

Avaya Solution & Interoperability Test Lab

# Application Notes for Configuring Avaya one-X® Mobile as part of an Avaya Unified Communication Mobile Worker Solution – Issue 1.0

## Abstract

These Application Notes describe the steps for configuring Avaya one-X® Mobile 5.2 as part of an Unified Communication Mobile Worker solution. Avaya one-X® Mobile is an Enterprise mobility solution that allows users roaming or otherwise located away from the office to access enterprise telephony and unified communications services. More specifically, users can utilize the Avaya one-X® Mobile Unified Communication (UC) client application running on their mobile phones to manage the routing of inbound business calls, place outbound business calls, manage corporate voice messages, and search the corporate directory. The Mobile Extension offer is an integrated solution that provides all the necessary components to enable PBX integration at the enterprise, including a cost control capability for enterprise wireless usage.

Testing was conducted via the Internal Interoperability Program at the Avaya Solution and Interoperability Test Lab.

# 1. Introduction

These Application Notes describe the steps for configuring simulated Enterprise and Branch sites with Avaya Aura<sup>TM</sup> Communication Manager (CM), Avaya Aura<sup>TM</sup> Session Manager, Midsize Business Template (MBT), Avaya SIP Enablement Services (SES), and ISDN-PRI trunks. Avaya one-X<sup>®</sup> Mobile is an Enterprise mobility solution that allows users roaming or otherwise located away from the office to access Enterprise Telephony and Unified Communications (UC) services. More specifically, users can:

• Manage the routing of inbound business calls

Using the Avaya one-X® Mobile UC client application (running on the mobile phone), users can select the destinations, e.g., office phone, mobile phone, home phone, other landline phones, etc., to which inbound business calls are routed. The users can then answer inbound business calls at any of the selected destinations.

• Place outbound business calls

Using the Avaya one-X® Mobile UC client application, users can place outbound business calls from any phone, e.g., mobile phone, home phone, other landline phones, etc. Since these business calls are placed through the Avaya Aura<sup>™</sup> Communication Manager, the user's business number is presented as the calling party number.

- Switch between using the office phone and mobile phone on active calls Users can move active calls from the office phone to the mobile phone, and vice versa. And move active calls from GSM to Enterprise Wireless, and vice versa.
- Manage corporate voice messages Users can view, listen to, save, and delete corporate voice messages from the Avaya one-X® Mobile UC client application.
- Search the corporate directory Using the Avaya one-X® Mobile UC client application, users can search the corporate directory for the contact information of other enterprise users.
- Access one-X® Speech to place and receive calls, using the Avaya one-X® Mobile UC client application.



Figure 1 illustrates the configuration that was used to verify these Application Notes.

Figure 1: Sample Avaya one-X® Mobile Solution Configuration

### 1.1. Call Flows

To understand how the Avaya one-X<sup>®</sup> Mobile solution manages outbound and inbound calls, several call flows are described in this section. The first call scenario illustrated in **Figure 2** is an inbound PSTN call to an Enterprise user enabled with Avaya one-X<sup>®</sup> Mobile. The call arrives via a public trunk at Communication Manager, and due to the Avaya one-X<sup>®</sup> Mobile integration, rings all of the endpoints, e.g., office phone, mobile phone, home phone, other landline phones, etc., selected by the user as receive (**Send Calls**) destinations.

- 1. The inbound PSTN call arrives on Communication Manager and is routed to an Communication Manager extension.
- 2. Since Avaya one-X® Mobile is monitoring calls on the called extension, Avaya one-X® Mobile is aware of the inbound call and looks up the receive destinations that the Avaya one-X® Mobile user associated with the called extension has selected for receiving inbound calls. Avaya one-X® Mobile then instructs Communication Manager to route the call to those receive destinations. In these Application Notes, the calls routed to those receive destinations are referred to as simultaneous ring, or **Simulring**, calls. The called user may then answer the call at **a**) the office phone; **b**) the mobile phone; or **c**) other selected receive destinations. Once the user answers at any one of those destinations, the user is connected to the caller and ringing stops on the other receive destinations.



Figure 2: Inbound PSTN Call Scenario

Solution & Interoperability Test Lab Application Notes ©2010 Avaya Inc. All Rights Reserved. The second call scenario illustrated in **Figure 3** is similar to the first call scenario, except that the call is an internal call from another Communication Manager phone, e.g., an intra-office call.

- 1. A Communication Manager phone calls the office extension of an enterprise user enabled with Avaya one-X® Mobile.
- 2. Since Avaya one-X® Mobile is monitoring calls on the called extension, Avaya one-X® Mobile is aware of the inbound call and looks up the receive destinations that the Avaya one-X® Mobile user associated with the called extension has selected for receiving inbound calls. Avaya one-X® Mobile then instructs Communication Manager to route the call to those receive destinations. In these Application Notes, the calls routed to those receive destinations are referred to as simultaneous ring, or **Simulring**, calls. The called user may then answer the call at **a**) the office phone; **b**) the mobile phone; or **c**) other selected receive destinations. Once the user answers at any one of those destinations, the user is connected to the caller and ringing stops on the other receive destinations.



Figure 3: Inbound Internal Call Scenario

The third call scenario illustrated in **Figure 4** is a business call from a user's mobile phone to a PSTN number, where the call is initiated from the Avaya one-X® Mobile UC client application running on the user's mobile phone.

- 1. Using the Avaya one-X<sup>®</sup> Mobile UC client application, the user enters a request to make a business call between the mobile phone and a PSTN number, e.g., a customer's number. The request is delivered over the Internet via HTTP/HTTPS to Avaya one-X<sup>®</sup> Mobile.
- 2. Avaya one-X<sup>®</sup> Mobile decomposes the request into parts. First, Avaya one-X<sup>®</sup> Mobile instructs Communication Manager to place a call to the calling user's mobile phone number. In these Application Notes, this leg of the overall business call is referred to as the **Callback** call. The calling user answers the **Callback** call.
- 3. Avaya one-X<sup>®</sup> Mobile then instructs Communication Manager to place a call to the destination PSTN number. The destination PSTN phone answers.
- 4. Avaya one-X® Mobile instructs Communication Manager to merge the two call legs, thereby connecting the calling user (on the mobile phone) to the destination PSTN phone.



Figure 4: Outbound PSTN Call From Mobile Phone Call Scenario

The fourth call scenario illustrated in **Figure 5** is similar to the third call scenario, except that the destination number is another Communication Manager extension, e.g., another office extension.

- 1. Using the Avaya one-X® Mobile UC client application, the user enters a request to make a business call between the mobile phone and another Communication Manager extension. The request is delivered over the Internet via HTTP/HTTPS to Avaya one-X® Mobile.
- 2. Avaya one-X<sup>®</sup> Mobile decomposes the request into parts. First, Avaya one-X<sup>®</sup> Mobile instructs Communication Manager to place a call to the calling user's mobile phone number. As in the third call scenario, this leg of the overall business call is referred to as the **Callback** call. The calling user answers the **Callback** call.
- 3. Avaya one-X<sup>®</sup> Mobile then instructs Communication Manager to place a call to the destination extension. The destination extension answers.
- 4. Avaya one-X® Mobile instructs Communication Manager to merge the two call legs, thereby connecting the calling user (on the mobile phone) to the destination extension. Note that if the destination extension is also that of another Avaya one-X® Mobile user, then as in the first call scenario, the called user's selected receive destinations will simultaneously ring, and the called user may answer the call at his/her office phone, mobile phone, or other selected receive destinations.



Figure 5: Outbound Internal Call From Mobile Phone Call Scenario

The fifth call scenario illustrated in **Figure 6** is a business call from a user's landline phone, i.e., not the user's office or mobile phone, to another PSTN number, where the call is initiated from the Avaya one-X<sup>®</sup> Mobile UC client application running on the user's mobile phone.

- 1. Using the Avaya one-X<sup>®</sup> Mobile UC client application, the user enters a request to make a business call between the user's landline phone, e.g., home phone, hotel phone, phones in conference rooms, etc., and another PSTN number, e.g., a customer's number. The request is delivered over the Internet via HTTP/HTTPS to Avaya one-X<sup>®</sup> Mobile.
- 2. Avaya one-X<sup>®</sup> Mobile decomposes the request into parts. First, Avaya one-X<sup>®</sup> Mobile instructs Communication Manager to place a call to the calling user's landline phone number. As in the third call scenario, this leg of the overall business call is referred to as the **Callback** call. The calling user answers the **Callback** call.
- 3. Avaya one-X<sup>®</sup> Mobile then instructs Communication Manager (via Avaya Application Enablement Services) to place a call to the destination PSTN number. The destination PSTN phone answers.
- 4. Avaya one-X<sup>®</sup> Mobile instructs Communication Manager to merge the two call legs, thereby connecting the calling user (on the landline phone) to the destination PSTN phone.



Figure 6: Outbound Call From Landline Phone Call Scenario

The sixth call scenario illustrated in **Figure 7** is one where an active business call on a user's office phone is moved to the user's mobile phone.

- 1. The user is on an active business call on his/her desk phone.
- 2. The user then decides to move the call to his/her mobile phone by pressing the **extend call** button on his/her office phone. Communication Manager places a call to the user's mobile phone number. The user answers at the mobile phone.
- 3. Communication Manager connects the user to the other party on the call, and the user hangs up the office phone. The call appearance on the office phone is still available should the user decide to return to the office phone (see seventh call scenario below).



Figure 7: Move Call From Office Phone to Mobile Phone Call Scenario

The seventh call scenario illustrated in **Figure 8** is one where an active business call on a user's mobile phone is moved to the user's office phone.

- 1. The user is on an active business call on his/her mobile phone.
- 2. The user then returns to his/her office, and sees that the call is also available on the office phone. The user presses the corresponding call appearance on his/her office phone, and the office phone is connected to the other party on the call.
- 3. The user disconnects the mobile phone. If the user decides to move the call back to his/her mobile phone, then the user would have to carry out the sixth call scenario above.



Figure 8: Move Active Call From Mobile Phone to Office Phone Call Scenario

# 2. Equipment and Software Validated

The following equipment and software was used for the sample configuration described in these Application Notes.

Component	Version
Avaya one-X® <sup>™</sup> Mobile Internal Server S8510	Avaya Software 5.2.0.0.69 running on
	Microsoft Windows Server 2003 R2
	Enterprise Edition Service Pack 2
Avaya one-X® <sup>TM</sup> Mobile Handset Server S8510	Avaya Software 5.2.0.0.69 running on
	Microsoft Windows Server 2003 R2
	Enterprise Edition Service Pack 2
Avaya one-X® <sup>TM</sup> Mobile UC Client Application	5.2.0.0.1
Nokia E71	Symbian OS v9.2
Nokia E63	Symbian OS v9.2
Avaya S8720 Server (Access Element Server)	Avaya Aura <sup>TM</sup> Communication
	Manager 5.2
	(\$8720-015-02.1.016.4 with update
	17774)
Avaya G650 Media Gateway	
TN2312BP IP Server Interface (IPSI)	HW15 FW049
TN799DP Control-LAN (C-LAN)	HW01 FW034
TN464GP DS1 Interface	HW06 FW020
TN2224CP Digital Line	HW08 FW015
TN2602AP IP Media Resource 320 (MedPro)	HW08 FW049
Avaya 9630 IP Telephone	Avaya one-X <sup>®</sup> Deskphone Edition
	H.323 Release S3.0
Avaya 9640 IP Telephone	Avaya one-X® Deskphone Edition
	H.323 Release S3.0
Avaya 4620SW IP Telephone	2.9
Avaya Aura <sup>™</sup> System Manager Server S8510	5.2.0.1- SP0
Avaya Aura <sup>™</sup> Session Manager Server S8510	5.2.0.1- SP0
Avaya Modular Messaging on Avaya S8730	5.2 (9.2.150)
Messaging Servers (MAS and MSS)	
Microsoft Active Directory on Microsoft Windows	5.2.3790.3959
Server 2003 R2 x64 Edition Service Pack 2	
Avaya one-X® Speech S8730	5.2.0.38
Avaya S8720 Server (Access Element and Feature	Avaya Aura <sup>TM</sup> Communication
Servers)	Manager 5.2
	(\$8720-015-02.1.016.4 with update
	17774)
Avava Aura <sup>TM</sup> for Midsize Enterprises S8800	52125

#### **Table 1: Equipment and Software Versions**

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### Configuration of Avaya Aura<sup>TM</sup> Communication Manager

This section describes the administration steps for Communication Manager in support of integration with Avaya one-X® Mobile. The steps are performed from the Communication Manager System Access Terminal (SAT) interface. These Application Notes assume that basic Communication Manager administration has already been performed.

## 2.1. System Parameters

This section reviews the Communication Manager licenses and features that are required for the sample configuration described in these Application Notes. For required licenses that are not enabled in the steps that follow, contact an authorized Avaya account representative to obtain the licenses.

Enter the command **display system-parameters special**-applications and naivagate to **Page 7**, verify that **(SA8931)** – **Send IE with EC500 Extension Number** is set to **y**.

```
display system-parameters special-applications
                                                                       7 of
                                                               Page
8
                             SPECIAL APPLICATIONS
                      (SA8888) - Per Station Music On Hold? n
     (SA8889) - Verizon VoiceGenie SIP MIME Message Bodies? n
                 (SA8891) - Verizon VoiceGenie SIP Headers? n
                      (SA8896) - IP Softphone Lamp Control? n
                 (SA8900) - Support for NTT Call Screening? n
              (SA8904) - Location Based Call Type Analysis? n
                  (SA8911) - Expanded Public Unknown Table? n
      (SA8917) - LSP Redirect using special coverage point? n
                         (SA8927) - Increase Paging Groups? n
     (SA8928) - Display Names on Bridged Appearance Labels? n
            (SA8931) - Send IE with EC500 Extension Number? y
          (SA8942) - Multiple Unicode Message File Support? n
          (SA8944) - Multiple Logins for Single IP Address? n
                            (SA8946) - Site Data Expansion? n
                 (SA8957) - PIN Checking for Private Calls? n
  (SA8958) - Increase BSR Polling/Interflow Pairs to 40000? n
                         (SA8965) - SIP Shuffling with SDP? n
  (SA8967) - Mask CLI and Station Name for QSIG/ISDN Calls? n
                     (SA8972) - Overwrite Calling Identity? n
```

Enter the **display system-parameters customer-options** command. On **Page 1** of the systemparameters customer-options form, verify that the **Maximum Off-PBX Telephones – EC500** and **Maximum Off-PBX Telephones - PBFMC** number is sufficient for the number of expected Avaya one-X® Mobile users (one EC500 license per Avaya one-X® Mobile user).

display system-parameters c	ustomer-options	Page	<b>1</b> of 11
	OPTIONAL FEATURES		
G3 Version: V15	Softwa	re Package:	Standard
Location: 1	RFA Syste	m ID (SID):	1
Platform: 6	RFA Modul	e ID (MID):	1
		USED	
	Platform Maximum Ports:	44000 286	
	Maximum Stations:	36000 101	
	Maximum XMOBILE Stations:	0 0	
Maximum	Off-PBX Telephones - EC500:	1000 0	
Maximum	Off-PBX Telephones - OPS:	36000 15	
Maximum	Off-PBX Telephones - PBFMC:	100 0	
Maximum	Off-PBX Telephones - PVFMC:	0 0	
Maximum	Off-PBX Telephones - SCCAN:	0 0	

On **Page 4**, of the **system-parameters customer-options** form, verify that the bolded fields in the following screenshots are set to **y**.

display system-parameters customer	r-opti	ons Page 4 of 11
01	PTIONA	AL FEATURES
Emergency Access to Attendant?	У	IP Stations? y
Enable 'dadmin' Login?	У	
Enhanced Conferencing?	У	ISDN Feature Plus? y
Enhanced EC500?	У	ISDN/SIP Network Call Redirection? y
Enterprise Survivable Server?	n	ISDN-BRI Trunks? y
Enterprise Wide Licensing?	n	ISDN-PRI? y
ESS Administration?	n	Local Survivable Processor? n
Extended Cvg/Fwd Admin?	У	Malicious Call Trace? n
External Device Alarm Admin?	n	Media Encryption Over IP? n
Five Port Networks Max Per MCC?	n	ode Code for Centralized Voice Mail? n
Flexible Billing?	n	
Forced Entry of Account Codes?	n	Multifrequency Signaling? y
Global Call Classification?	n	Multimedia Call Handling (Basic)? y
Hospitality (Basic)?	У	Multimedia Call Handling (Enhanced)? y
Hospitality (G3V3 Enhancements)?	n	Multimedia IP SIP Trunking? n
IP Trunks?	У	
IP Attendant Consoles? n		

## 2.2. Dial Plan and Feature Access Codes

This section briefly describes the dial plan requirements and feature access codes for the configuration described in these Application Notes. Enter the **change dialplan analysis** command to provision the dial plan.

- 3-digit dial access codes (indicated with a Call Type of dac) beginning with the digits 1

   Trunk Access Codes (TACs) defined for trunk groups in this configuration conform to this format.
- 5-digit extensions (indicated with a **Call Type** of **ext**) beginning with the digit **2** extensions for stations in this configuration conform to this format.
- Single-digit (9) feature access codes (indicated with a **Call Type** of **fac**) These dialed strings will be interpreted as Feature Access Codes (FACs). In this configuration, 9 is used as the user-dialed prefix for outbound calls to the PSTN.

change dia	lplan analys	is				Pag	ge 1 of 12
			DIAL PLAN Locat	ANALYSIS	TABLE 1	Perce	nt Full: 2
Dia Str <b>1</b>	led Total ing Length <b>3</b>	Call Type dac	Dialed String *	Total ( Length 7 2 f	Call Type fac	Dialed String	Total Call Length Type
2	5	ext	#	3 t	fac		
3	5	ext					
333	5	aar					
34	5	aar					
350	5	aar					
4	5	aar					
420	5	aar					
5	б	ext					
60	4	aar					
666	5	aar					
7	5	aar					
8	5	aar					
81	5	aar					
9	1	fac					

Enter the **change feature-access-codes** command. On **Page 1** of the **feature-access-codes** form, provision access codes that are valid under the administered dial plan as per this section for the following features:

• Auto Route Selection (ARS) - Access Code 1 – In this configuration, ARS is used for routing calls to the PSTN, and the access code entered here is used as the user-dialed prefix for outbound calls. See Section 2.4.1 for further details on outbound call routing administration.

change feature-access-codes	Page 1 of 9
FEATURE ACCESS CODE (FAC	2)
Abbreviated Dialing List1 Access Code:	
Abbreviated Dialing List2 Access Code:	
Abbreviated Dialing List3 Access Code:	
Abbreviated Dial - Prgm Group List Access Code:	
Announcement Access Code:	
Answer Back Access Code:	
Attendant Access Code:	
Auto Alternate Routing (AAR) Access Code: 8	
Auto Route Selection (ARS) - Access Code 1: 9 A	ccess Code 2:
Automatic Callback Activation:	Deactivation:
Call Forwarding Activation Busy/DA: All:	Deactivation:
Call Forwarding Enhanced Status: Act:	Deactivation:
Call Park Access Code:	
Call Pickup Access Code:	
CAS Remote Hold/Answer Hold-Unhold Access Code:	
CDR Account Code Access Code:	
Change COR Access Code:	
Change Coverage Access Code:	
Contact Closure Open Code:	Close Code:

### 2.3. ISDN-PRI Trunk

In this configuration, an ISDN-PRI trunk is used for both inbound Direct Inward Dialing (DID) calls from, and outbound calls to, the PSTN. Since the ISDN-PRI trunk administration can vary according to customer needs and the ISDN-PRI trunk service offered in a given locale, this section briefly describes the administration options relevant to this configuration. Enter the **add trunk-group t** command, where **t** is the number of an ISDN-PRI trunk group.

```
add trunk-group 100
                                                                          21
                                                            Page
                                                                    1 of
                                 TRUNK GROUP
Group Number: 100
                                    Group Type: isdn
                                                               CDR Reports: y
  Group Name: To Outside world
                                           COR: 1
                                                          TN: 1
                                                                       TAC: 100
Direction: two-way Outgoing Display? y
                                                        Carrier Medium: PRI/BRI
                            Busy Threshold: 255 Night Service:
Dial Access? y
Queue Length: 0
                                     Auth Code? n
                                                              TestCall ITC:
Service Type: tie
rest
                          Far End Test Line No:
TestCall BCC: 4
add trunk-group 100
                                                                    3 of
                                                            Page
                                                                          21
                                 TRUNK FEATURES
      ACA Assignment? n
                                    Measured: none
                                                         Wideband Support? n
                                      rnal Alert? nMaintenance Tests?estriction? nNCA-TSC Trunk Member:Send Name: ySend Calling Number;
                                                           Maintenance Tests? y
                                 Internal Alert? n
                               Data Restriction? n
                                                        Send Calling Number: y
                                                       Send EMU Visitor CPN? n
           Used for DCS? n
                                        Hop Dgt? n
   Suppress # Outpulsing? n Format: public
Outgoing Channel ID Encoding: preferred
                                            UUI IE Treatment: service-
provider
                                                  Replace Restricted Numbers? n
                                                 Replace Unavailable Numbers? n
                                                       Send Connected Number: y
                                                   Hold/Unhold Notifications? y
             Send UUI IE? y
                                                Modify Tandem Calling Number? n
               Send UCID? y
 Send Codeset 6/7 LAI IE? y
                                                      Ds1 Echo Cancellation? n
    Apply Local Ringback? n
Show ANSWERED BY on Display? y
                              Network (Japan) Needs Connect Before Disconnect?
n
```

## 2.4. PSTN Call Routing

This section describes the steps for administering outbound and inbound PSTN call routing on Communication Manager. In this configuration, each user is assigned a DID number. Note that these Application Notes uses Dublin Ireland (10-digit numbers with a leading "353" as the country code where necessary) numbering in all calling and called number examples that follow.

User Extension	User DID (Business Number)
20031	353-1-2075651
20032	353-1-2075652

### 2.4.1. Outbound Calls

This section describes the steps for administering the routing of outbound calls to the PSTN. In this configuration, ARS is used to route outbound calls via the ISDN-PRI trunk described in **Section 2.3** to the PSTN. Outbound call routing is used in the following situations:

- Calls placed by a Communication Manager phone (e.g., an office phone) to PSTN phone numbers.
- **Simulring** calls to receive (**Send Calls**) destinations, e.g., mobile phone, home phone, other landline phones, etc., selected by an Avaya one-X<sup>®</sup> Mobile user for inbound business calls.
- Callback calls from Communication Manager to the phone, e.g., mobile phone, home phone, other landline phone, etc., selected by an Avaya one-X® Mobile user for originating a call.

Enter the **change ars analysis d** command, where **d** is any digit(s). In the **ars digit-conversion** form, provision an entry for each PSTN destination as follows:

- **Dialed String** Enter the leading digits of a dialed PSTN destination, e.g., 9 followed by the destination area code.
- Total Min and Max Enter 10
- **Route Pattern** Enter the number of an unused route pattern (e.g., 100).
- Call Type Enter pubu

In addition, provision another entry to cover the case where enterprise users dial PSTN destinations in the **home** area code of the enterprise office without a leading **9**. For this entry, set **Dialed String** to the leading digits of the dialed PSTN destination, e.g., the **mobile** area code, **Total Min** and **Max** to **10**, **Route Pattern** to the same route pattern as above, and **Call Type** to **pubu**.

change ars analysis 0						Page 1 of	2
-	A	RS DI	GIT ANALY	SIS TABI	LE	5	
		L	ocation:	all		Percent Full:	2
Dialed	Tot	al	Route	Call	Node	ANI	
String	Min	Max	Pattern	Type	Num	Reqd	
0	1	1	deny	op		n	
0	8	8	deny	op		n	
0	11	11	deny	op		n	
00	2	2	deny	op		n	
01	9	17	deny	iop		n	
011	10	18	deny	intl		n	
086	10	10	100	pubu		n	
087	10	10	100	pubu		n	
101xxxx0	18	18	deny	op		n	
101xxxx01	16	24	deny	iop		n	
101xxxx011	17	25	deny	intl		n	
101xxxx1	18	18	deny	fnpa		n	
10xxx0	6	6	deny	op		n	
10xxx0	16	16	deny	op		n	
10xxx01	14	22	deny	iop		n	

#### Figure 9: ARS Analysis Form

In **Figure 9**, entries are shown for outbound calls to 086-xxx-xxxx and 087-xxx-xxxx. Typical deployments generally require additional entries, or the use of less exact or wildcard matching strings, to cover all permitted PSTN destination numbers, but that is beyond the scope of these Application Notes. Ensure that there are entries to cover all permitted PSTN destination numbers, including those of the mobile phones and other receive destinations.

Enter the **change route-pattern**  $\mathbf{r}$  command, where  $\mathbf{r}$  is the route pattern entered Provision an entry as follows:

- Grp No Enter the number of the ISDN-PRI trunk group described in Section 2.3.
- **FRL** Enter the minimum Facility Restriction Level necessary to use this trunk group, with 0 being the least restrictive.
- **Digits** Enter the number **9**

chan	nge 1	coute	e-pat	teri	n 100	D							Pag	je	1	of	3		
					Patt	tern l	Numbei	c: 100	) Pa	ttern	Name:	То	Sils	stacl	k				
							SCCAN	√? n		Secure	SIP?	n							
	Grp	FRL	NPA	Pfx	Нор	Toll	No.	Inser	ted								DCS/	IXC	
	No			Mrk	Lmt	List	Del	Digit	s								QSIG	t T	
							Dgts										Intw	7	
1:	100	0						9									n	user	
2:																	n	user	
3:																	n	user	
4:																	n	user	
5:																	n	user	
6:																	n	user	
	BCC	2 VAI 2 M	LUE 4 W	TSC	CA-: Regi	ISC lest	ITC	BCIE	Ser	vice/F	Peature	PA	RM T	No.	Nu Fo	umber	ring -	LAR	
	0 1	2			10090	acbe							Suba	nddre	ess	3	-		
1:	v v	v v	v n	n			rest	-					2 0.00					none	
2:	v v	v v	v n	n			rest	_										none	
	1 1		2				_ 0.0 (	-											

### 2.4.2. Inbound Calls

This section describes the steps for administering the routing of inbound DID calls to Communication Manager extensions. Once a DID call is routed to an extension, if that extension is also that of an Avaya one-X® Mobile user, then Avaya one-X® Mobile instructs Communication Manager to route the call to all of the receive (**Send Calls**) destinations selected by the user. For the receive destinations that are in the PSTN (e.g., mobile and/or landlines), those calls are routed according to the outbound call routing described in **Section 2.4.1**. In this configuration, inbound calls from the PSTN arrive via the ISDN-PRI trunk described in **Section 2.3**. Enter the **change inc-call-handling-trmt trunk-group t** command, where **t** is the number of the trunk group described in **Section 2.3**, to specify how the called party numbers on inbound calls on the ISDN-PRI trunk are to be interpreted. In the **inc-call-handling-trmt trunk-group** form, provision an entry as follows:

• Called Len – Enter the total number of digits in the called party number.

		change i	nc-call-	-handling-	trmt trunk-group 100
Page 1 of	30				
		INCOMING	CALL HAN	NDLING TRE	ATMENT
Service/	Number	Number	Del	Insert	Per Call Night
Feature	Len	Digits			CPN/BN Serv
tie	53	5650	5	20036	cpn-only
tie	53	5651	5	35651	cpn-only
tie	53	5652	5	70019	cpn-only
tie	53	5653	5	20090	cpn-only
tie	53	5654	5	20002	cpn-only

## 2.5. Voicemail and Avaya one-X® Speech

The integration of Communication Manager with Modular Messaging and one-X® Speech is beyond the scope of these Application Notes.

## 2.6. Configuration for Avaya one-X® Mobile Users

This section describes the steps for enabling Communication Manager stations (users) with Avaya one-X<sup>®</sup> Mobile functionality. The steps assume existing stations, though for new stations, the commands below are simply **add** rather than **change** commands. Enter the **change station e** command, where **e** is the office extension of a user to be enabled with Avaya one-X<sup>®</sup> Mobile. On Page 1 of the **station** form, ensure that a **Coverage Path** is assigned. Coverage paths are typically used to allow inbound calls to a station to be redirected to other extensions, e.g., voicemail, when the station does not answer. The administration of call coverage is beyond the scope of these Application Notes. **Enable IP Softphone =Y** if the user is one-X<sup>®</sup> Communicator.

change stat	tion 20031		Page	1	of	5
			STATION			
Extension:	20031		Lock Messages? n		BCC:	М
Type:	9630		Security Code: 1234		TN:	1
Port:	S00015		Coverage Path 1: 1		COR:	1
Name:	EntUser20031_1	XM	Coverage Path 2:		COS:	1
			Hunt-to Station:			
STATION OP	TIONS					
			Time of Day Lock Table:			
	Loss Group:	19	Personalized Ringing Pattern:	1		
			Message Lamp Ext:	200	31	
	Speakerphone:	2-way	Mute Button Enabled?	У		
Di	splay Language:	english	Button Modules:	0		
Survivable	e GK Node Name:					
:	Survivable COR:	internal	Media Complex Ext:			
Survival	ble Trunk Dest?	У	IP SoftPhone?	У		
			IP Video Softphone?	n		
			Customizable Labels?	У		

On **Page 2** of the **station** form, consider the following. The default **Restrict Last Appearance** of **y** reserves one call appearance for outbound calls only; in other words, if all but one call appearance is occupied, the remaining call appearance may be used for outbound calling only. Setting **Restrict Last Appearance** to **n** allows the remaining appearance to be used for other calls, such as inbound calls. The decision to change this setting from the default is a customer preference.

change station 20032		<b>Page 2</b> of 5	)
	S	TATION	
FEATURE OPTIONS			
LWC Reception:	spe	Auto Select Any Idle Appearance? n	L
LWC Activation?	У	Coverage Msg Retrieval? y	r
LWC Log External Calls?	n	Auto Answer:	
none			
CDR Privacy?	n	Data Restriction? n	L
Redirect Notification?	У	Idle Appearance Preference? n	L
Per Button Ring Control?	n	Bridged Idle Line Preference? n	L
Bridged Call Alerting?	n	Restrict Last Appearance? y	-
Active Station Ringing:	single		
		EMU Login Allowed? n	L
H.320 Conversion?	n P	er Station CPN - Send Calling Number? y	-
Service Link Mode:	as-needed	EC500 State: enabled	
Multimedia Mode:	enhanced		
MWI Served User Type:	sip-adjunct	Display Client Redirection? n	L
		Select Last Used Appearance? n	L
		Coverage After Forwarding? s	;
		Multimedia Early Answer? n	L
		Direct IP-IP Audio	
Connections? y			
Emergency Location Ext:	20031	Always Use? n IP Audio Hairpinning? n	L

On **Pages 4** (and/or 5 if necessary) of the **station** form, provision at least five **call-appr** buttons and one **extend-call** button. Provision an additional **call-appr** button if **Restrict Last Appearance** is set to **y**. **Extend-call** button enables user to move an active call from a desk phone to one-X® Mobile.

change station 20031		Page	<b>4</b> of	5
2	STATIO	ON CON		
SITE DATA				
Room:		Headset? n		
Jack:		Speaker? n		
Cable:		Mounting: d		
Floor:		Cord Length: 0		
Building:		Set Color:		
ABBREVIATED DIALING				
List1:	List2:	List3:		
1. gall_appr	E.	all_appr		
2. call-appr	5	call-appr		
3. call-appr	7.	extnd_call		
4. call-appr	8			
TI CATT GPPT	0.			

Repeat above steps for each user to be enabled with Avaya one-X® Mobile.

# 3. Avaya Modular Messaging with Message Storage Server

This section describes the administration steps for Avaya Modular Messaging with Message Storage Server (MSS) in support of integration with Avaya one-X® Mobile. These Application Notes assume that basic Modular Messaging administration, including user voice mailboxes, has already been performed.

Launch a web browser, enter <u>https://<IP address of Avaya MSS Server</u>> in the URL, and log in with the appropriate credentials. In the left pane under **Messaging Administration**, click on **System Administration**. In the **Administer System Attribute and Ports** page, provision the following fields and click on **Save**:

- LDAP Port Set to Authenticated or Anonymous
- **IMAP4 Port** Use the default port **143** and set to **Enabled**
- IMAP4 SSL Port Use the default port 993 and set to Enabled
- SMTP Port
- Use the default port **25** and set to **Enabled**

<ul> <li>Messaging Administration</li> <li>Subscriber Management</li> <li>Activity Log Configuration</li> </ul>	Increment 1 00 v days 00 v hrs 05 v mins Increment 6 00 v da	1ys 02 🔽 hrs 00 💌 mins
Messaging Attributes Classes-of-Service	Increment 2 00 v days 00 v hrs 55 v mins Increment 7 00 v da	ays 03 💌 hrs 00 💌 mins
Enhanced-Lists Sending Restrictions System Administration	Increment 3 00 v days 01 v hrs 00 v mins Increment 8 00 v da	ays 03 🔻 hrs 00 👻 mins
Request Remote Update Networked Machines Trusted Servers	Increment 4 00 v days 01 v hrs 00 v mins Increment 9 00 v da	ays 05 🔻 hrs 00 💌 mins
<ul> <li>Server Administration</li> <li>Configure Using DCT</li> </ul>	Increment 5 00 • days 02 • hrs 00 • mins Increment 10 00 • da	ays 06 💌 hrs 00 💌 mins
TCP/IP Network Configurat External Hosts MAS Host Setup		
MAS Host Send Windows Domain Setup	SYSTEM TCP/IP PORTS	
Console Reboot Option Date/Time/NTP Server Syslog Server	LDAP Port 389 Authenticated or Anonymous I	fort 636 Enabled 💌
Modem/Terminal Display Modem/Terminal Configure Modem/Terminal Removal	LDAP Internal Server Port 55389 Enabled V Update F	ory 56389 Enabled
<ul> <li>IMAP/SMTP Administration</li> <li>SMTP Options</li> <li>Mail Options</li> </ul>	LDAP Front End Alternate Port	ort 55143 Enabled
IMAP/SMTP Status Server Information	IMAP4 Port 143 Enabled	ort 993 Enabled 💌
Alarm Summary Disk Information	POP3 Port 110 Disabled POP3 SSL F	ort 995 Disabled 💌
Server Notes CMOS Settings RAID Status Rebuild RAID Status	SMTP Port 25 Enabled SMTP Altern	ort Disabled -
Reboot Interval Utilities Rebuild RAID 1 Array	SMTP SSL Port 465 Enabled Subject Stress Str	TP 25 Enabled •
CD/DVD Mount CD/DVD Unmount CD/DVD Eject	MCAPI Port 55000 Enabled	
Messaging DB Audits Start Messaging Stop Messaging Shutdown Server Reboot Server Logs Administration History	Save Help	

In the left pane under **Messaging Administration**, click on **Trusted Server**. In the **Manage Trusted Servers** page, click on **Add a New Trusted Server**.

135.64.189.41 135.64.186.30 192.168.1.250 192.168.1.250 135.64.186.26	Sp   ed   MW   Me:   On	eech Access qe I Server ssaging Application S e-X Portal	Serve
135.64.186.30 192.168.1.250 192.168.1.250 135.64.186.26	ed   MW   Me:   On	qe I Server ssaging Application S e-X Portal	Serve
192.168.1.250 192.168.1.250 135.64.186.26	MW:   Me:   On:	I Server ssaging Application S e-X Portal	Serve
192.168.1.250 135.64.186.26	Me:   On	ssaging Application & e-X Portal	Serve
135.64.186.26	On	e-X Portal	
usted Servers		Delete the Selected Trusted Se	Server
	usted Servers	usted Servers	usted Servers Delete the Selected Trusted S

In the Add Trusted Server page, provision the following and click on Save:

٠	Trusted Server Name	Enter a descriptive name. This name must
		match the Trusted Server Name provisioned
		Section 5.4.3
٠	Password and Confirm Password	This password must match the Trusted
		Server Password provisioned in the one-X
		Mobile® Voicemail Profile in Section 5.4.3
		Steps 0 - 0.
٠	Machine Name / IP Address	Enter the IP address of the internal one-X
		Mobile <sup>®</sup> server.
٠	Service Name	Enter Edge
٠	LDAP Access Allowed and IMAP4 Super	r User Access Allowed
		Set to <b>yes</b>
٠	LDAP Connection Security	Set to No encryption required

• IMAP4 Super User Connection Security Set to Must use SSL or encrypted SASL

Messaging Attributes Classes-of-Service Enhanced-Lists			Password	
Sending Restrictions System Administration Request Remote Update	Trusted Server Name	OneXMobile	<u>Confirm Password</u>	
Networked Machines Trusted Servers Server Administration	Machine Name / IP Address	135.64.186.30	Service Name	edge
Configure Using DCT TCP/IP Network Configura External Hosts	Minutes of Inactivity Before Alarm	0	Default Community	1 💌
MAS Host Setup MAS Host Send Windows Domain Setup	Access to Cross Domain Delivery	no 💌	<u>Special Type</u>	(none)
Console Reboot Option Date/Time/NTP Server Syslog Server	LDAP Access Allowed	yes 💙	LDAP Connection Security	No encryption required 🛛 👻
Modem/Terminal Display Modem/Terminal Configur Modem/Terminal Removal	IMAP4 Super User Access Allowed	yes 💙	IMAP4 Super User Connection Security	Must use SSL or encrypted SASL 🛩
IMAP/SMTP Administration     SMTP Options				
Mail Options IMAP/SMTP Status Server Information	Back	Help		

# 4. Microsoft Active Directory

In this configuration, Microsoft Active Directory is used as the LDAP server. This section describes the administration of users' business numbers, and extensions if necessary, in Microsoft Active Directory.

1. On the Microsoft Active Directory server, launch the Active Directory Users and Computers snap-in. Right-click on a user account and select **Properties**. In the user's **Properties** window, enter the user's DID number as an E.164-formatted number in the **Telephone number** textbox.

Published Certificat	es   M	ember Of	] Dial-in	Object
Security Er	vironment	Sessi	ons	Remote control
Terminal Services	Profile	COM+	10	ommunications
General Address	Account	Profile	Telephone	s   Organization
Ent User	20031		_	
<u>F</u> irst name:	Ent		Initials:	
Last name:	User20031			
Display name:	Ent User20	031		
Description:	1xM user			
Offi <u>c</u> e:				
Ielephone number:	20031			<u>O</u> ther
E- <u>m</u> ail:	User20031	@silstack.c	om	
<u>W</u> eb page:				Other
	-	1		1

Repeat above Steps as necessary for other Avaya one-X Mobile users.

# 5. Avaya one-X® Mobile

This section describes the administration steps for one-X® Mobile Split Server integration with Communication Manager, Modular Messaging with MSS, Corporate Directory, Class of Service and Provisioning Profile. These Application Notes assume that basic one-X® Mobile installation and administration has already been performed. In this sample configuration one-X® Mobile client application is installed on Internal Server.

### 5.1. Licenses

Launch a web browser, enter http://<IP Address of internal one-X® Mobile server>/admin in the URL, and log in with the appropriate credentials. Select the **Status** tab, and verify that there are sufficient licenses. If not, contact an authorized Avaya account representative to obtain the licenses.

itatus Server Setup Avaya Setup Service	ability Licenses	Carrier Offset	Direct Call PBX Numbers
License Information			
Total Licenses		20	
Currently Used		9	
Available Licenses		11	
WebLM Hostname URL		https://1	27.0.0.1:8443/WebLM/LicenseServe
Mobile Release Synchronization			
Please press the Synchronize mobile software release ve synchronize the one-X Mobile database with the most cu for mobile devices. This is required for users to downloa software to their mobile devices. <b>Note:</b> The synchronization will run in the background and complete.	rrsions button below to rrent software release d the correct one-X Mol I may take some time	versions bile to	
Last Synchronized		12/9/200	9 12:27 PM
>>> Synchronize mobile software release version	5		

### 5.2. Settings

To configure IP address of the one-X® Mobile Internal Server. This is not 127.0.0.1 but the server's IP as seen externally.

Select the Server Setup  $\rightarrow$  Settings, and click on tab and provisioning the following.

one-X Mobile Server IP Address

Enter the IP address of the internal one-X® Mobile server

icatus	Server Setup	Avaya Setup	Serviceability	Licenses	Carrier Offset	Direct Call PBX Numbers
ettings	Split Server	Configuration				
_	o					

## 5.3. Split Server Configuration

Configure internal and external servers when there is more than one server used. The Split Server Configuration settings can be configured only if split server setup was chosen at the time of the installation. In this sample configuration Split Server Configuration was used.

Select the Server Setup  $\rightarrow$  Split Server Configuration tab, and click on tab and provisioning the following

- Internal Server IP Address-IP address of the internal one-X Mobile server as it appears to the externals servers.
- Localhost- Leave the default value 127.0.0.1.

#### Click Save.

Click on **Add Trusted Server** to add a server that will be allowed access to the internal server. In this sample configuration 135.64.186.29 was external server used.

- Server Name-Enter descriptive name of the External one-X Mobile server (OneXMobile1)
- Server IP Address-Enter the IP Address of the External one-X Mobile Server
- Server Type-From the drop-down box select the type External

itus	Server Setup	Avaya Setup	Serviceability	Licenses	Carrier Offset	Direct	Call PBX Numbers	5
ttings	Split Server	Configuration						
nlit Go	ruer Configurat	ion						
piic se	iver configurat	1011						
nternal (	Server IP Address		135.64.186.3	0				
calhost			127.0.0.1					
neXMot	oile1		135.64.186.2	9			Delete	
oternal			135.64.186.30				Delete	
							Delete	

## 5.4. Profiles

This section describes the steps for creating profiles on one-X® Mobile. The profiles are used for integration with LDAP servers, Communication Manager and Modular Messaging.

## 5.4.1. Provisioning Profile

A Provisioning Profile defines the parameters for importing user information from an LDAP server. Select the **Avaya Setup**  $\rightarrow$  **Setup Profiles**  $\rightarrow$  **Provisioning Profile** tab, and click on **New Provisioning Profile**".

Status Server Setup Avaya Set	up Serviceability	Licenses	Carrier Offset	Direct Call PBX Numbers
Setup Profiles Users Dial Plans	1			
Class of Service <b>Provisioning Prof</b> i	le CM Profile Vo	icemail Profil	le Corporate D	irectory Profile

In the **New Provisioning Profile** page, click on "**Show Advanced Settings**" and provision the following:

- **Profile Name** Enter a descriptive profile name.
- Ldap Search Type Select the appropriate LDAP type. In this configuration, Active Directory is used.
- LDAP User DN Enter the LDAP Distinguished Name (DN) of a user with permissions to search the LDAP directory. For example, in this configuration, cn=administrator,cn=users,dc=silstack,dc=com is entered
- LDAP Hostname Enter the IP address of the LDAP server
- LDAP Port Number Enter the LDAP server port, typically 389
- LDAP Password Enter the password of the LDAP user above
- LDAP Base DN Enter the base search DN. For example, in this configuration,
- ou=Enterprise Users,dc=silstack,dc=com is entered
- Extension telephone number
- **First Name** Enter the LDAP attribute corresponding to the user's first name. For Active Directory, enter **givenName**

Use defaults for the remaining fields. Click on Save.

Class of Service <b>Provisioning Profile</b> CM Profile Vo	vicemail Profile Corporate Directory Profile
Edit Provisioning Profile	
Profile Name	ProvProfile
	Provision Profile
LDAP Settings	
Note: If you use SSL to connect to a server on a port that is not socket, your connection attempt will fail. The one-X Mobile Admir connection attempts continue to process in the background. This	using SSL or if you use a plain socket to connect to a server's SSL istrative website may not respond for up to 30 minutes while is a characteristic of the SSL protocol.
Ldap Search Type	Active Directory
LDAP User DN	cn=administrator,cn=users,dc=silstack,dc=com
LDAP Hostname	135.64.186.5
LDAP Port Number	389
LDAP Password	•••••
LDAP Base DN	ou=Enterprise Users,do=silstack,do=com
III Hide Advanced Settings	
LDAP Attributes	
Extension	telenhoneNumber
Phone Number	telenhoneNumber
Handle or LiserID	sAMAccountName
First Name	givenName
Last Name	sn
Email	mail
Department	department
Directory Fetch Size	1000
Search Referrals	None 💌

### 5.4.2. CM Profile

A Provisioning Profile defines the parameters for importing user information from an LDAP server.

Select the Avaya Setup → Setup Profiles → CM Profile tab, and click on New CM Profile.

Status Server	Setup Avaya	Setup Serviceab	ility Licenses	Carrier Offset	Direct Call PBX Numbers
Setup Profiles	Users Dial Pl	ans			
Class of Service	Provisioning P	rofile CM Profile	Voicemail Prof	ile Corporate D	irectory Profile
👐 New CM Profi	le				

In the **New CM Profile** page, provision the following:

- **CM Profile Name** Enter a descriptive profile name.
- **Description** Enter a brief profile description
- SIP Port 5060 for TCP non-secure; in case of TLS Port 5061
- SIP Protocol TCP (non-secure) (to match port 5060 as shown)
- Dial Plan Select DP1.To create a dial plan Refer Section 6.7
- one-X Speech Access Number Enter a one-X® Speech access number. Example 80900.
- Clan-IP Enter the IP Address of Communication Manager C-LAN interface

Click on Save.

Setup Profiles Users Dial Plans	
lass of Service Provisioning Profile CM Profile	Voicemail Profile Corporate Directory Profile
Edit CM Profile	
CM Profile Name	CM test
Description	CM_test
SIP Port	5060
SIP Protocol	TCP (non-secure) 💟
Dial Plan	DP1
one-X Speech Access Number	80900
Routing prefixes	
Roading provinces	
Callback routing prefix	
Force callback via mobile device	
Communication Manager	
CLAN IP	135.64.186.6
🕪 Save 🛛 🕪 Cancel 🕬 Delete	

Repeat above steps to integrate more then one Communication Manager to the one-X® Mobile Internal Server.

### 5.4.3. Voicemail Profile

A Voicemail Profile defines the parameters for connecting to the Modular Messaging MSS server to retrieve corporate voice mailbox information for one-X<sup>®</sup> Mobile users. Select the **Avaya Setup**  $\rightarrow$  **Setup Profiles**  $\rightarrow$  **Voicemail Profile** tab, and click on **New Voicemail Profile**.

Status Server	Setup Avaya Setup	Serviceability	Licenses	Carrier Offset	Direct Call PBX Numbers
Setup Profiles	Users Dial Plans				
lass of Service	Provisioning Profile	CM Profile	oicemail Prof	ile Corporate D	irectory Profile

In the **New Voicemail Profile** page, provision the following and click on **Save**:

101	
Profile Name	Enter a descriptive profile name.
Profile Type	Select the appropriate Avaya Modular Messaging
	integration. In this configuration, Modular Messaging
	with MSS is used.
Voicemail Platform Hostname	Enter the IP address of the Avaya MSS server.
IMAP Port	Enter the IMAP4 SSL port provisioned in Section 3
Voicemail Audio Format	Select the appropriate codec. In this configuration, <b>mu</b> -
	law was used.
Trusted Server Name and Trus	ted Server Password
	Enter the Trusted Server Name and Password
	provisioned in Section 3
LDAP User DN	Enter the LDAP DN of the Trusted Server Name above.
	For example, in this configuration,
	cn=onexmobile,dc=Avaya is entered, where
	onexmobile is the Trusted Server Name above. Avaya
	is the default value
LDAP Hostname	Enter the IP address of the Avaya MSS server.
LDAP Port Number	Enter <b>389</b>
LDAP Password	Enter the same password as Trusted Server Password
	above.
LDAP Base DN	Enter ou=People,dc=Avaya
Voicemail Mailbox ID Source	Set to Extension
	Profile Name Profile Type Voicemail Platform Hostname IMAP Port Voicemail Audio Format Trusted Server Name and Trus LDAP User DN LDAP Hostname LDAP Port Number LDAP Password LDAP Base DN Voicemail Mailbox ID Source

Click on Save.

status Server Setup	Avaya Setup	Serviceability	Licenses	Carrier Offset	Direct Call PBX Numbers	
etup Profiles Users	Dial Plans					
lass of Service Prov	isioning Profile	CM Profile Va	icemail Prof	<mark>ile</mark> Corporate D	virectory Profile	
Edit Voicemail Profile						
Profile Name				voicemail_p	rofile	
Profile Type				Modular Mes	saging with MSS 🛛 😽	]
Voicemail Platform Hostna	ame			135.64.186.3	35	
IMAP Port				993		
Voicemail Audio Format				mu-law		
111						
MSS Administrative U	ser Setting					
Trusted Server Name				one×mobile		
Trusted Server Password				•••••		
<u>h</u>						
MSS LDAP Settings						
LDAP User DN				cn=one×mob	vile,dc=Avaya	
LDAP Hostname				135.64.186.3	35	
LDAP Port Number				389		
LDAP Password				•••••		
LDAP Base DN				ou=People,c	lo=Avaya	
Voicemail Mailbox Set	tings					
Voicemail Mailbox ID Sou	rce			Extension	×	
III Save III Cancel	>>> Delete					

### 5.4.4. Corporate Directory Profile

A Corporate Directory Profile defines the parameters for connecting to and searching a corporate directory server. Select the Avaya Setup  $\rightarrow$  Setup Profiles  $\rightarrow$  Corporate Directory Profile tab, and click on New Corporate Directory Profile.

one <del>X</del>					
Status Server	<mark>Setup</mark> Avaya S	etup Serviceability	Licenses	Carrier Offset	Direct Call PBX Numbers
Setup Profiles	Users Dial Pla	15			
Class of Service	Provisioning Pro	ofile CM Profile 1	/oicemail Profile	e Corporate D	irectory Profile
👐 New Corpora	te Directory Profil	e			

In the **New Corporate Directory Profile** page, click on "**Show Advanced Settings**" and provision the following:

•	Profile Name	Enter a descriptive profile name
•	Ldap Search Type	Select the appropriate LDAP type. In this configuration, <b>Active Directory</b> is used
•	LDAP User DN	Enter the LDAP Distinguished Name (DN) of a user with permissions to search the LDAP directory. For example, in this configuration, an=Administrator an=users da=silsteak da=aom is
		entered
•	LDAP Hostname	Enter the IP address of the LDAP server.
•	LDAP Port Number	Enter the LDAP server port, typically <b>389</b>
•	LDAP Password	Enter the password of the LDAP user above
٠	<b>Corporate Directory Searc</b>	h Base DN
		Enter the base search DN. For example, in this configuration, " <b>ou=Enterprise Users,dc=silstack,dc=com</b> " is entered.
•	Extension	Enter telephoneNumber
•	First Name	Enter the LDAP attribute corresponding to the user's first name. For Active Directory, enter <b>givenName</b>

Use defaults for the remaining fields. Click on Save.

tatus Server	Setup	Avaya Setup	Serviceabi	lity Licenses	Carrier Offset Dire	ct Call PBX Numbers	
etup Profiles	Users	Dial Plans					
lass of Service	Provis	ioning Profile	CM Profile	Voicemail Prof	le Corporate Directo	ry Profile	
Edit Corporate	Director	y Profile					
Profile Name					CorpDirProfile		
Description					Corporate Directory Pr	ofile	
LDAP Settings							
Note: If you use S socket, your conn connection attemp	SL to con ection atte ots continu	nect to a server or empt will fail. The Je to process in th	n a port that is one-X Mobile A e background.	not using SSL or if dministrative websit This is a characteris	rou use a plain socket to co e may not respond for up t tic of the SSL protocol.	onnect to a server's SSL o 30 minutes while	
Ldap Search Type					Active Directory 😽		
LDAP User DN					cn=Administrator,cn=u:	sers,do=silstack,do=com	
LDAP Hostname				135.64.186.5	135.64.186.5		
LDAP Port Number					389		
LDAP Password					•••••		
Corporate Director	y Search	Base DN			ou=Enterprise Users,do	=silstack,dc=com	
>>> Hide Advanc	ed Settir	ngs					
User LDAP Filter					objectclass=user		
Extension					telephoneNumber		
Phone Number					telephoneNumber		
Handle or UserID					sAMAccountName		
First Name					givenName		
Last Name					sn		
Email					mail		
Department					department		
Directory Fetch Siz	:e				1000		
Search Referrals					None 🖌		
🕪 Save 🛛 🕨	Cancel	Delete					

#### Click on Save.

### 5.4.5. Class of Service

A Class of Service aggregates the aforementioned profiles along with several additional settings. Each one-X<sup>®</sup> Mobile user is assigned to a Class of Service. Select the Avaya Setup  $\rightarrow$  Setup **Profiles**  $\rightarrow$  Class of Service tab, and click on New Class of Service.



In the **New Class of Service Profile** page, provision the following:

- Class of Service Name Enter a descriptive name
- **Provisioning Profile** Set to the Provisioning Profile administered in Section 5.4.1
- Voicemail Profile Set to the Voicemail Profile administered in Section 5.4.3
- Corporate Directory Profile

Set to the Corporate Directory Profile administered in **Section 5.4.4** 

• **CM Profile** Set to the Corporate Directory Profile administered in **Section** 5.2.2

Use defaults for the remaining fields. Click on Save.

ass of Service Provisioning Profile CM Profile Voicemail Pr	ofile Corporate Directory Profile
dit Class of Service Profile	
lass of Service Name	cos
rescription	Class of Service
rovisioning Profile	ProvProfile 😵
oicemail Profile	voicemail_profile
orporate Directory Profile	CorpDirProfile
:M Profile	Chi_test
ecurity	
Allow unicompail to be started on the mobile device	
Allow voicemail to be forwarded via email	
Require login each time oper? Mobile is launched on mobile deuice	
I require login each time one x mobile is fault and on mobile device	7
ince period for which a user is locked out in minutes	- /
	1
vial Plan Settings	
laximum number of phones to Send Calls to (2 to 5)	5
STN Prefix	9
] Require DTMF (Dual Tone Multi-Frequency) during CallBack via PBX.	5 <b>L</b>
Require DTMF (Dual Tone Multi-Frequency) during incoming calls.	
Translate e-164 numbers to extensions	
Use user entered to dialable dial plan	
Use National Direct Dialing Prefix	
1obile Client Settings	
Require dient software upgrades	
– lumber of days to warn users before making updates mandatory	5
ierver	
	English (US)

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#### **Class of Service Profile Page – Continued**

Continuing in the New Class of Service Profile page, provision the following and click on Save:

- Determine Extensions from If the users' extensions and the users' LDAP telephone numbers do NOT share a common suffix, i.e., do NOT have common trailing digits, set to From LDAP extension attribute. If the users' extensions are suffixes of the users' LDAP telephone numbers, then set to 10 digit phone number manually
- Other LDAP Attribute Source Profiles fields Set to Provisioning Profile.

ndle or UserID Digit Phone Number st Name st Name ail partment termine Extension from	Provisioning Profile   Provisioning Profile  Provisioning Profile  Provisioning Profile
Digit Phone Number st Name ail partment termine Extension from	Provisioning Profile
st Name st Name ail partment termine Extension from	Provisioning Profile
st Name ail partment termine Extension from	Provisioning Profile
ail partment termine Extension from	The standard
partment termine Extension from	Provisioning Profile
termine Extension from	Provisioning Profile
	From LDAP extension attribute
AP Extension Source	Provisioning Profile 🔹

New Class of Service Profile Page – Continued

• Automatically using DMCC – Appears if Determine Extensions from is set to 10 digit phone number manually. Select this if the customer elects to use Avaya AE Services Dial Plan rules to convert one-X® Mobile users' LDAP telephone numbers to users' extensions.

Handle or UserID	Provisioning Profile 🛛 💙
Phone Number	Provisioning Profile 💙
First Name	Provisioning Profile 💙
Last Name	Provisioning Profile 💙
Email	Provisioning Profile 🛛 👻
Department	Provisioning Profile
Determine Extension from	LDAP extension attribute
LDAP Extension Source	Provisioning Profile

#### Click on Save.

Repeat above steps to integrate more then one Communication Manager to the one-X® Mobile Internal Server. Under **CM Profile** field select the second Communication Manager to integrate.

RJ; Reviewed:	Solution & Interoperability Test Lab Application Notes	41 of 48
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### 5.5. Import Users

This section describes the steps for importing users into the Avaya one-X $\otimes$  Mobile database. Select the Avaya Setup  $\rightarrow$  Users  $\rightarrow$  Import Users tab and provision the following:

- Class of Service Set to the one-X® Mobile Class of Service administered in Section 0.
- **Filter** Enter an LDAP search filter string, for example, **cn=\*e\*** searches for users with an "e" in their name. In this sample configuration the user name begins with "e"

Click on Import Users.

tatus Serv	er Setup	Avaya Setup	Serviceability	Licenses	Carrier Offset	Direct Call PBX Numbe	rs	
etup Profiles	Users	Dial Plans						
icensed User	Manageme	ent Unlicensed	l User Manageme	nt Import	t Users			
Class Of Servi	ce:				cos	*		
Filter:					cn=e*			
	are like	Clear Changes						

Select the Avaya Setup  $\rightarrow$  Users  $\rightarrow$  Unlicensed User Management tab. Select the users to be imported into the one-X<sup>®</sup> Mobile database and click on License Selected Users.

≥×`							
Server Setup	Avaya Setup S	erviceability	Licenses	Carrier Offset	Direct Call PBX Numbers		
Profiles Users	Dial Plans						
d User Managem	ent Unlicensed U	ser Manageme	nt Impor	t Users			
ense Selected Us	ers 🛛 👐 Delete Se	elected Users				👐 Search	
ange Class of Ser	vice					Sort by:	Extension 👻
User20031	Ent		2003:	ı cos	-	٠	Details
User20032	Ent		2003	2 COS	3. <u>-</u> 21	•	Details
User20033	Ent		2003:	3 COS	2 <del>4</del> 8	•	Details
	Server Setup Profiles Users d User Managem ense Selected Us ange Class of Ser User20031 User20032 User20033	Server Setup Avaya Setup S Profiles Users Dial Plans d User Management Unlicensed Users ense Selected Users Dial Plans User20031 Ent User20032 Ent User20033 Ent	Server Setup Avaya Setup Serviceability Profiles Users Dial Plans ad User Management Unlicensed User Manageme ense Selected Users IIII Delete Selected Users ange Class of Service User20031 Ent User20032 Ent User20033 Ent	Server Setup Avaya Setup Serviceability Licenses Profiles Users Dial Plans d User Management Unlicensed User Management Import ense Selected Users IIII Delete Selected Users ange Class of Service User20031 Ent 2003: User20032 Ent 2003:	Server Setup       Avaya Setup       Serviceability       Licenses       Carrier Offset         Profiles       Users       Dial Plans       Import Users       Import Users         Id User Management       Unlicensed User Management       Import Users       Import Users         ense Selected Users       Import Users       Import Users       Import Users         User20031       Ent       20031       Cos         User20032       Ent       20032       Cos         User20033       Ent       20033       Cos	Server Setup Avaya Setup Serviceability Licenses Carrier Offset Direct Call PBX Numbers   Profiles Users Dial Plans Import Users Import Users   d User Management Unlicensed User Management Import Users   ense Selected Users Import Users Import Users   user20031 Ent 20031 CoS   User20032 Ent 20032 CoS   user20033 Ent 20033 CoS	Server Setup Avaya Setup Serviceability Licenses Carrier Offset Direct Call PBX Numbers   Profiles Users Dial Plans Import Users   d User Management Unlicensed User Management Import Users   ense Selected Users >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

## 5.6. Direct Call PBX Numbers

This section describes the administration of Direct Call PBX Numbers to allow one-X® Mobile users to call other Communication Manager extensions and extension ranges, i.e., voicemail access, conference rooms, hunt groups, etc. Select the **Direct Call PBX Numbers** tab and click on **New Direct Call PBX Number**.

RJ; Reviewed:	Solution & Interoperability Test Lab Application Notes	42 of 48
SPOC 03/01/2010	©2010 Avaya Inc. All Rights Reserved.	UCMW_1XM52

	<b>:</b> ≯°							
Status	Server Setup	Avaya Setup	Cisco Setup	Serviceability	Licenses	Carrier Offset	Direct Call PBX Nun	nbers
Direct C	all PBX Numbers	:						
Neu	Direct Call PBX N	Jumber						Help
A NOW	DITECCEDITEDAT	A A A A A A A A A A A A A A A A A A A						Direct Call

In the New Direct Call PBX Number page, provision the following and click on Save:

- Switch HostName Set to the IP address of the Communication Manager server.
- Leading String Enter enough leading digits to match a Communication Manager extension or extension range.
- **Digit Count** Enter the number of digits in the Communication Manager extension or extension range.

	Server Setup	Avaya Setup	Serviceability	Licenses	Carrier Offset	Direct Call PBX Numbers
rect C	all PBX Numbers	5				
Jew D	irect Call PRY Nu	mber				
ICW D	inect call Fbx Nu	liber				
	lostName				135.64.186.6	~
witch H					200	
witch F .eading	; String					

Click on Save.

Repeat above steps to access for number different extensions.

## 5.7. Dial Plans

These are used to deal with a situation where the caller ID for an incoming call arrives as an extension. This can happen if the caller is on the same switch but not identified in the enterprise directory and one-X<sup>®</sup> Mobile is not able to resolve the number.

Select the Avaya Setup  $\rightarrow$  Dial Plans  $\rightarrow$  Extension Conversion Dial Plans  $\rightarrow$  Add New Conversion Dial Plan and provision the following

• **Dial Plan Name** Enter a descriptive name

RJ; Reviewed:	Solution & Interoperability Test Lab Application Notes	43 of 48
SPOC 03/01/2010	©2010 Avaya Inc. All Rights Reserved.	UCMW_1XM52

Enter **Min Length, Max Length, Starts with, Del Length and Prepend** as per the requirement. In this configuration following was used as shown below. Click on **Save**.

	Setup Avaya Setu	Serviceability	Licenses Car	rier Offset Direct	Call PBX Numbe	ers	
tup Profiles	Users Dial Plans						
	78						
dit Extension C	onversion Plan						
				DP1			
ial Plan Name:							
) Pattern Matchin	g 🔘 Regular Expression						
ial Plan Name: Pattern Matchin Min Length	g ORegular Expression	Starts with	Del Length	Prepend			

Click on Save.

# 6. Configuring the Avaya one-X Mobile User Account

Before user begin using one-X<sup>®</sup> Mobile, the user needs to set up their account on the one-X<sup>®</sup> Mobile Client web site and on the Mobile handset. The following procedure is for first time users.

## 6.1. one-X® Mobile Client web site

To log in to the one-X® Mobile Client web site (for the first time and set up your account). Open the Web browser on your PC with URL http://<IP Address of internal one-X Mobile server>/.

### Note:

You can set up your user account only from the PC browser; you cannot set it up from the one-X® Mobile browser. Using http/https as advised by your system administrator, go to your corporate URL for the one-X® Mobile Server. The one-X® Mobile Web site login page appears. In the **Username** field, enter your corporate computer username. In the **Password** field, enter your corporate computer password. Click the **Log In** button. Enter the Modular Messaging password. **The End User Lice**nse Agreement appears.

### Note:

The Modular Messaging password prompt does not appear if the Avaya one-X® Mobile Web account is configured without voicemail. Read the license agreement, and then click the **Accept** button. Select the option that exactly matches the message on the screen of your desk phone, and then click the **OK** button.

### Note:

If you have a shared phone extension, you are prompted to identify your desk phone. On the one-X® Mobile Setup page, enter your 10-digit mobile phone number, and then click the **Next** 

RJ; Reviewed:	Solution & Interoperability Test Lab Application Notes	44 of 48
SPOC 03/01/2010	©2010 Avaya Inc. All Rights Reserved.	UCMW_1XM52

button. Select your mobile carrier from the drop-down menu, and then click the **Next** button. Select your mobile manufacturer from the drop-down menu, and then click the **Next** button. Select your mobile model from the drop-down menu, and then click the **Next** button.

## 6.2. one-X® Mobile Client Handset

This section provides the procedure to set up your Avaya one-X<sup>®</sup> Mobile account assuming the administrator has installed the Avaya one-X<sup>®</sup> Mobile application on your mobile device. The first time you use the Avaya one-X<sup>®</sup> Mobile application on your mobile device, you must log in with your corporate computer username and password. See your system administrator for the URL for the one-X<sup>®</sup> Mobile server and the protocol (http or https) you should use when logging in for this first time. To log in for the first time, select **Start**  $\rightarrow$  **one-X Mobile**.

### Note:

You might find this application in the **downloads** folder on newer devices. Enter the URL or IP address of the Avaya one-X® Mobile External server. In the **Server Protocol** drop-down menu, select the appropriate protocol. In the **Username** field, enter your corporate computer username. This entry is case sensitive. In the **Password** field, enter your corporate computer password. This entry is case sensitive. Select **Login**.

# 7. Verification Steps

The following steps may be used to verify the configuration. After importing and licensing the user on one-X® Mobile Internal server and configuring one-X® Mobile client account through the web, verify the status of the one-X® Mobile extension and on off-pbx-telephone station-mapping on Communication Manager as shown below.

```
status station 20031
                              GENERAL STATUS
    Administered Type: 9630
                                        Service State: in-service/on-hook
                                   TCP Signal Status: connected
       Connected Type: 9630
           Extension: 20031
                Port: S00015
                                  Parameter Download: complete
          Call Parked? no
                                        SAC Activated? no
     Ring Cut Off Act? no
Active Coverage Option: 1
                                  one-X® Server Status: trigger
                                 Off-PBX Service State: in-service/active
         EC500 Status: N/A
  Message Waiting: VM Server
  Connected Ports:
 Limit Incoming Calls? no
User Cntrl Restr: none
                                             HOSPITALITY STATUS
Group Cntrl Restr: none
                                          Awaken at:
                                           User DND: not activated
                                          Group DND: not activated
                                        Room Status: non-guest room
display off-pbx-telephone station-mapping 20031
                                                          Page
                                                                 1 of
                                                                        3
                 STATIONS WITH OFF-PBX TELEPHONE INTEGRATION
                                                  Trunk Config Dual
Station
             Application Dial CC Phone Number
Extension
                        Prefix
                                                  Selection Set
                                                                      Mode
20031
```

Place inbound calls to a one-X® Mobile user and verify that all of the user's selected receive destinations ring. Answer the calls, verify two-way talkpath, and verify that the calls remain stable for several minutes and disconnect properly. Use the one-X® Mobile UC client application to place outbound calls from a one-X® Mobile user's phones (mobile phone, home phone, other landline phones, etc.). Answer the calls, verify two-way talkpath, and verify that the calls remain stable for several minutes and disconnect properly. Leave voice messages on an one-X® Mobile user's corporate voice mailbox and verify that the user's one-X® Mobile UC client application correctly displays the number of new voice messages.

Use the one-X® Mobile UC client application to view, listen to, save, and delete voice messages, and verify that Avaya Modular Messaging is updated accordingly. Perform the same functions on Modular Messaging and verify that the one-X® Mobile UC client application is updated accordingly.

RJ; Reviewed:	Solution & Interoperability Test Lab Application Notes	46 of 48
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# 8. Conclusion

These Application Notes described the steps for configuring Avaya one-X® Mobile and Communication Manager with Mobile Extension and ISDN-PRI trunks. Avaya one-X® Mobile is an Enterprise Mobility solution that allows users roaming or otherwise located away from the office to access enterprise telephony and unified communications services. The Mobile Extension offer is an integrated solution that provides all the necessary components to enable PBX integration at the enterprise, including a cost control capability for enterprise wireless usage. The Mobile Extension offer is based on the combination of enterprise communications products.

The sample configuration shown in these Application Notes is representative of a basic enterprise customer configuration and is intended to provide configuration guidance to supplement other Avaya product documentation. It is based upon formal interoperability compliance testing as part of the Avaya Interoperability testing.

# 9. Additional References

The Avaya product documentation is available at <u>http://support.avaya.com</u> unless otherwise noted.

- [1] Avaya one-X®<sup>TM</sup> Mobile Installation Guide,
- [2] Avaya one-X®<sup>TM</sup> Mobile Integration, Administration, and Maintenance Guide,
- [3] Administrator Guide for Avaya Communication Manager,
- [4] Feature Description and Implementation for Avaya Communication Manager,
- [5] Avaya one-X<sup>®TM</sup> Mobile Web User Guide,
- [6] Avaya one-X®<sup>TM</sup> Mobile User Guide for iPhone,
- [7] Avaya one-X®<sup>TM</sup> Mobile User Guide for RIM BlackBerry
- [8] Avaya one-X<sup>®</sup><sup>TM</sup> Mobile User Guide for Windows Mobile,
- [9] Avaya one-X<sup>®TM</sup> Mobile User Guide for <u>Symbian</u> Mobile,

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