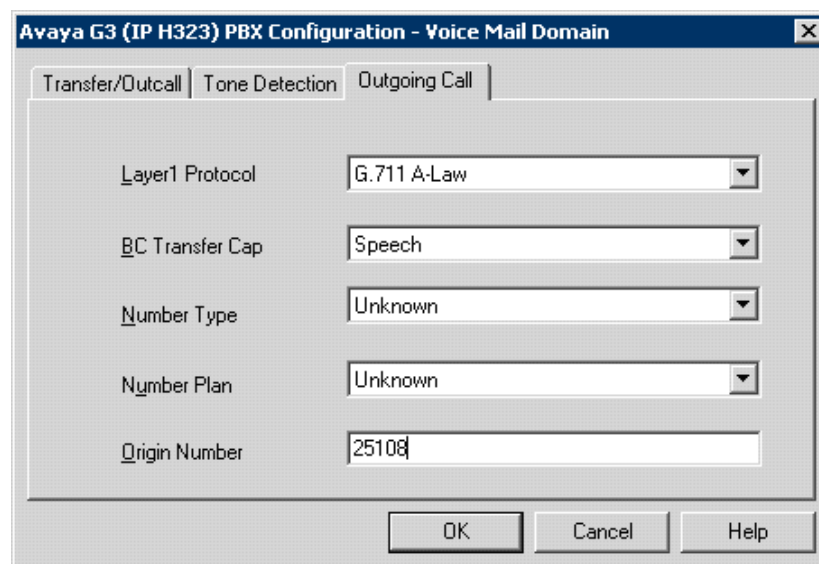
From the **Voice Mail System Configuration** tree-view, expand **PBXs** and select **Avaya G3 (IP H323)**. In the window displayed below, access the **Transfer/Outcall** tab and set the **Transfer Mode** field to “full”. Click **OK**.



**Figure 18: PBX Configuration – Transfer/Outcall Tab**

In the **Outgoing Call** tab, set the **Origin Number** to the voice mail pilot number (i.e., 25108). That is, set the field to the number entered in the **Voice Mail Number** field on the Page 2 of the **Hunt Group** form shown in **Figure 11**. Click **OK** to save the changes.

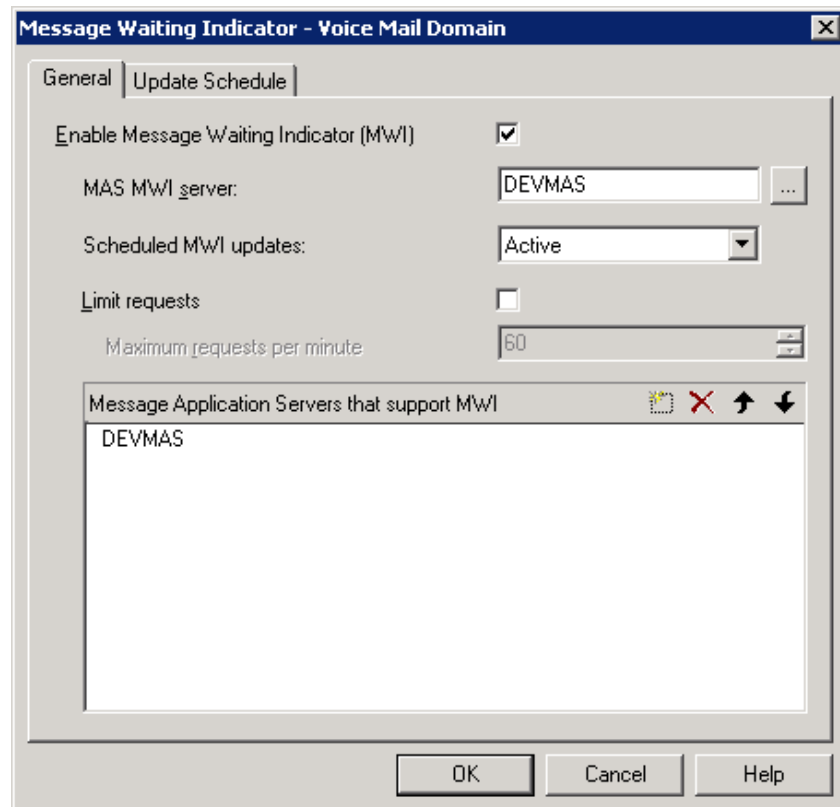
**Note:** The MAS will prompt to restart the services. This step will be performed later.



**Figure 19: PBX Configuration – Outgoing Call Tab**

Access the **Message Waiting Indicator** option and configure the parameters as follows:

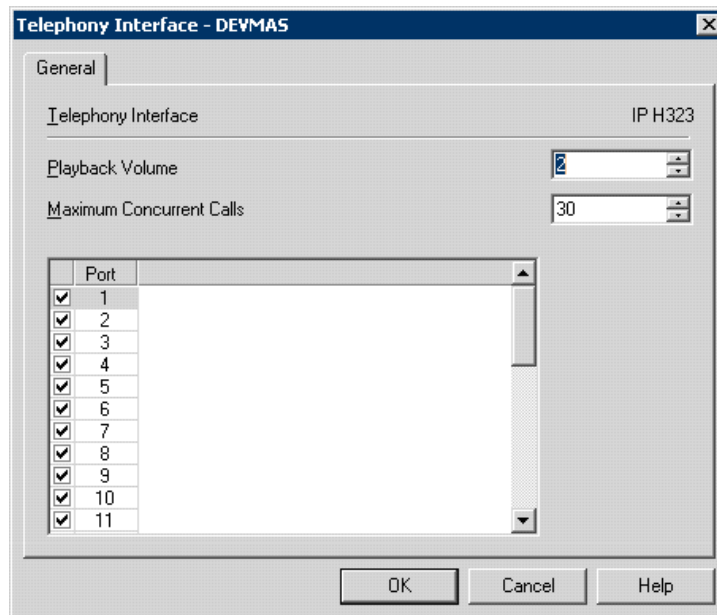
- **Enable Message Waiting Indicator (MWI)** by checking the box.
- Enter the name of the MWI server created during the installation procedure in the **MAS MWI server** field. In this example, the MAS server, “DEVMAS”, was also the MWI server.
- The box entitled **Message Application Servers that support MWI** should contain the MAS server capable of placing MWI requests. Again, the MWI server is “DEVMAS”.
- Click **OK** to save the changes.



**Figure 20: Message Waiting Indicator**

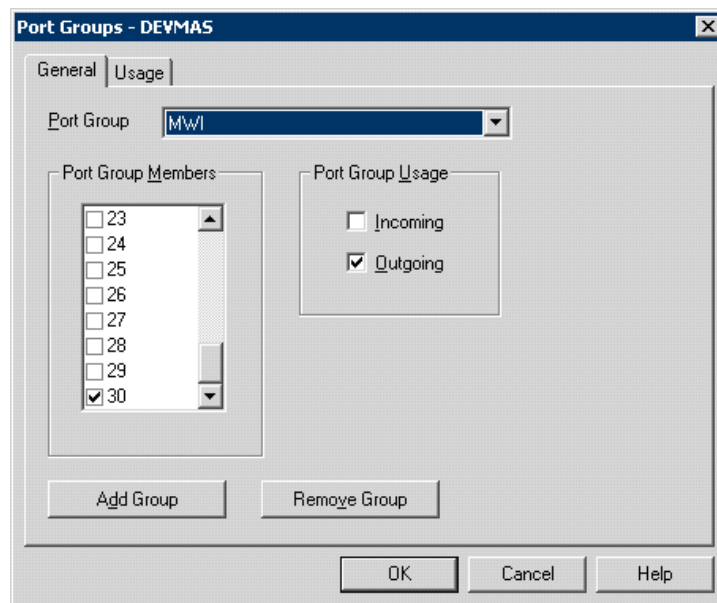


Access the **Telephony Interface (IP H323)** option and set the **Maximum Concurrent Calls** field to the number of ports supported for the H.323 IP trunk. In this example, 30 ports were used. By default the ports are enabled. Click **OK** to save the changes. Restart the MAS Service when prompted and then continue with the step below.



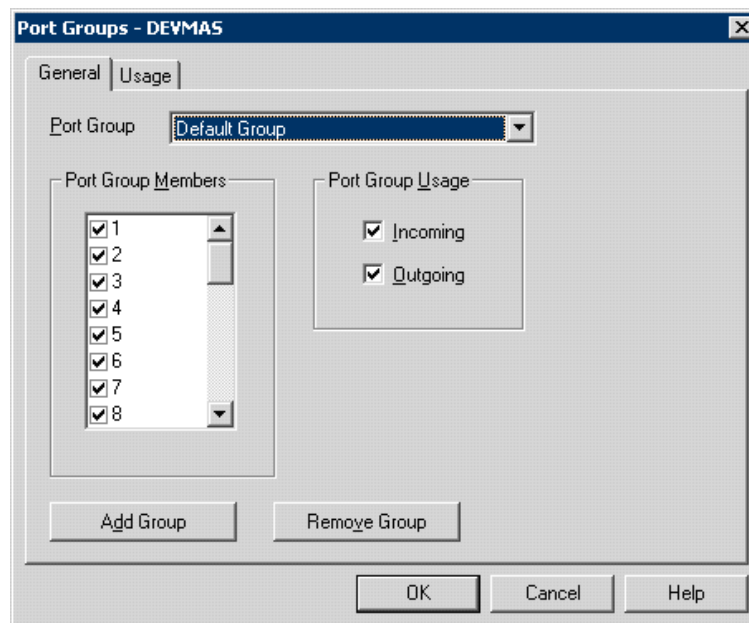
**Figure 21: Telephony Interface**

Access the **Port Groups** options under the MAS name in **Figure 17** and click the **Add Group** button. Provide a name for the **Port Group** and only enable “Outgoing” for the **Port Group Usage** field. Uncheck all of the ports, except the ports that will be used for MWI. In this example, port 30 is being used for MWI. Click **OK**.



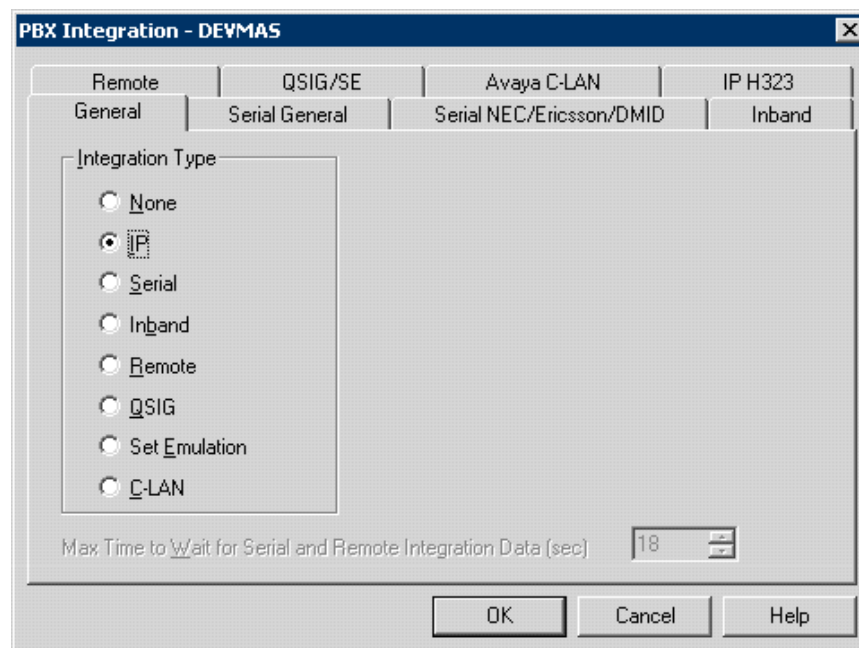
**Figure 22: Port Groups - MWI**

Next, select the “Default Group” in the **Port Group** field and ensure that it is configured to meet the customer’s need for “Incoming” and “Outgoing” under **Port Group Usage** by checking all ports. Click **OK** to save the changes.



**Figure 23: Port Groups – Default Group**

Next, access **PBX Integration** and within the **General** tab select “IP” for the **Integration Type**.



**Figure 24: PBX Integration – General Tab**

Next, configure the **IP H323** tab with the following settings:

- Specify the **MAS Corporate IP Address**.
- Set the **PBX IP Address** field to the IP address of the C-LAN board.
- Set the **Port** field to “1720”.
- Deselect **Silence Suppress**.
- Set the **Max MWI Sessions** field to ‘1’.
- Set the **Port Group Name** to the “MWI” port group from the drop down list.
- Leave the default value for the other fields as shown below.
- Click **OK** to save the changes.

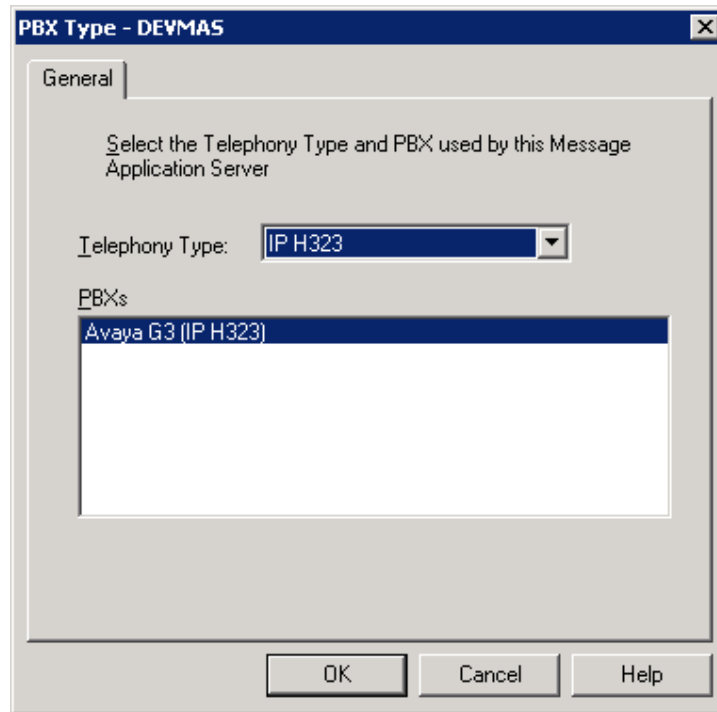
The screenshot shows the 'PBX Integration - DEVMA5' dialog box with the 'IP H323' tab selected. The dialog has a tabbed interface with 'General', 'Serial General', 'Serial NEC/Ericsson/DMID', and 'Inband' tabs. Under 'Inband', there are sub-tabs for 'Remote', 'QSIG/SE', 'Avaya C-LAN', and 'IP H323'. The 'IP H323' tab is active, showing the following fields and settings:

- MAS Corporate IP Address:** 192 . 45 . 100 . 181
- PBX IP Address:** 192 . 45 . 100 . 70
- Port:** 1720
- UDP Port Range:** 5000
- Tg:** 5999
- Packet size (bytes):** 40
- Enable Tunneling:** ☒
- Enable Fast Start:** ☒
- Silence Suppress:** ☐
- Max MWI Sessions:** 1
- Port Group Name:** MWI (selected from a dropdown menu)
- IP Supported Codecs:** A list box containing 'G.711-uLaw-64k' and 'G.711-ALaw-64k'. To the right of the list box are buttons: 'Move Up', 'Move Down', 'Add...', and 'Remove'.

At the bottom of the dialog are 'OK', 'Cancel', and 'Help' buttons.

**Figure 25: PBX Integration – IP H323 Tab**

Finally, access **PBX Type** and verify that the **Telephony Type** field is set to “IP H323” and that “Avaya G3 (IP H323)” is selected under **PBXs**. Click **OK** to save the changes.



**Figure 26: PBX Type**

After configuring the voicemail system, restart the Message Application Server (MAS) services to apply these changes.

## 5.2. Configure the Message Storage Server (MSS)

This section describes the procedure for enabling the IMAP interface and configuring a voicemail subscriber. The Message Storage Server (MSS) is configured from a web interface. Launch a web browser and enter the MSS IP address in the URL field. The **Messaging Administration** webpage is displayed as shown below.

For complete coverage of MSS configuration, refer to [4]. This section only covers enabling the IMAP interface and adding a subscriber.

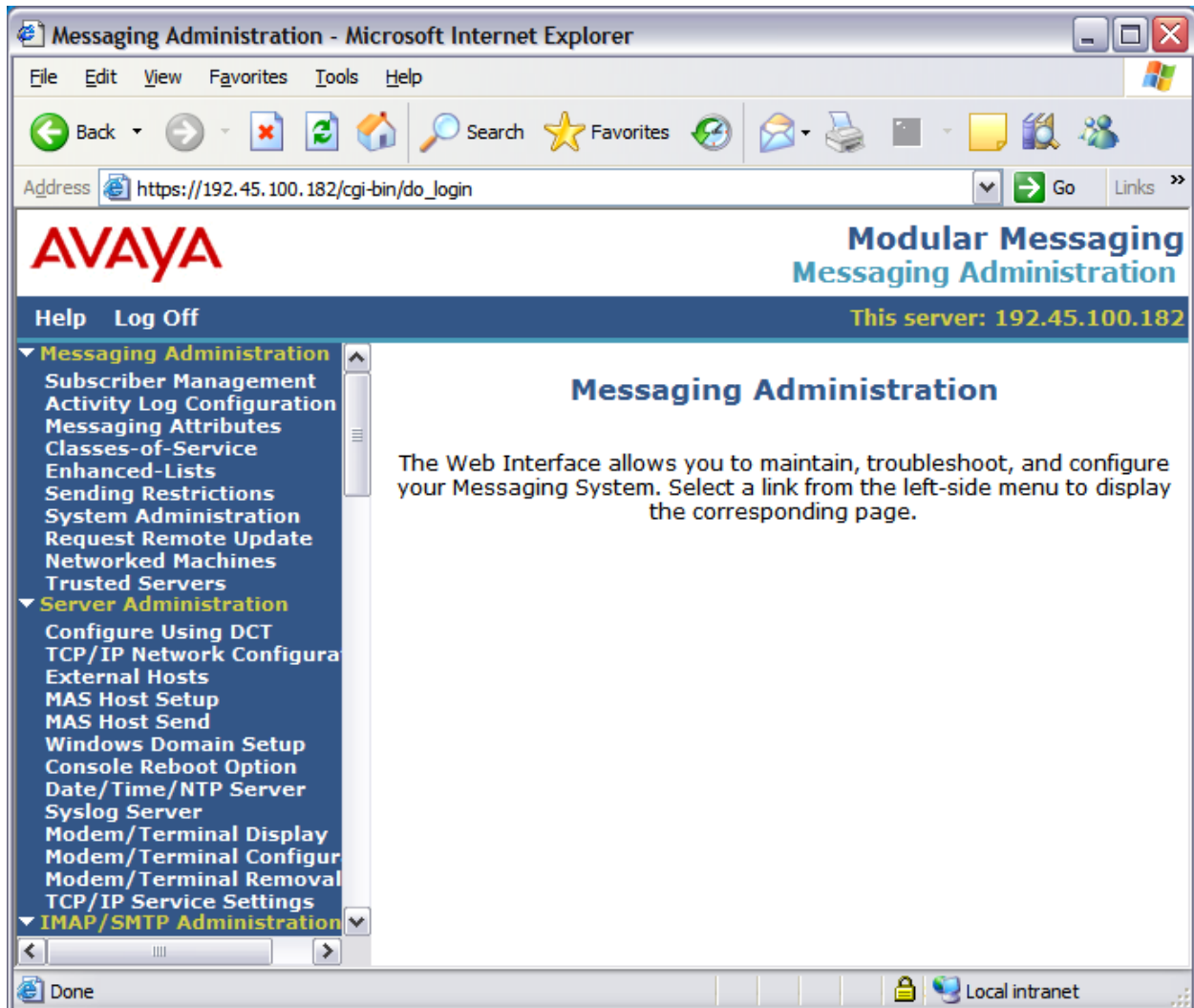


Figure 27: Messaging Administration

From the left pane of the **Messaging Administration** web page, select **Messaging Attributes** to enable the IMAP interface. shows the bottom half of the webpage with the **System TCP/IP Ports** section. Enable the **IMAP4 Port** associated with port 143. Click **Save**.

**AVAYA** Modular Messaging  
Messaging Administration

Help Log Off This server: 192.45.100.182

**▼ Messaging Administration**  
 Subscriber Management  
 Activity Log Configuration  
 Messaging Attributes  
 Classes-of-Service  
 Enhanced-Lists  
 Sending Restrictions  
 System Administration  
 Request Remote Update  
 Networked Machines  
 Trusted Servers  
**▼ Server Administration**  
 Configure Using DCT  
 TCP/IP Network Configura  
 External Hosts  
 MAS Host Setup  
 MAS Host Send  
 Windows Domain Setup  
 Console Reboot Option  
 Date/Time/NTP Server  
 Syslog Server  
 Modem/Terminal Display  
 Modem/Terminal Configur  
 Modem/Terminal Removal  
 TCP/IP Service Settings  
**▼ IMAP/SMTP Administration**  
 SMTP Options  
 Mail Options  
 IMAP/SMTP Status  
**▼ Server Information**  
 Server Status  
 Alarm Summary  
 Disk Information  
 Server Notes  
 CMOS Settings  
 RAID Status  
 Rebuild RAID Status  
 Reboot Interval  
**▼ Utilities**  
 CD/DVD Mount  
 CD/DVD Unmount  
 CD/DVD Eject  
 Messaging DB Audits  
 Start Messaging  
 Stop Messaging

**SYSTEM TCP/IP PORTS**

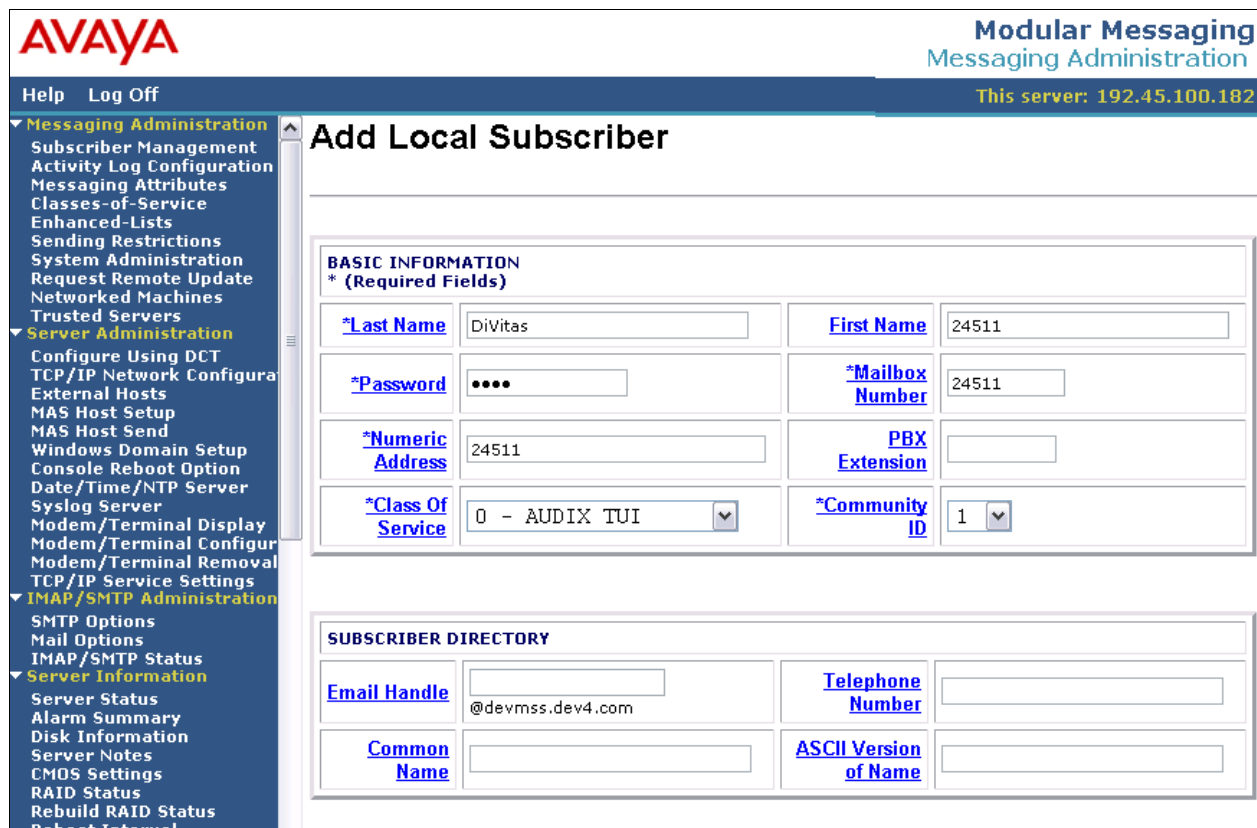
<a href="#">LDAP Port</a>	389	Authenticated or Anonymous	<a href="#">LDAP SSL Port</a>	636	Enabled
<a href="#">LDAP Internal Server Port</a>	55389	Enabled	<a href="#">LDAP Directory Update Port</a>	56389	Disabled
<a href="#">LDAP Front End Alternate Port</a>		Disabled	<a href="#">IMAP4 TUI Port</a>	55143	Enabled
<a href="#">IMAP4 Port</a>	143	Enabled	<a href="#">IMAP4 SSL Port</a>	993	Disabled
<a href="#">POP3 Port</a>	110	Disabled	<a href="#">POP3 SSL Port</a>	995	Disabled
<a href="#">SMTP Port</a>	25	Enabled	<a href="#">SMTP Alternate Port</a>		Disabled
<a href="#">SMTP SSL Port</a>	465	Enabled	<a href="#">Allow TLS for Outgoing SMTP</a>	25	Enabled
<a href="#">MCAPI Port</a>	55000	Enabled			

Save Help

Page Status: Form unchanged. Saved values are shown.

**Figure 28: System Administration – System TCP/IP Ports Section**

To add a subscriber, select **Subscriber Management** in the left pane and then enter the subscriber extension in the **Local Subscriber Mailbox Number** field on the webpage that appears (not shown). The **Add Local Subscriber** webpage is displayed as shown in **Figure 29**. Configure the **Last Name** and **First Name** fields corresponding to the subscriber. Next, enter the extension assigned to the desktop phone configured on Avaya Communication Manager in the **Mailbox Number** and **Numeric Address** fields. Assign an appropriate **Class of Service** to the subscriber. In this example, extension 24511 is added as a subscriber and the **Class of Service** specified uses the AUDIX TUI. At the bottom of the webpage, click the **Save** button (not shown).



**AVAYA** Modular Messaging  
Messaging Administration

Help Log Off This server: 192.45.100.182

**Add Local Subscriber**

**BASIC INFORMATION**  
\* (Required Fields)

*Last Name	DiVitas	First Name	24511
*Password	....	*Mailbox Number	24511
*Numeric Address	24511	PBX Extension	
*Class Of Service	0 - AUDIX TUI	*Community ID	1

**SUBSCRIBER DIRECTORY**

Email Handle	@devmss.dev4.com	Telephone Number	
Common Name		ASCII Version of Name	

**Figure 29: Add Local Subscriber**

## 6. Configure DiVitas Mobile Unified Communications

This section describes the steps for enabling the IMAP interface on the DiVitas Server and enabling voicemail on the DiVitas Clients. Refer to [6] for additional configuration information.

All DiVitas Mobile UC Server configuration and management features are accessed from a Web-based interface. From an Internet browser, enter the IP address of the DiVitas Mobile UC Server in the URL field and log in using the appropriate credentials. The screen shown in **Figure 30** is displayed.

The screenshot displays the DiVitas Networks web interface. At the top, there is a navigation bar with tabs for Server, Clients, Voice, Monitoring, Reporting, and Tools. The 'Server' tab is active, showing sub-tabs: Status, Network Status, IP Config, Admin Users, Images, Licensing, Time, Voice Config, Backup/Restore, and Email. A 'Logout' link is also present. Below the navigation bar, a status bar indicates the user is logged in as 'admin' from IP '192.45.60.62' at '2:24 pm EDT'. A link for documentation is provided. The main content area is divided into three sections: 'Server Information', 'Active Server Image', and 'License Information'. Each section contains a table of system details.

Server Information	
Serial Number	D27LCC1
Kernel Version	2.6.25.10-47.DV3.fc8
Kernel Build Date	#1 SMP Tue Jul 22 13:59:41 EDT 2008
System Memory	1034596 kB
System Uptime	0 days, 3:00
DVOS Uptime	0 days, 3:00
DVOS Status	System Normal
CPU Usage	3%

Active Server Image	
Platform	U1000
Version	2.7.0.0
Build	18
Build Timestamp	Mar 12 2009, 16:18:23

License Information	
Customer Name	Avaya Test lab
Customer ID	AVA001
Expiration	Tue Mar 16 19:59:59 2010

At the bottom of the interface, the DVOS Version is listed as 2.7.0.0.18, and the copyright notice reads: © 2009 DiVitas Networks. All Rights Reserved.

**Figure 30: DiVitas Mobile UC Server Web Interface**



In the **Server→IP Config** webpage, configure the IP network parameters of the DiVitas Server corresponding to the customer's network as shown in **Figure 31**. The remaining fields on this webpage (not shown) may be left at the default values. Click **Submit**.

The screenshot displays the DiVitas Networks management interface. At the top, there is a navigation bar with tabs for 'Server', 'Clients', 'Voice', 'Monitoring', 'Reporting', and 'Tools'. The 'Server' tab is active, and within it, 'IP Config' is selected. Below the navigation bar, a status bar indicates the user is logged in as 'admin' from IP '192.45.60.62' at '2:24 pm EDT'. A 'Logout' link is present in the top right. The main content area is titled 'Server Network Configuration'. Under the 'Host Configuration' section, the following fields are visible:

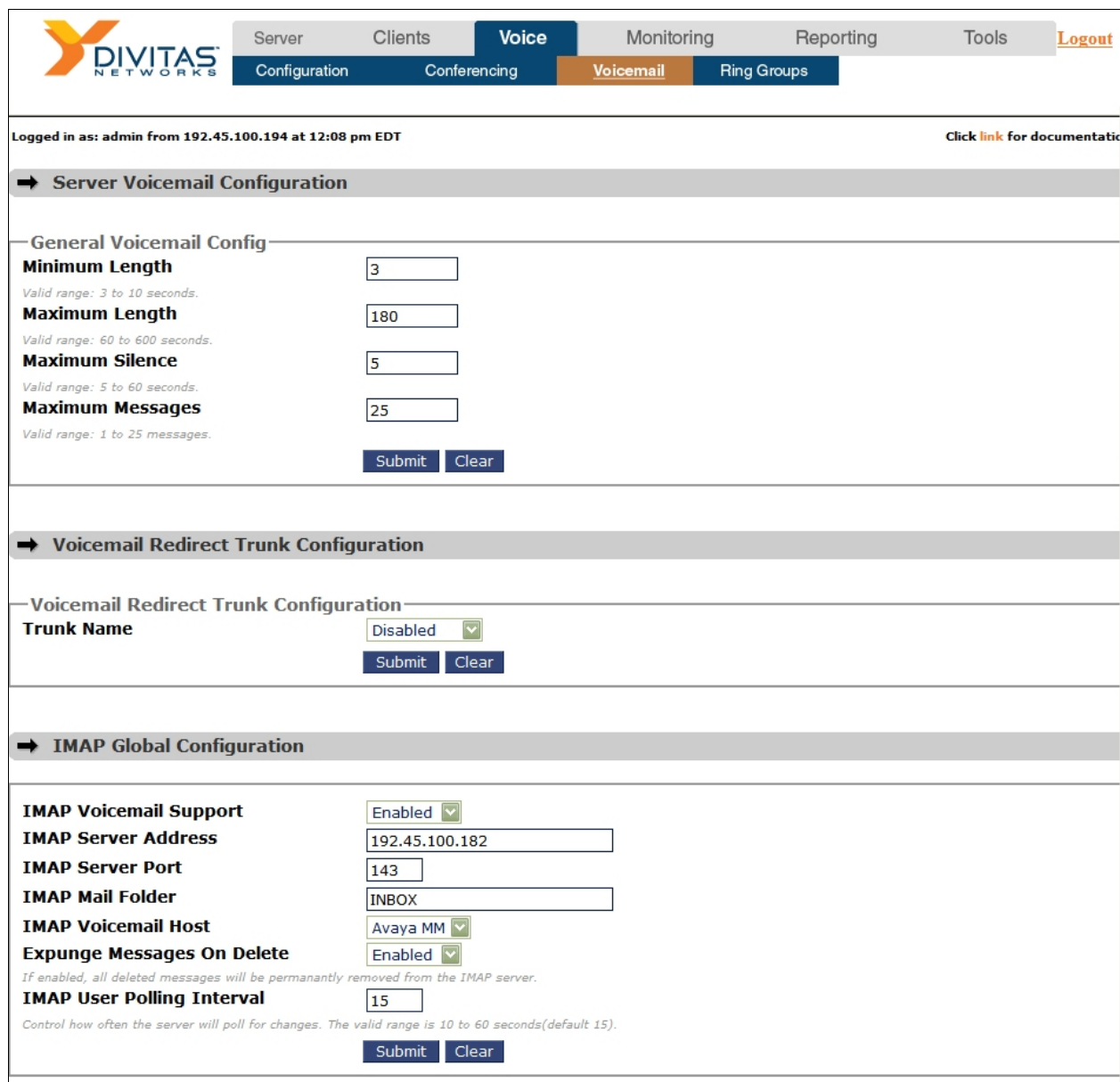
IP Address	192.45.100.190
Subnet Mask	255.255.255.0
IP Gateway	192.45.100.1
Internal Hostname	localhost
Primary DNS Server Address	0.0.0.0
Secondary DNS Server Address	0.0.0.0

At the bottom of the configuration section, there are two buttons: 'Submit' and 'Clear'.

**Figure 31: Server IP Configuration**

In the **Voice→Voicemail** webpage, configure the **IMAP Global Configuration** parameters as follows:

- Enable **IMAP Voicemail Support**.
- Set the **IMAP Server Address** to the IP Address of the MSS (e.g., 192.45.100.182).
- Set the **IMAP Server Port** to “143”.
- Set the **IMAP Voicemail Host** to the “Avaya MM”.
- Set the **IMAP User Polling Interval** to an appropriate value. In this example, the DiVitas Server was configured to check for new messages every 15 seconds.
- Configure the other parameters as shown in **Figure 32**.
- Click **Submit**.



The screenshot shows the Divitas Networks web interface. The top navigation bar includes tabs for Server, Clients, Voice, Monitoring, Reporting, and Tools. The 'Voice' tab is active, and the 'Voicemail' sub-tab is selected. The user is logged in as 'admin' from IP 192.45.100.194 at 12:08 pm EDT. The page title is 'Server Voicemail Configuration'. The 'General Voicemail Config' section includes fields for Minimum Length (3), Maximum Length (180), Maximum Silence (5), and Maximum Messages (25). The 'Voicemail Redirect Trunk Configuration' section shows the Trunk Name set to 'Disabled'. The 'IMAP Global Configuration' section is expanded, showing IMAP Voicemail Support set to 'Enabled', IMAP Server Address as 192.45.100.182, IMAP Server Port as 143, IMAP Mail Folder as INBOX, IMAP Voicemail Host as Avaya MM, Expunge Messages On Delete set to 'Enabled', and IMAP User Polling Interval set to 15. Submit and Clear buttons are present at the bottom of each section.

**General Voicemail Config**

Minimum Length: 3  
Valid range: 3 to 10 seconds.

Maximum Length: 180  
Valid range: 60 to 600 seconds.

Maximum Silence: 5  
Valid range: 5 to 60 seconds.

Maximum Messages: 25  
Valid range: 1 to 25 messages.

**Voicemail Redirect Trunk Configuration**

Voicemail Redirect Trunk Configuration

Trunk Name: Disabled

**IMAP Global Configuration**

IMAP Voicemail Support: Enabled

IMAP Server Address: 192.45.100.182

IMAP Server Port: 143

IMAP Mail Folder: INBOX

IMAP Voicemail Host: Avaya MM

Expunge Messages On Delete: Enabled  
If enabled, all deleted messages will be permanently removed from the IMAP server.

IMAP User Polling Interval: 15  
Control how often the server will poll for changes. The valid range is 10 to 60 seconds(default 15).

**Figure 32: IMAP Global Configuration**

To view and add users to the DiVitas Server, navigate to **Clients→Users**. To add a **User**, click on the **Add** button under **Add User Account**. To view the details of a configured user account, select **Modify** in the **Action** field under the **User Accounts** section and click **Submit**.

Logged in as: admin from 192.45.60.62 at 2:24 pm EDT [Click link for documentation.](#)

➔ **Add User Account**

Add User Account

➔ **Delete User Accounts**

Delete User Accounts

➔ **User Accounts**

Name	Action	Full Name	Group	Extension	Devices	Active Calls	Status
8524511	None <input type="button" value="Submit"/>	New Test User 1	default	8524511	352925021819794	0	Active
8524513	None <input type="button" value="Submit"/>	New Test User 2	default	8524513	352925021820396	1	Active

DVOS Version: 2.7.0.0.18 © 2009 DiVitas Networks. All Rights Reserved.

**Figure 33: User Accounts**

When adding a **User**, specify the user's **Full Name** and **Extension** as shown in **Figure 34**. The figure below shows the user account after it has been configured. The **Add User Account** webpage will appear slightly different, but contain similar fields. To enable voicemail with Avaya Modular Messaging, configure the **IMAP Configuration** section. Enable IMAP and specify the appropriate username and password configured for this subscriber in the MSS (see **Figure 29**). Click **Submit**.

**Divitas Networks** | Server | **Clients** | Voice | Monitoring | Reporting | Tools | [Logout](#)

**Users** | User Groups | User Config | Devices | Device Groups | Device Config | Bulk Load

Logged in as: admin from 192.45.60.62 at 2:24 pm EDT | [Click link for documentation.](#)

---

**Modify User Account**

**Account** Enabled

**Extension**

**DiVitas Client User Password**

**SIP Device User Password**

If SIP device user password is left blank, it will be defaulted to the DiVitas Client password.

**Full Name**

**Outbound CID**

**Email**

**SMS Email Address**

**Paired Deskphone** ☐ Internal ☒ External

**Group Name** default

---

**Voicemail**

**Mailbox** Disabled

The following fields are only used when voicemail is enabled.

**Mailbox Password**

**Play Caller ID** ☐ Yes ☒ No

**Play Envelope(Date/Time)** ☐ Yes ☒ No

**Access Number**

**Redirect Number**

The redirect number is only used when voicemail redirect is selected.

---

**IMAP Configuration**

**Enable IMAP** ☒ Yes ☐ No

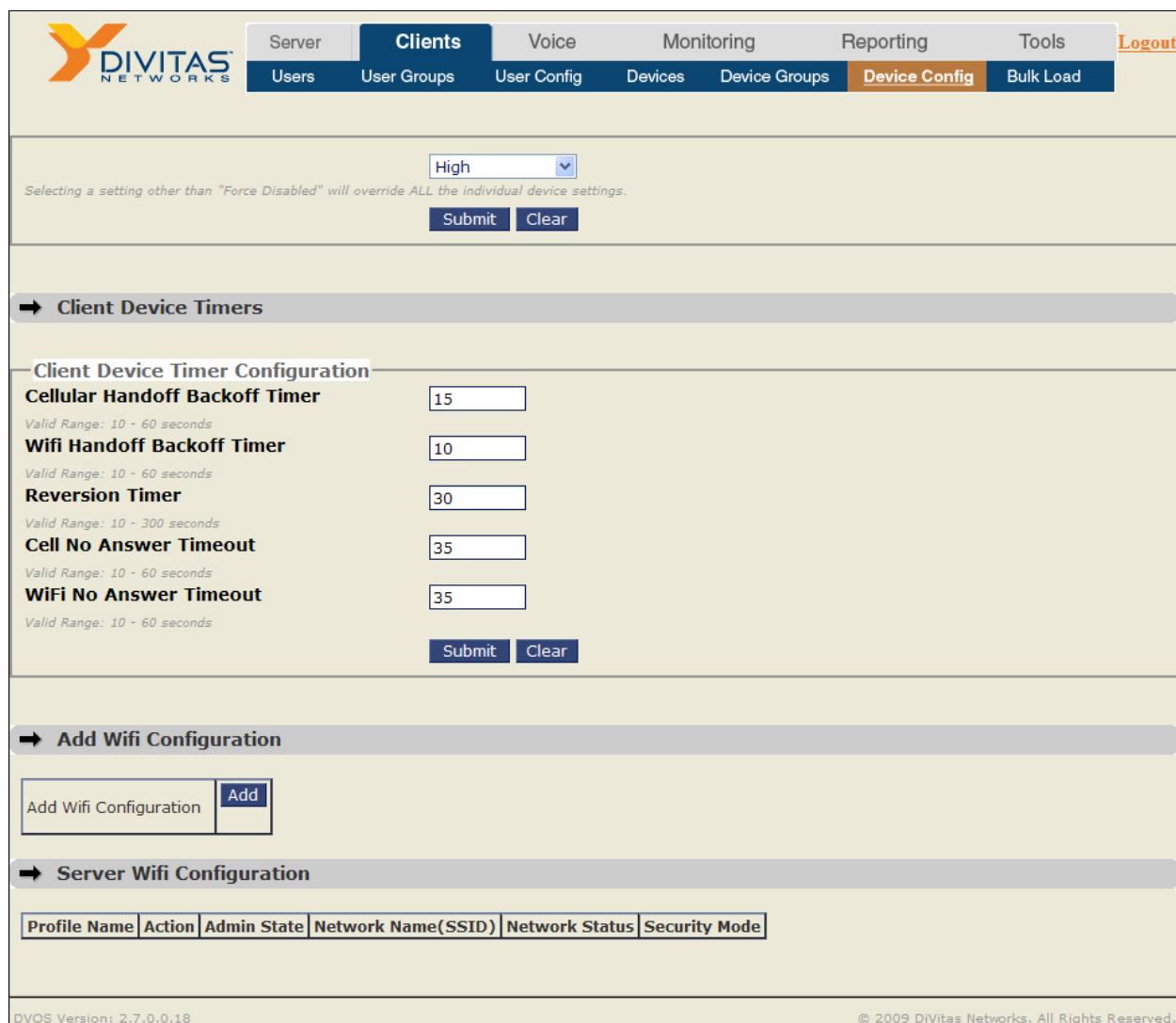
**IMAP Username**

**IMAP User Password**

DVOS Version: 2.7.0.0.18 | © 2009 DiVitas Networks. All Rights Reserved.

**Figure 34: User**

In the **Clients→Device Config** webpage, increase the **Cell No Answer Timeout** field to allow a DiVitas Client in Cellular mode to ring before the call covers to voicemail. Click **Submit**.



**Server** **Clients** Voice Monitoring Reporting Tools [Logout](#)

Users User Groups User Config Devices Device Groups **Device Config** Bulk Load

High  
Selecting a setting other than "Force Disabled" will override ALL the individual device settings.  
Submit Clear

→ **Client Device Timers**

**Client Device Timer Configuration**

**Cellular Handoff Backoff Timer** 15  
Valid Range: 10 - 60 seconds

**Wifi Handoff Backoff Timer** 10  
Valid Range: 10 - 60 seconds

**Reversion Timer** 30  
Valid Range: 10 - 300 seconds

**Cell No Answer Timeout** 35  
Valid Range: 10 - 60 seconds

**WiFi No Answer Timeout** 35  
Valid Range: 10 - 60 seconds

Submit Clear

→ **Add Wifi Configuration**

Add Wifi Configuration Add

→ **Server Wifi Configuration**

Profile Name	Action	Admin State	Network Name(SSID)	Network Status	Security Mode
--------------	--------	-------------	--------------------	----------------	---------------

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**Figure 35: Client Device Timer Configuration**

## 7. General Test Approach and Test Results

The focus of the interoperability compliance test was to verify that the DiVitas Server can access voicemail messages stored in the Message Storage Server (MSS) of Avaya Module Messaging using the IMAP interface, and that the DiVitas Client running on Nokia E71 mobile handsets can retrieve, playback, and delete the voicemail message on their visual voicemail application.

All tests passed; however, a few observations were noted.

- While the DiVitas Client was in Cellular mode and logged into Modular Messaging, the DiVitas Client could not delete a message (\*D) or transfer out of voicemail (\*T). Note that these are options available when using the AUDIX TUI. Activating other options that didn't begin with an asterisk successful. This behavior was not observed when the DiVitas Client was in WiFi mode.
- When a subscriber replies/forwards a voicemail message with a comment from the Modular Messaging menu to a DiVitas Client, the DiVitas Client can retrieve the message from the visual voicemail application, but only the original message is heard. The comment added by the subscriber is not heard.
- Replying and forwarding voicemail messages from the DiVitas Client's visual voicemail application is not yet supported.
- To retrieve a voicemail message from a DiVitas Client in Cellular mode requires a Cellular Data Channel (CDC) – a Cellular Voice Channel (CVC) is not sufficient for this purpose. This is expected behavior.

## 8. Verification Steps

This section provides the verification steps that may be performed to verify voicemail coverage for the DiVitas Clients and that the DiVitas Client could retrieve voicemail messages from their visual voicemail application.

1. From the Avaya Communication Manager SAT, verify that the H.323 signaling group and trunk group to Avaya Modular Message are in-service using the **status signaling-group** and **status trunk** commands, respectively.
2. From the MAS, open the **Port Monitor** application by navigating to **Programs→Avaya Modular Messaging→Port Monitor**. Select the appropriate MAS from the list when prompted and ensure that the H.323 IP trunk ports are in the “idle” state as shown below.



**Figure 36: Port Monitor**

3. From the DiVitas web interface, navigate to the **Voice→Voicemail** webpage and verify that the **IMAP Server Status** is “Active” and that the DiVitas Clients can log into Modular Messaging as indicated by the **User State** being set to “Authenticated”.

Divitas Networks

Server Clients **Voice** Monitoring Reporting Tools [Logout](#)

Configuration Conferencing **Voicemail** Ring Groups

Logged in as: admin from 192.45.100.194 at 12:08 pm EDT [Click link for documentation.](#)

[Refresh](#)

[Return to Voicemail](#)

➔ **IVVMD Status Summary**

IMAP Server Status	Number of IMAP Users	IMAP Server Address	IMAP Server Port	IMAP Server Host Type
Active	2	192.45.100.182	143	Avaya MM

➔ **IMAP User Accounts**

Name	IMAP Username	Total Messages	New Messages	Old Messages	User State
8524511	24511	1	0	1	AUTHENTICATED
8524513	24513	11	1	10	AUTHENTICATED

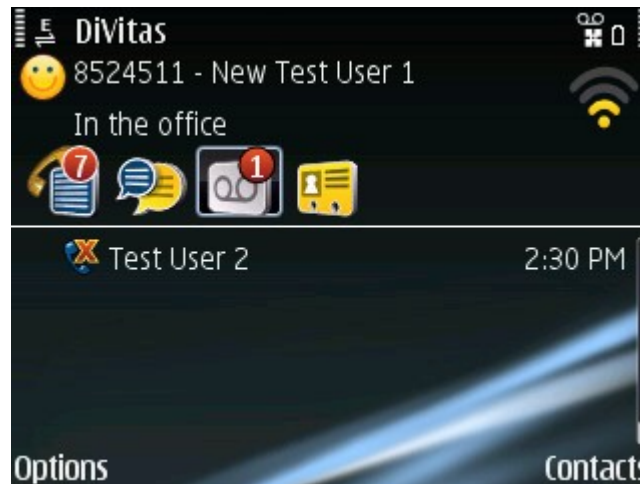
DVOS Version: 2.7.0.0.18 © 2009 DiVitas Networks. All Rights Reserved.

**Figure 37: User’s Voicemail Status**

4. Place a call to a DiVitas Client and allow the call to cover to voicemail. Leave a message.

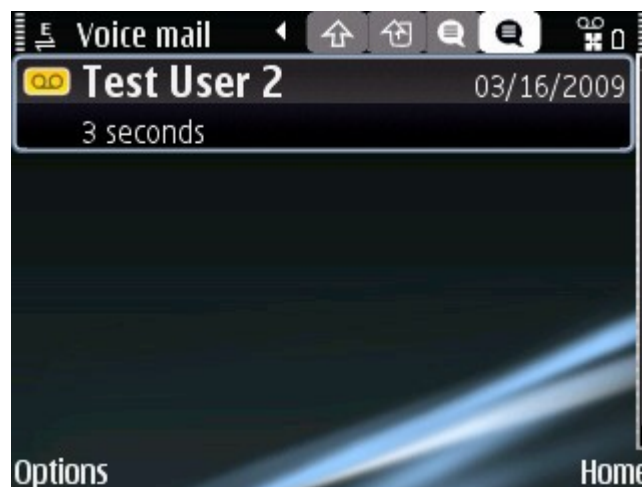


5. After leaving a new voicemail, verify that the visual voicemail application running on the DiVitas Client shows a new message as seen in **Figure 38**.



**Figure 38: Visual Voicemail Application with New Message**

In the list of voicemail messages as shown below, listen to the message on the DiVitas Client.



**Figure 39: Voicemail Messages**

## 9. Conclusion

These Application Notes describe the configuration steps required to provide voicemail coverage to DiVitas Clients registered to DiVitas Mobile Unified Communications using Avaya Modular Messaging. The DiVitas Server was able to access voicemail from Avaya Modular Messaging using the IMAP interface and the DiVitas Clients running on Nokia E- and N-Series mobile handsets were able to retrieve, playback, and delete messages using their visual voicemail application.

## 10. Additional References

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

- [1] *Administrator Guide for Avaya Communication Manager*, Document 03-300509, Issue 4, January 2008, available at <http://support.avaya.com>.
- [2] *Feature Description and Implementation for Avaya Communication Manager*, Document 555-245-205, Issue 6, January 2008, available at <http://support.avaya.com>.
- [3] *SIP Support in Avaya Communication Manager*, Issue 8, January 2008, Document Number 555-245-206, available at <http://support.avaya.com>.
- [4] *Avaya Modular Messaging for the Avaya Message Storage Server (MSS) Configuration Release 5.0 Installation and Upgrades*, February 2009, available at <http://support.avaya.com>.
- [5] *Application Notes for DiVitas Mobile Unified Communications with Avaya Communication Manager and Avaya SIP Enablement Services*, Issue 1.0, available at <http://support.avaya.com>.
- [6] *DiVitas Server Administration Guide*, Version 2.7, Part Number: DOC-DVOS-AG-206.

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