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™ Communication Manager (CM), Avaya Aura ™ Session Manager, Midsize Business Template (MBT), Avaya SIP Enablement Services (SES), 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 (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™ 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.

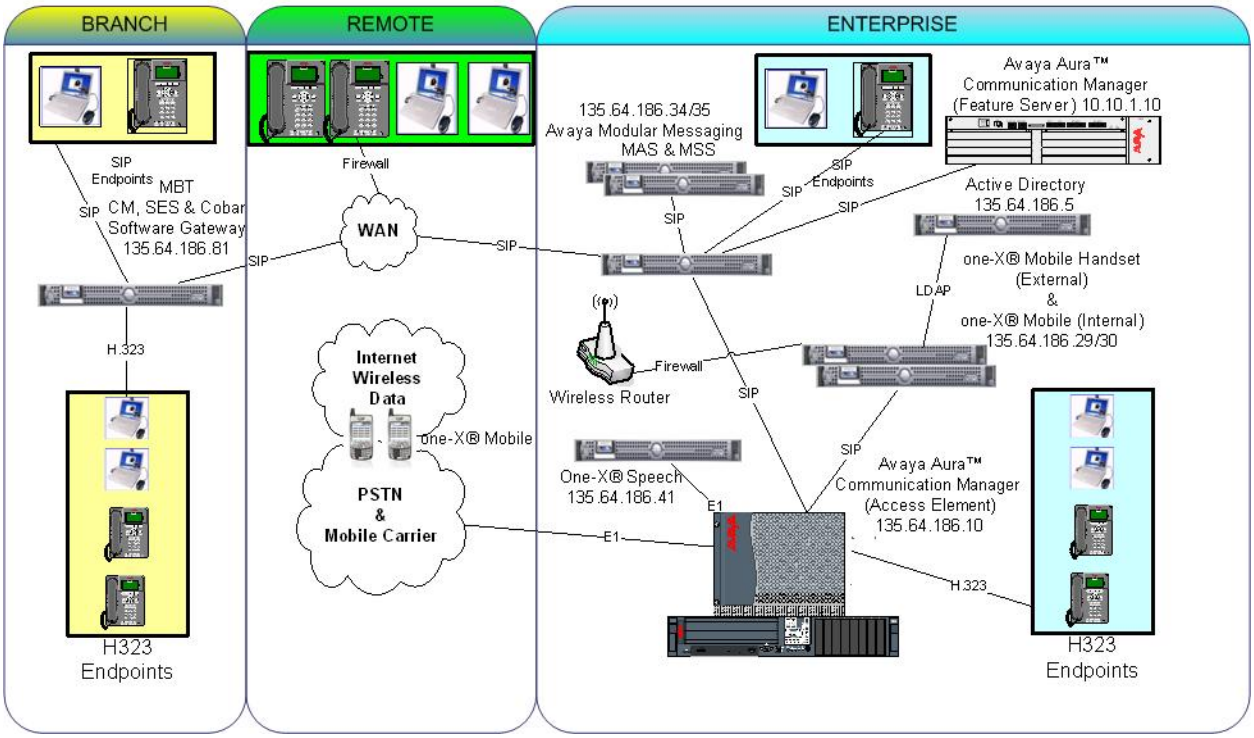


Figure 1: Sample Avaya one-X® Mobile Solution Configuration

1.1. Call Flows

To understand how the Avaya one-X® 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® Mobile. The call arrives via a public trunk at Communication Manager, and due to the Avaya one-X® 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.

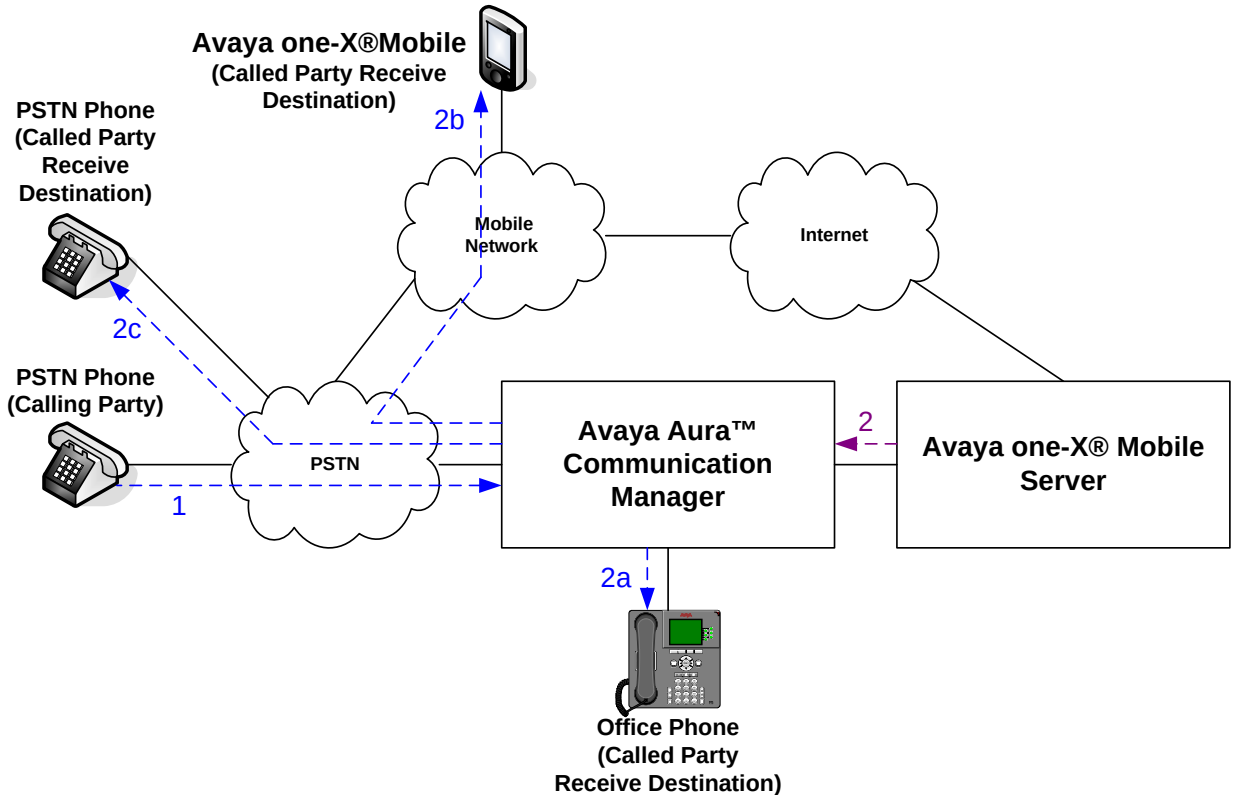


Figure 2: Inbound PSTN Call Scenario

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.

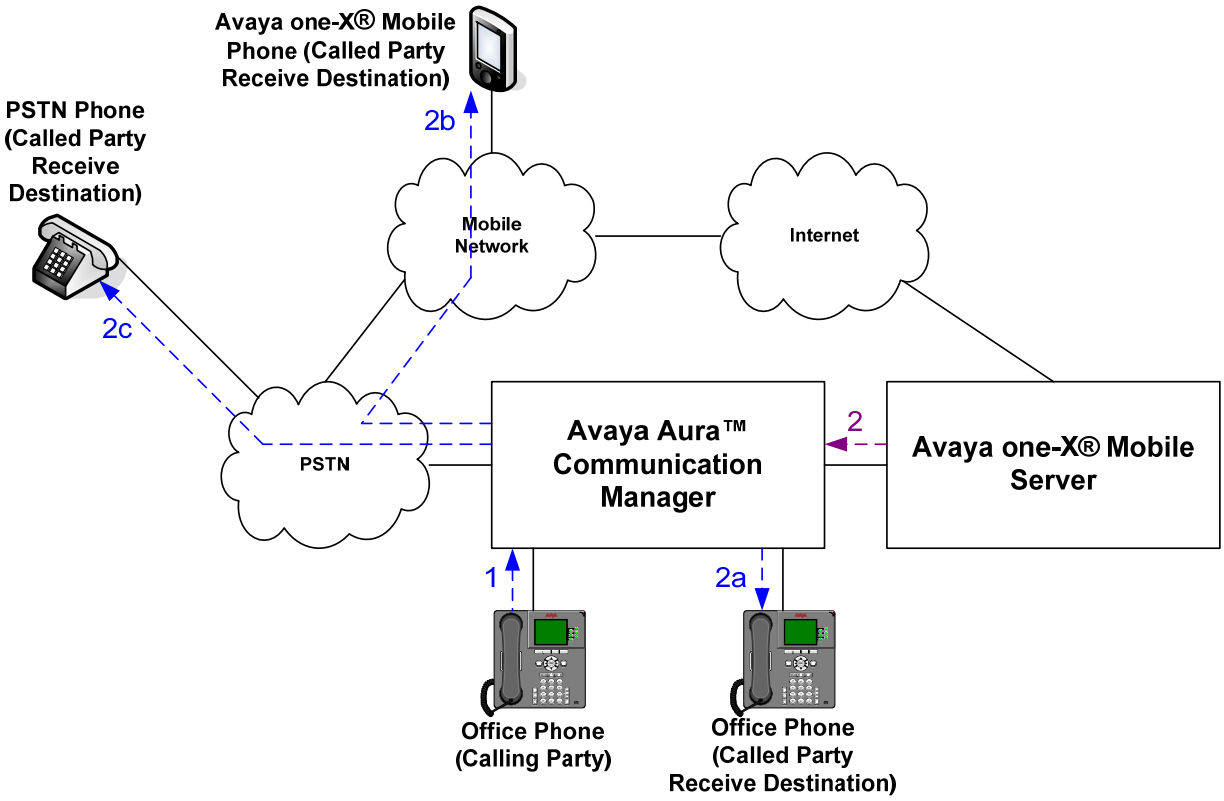


Figure 3: Inbound Internal Call Scenario

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® 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® Mobile.
2. Avaya one-X® Mobile decomposes the request into parts. First, Avaya one-X® 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® 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.

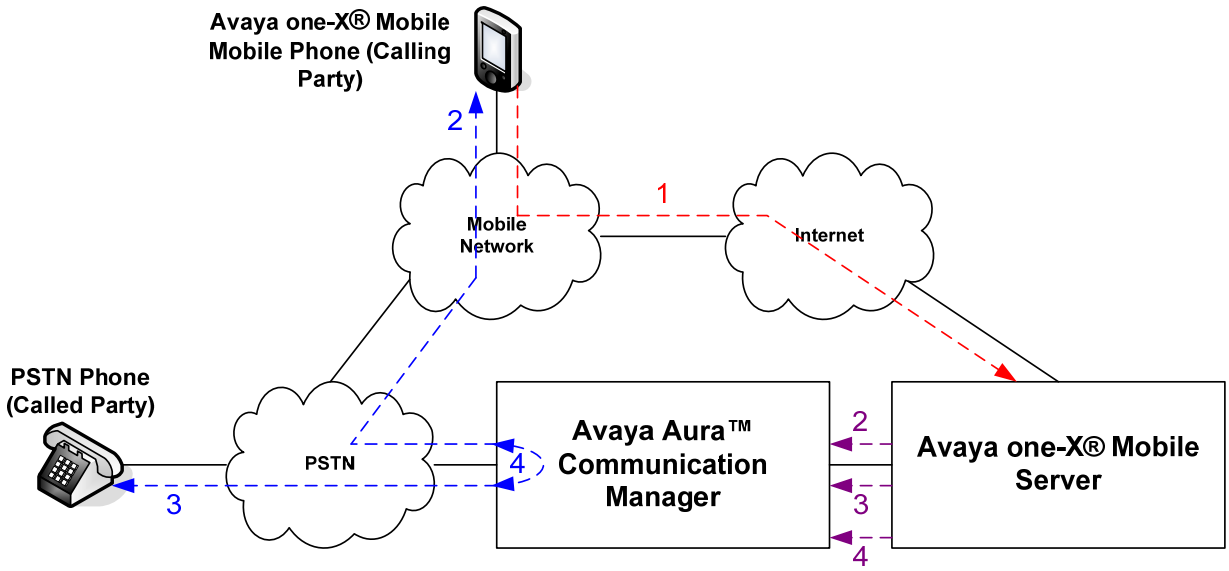


Figure 4: Outbound PSTN Call From Mobile Phone Call Scenario

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® Mobile decomposes the request into parts. First, Avaya one-X® 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® 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.

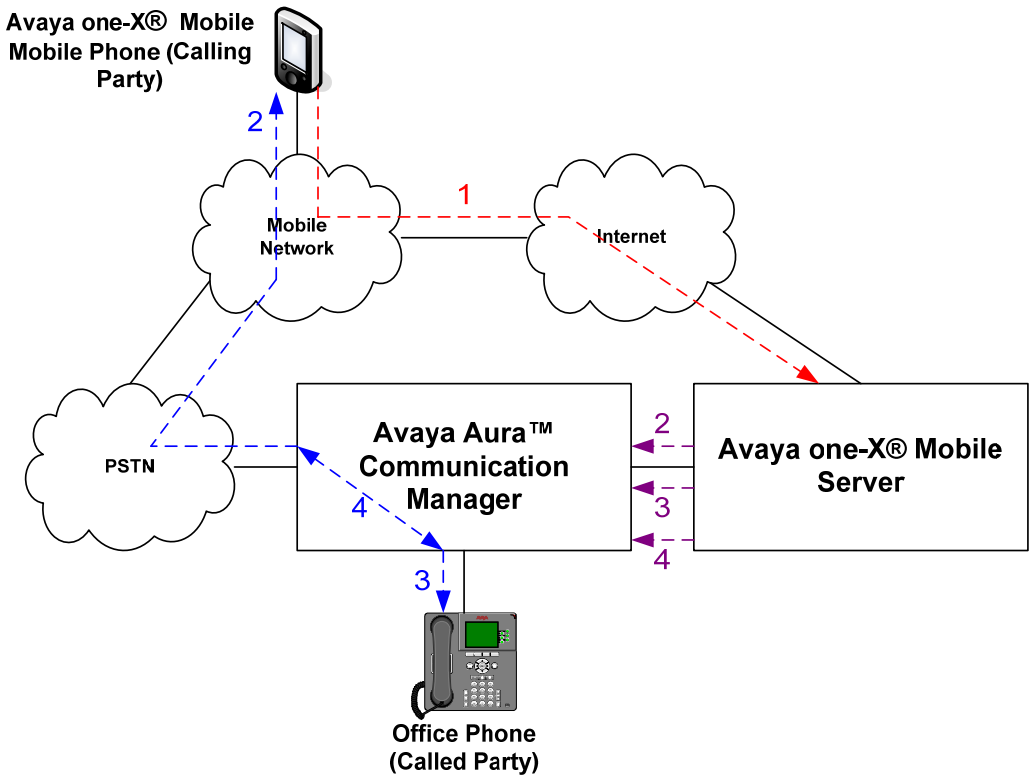


Figure 5: Outbound Internal Call From Mobile Phone Call Scenario

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® Mobile UC client application running on the user's mobile phone.

1. Using the Avaya one-X® 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® Mobile.
2. Avaya one-X® Mobile decomposes the request into parts. First, Avaya one-X® 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® 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® Mobile instructs Communication Manager to merge the two call legs, thereby connecting the calling user (on the landline phone) to the destination PSTN phone.

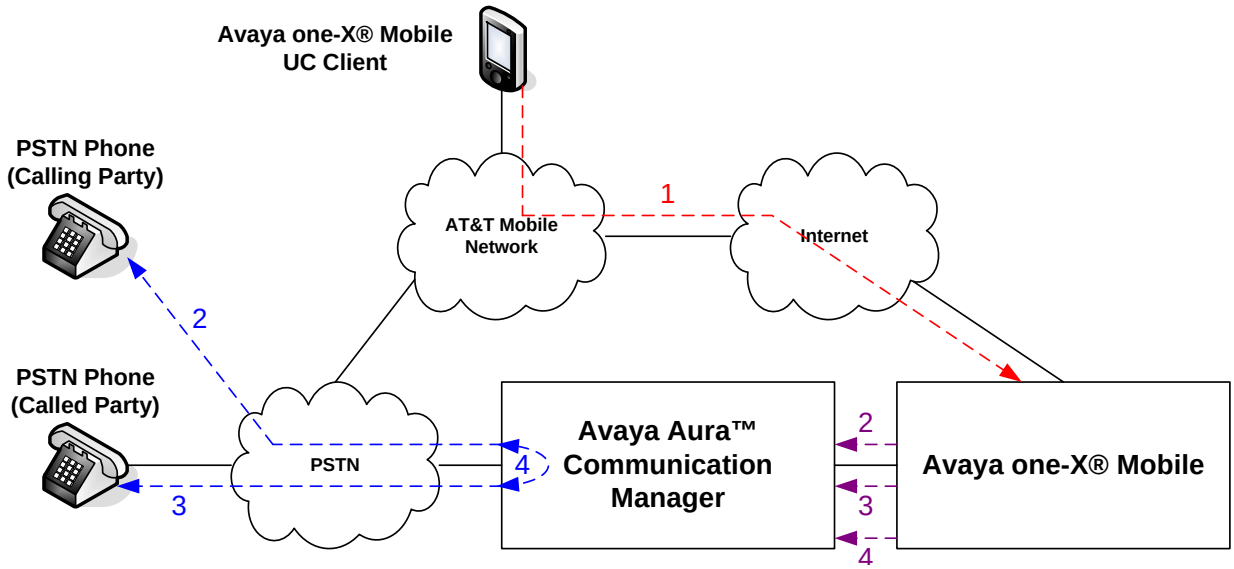


Figure 6: Outbound Call From Landline Phone Call Scenario

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).

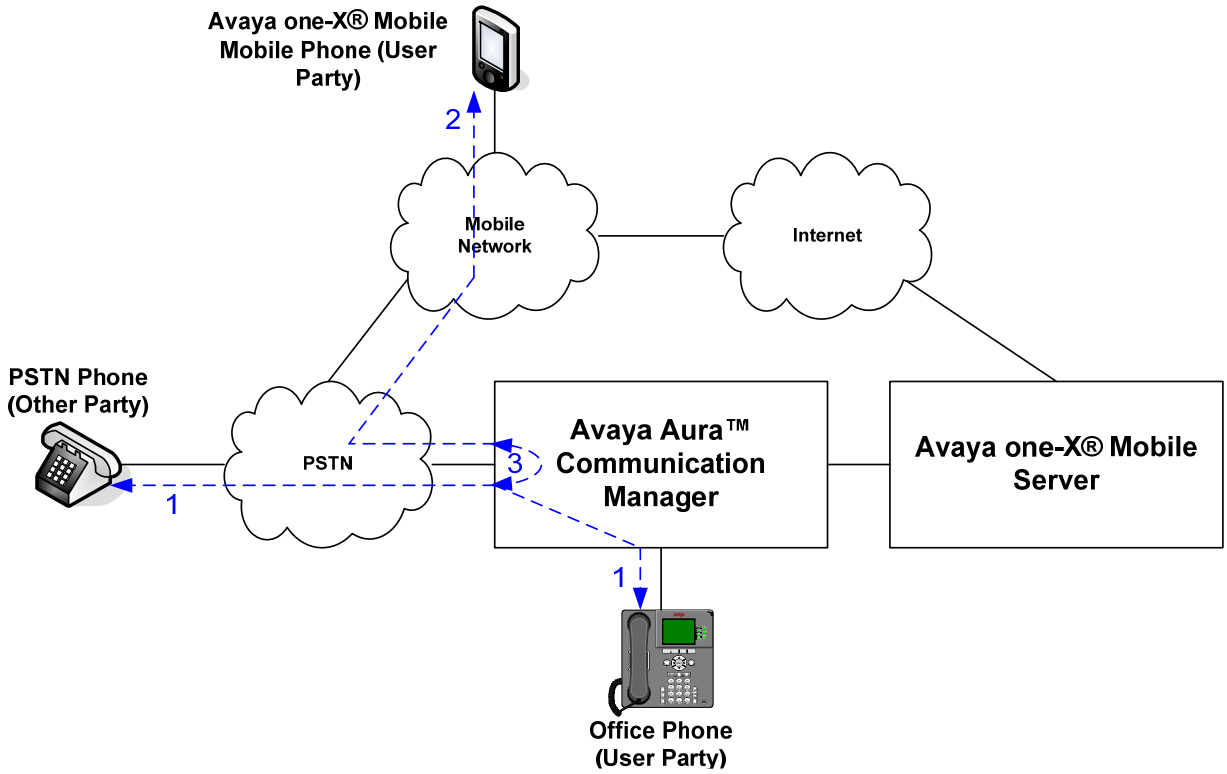


Figure 7: Move Call From Office Phone to Mobile Phone Call Scenario

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.

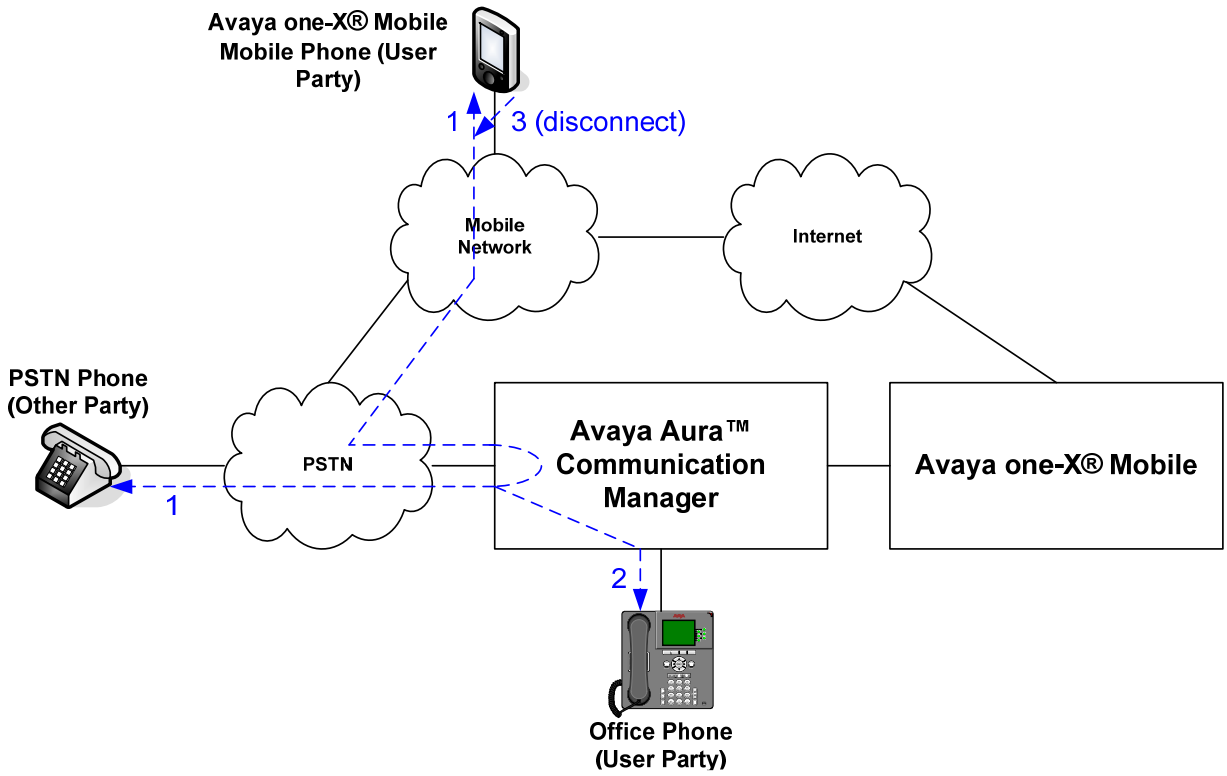


Figure 8: Move Active Call From Mobile Phone to Office Phone Call Scenario

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®™ Mobile Internal Server S8510 Avaya one-X®™ Mobile Handset Server S8510		Avaya Software 5.2.0.0.69 running on Microsoft Windows Server 2003 R2 Enterprise Edition Service Pack 2 Avaya Software 5.2.0.0.69 running on Microsoft Windows Server 2003 R2 Enterprise Edition Service Pack 2
Avaya one-X®™ 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™ Communication Manager 5.2 (S8720-015-02.1.016.4 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® 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™ System Manager Server S8510		5.2.0.1- SP0
Avaya Aura™ Session Manager Server S8510		5.2.0.1- SP0
Avaya Modular Messaging on Avaya S8730 Messaging Servers (MAS and MSS)		5.2 (9.2.150)
Microsoft Active Directory on Microsoft Windows Server 2003 R2 x64 Edition Service Pack 2		5.2.3790.3959
Avaya one-X® Speech S8730		5.2.0.38
Avaya S8720 Server (Access Element and Feature Servers)		Avaya Aura™ Communication Manager 5.2 (S8720-015-02.1.016.4 with update 17774)
Avaya Aura™ for Midsize Enterprises S8800		5.2.1.2.5

Table 1: Equipment and Software Versions

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                 Page   7 of
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 system-parameters 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 customer-options                    Page   1 of  11
                                OPTIONAL FEATURES

     G3 Version: V15                              Software Package: Standard
       Location: 1                              RFA System ID (SID): 1
       Platform: 6                              RFA Module 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-options                    Page   4 of  11
                                OPTIONAL FEATURES

   Emergency Access to Attendant? y                             IP Stations? y
           Enable 'dadmin' Login? y
           Enhanced Conferencing? y                      ISDN Feature Plus? y
                  Enhanced EC500? y      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? y                   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)? y    Multimedia Call Handling (Enhanced)? y
 Hospitality (G3V3 Enhancements)? n             Multimedia IP SIP Trunking? n
                        IP Trunks? y

      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 dialplan analysis                                        Page   1 of  12
                              DIAL PLAN ANALYSIS TABLE
                                   Location:  all           Percent Full:    2

       Dialed   Total  Call    Dialed   Total  Call     Dialed   Total  Call
       String   Length Type    String   Length Type     String   Length Type
     1            3    dac     *          2    fac
     2            5    ext     #          3    fac
     3            5    ext
     333          5    aar
     34           5    aar
     350          5    aar
     4            5    aar
     420          5    aar
     5            6    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)
         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     Access 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                                          Page   1 of  21
                                 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
 Dial Access? y              Busy Threshold: 255  Night Service:
Queue Length: 0
Service Type: tie                    Auth Code? n            TestCall ITC:
rest
                           Far End Test Line No:
TestCall BCC: 4
```

```
add trunk-group 100                                          Page   3 of  21
                                 TRUNK FEATURES
      ACA Assignment? n            Measured: none      Wideband Support? n
                                 Internal Alert? n        Maintenance Tests? y
                               Data Restriction? n     NCA-TSC Trunk Member:
                                     Send Name: y      Send Calling Number: y
           Used for DCS? n             Hop Dgt? n     Send EMU Visitor CPN? 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® 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
                              ARS DIGIT ANALYSIS TABLE
                                   Location:  all           Percent Full:    2

          Dialed           Total     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 r** command, where **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**

```
change route-pattern 100                                  Page   1 of   3
                    Pattern Number: 100 Pattern Name: To Silstack
                              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: 100  0                         9                                     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  n            rest                                        none
 2: y y y y y n  n            rest                                        none
```

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 inc-call-handling-trmt trunk-group 100
Page   1 of  30
                       INCOMING CALL HANDLING TREATMENT
 Service/      Number   Number      Del Insert            Per Call Night
 Feature        Len      Digits                           CPN/BN   Serv
 tie             5  35650            5   20036            cpn-only
 tie             5  35651            5   35651            cpn-only
 tie             5  35652            5   70019            cpn-only
 tie             5  35653            5   20090            cpn-only
 tie             5  35654            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® 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® 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® Communicator.

```
change station 20031                                          Page   1 of   5
                                      STATION

Extension: 20031                        Lock Messages? n               BCC: M
     Type: 9630                         Security Code: 1234             TN: 1
     Port: S00015                     Coverage Path 1: 1               COR: 1
     Name: EntUser20031_1XM           Coverage Path 2:                 COS: 1
                                       Hunt-to Station:
STATION OPTIONS
                                           Time of Day Lock Table:
              Loss Group: 19         Personalized Ringing Pattern: 1
                                                Message Lamp Ext: 20031
            Speakerphone: 2-way               Mute Button Enabled? y
        Display Language: english                  Button Modules: 0
 Survivable GK Node Name:
          Survivable COR: internal              Media Complex Ext:
   Survivable Trunk Dest? y                          IP SoftPhone? y

                                             IP Video Softphone? n
                                            Customizable Labels? y
```

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                                          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? y
  Active Station Ringing: single
                                                            EMU Login Allowed? n
        H.320 Conversion? n          Per 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
                                               Select Last Used Appearance? n
                                                 Coverage After Forwarding? s
                                                   Multimedia Early Answer? n
                                               Direct IP-IP Audio
Connections? y
  Emergency Location Ext: 20031         Always Use? n IP Audio Hairpinning? n
```

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**. E**xtend-call** button enables user to move an active call from a desk phone to one-X® Mobile.

```
change station 20031                                          Page   4 of   5
                                     STATION
 SITE DATA
       Room:                                            Headset? n
       Jack:                                            Speaker? n
      Cable:                                           Mounting: d
      Floor:                                       Cord Length: 0
   Building:                                         Set Color:

ABBREVIATED DIALING
     List1:                     List2:                     List3:



BUTTON ASSIGNMENTS
 1: call-appr                            5: call-appr
 2: call-appr                            6: call-appr
 3: call-appr                            7: extnd-call
 4: call-appr                            8:
```

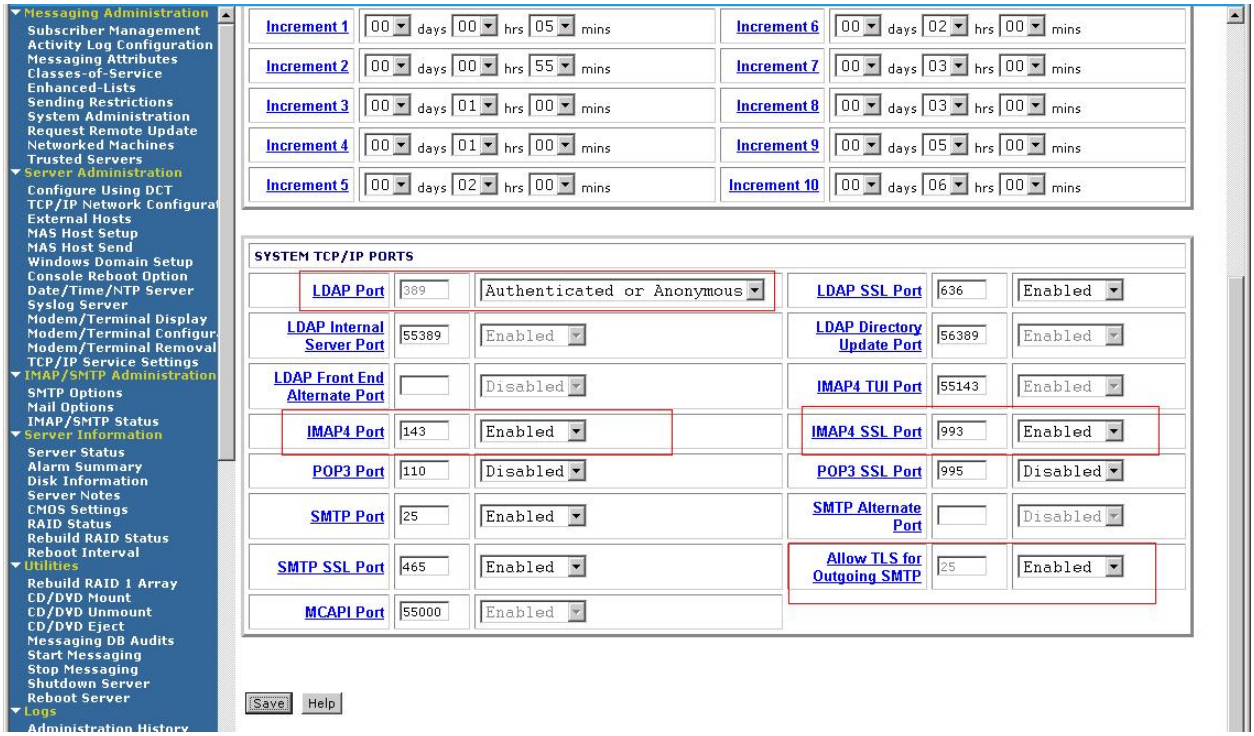
Repeat above steps for each user to be enabled with Avaya one-X® Mobile.

3. Avaya Modular Messaging with Message Storage Server

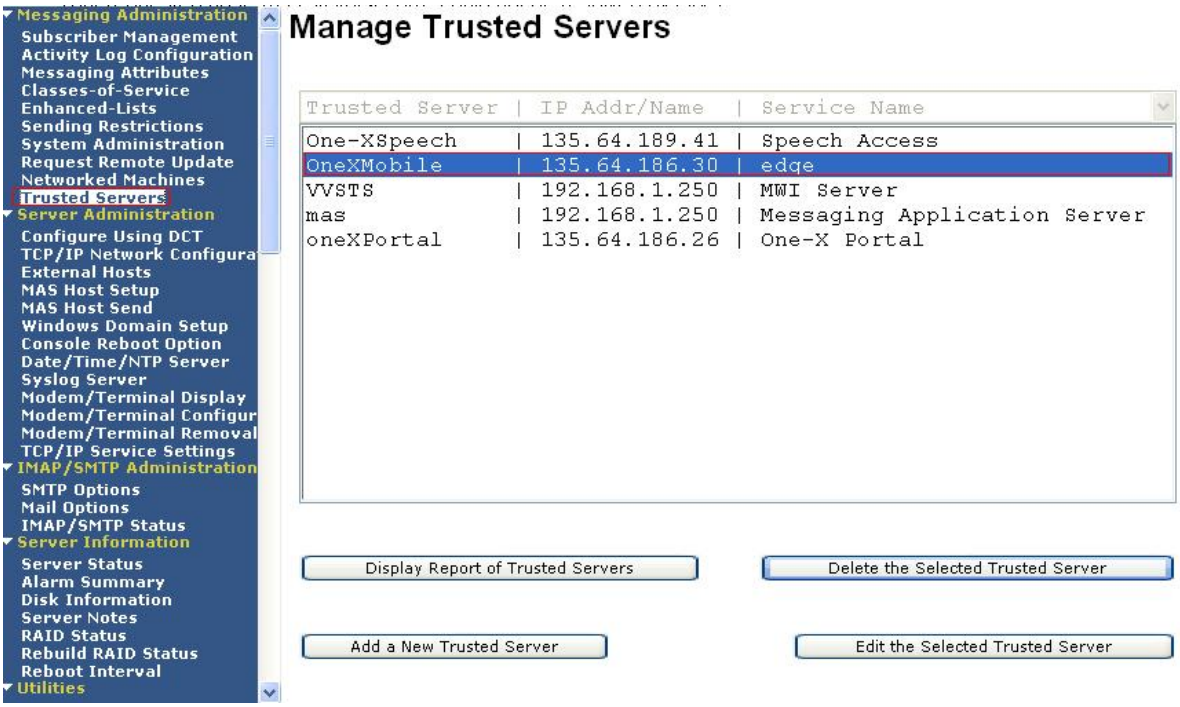
This section describes the administration steps for Avaya Modular Messaging with Message Storage Server (MSS) in support of integration with Avaya one-X® Mobile. These Application Notes assume that basic Modular Messaging administration, including user voice mailboxes, has already been performed.

Launch a web browser, enter https://<IP address of Avaya MSS Server> 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**

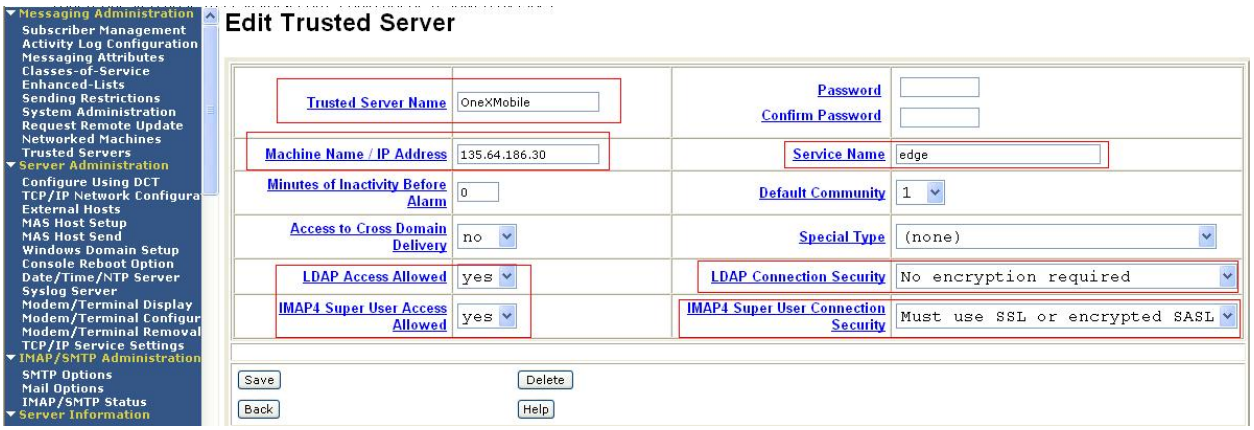


In the left pane under **Messaging Administration**, click on **Trusted Server**. In the **Manage Trusted Servers** page, click on **Add a New Trusted Server**.



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

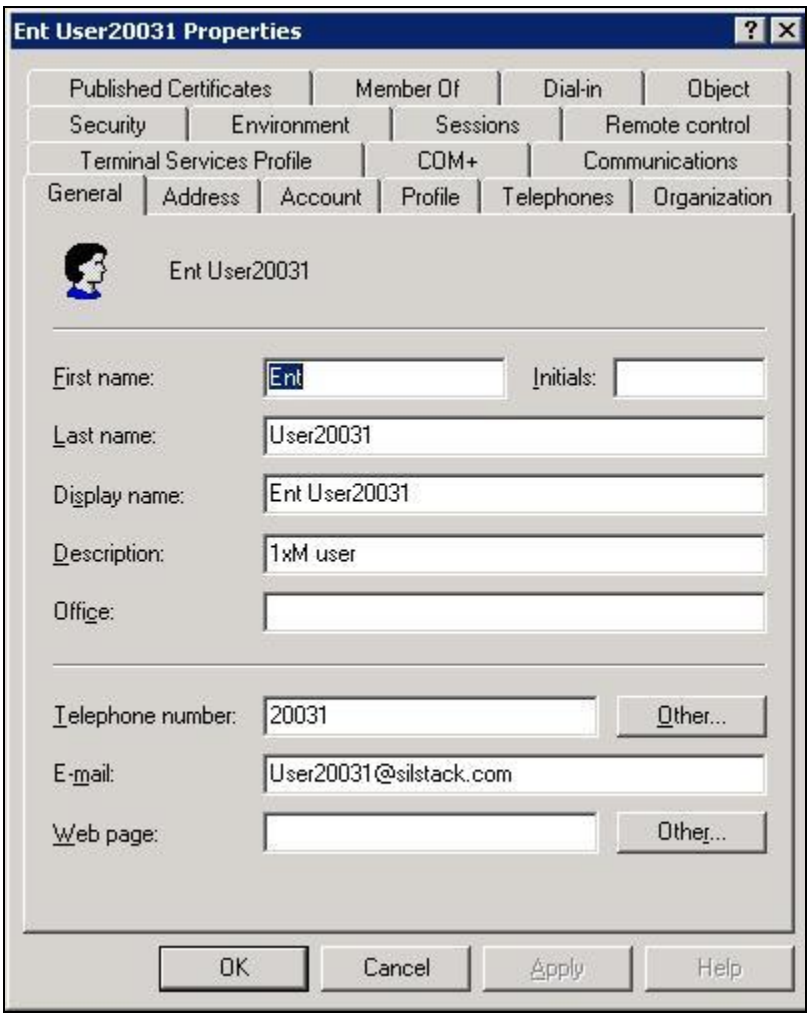
- **Trusted Server Name** — Enter a descriptive name. This name must match the Trusted Server Name provisioned in the one-X Mobile® Voicemail Profile in **Section 5.4.3**
- **Password** and **Confirm Password** — This password must match the Trusted Server Password provisioned in the one-X Mobile® Voicemail Profile in **Section 5.4.3** Steps 0 - 0.
- **Machine Name / IP Address** — Enter the IP address of the internal one-X Mobile® server.
- **Service Name** — Enter **Edge**
- **LDAP Access Allowed** and **IMAP4 Super User Access Allowed** — Set to **yes**
- **LDAP Connection Security** — Set to **No encryption required**
- **IMAP4 Super User Connection Security** — Set to **Must use SSL or encrypted SASL**



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.



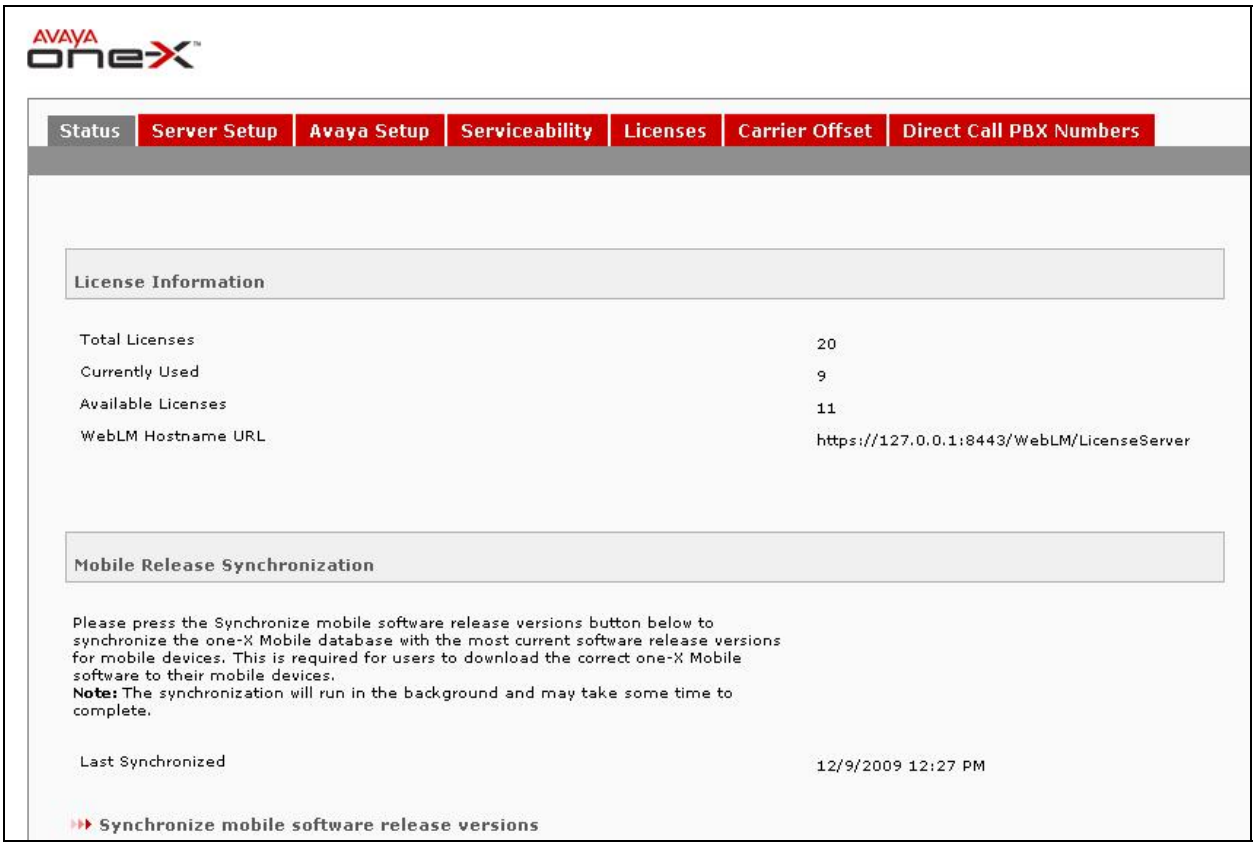
Repeat above Steps as necessary for other Avaya one-X Mobile users.

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.

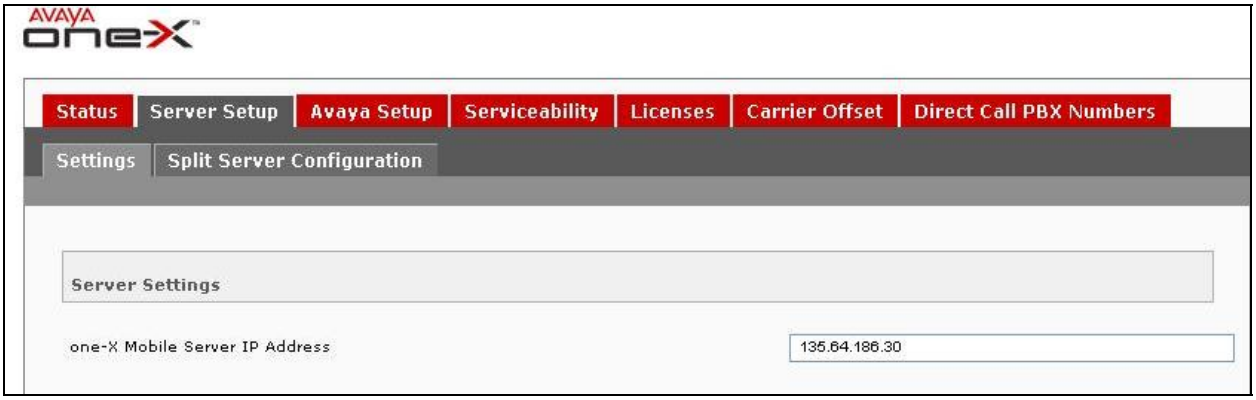


5.2. Settings

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 → 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



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.

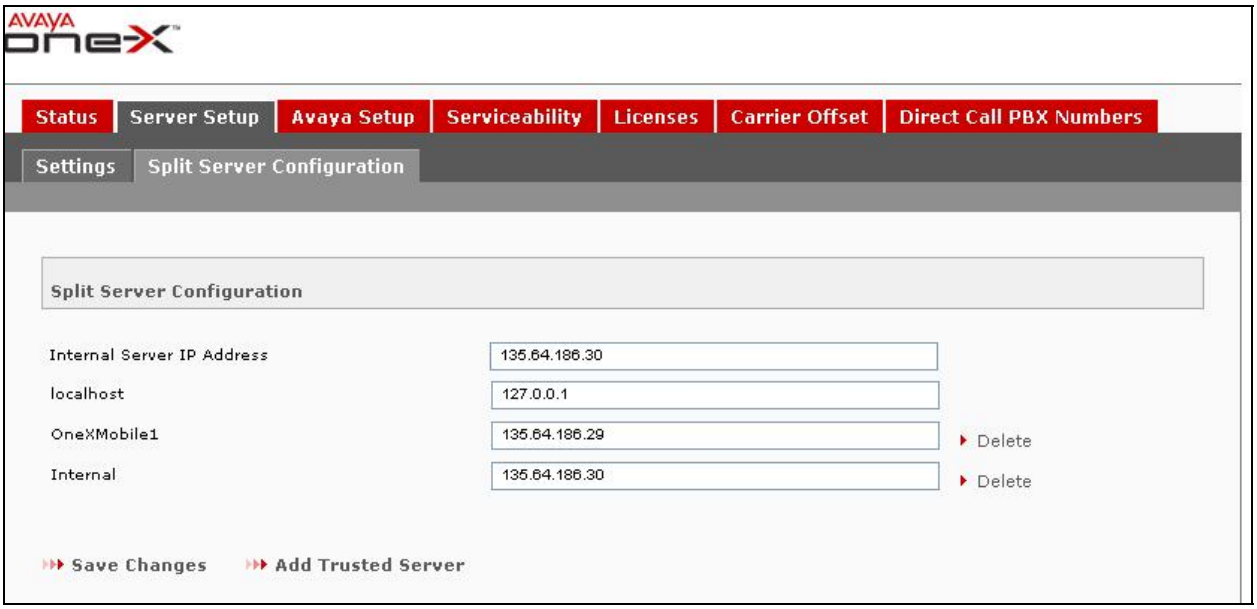
Select the **Server Setup → Split Server Configuration tab**, and click on tab and provisioning the following

- **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**

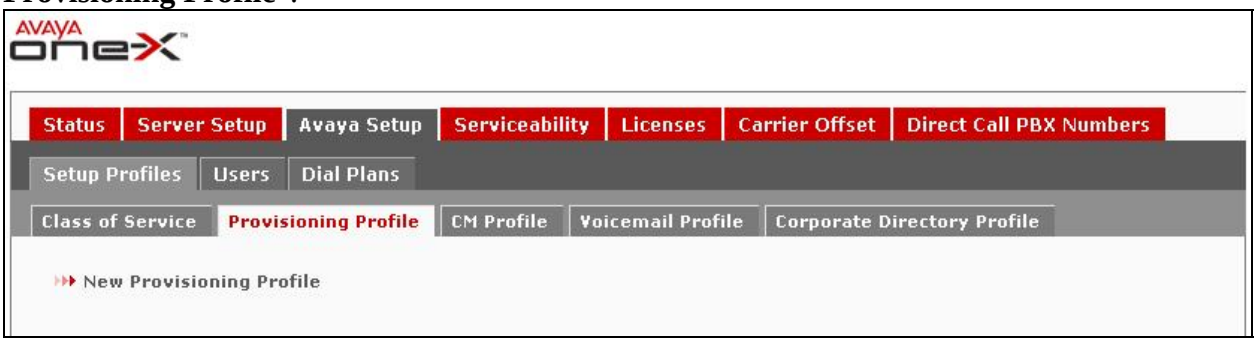


5.4. Profiles

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

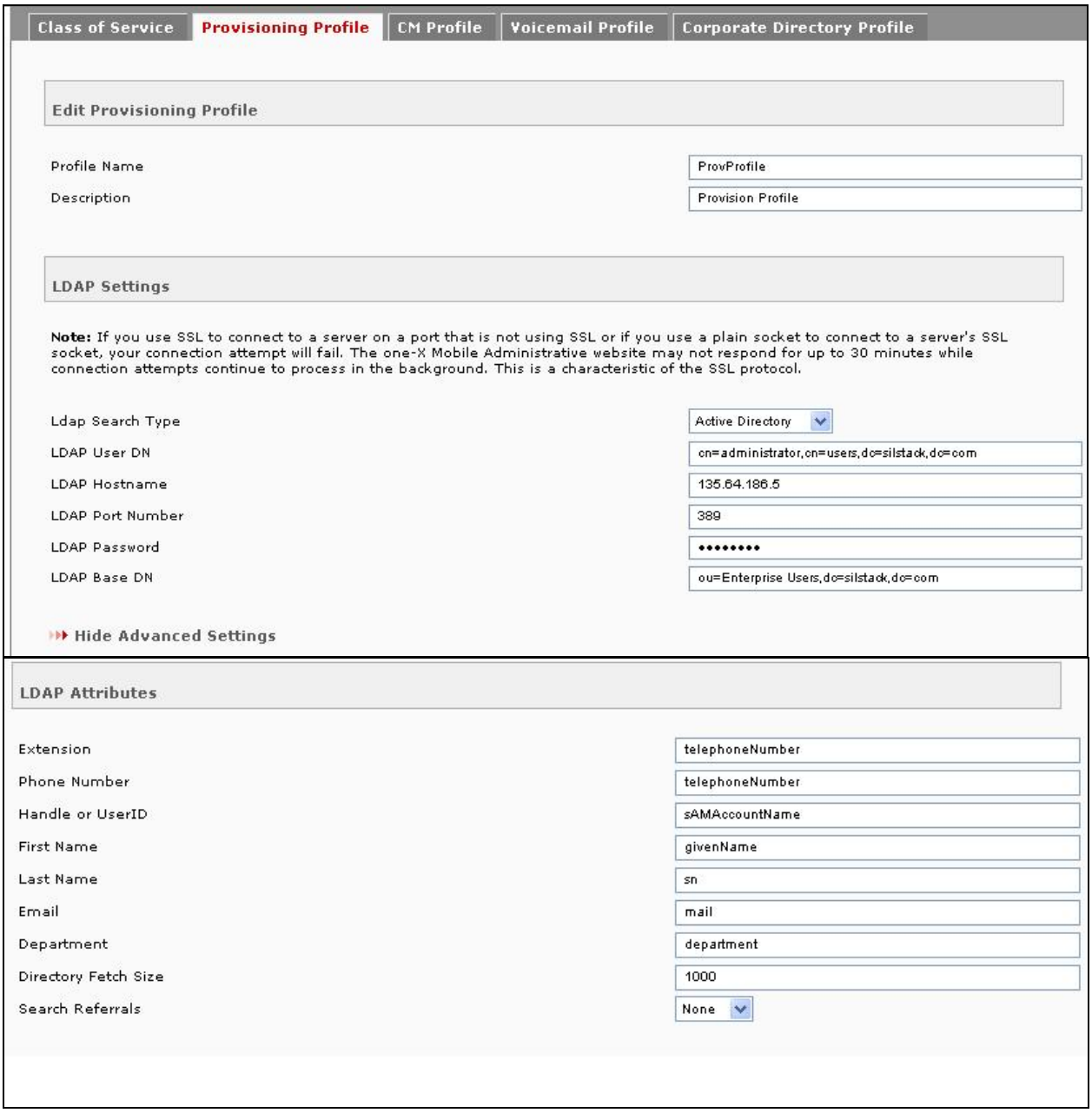
A Provisioning Profile defines the parameters for importing user information from an LDAP server. Select the **Avaya Setup → Setup Profiles → Provisioning Profile** tab, and click on **New Provisioning Profile**".



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**

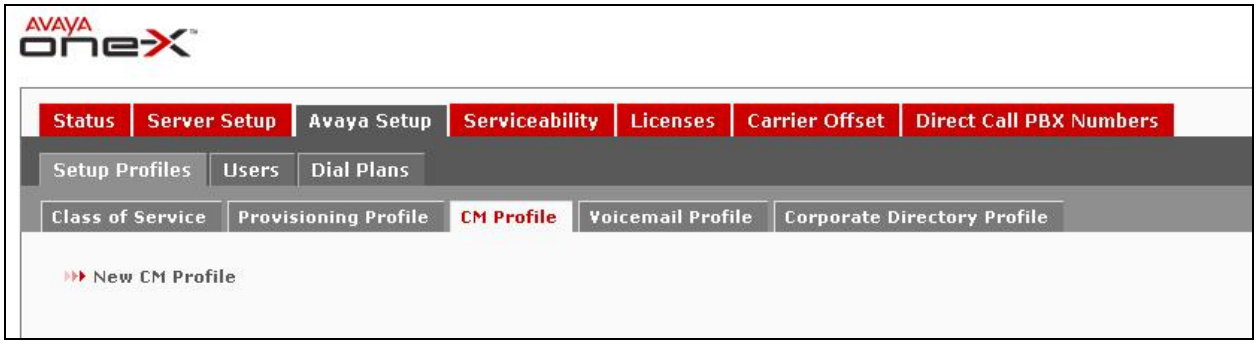
Use defaults for the remaining fields. Click on **Save**.



5.4.2. CM Profile

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

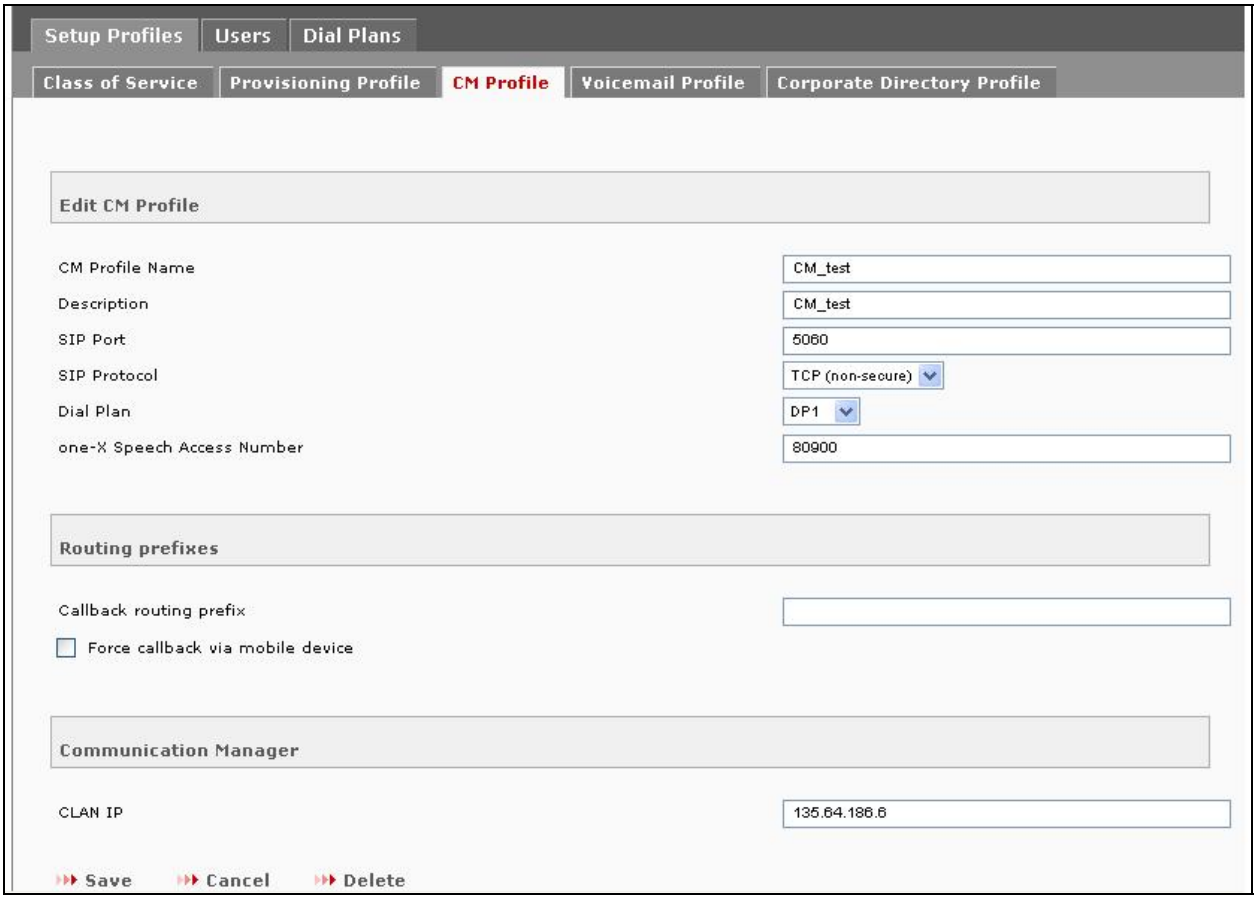
Select the **Avaya Setup → Setup Profiles → CM Profile** tab, and click on **New CM Profile**.



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

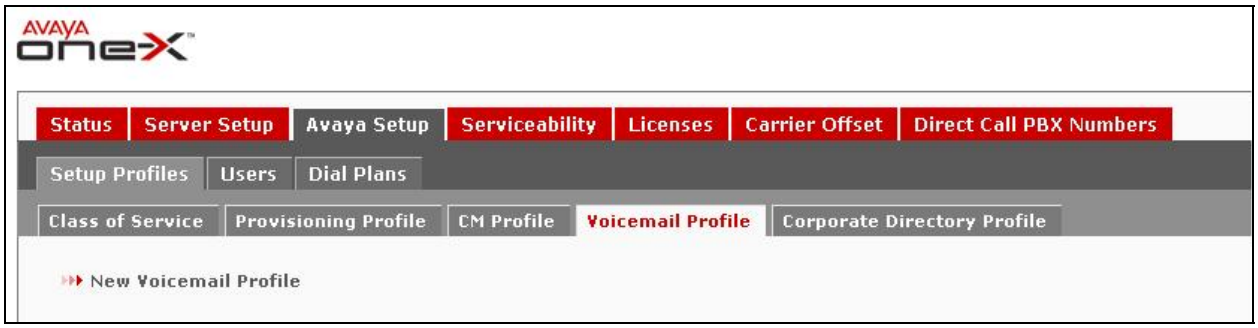
Click on **Save**.



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

5.4.3. Voicemail Profile

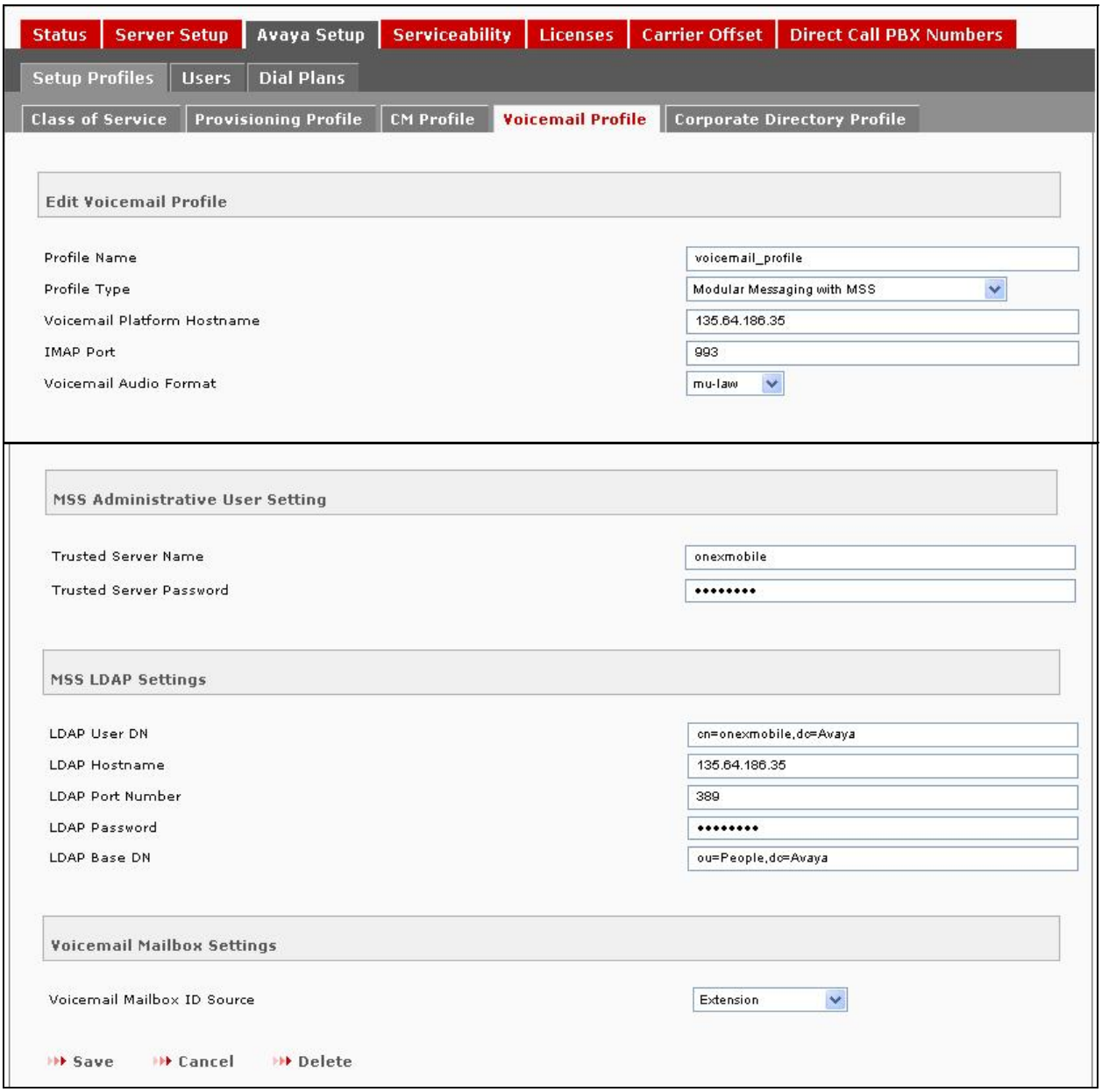
A Voicemail Profile defines the parameters for connecting to the Modular Messaging MSS server to retrieve corporate voice mailbox information for one-X® Mobile users. Select the **Avaya Setup → Setup Profiles → Voicemail Profile** tab, and click on **New Voicemail Profile**.



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

- **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, **mu-law** was used.
- **Trusted Server Name** and **Trusted 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 **389**
- **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**

Click on **Save**.



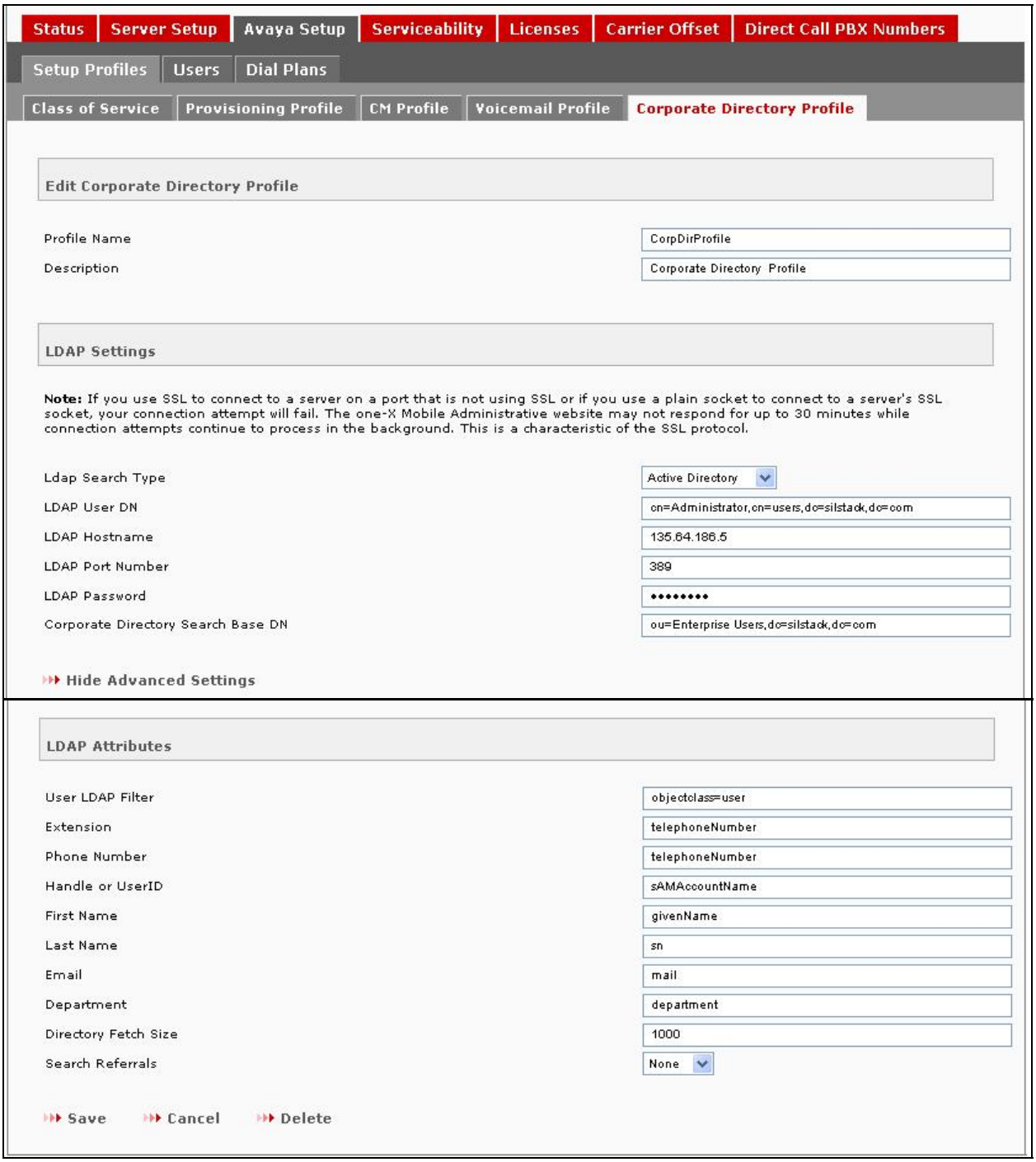
5.4.4. Corporate Directory Profile

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

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, **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
- **Corporate Directory Search Base DN** — Enter the base search DN. For example, in this configuration, "**ou=Enterprise Users,dc=silstack,dc=com**" is entered.
- **Extension** — Enter **telephoneNumber**
- **First Name** — Enter the LDAP attribute corresponding to the user's first name. For Active Directory, enter **givenName**

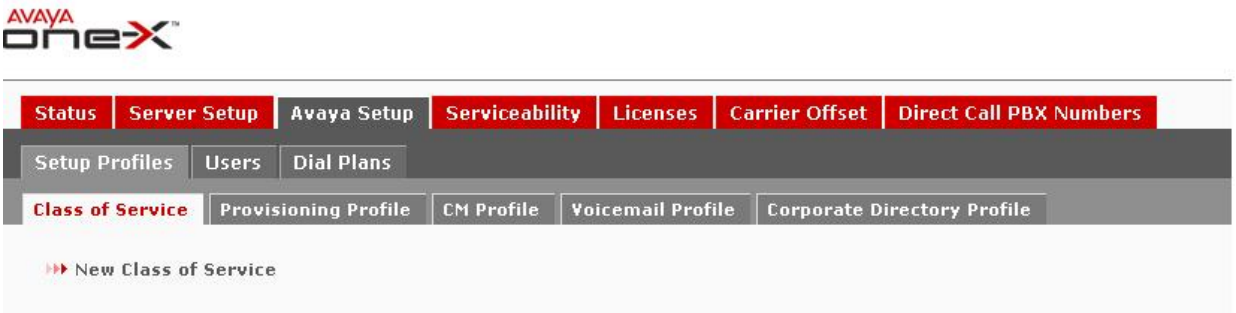
Use defaults for the remaining fields. Click on **Save**.



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® Mobile user is assigned to a Class of Service. Select the **Avaya Setup → Setup Profiles → 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**.

Status | Server Setup | Avaya Setup | Serviceability | Licenses | Carrier Offset | Direct Call PBX Numbers

Setup Profiles | Users | Dial Plans

Class of Service | Provisioning Profile | CM Profile | Voicemail Profile | Corporate Directory Profile

Edit Class of Service Profile

Class of Service Name	COS
Description	Class of Service
Provisioning Profile	ProvProfile
Voicemail Profile	voicemail_profile
Corporate Directory Profile	CorpDirProfile
CM Profile	CM_test

Security

- [x] Allow voicemail to be stored on the mobile device
- [x] Allow voicemail to be forwarded via email.
- [ ] Require login each time one-X Mobile is launched on mobile device

Maximum number of attempts before user is locked out	7
Time period for which a user is locked out in minutes	90

Dial Plan Settings

Maximum number of phones to Send Calls to (2 to 5)	5
PSTN Prefix	9

- [ ] Require DTMF (Dual Tone Multi-Frequency) during CallBack via PBX.
- [ ] Require DTMF (Dual Tone Multi-Frequency) during incoming calls.
- [x] Translate e-164 numbers to extensions
- [ ] Use user entered to dialable dial plan
- [ ] Use National Direct Dialing Prefix

Mobile Client Settings

- [x] Require client software upgrades

Number of days to warn users before making updates mandatory	5

Server

User Interface Language	English (US)

Hide Advanced Settings

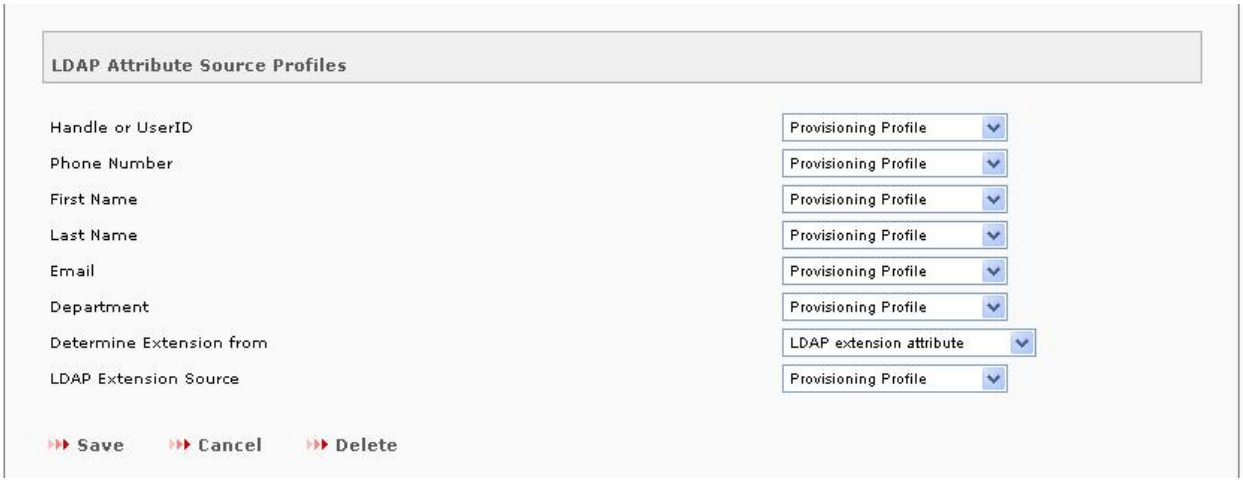
Class of Service Profile Page – Continued

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**.

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 .



Click on **Save**.

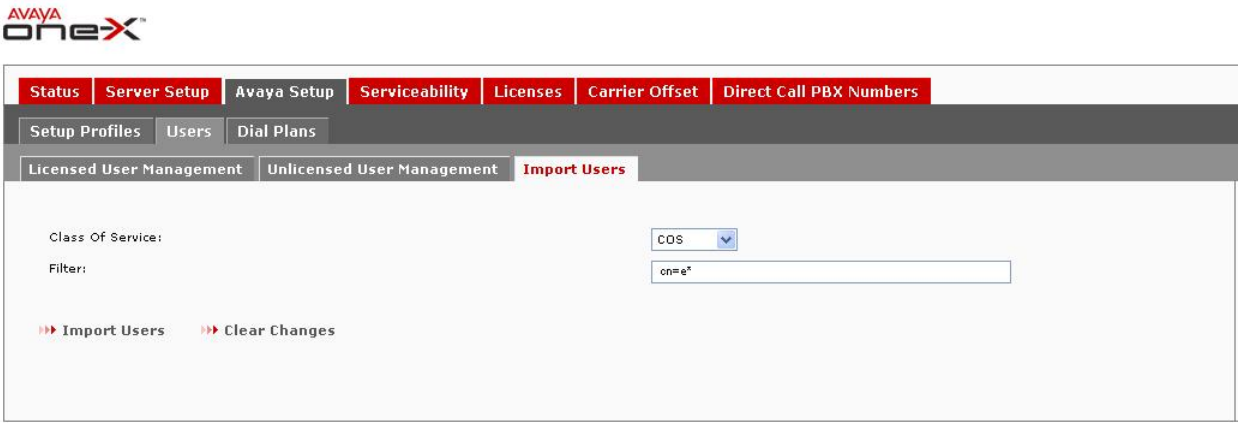
Repeat above steps to integrate more then one Communication Manager to the one-X® Mobile Internal Server. Under **CM Profile** field select the second Communication Manager to integrate.

5.5. Import Users

This section describes the steps for importing users into the Avaya one-X® Mobile database. Select the **Avaya Setup → Users → 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"

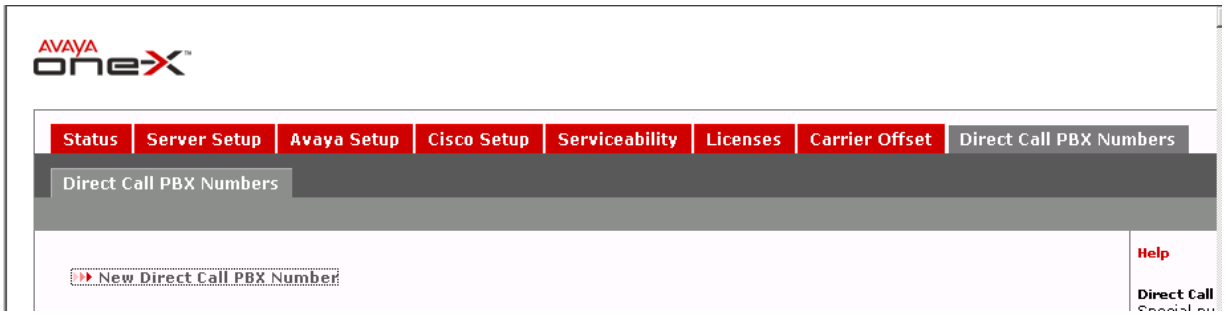
Click on **Import Users**.



Select the **Avaya Setup → Users → Unlicensed User Management** tab. Select the users to be imported into the one-X® Mobile database and click on **License Selected Users**.

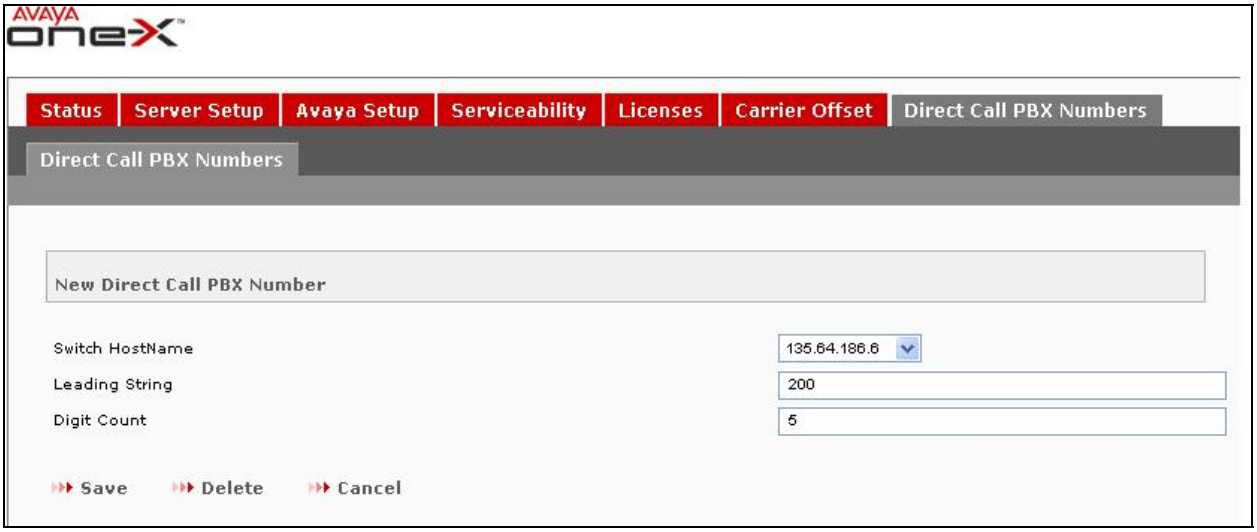
5.6. Direct Call PBX Numbers

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**.



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.



Click on **Save**.

Repeat above steps to access for number different extensions.

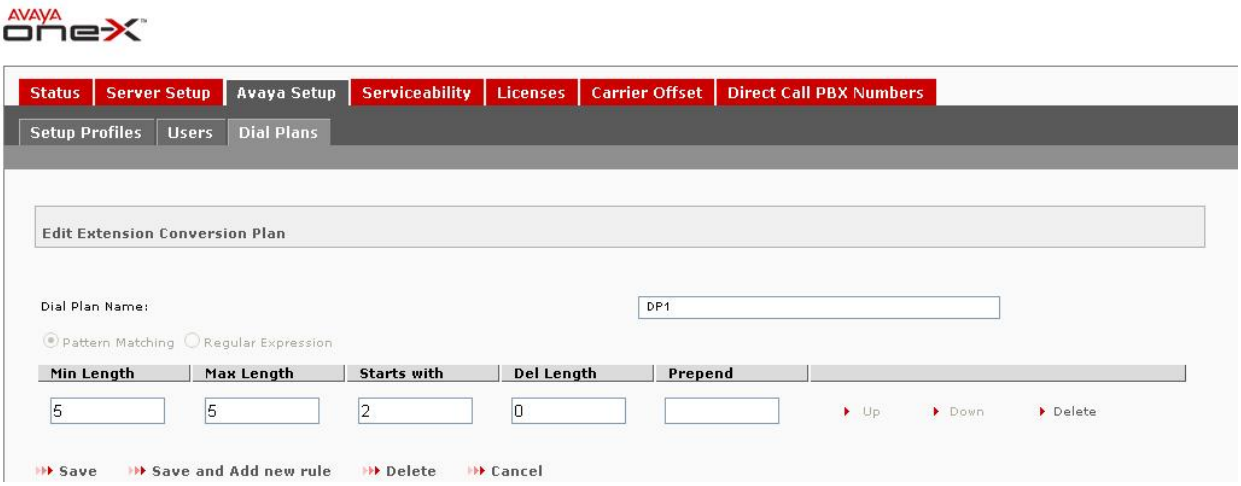
5.7. Dial Plans

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® Mobile is not able to resolve the number.

Select the **Avaya Setup → Dial Plans →Extension Conversion Dial Plans→Add New Conversion Dial Plan** and provision the following

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

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**.



Click on **Save**.

6. Configuring the Avaya one-X Mobile User Account

Before user begin using one-X® Mobile, the user needs to set up their account on the one-X® 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 E**nd **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**

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® Mobile account assuming the administrator has installed the Avaya one-X® Mobile application on your mobile device. The first time you use the Avaya one-X® 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® 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 → 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
        Connected Type: 9630           TCP Signal Status: connected
             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

          EC500 Status: N/A        Off-PBX Service State: in-service/active
   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

Station       Application Dial   CC  Phone Number    Trunk       Config  Dual
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.

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 http://support.avaya.com unless otherwise noted.

[1] *Avaya one-X®™ Mobile Installation Guide*,
[2] *Avaya one-X®™ 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®™ Mobile Web User Guide*,
[6] *Avaya one-X®™ Mobile User Guide for iPhone*,
[7] *Avaya one-X®™ Mobile User Guide for RIM BlackBerry*
[8] *Avaya one-X®™ Mobile User Guide for Windows Mobile*,
[9] *Avaya one-X®™ Mobile User Guide for Symbian Mobile*,

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Solution & Interoperability Test Lab at interoplabnotes@list.avaya.com