



Avaya Solution & Interoperability Test Lab

Application Notes for Configuring an Avaya Aura™ Telephony Infrastructure with Avaya one-X® Mobile using Tango Networks™ Abrazo™ Solution - Issue 1.0

Abstract

These Application Notes describe the steps for configuring an Avaya Aura™ Telephony Infrastructure with Tango Networks™ Abrazo™ Solution utilizing Abrazo's outward dialing feature for Avaya one-X® Mobile.

Information in these Application Notes has been obtained through compliance testing and additional technical discussions.

1. Introduction

These Application Notes describe a compliance-tested configuration comprised of the Tango Networks Abrazo Solution connected to an Avaya Aura™ Telephony Infrastructure, consisting of Avaya Aura™ Communication Manager, Avaya Aura™ SIP Enablement Services and Avaya one-X® Mobile server.

- 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 Abrazo solution extends enterprise PBX functionality to mobile devices, allowing end users to be accessible when out of the office. The Abrazo solution integrates mobile devices with existing Private Branch Exchanges (PBXs) so that the PBX sees the mobile device as another desk phone. This allows the existing PBX feature set to be applied consistently across both devices. Mobile specific functionality is then layered on top.

1.1. Interoperability Compliance Testing

Testing was conducted via the DevConnect Program. Compliance testing verified the integration between Avaya Aura™ Telephony Infrastructure consisting of Avaya Aura™ Communication Manager, Avaya Aura™ SIP Enablement Services and Avaya one-X® Mobile and Tango Networks Abrazo Solution and verified the following:

The ability for an enterprise user using Avaya one-X® Mobile on their Smart phone can utilize the Tango Networks Abrazo direct cell outward dialing option. There are 2 ways to place calls using the one-X® Mobile Client.

1. Call via Communication Manager (callback)

When a call is placed in this mode the client sends a request to the one-X® Mobile Server that the user is placing an origination. The one-X® Mobile Server then places a call to the mobile device. The user will then answer the phone when it rings. After this the one-X® Mobile Server will place the call to the original dialed digits and bridge the calls together.

Abrazo Interactions with Call via Communication Manager:

Avaya one-X® Mobile is configured so that it will insert a specific prefix to the mobile number as it is placing the callback to the mobile. This will allow translations on the Avaya to route the call to the Abrazo-E using a SIP trunk. The Abrazo-E will retrieve the temporary roaming number associated with the user's mobile number from the carrier

network. The Abrazo-E will then route the call to the PSTN network utilizing the roaming network. Thus the following services are provided by the Abrazo in this mode.

- The Abrazo-E utilizes the roaming number allows the enterprise voice network the ability to route the call as much as possible which reduces voice costs such as roaming.
- The Abrazo-E is in the path of the call so all mid call services such as Call Move, Blind Transfer, Consultative Transfer and Conferencing can now be utilized from the mobile phone.

2. Call via Mobile

When a call is placed in this mode the client sends the origination to the carrier using the native dialer on the phone. Just as if the call is placed on the mobile without using the client.

Abrazo Interactions with Call via Communication Manager:

- The Abrazo will intercept the call from the Carrier and route it to the enterprise Communication Manager. This allows the native dialer to be used on the phone. This eliminates the need for the use of the data channel which results in faster setup times. Also the user interface on the phone does not change. It now works the same way with the client and normal dialing on the phone with no client.
- The Abrazo-E is in the path of the call so all mid call services such as Call Move, Blind Transfer, Consultative Transfer and Conferencing can now be utilized from the mobile phone.

Other features were tested using both modes Call via Mobile and Call via Communication Manager:

- Terminating policies
 - Send Calls to desk and mobile
 - Send calls to desk
 - Send Calls to mobile
 - Block Calls
- Placed calls using corporate directory
- Verified call logs
- Abrazo Features:
 - Voicemail notifications, deposit, retrieval
 - Call Move
 - Blind Transfer
 - Consultative Transfer
 - Conference

1.2. Support

Use the following contacts for technical support of Tango Networks Abrazo products:

- Web site: <http://www.tango-networks.com>
- Email: sales@tango-networks.com
- Telephone: +1 469-229-6024

2. Reference Configuration

These Application Notes describe a solution for integrating the Tango Abrazo-E with an Avaya Aura™ Telephony Infrastructure consisting of Avaya Aura™ Communication Manager, Avaya Aura™ SIP Enablement Services and Avaya one-X® Mobile. **Figure 1** illustrates the configuration used in these Application Notes. The diagram indicates the logical signaling connections between the Tango Abrazo and Avaya products. The solution described herein is also extensible to other Avaya Servers and Media Gateways.

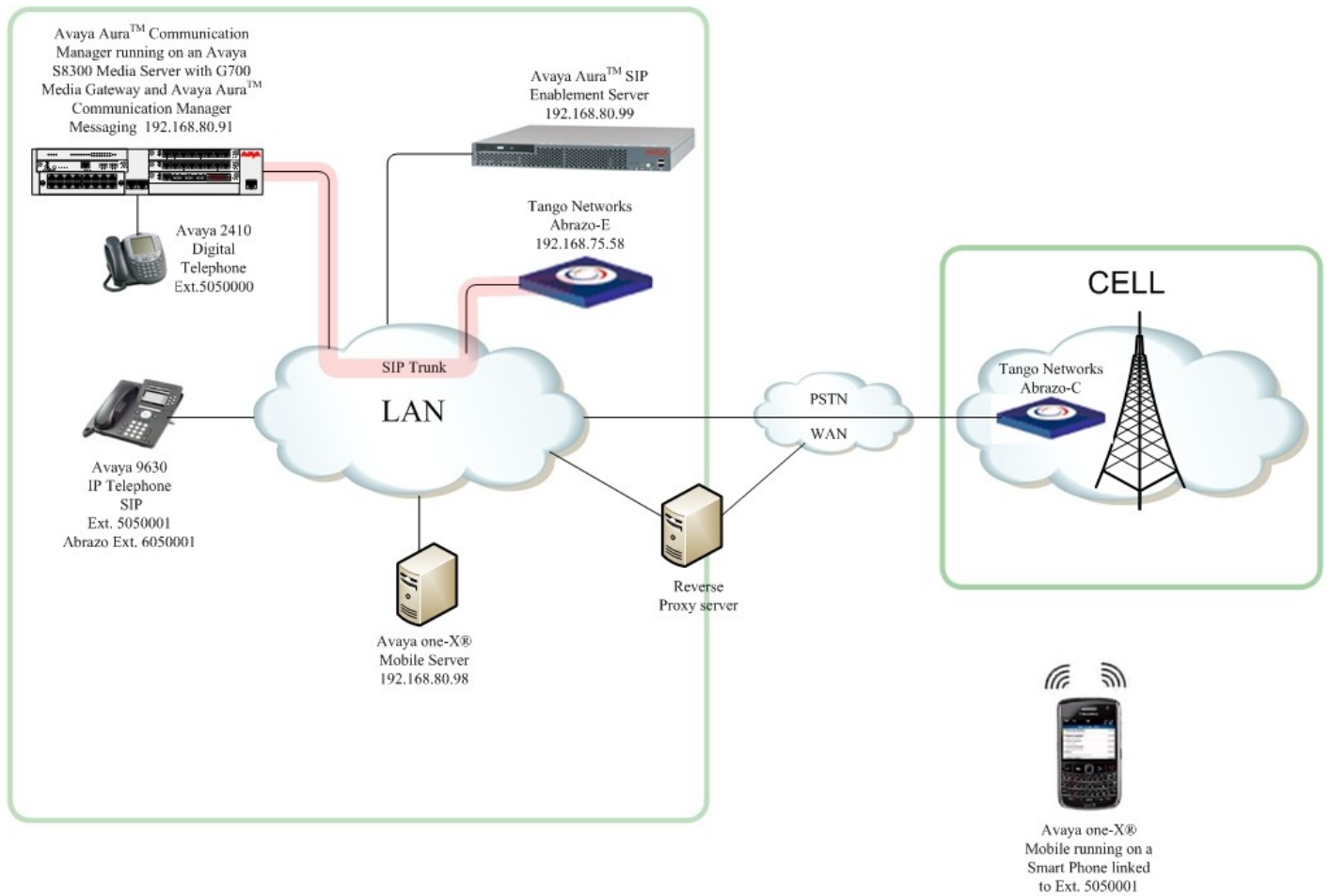


Figure 1: Interoperability Configuration Diagram

3. Equipment and Software Validated

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

Equipment	Software/Firmware
<i>Avaya PBX Products</i>	
Avaya S8300 Server running Avaya Aura™ Communication Manager	Avaya Aura™ Communication Manager 5.2.1
Avaya G700 Media Gateway (Corporate Site) MGP MM712 DCP Media Module	28.22.0 HW9
<i>Avaya Aura™ SIP Enablement Services (SES)</i>	
Avaya S8300 Server running Avaya Aura™ SIP Enablement Services	Avaya Aura™ SIP Enablement Services 5.2.1
<i>Avaya Messaging (Voice Mail) Products</i>	
Avaya S8300 Server running Avaya Aura™ Communication Manager Messaging (CMM)	Avaya Aura™ Communication Manager Messaging (CMM) 5.2.1-13.0
<i>Avaya Telephone Sets</i>	
Avaya 9600 Series IP Telephones	Avaya one-X® Deskphone Edition 3.1.1
Avaya 9600 Series IP Telephones	Avaya one-X® Deskphone SIP 2.6
Avaya 4600 Series IP Telephones	SIP (2.2) & H.323 (2.9)
Avaya 2410 Digital Telephone	5.0
<i>Avaya one-X® Mobile</i>	
Avaya one-X® Mobil	5.2
Avaya one-X® Mobil Client	5.2
<i>Tango Abrazo Products</i>	
Tango Networks Abrazo-Enterprise Release	4.4
Tango Networks Abrazo-Carrier Release	4.4
<i>Mobile Devices</i>	
Various Mobile Cell phones used for testing	NA

4. Avaya one-X® Mobile Integration

It is assumed that Basic configuration of Avaya Aura™ Communication Manager, Avaya Aura™ SIP Enablement Services, one-X® Mobile and the Abrazo-E has already been completed. This section focuses on specific configuration changes needed to integrate the Avaya one-X® Mobile and Abrazo-E systems.

4.1. Avaya one-X® Mobile Server

The Avaya one-X® Mobile server needs to be configured so that calls can be routed to the Abrazo-E before the PSTN network. This is done by adding a prefix to the number so that translations in the Communication Manager can route the call to the Abrazo-E.

4.1.1. Callback Routing Prefix

If the Mobile Client is configured to use callback for mobile originations then the one-X® Mobile server can add a prefix to the mobile number so that the Abrazo-E can provide services for this mobile leg. The Abrazo-E provides the following services for the mobile originations.

- Retrieves the temporary roaming number for the subscriber's mobile and ensures a least cost route is used. This results in the enterprise voice network being used to route the call as much as possible, thus reducing voice costs such as roaming.
- While active in the call the subscriber can utilize any advanced service provided by the Abrazo-E such as; Conference, Blind Transfer, Consultative Transfer, and Call move.

To enable the callback to be routed to the Abrazo-E the following should be updated on the one-X® Mobile Server Configuration.

Note: The basic setup and configuration of Avaya one-X® Mobile Server is outside the scope of this document. Refer to Section 6 for configuration information.

Change the CM Profile

Avaya Setup -> CM Profile

Under Routing prefixes make sure “**Force callback via mobile device**” has been selected. A prefix should be provided that will route the call to the Abrazo-E. In this example prefix 2 is used.

The screenshot displays the Avaya one-X Mobile Server Configuration web interface. The top navigation bar includes tabs for Status, Server Setup, Avaya Setup, Serviceability, Licenses, Carrier Offset, and Direct Call PBX Numbers. Below this, a sub-navigation bar shows Setup Profiles, Users, and Dial Plans and Conversion Rules. The main content area is titled 'Edit CM Profile' and contains several configuration fields: CM Profile Name (AvayaCM), Description, SIP Port (5080), SIP Protocol (TCP (non-secure)), Phone number Conversion to Extension Rules (None), and one-X Speech Access Number. A section titled 'Routing prefixes' contains three fields: 'Callback routing prefix' (2), 'Force callback via mobile device' (checked), and 'Incoming call routing prefix' (2). The 'Force callback via mobile device' checkbox and the '2' in the 'Callback routing prefix' field are highlighted with red boxes.

Field	Value
CM Profile Name	AvayaCM
Description	
SIP Port	5080
SIP Protocol	TCP (non-secure)
Phone number Conversion to Extension Rules	None
one-X Speech Access Number	
Callback routing prefix	2
Force callback via mobile device	<input checked="" type="checkbox"/>
Incoming call routing prefix	2

4.1.2. Incoming Call Routing Prefix

When a call terminates to a one-X® Mobile subscriber the one-X® Mobile Server is going to simultaneously ring the subscriber's mobile device. In order to route these calls to the Abrazo-E for services a prefix is added to the mobile number. This allows the Avaya system to route the call to the Abrazo-E so that the services can be applied.

Change the CM Profile that has already been created on the Avaya one-X® Mobile Server.

Avaya Setup -> CM Profile

Under Routing prefixes set a value for “**Incoming call routing prefix**” that will route to the Abrazo-E. In this example prefix 2 is used.

The screenshot displays the Avaya one-X Mobile Server configuration interface. At the top, the Avaya one-X logo is visible. Below it, a series of tabs are shown: Status, Server Setup, Avaya Setup, Serviceability, Licenses, Carrier Offset, and Direct Call PBX Numbers. Under the Avaya Setup tab, there are sub-tabs: Setup Profiles, Users, and Dial Plans and Conversion Rules. The CM Profile sub-tab is selected. The main content area is titled 'Edit CM Profile' and contains the following fields:

- CM Profile Name: AvayaCM
- Description: (empty)
- SIP Port: 5060
- SIP Protocol: TCP (non-secure) (dropdown menu)
- Phone number Conversion to Extension Rules: None (dropdown menu)
- one-X Speech Access Number: (empty)

Below these fields is a section titled 'Routing prefixes'. It contains the following fields:

- Callback routing prefix: 2
- ☒ Force callback via mobile device
- Incoming call routing prefix: 2 (this field is highlighted with a red border)

4.2. Avaya Aura™ Communication Manager

4.2.1. Configure Routing on Communication Manager

Add routing on the Communication Manager so that the prefixes that are setup on the Avaya one-X® Mobile Server route calls to the Abrazo-E. There should already be a Trunk Group defined on the Avaya system that connects to the Abrazo-E. Therefore an entry into the ARS needs to be added for the prefix to route correctly. In our compliance testing we have defined a route-pattern 3 to route calls to the Abrazo-E. Therefore we need to add a route for any number starting with the prefixes that were added in the above steps for setting up the Avaya one-X® Mobile Server. In our example both prefixes were set to “2”.

Edit the ARS table to include the translations to the route pattern, which will route the call to the Abrazo-E. Issue the command **change ars analysis x**. In our example use **change ars analysis 2** and enter the following:

- **Dialed String** should be set to the prefix configured on the Avaya one-X® Mobile.
- **Min** and **Max** should be set to the length a mobile number plus prefix.
- **Route Pattern** should be set to the number of the route pattern created to route to the Abrazo-E
- **Call Type** should be set to hnpa.
- The rest of the values can be left at their defaults.

```
change ars analysis 212                                     Page 1 of 2
                                     ARS DIGIT ANALYSIS TABLE
                                     Location: all             Percent Full: 3
Dialed      Total      Route      Call      Node      ANI
String      Min      Max      Pattern      Type      Num      Req'd
2           11      11       3          hnpa       n
```

4.2.2. Off PBX Station changes

A user should already have an Off-PBX station with an application of “EC500”. This is required for the basic one-X® Mobile integration. An entry needs to be added so that the Abrazo-E can route call mobile originated calls into the Avaya for SIP Line services.

Use the **change off-pbx-telephone station-mapping 5050004** command to configure the station.

- Set **Application** to “CSP”.
- Set **Phone Number** To the number Abrazo-E will use for call originations and terminations, which is the user portion of the SIP address defined for the subscriber on the Abrazo-E. This can be any unique number assigned to the user and should not be the same as their station number. Extension 6050004 was used for compliance testing.
- Set **Trunk Selection** to the number of the SIP trunk group connected to the Abrazo-E.
- Set **Configuration Set** to the set to be used for IP phone call treatments.

Go to page 2 and change the following:

- Set the **Call Limit** to match the number of “call appearance” button assignments on the stations. This can be found on tab 4 of the station form. Count the number of button appearances set to “call-appr”, and that is the number that should be used in the field. In order to support Abrazo call move services – this number may need to be incremented by at least one. The example is set to “4”
- Set **Mapping Mode** to “**origination**”.
- Set **Calls Allowed** to “**all**”.

Set **Bridged Calls** appropriately. See the Avaya documentation for more details on this field. The example is set to **both**.

change off-pbx-telephone station-mapping 5050004 Page 1 of 3
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

Station Extension	Application	Dial Prefix	CC	Phone Number	Trunk Selection	Config Set	Dual Mode
5050004	EC500		-		80	1	
5050004	CSP		-	6050004	67	1	

change off-pbx-telephone station-mapping 5050004 Page 2 of 3
STATIONS WITH OFF-PBX TELEPHONE INTEGRATION

Station Extension	Appl Name	Call Limit	Mapping Mode	Calls Allowed	Bridged Calls	Location
5050004	EC500	4	both	all	both	
5050004	CSP	4	origination	all	both	

4.2.3. **Mobile Client**

The Mobile Client can be configured to utilize callbacks for mobile originations or to utilize the Abrazo solution. Using the Abrazo solution that integrates with the Mobile Carrier will speed up the amount of time it takes to perform originations.

- **Using Callback**
To enable the client to originate calls using callback ensure the “Call back Preference” is set to “Call via PBX”.
- **Using the Abrazo solution**
To enable the client to originate calls using the Abrazo solution ensure the “Call back Preference” is set to “Call via Mobile”.

4.2.4. **Abrazo-E**

Modify the subscriber on the Abrazo-E to support the one-X® Mobile.

Modify the subscriber on the Abrazo-E

Subscriber -> List All -> Select subscriber in this example 5050004
Select “**One-X Mobile**”

Modify Abrazo Subscriber

VoiceMail Subscription Status: Not Active

Subscriber Enabled: ☒

* Last Name:

* First Name:

Display Name:

Business Identity:

* Enterprise Desk Number:

Extension Range: [avaya52](#)

* Mobile Number:

* Mobile Number Country:

* Home PBX:

Alias:

Direct Inward Dial (DID):

Subscriber DID Country:

Email Address:

* SIP Address: @mpc.com

Subscriber's Wireless Carrier:

* Profile:

* Mobile Policy Rule Set:

* Mobile Policy Permission:

* Home Time Zone:

Daylight Saving Time Observed: ☐

* Dial Plan:

* Line Group:

One-X Mobile: ☒

Home PBX Provides Orig Svcs: ☒

Conference Server:

Voice Mail Server:

Password to access Mobile Assistant, WLAN, or Corporate Directory:

Password:

Confirm Password:

*-indicates required field

4.3. Test Results

The Tango Networks Abrazo Solution successfully completed all test cases for the features identified in **Section 1.1**.

5. Conclusion

These Application Notes describe the configuration steps required for integrating the Tango Networks Abrazo Solution into an Avaya telephony infrastructure. The Tango Networks Abrazo Solution was responsible for bridging landline connectivity to Avaya AuraTM Communication Manager with the wireless connectivity to the GSM network. All feature functionality test cases passed.

6. Additional References

The documents referenced below were used for additional support and configuration information. This section references the Avaya documentation relevant to these Application Notes. The following Avaya product documentation is available at <http://support.avaya.com>.

- [1] *Administering Avaya AuraTM Communication Manager*, May 2009, Issue 5.0.0, Document Number 03-300509.
- [2] *Installing, Administering, Maintaining, and Troubleshooting Avaya AuraTM SIP Enablement Services*, November 2009, Issue 8.0, Document 03-600768.
- [3] *Avaya one-XTM Deskphone Edition for 9600 Series IP Telephones Administrator Guide Release 3.1*, Document Number 16-300698.
- [4] *Avaya one-XTM Deskphone SIP for 9600 Series IP Telephones Administrator Guide, Release 2.6*, Document Number 16-601944.
- [5] *Avaya one-X[®] Mobile Integration, Administration and Maintenance Guide*
- [6] *Avaya one-X[®] Mobile Integration Guide 18-602153*
- [7] *Avaya one-X[®] Mobile Device Compatibility List*

Product documentation for Tango Networks products may be found at: <http://www.tango-networks.com>

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