Avaya Solution & Interoperability Test Lab

Application Notes for Global BHS FLAvoice with Avaya Aura® Session Manager and Avaya Aura® Communication Manager – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Global BHS FLAvoice to interoperate with Avaya Aura® Session Manager and Avaya Aura® Communication Manager. Global BHS FLAvoice is a hospitality solution.

In the compliance testing, Global BHS FLAvoice used the SIP User interface from Avaya Aura® Session Manager to provide hospitality features including voicemail, wakeup call, room status, and minibar.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as any observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

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

1. Introduction

These Application Notes describe the configuration steps required for Global BHS FLAvoice to interoperate with Avaya Aura® Session Manager and Avaya Aura® Communication Manager. FLAvoice is a hospitality solution that uses the SIP User interface from Session Manager to provide voicemail, wakeup call, room status, and minibar features.

In the compliance testing, FLAvoice emulated six virtual SIP users that registered to Session Manager. The six virtual SIP users were configured as separate members of three hunt groups for handling of voicemail, wakeup call, room status and minibar. FLAvoice used the Abto VoIP SIP SDK for Windows to support all SIP communications.

In the compliance testing, subscribers of FLAvoice voicemail consisted of all staff and guest station users on Communication Manager. The Call Coverage feature from Communication Manager was used to redirect calls to FLAvoice via an available virtual SIP user in the voicemail hunt group. The activation and deactivation of Message Waiting Indicator (MWI) for voicemail users were accomplished by FLAvoice via use of SIP NOTIFY.

Scheduling of wakeup calls were initiated from the staff and guest telephones by calling the wakeup call hunt group, and the delivery of wakeup calls were initiated by FLAvoice via available virtual SIP users associated with the wakeup feature.

Room status and minibar were accomplished by calling the room status and minibar hunt group from the guest telephones.

FLAvoice also supports the Property Management System (PMS) interface for integration with a third-party PMS system for initiation of other hospitality features such as check-in and check-out. In the compliance testing, the FLAvoice CHECK-INS AND CHECK-OUTS MANAGER VIA IP tool was used for setting of necessary check-in, check-out, and room change status for various guests on FLAvoice as part of testing the voicemail, wakeup call, room status and minibar features.

2. General Test Approach and Test Results

The feature test cases were performed manually. Calls were made from local users to the hunt groups for various features. Calls were made from the PSTN to the voicemail hunt group to verify remote retrieval of voice messages.

The serviceability test cases were performed manually by disconnecting/reconnecting the Ethernet connection to FLAvoice.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with these Application Notes, the interface between Session Manager and FLAvoice did not include use of any specific encryption features as requested by Global BHS.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on FLAvoice:

- Proper handling of SIP message exchanges including registration, G.711, G.729, media shuffling, codec negotiation, session refresh, DTMF, REFER, and NOTIFY.

- Voicemail recording, logging, and retrieval, with proper MWI activation/deactivation.

- Scheduling and delivery of wake-up calls, including retried attempts and escalation to staff.

- Proper handling of room status and minibar.

The serviceability testing focused on verifying the ability of FLAvoice to recover from adverse conditions, such as disconnecting and reconnecting the Ethernet connection to FLAvoice.

2.2. Test Results

All test cases were executed. The following was observed on FLAvoice from the compliance testing.

- When a voicemail user calls from the PSTN to perform remote retrieval of voice message, the greeting announcement heard by the caller was slightly chopped off from the beginning. Global BHS shared that a configurable delay will be implemented in a future release to help address this observation.

2.3. Support

Technical support on FLAvoice can be obtained through the following:

- **Phone:** +1 (407) 501-7500
- **Email:** support@globalbhs.com
- **Web :** http://globalbhs.com/suporte

3. Reference Configuration

The configuration used for the compliance testing is shown in **Figure 1**, with the domain name used in the testing being "dr220.com".

The configuration of Session Manager is performed via the web interface of System Manager. The detailed administration of basic connectivity between Communication Manager, System Manager, and Session Manager are not the focus of these Application Notes and will not be described.

The Communication Manager resources used in the compliance testing are shown in the table below.

Device Type	Extension
Staff Station	65001 (H.323)
Guest Station	66002 (SIP), 63001 (Analog)

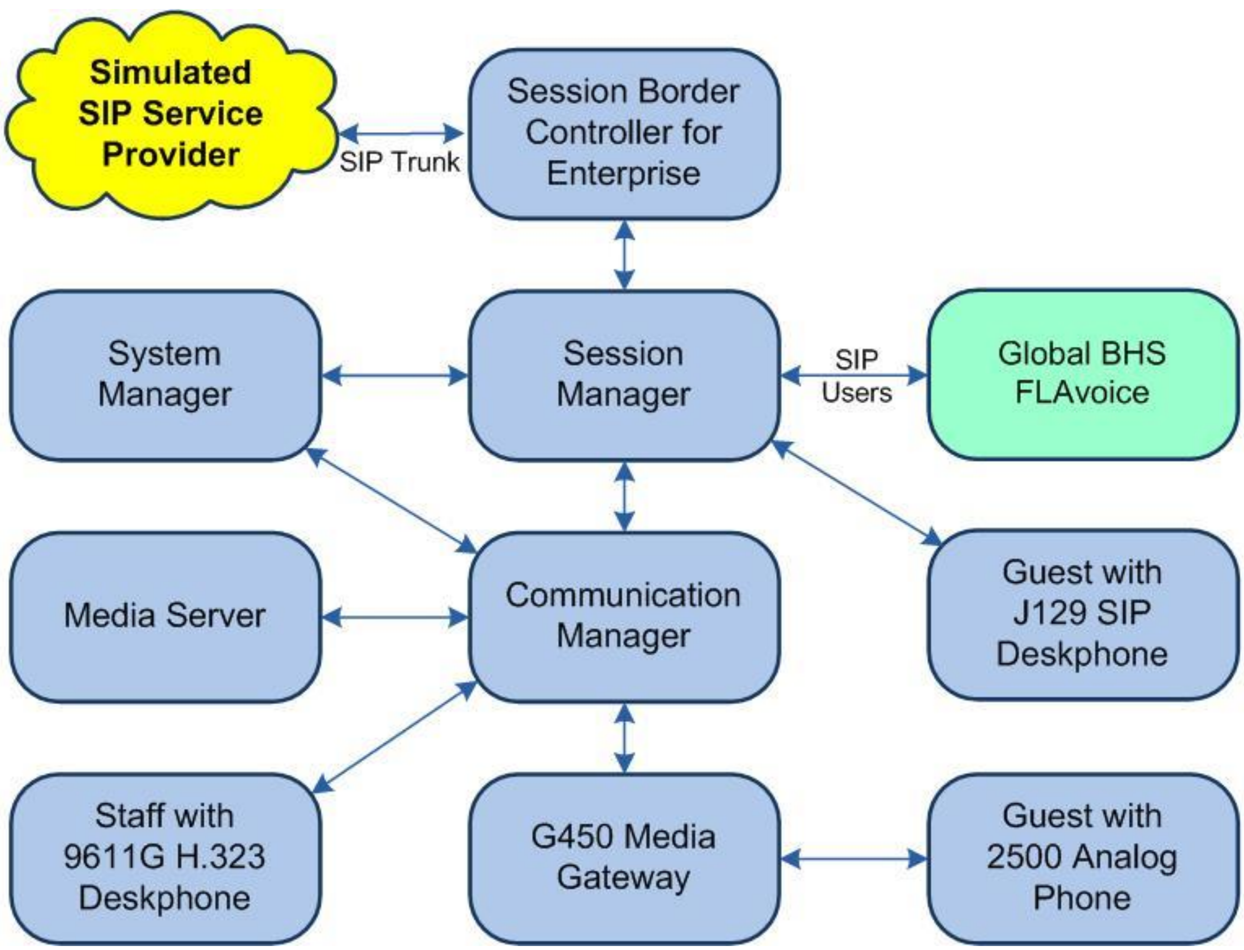


Figure 1: Compliance Testing Configuration

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya Aura® Communication Manager in Virtual Environment	8.1.1 (8.1.0.1.1.890.25763)
Avaya G450 Media Gateway	41.16.0
Avaya Aura® Media Server in Virtual Environment	8.0.1.121
Avaya Aura® Session Manager in Virtual Environment	8.1.1 (8.1.1.0.811021)
Avaya Aura® System Manager in Virtual Environment	8.1.1 (8.1.1.0.0310912)
Avaya 9611G IP Deskphone (H.323)	6.8202
Avaya J129 IP Deskphone (SIP)	4.0.2.1.3
2500YMGK Analog Phone	NA
Global BHS FLAvoice • Abto VoIP SIP SDK for Windows (SIPVoipSDK.dll)	9.4.7 4.11.406.1

5. Configure Avaya Aura® Communication Manager

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

- Administer IP codec set
- Administer hunt groups
- Administer coverage path
- Administer stations

5.1. Administer IP Codec Set

Administer a codec set for integration with FLAvoice. Use the "change ip-codec-set n" command, where "n" is an existing codec set number to use for interoperability. In the compliance testing, codec set "1" was used for FLAvoice and for the staff and guest stations.

For **Audio Codec**, enter the pertinent codec variants as shown below. For **Media Encryption** make certain "none" is included. For **Encrypted SRTCP**, make certain the value is not "enforce-enc-srtcp".

```
change ip-codec-set 1                                           Page   1 of   2

                          IP MEDIA PARAMETERS
    Codec Set: 1

    Audio        Silence      Frames   Packet
    Codec        Suppression  Per Pkt  Size(ms)
 1: G.711MU           n          2        20
 2: G.729             n          2        20
 3:
 4:
 5:
 6:
 7:

     Media Encryption                   Encrypted SRTCP: best-effort
 1: 1-srtp-aescm128-hmac80
 2: aes
 3: none
```

5.2. Administer Hunt Groups

Administer three hunt groups for FLAvoice voicemail, wakeup call, and combined room status and mini bar respectively.

5.2.1. Voicemail

Use the "add hunt-group n" command, where "n" is an available hunt group number. This hunt group is used for FLAvoice voicemail. Enter the following values for the specified fields and retain the default values for the remaining fields.

- **Group Number:** The available group number.
- **Group Name:** A descriptive name.
- **Group Extension:** An available extension number.
- **Group Type:** "circ"

```
add hunt-group 61                                               Page   1 of  60
                                  HUNT GROUP

            Group Number: 61
              Group Name: FLAvoice Voicemail
         Group Extension: 62001
              Group Type: circ                   Coverage Path:
                      TN: 1          Night Service Destination:
                     COR: 1                  MM Early Answer? n
           Security Code:               Local Agent Preference? n
 ISDN/SIP Caller Display:
```

Navigate to **Page 3** and enter the extension of all FLAvoice virtual SIP users from **Section 6.3** for handling of voicemail, as shown below.

```
add hunt-group 61                                               Page   3 of  60
                                  HUNT GROUP
  Group Number: 61    Group Extension: 62001              Group Type: circ
  Member Range Allowed: 1 - 1500       Administered Members (min/max): 0   /0
                                           Total Administered Members: 0
GROUP MEMBER ASSIGNMENTS
      Ext            Name(16 characters)       Ext           Name(16 characters)
   1: 66991                               14:
   2: 66992                               15:
   3:                                     16:
```

5.2.2. Wakeup Call

Use the "add hunt-group n" command, where "n" is an available hunt group number. This hunt group is used for FLAvoice wakeup call. Enter the following values for the specified fields and retain the default values for the remaining fields.

- **Group Number:** The available group number.
- **Group Name:** A descriptive name.
- **Group Extension:** An available extension number.
- **Group Type:** "circ"

```
add hunt-group 62                                              Page   1 of  60
                                  HUNT GROUP

            Group Number: 62
              Group Name: FLAvoice Wakeup
         Group Extension: 62002
              Group Type: circ                  Coverage Path:
                      TN: 1          Night Service Destination:
                     COR: 1                    MM Early Answer? n
           Security Code:              Local Agent Preference? n
 ISDN/SIP Caller Display:
```

Navigate to **Page 3** and enter the extension of all FLAvoice virtual SIP users from **Section 6.3** for handling of wakeup call, as shown below.

```
add hunt-group 62                                              Page   3 of  60
                                  HUNT GROUP
  Group Number: 62    Group Extension: 62002              Group Type: circ
  Member Range Allowed: 1 - 1500       Administered Members (min/max): 0   /0
                                           Total Administered Members: 0
GROUP MEMBER ASSIGNMENTS
      Ext           Name(16 characters)       Ext           Name(16 characters)
   1: 66993                                14:
   2: 66994                                15:
   3:                                      16:
```

5.2.3. Room Status and Minibar

Use the “add hunt-group n” command, where “n” is an available hunt group number. This hunt group is used for FLAvoice room status and minibar. Enter the following values for the specified fields and retain the default values for the remaining fields.

- **Group Number:** The available group number.
- **Group Name:** A descriptive name.
- **Group Extension:** An available extension number.
- **Group Type:** “circ”

```
add hunt-group 63                                            Page   1 of  60
                                  HUNT GROUP

            Group Number: 63
              Group Name: FLAvoice RoomBar
         Group Extension: 62003
              Group Type: circ                  Coverage Path:
                      TN: 1         Night Service Destination:
                     COR: 1                   MM Early Answer? n
           Security Code:              Local Agent Preference? n
 ISDN/SIP Caller Display:
```

Navigate to **Page 3** and enter the extension of all FLAvoice virtual SIP users from **Section 6.3** for handling of room status and minibar, as shown below.

```
add hunt-group 63                                            Page   3 of  60
                                  HUNT GROUP
  Group Number: 63    Group Extension: 62003              Group Type: circ
  Member Range Allowed: 1 - 1500       Administered Members (min/max): 0   /0
                                           Total Administered Members: 0
GROUP MEMBER ASSIGNMENTS
      Ext           Name(16 characters)       Ext           Name(16 characters)
   1: 66995                              14:
   2: 66996                              15:
   3:                                    16:
```

5.3. Administer Coverage Path

Add a coverage path using the “add coverage path n” command, where “n” is an available coverage path number. This coverage path is used for coverage to FLAvoice for voicemail.

For **Point1**, enter “h61” to designate the voicemail hunt group “61” from **Section 5.2.1** as the first coverage point. Retain the default values in the remaining fields.

```
add coverage path 61                                                Page   1 of   1
                                 COVERAGE PATH

                   Coverage Path Number: 61
     Cvg Enabled for VDN Route-To Party? n        Hunt after Coverage? n
                       Next Path Number:          Linkage

COVERAGE CRITERIA
    Station/Group Status    Inside Call     Outside Call
             Active?             n               n
               Busy?             y               y
        Don't Answer?            y               y        Number of Rings: 2
                All?             n               n
 DND/SAC/Goto Cover?             y               y
   Holiday Coverage?             n               n


COVERAGE POINTS
    Terminate to Coverage Pts. with Bridged Appearances? n
Point1: h61               Rng:    Point2:
Point3:                           Point4:
Point5:                           Point6:
```

5.4. Administer Stations

Use the "change station n" command, where "n" is a non-SIP station extension from **Section 3**. Note that similar configuration for SIP station extensions are performed from System Manager in **Section 6.2**.

For **Coverage Path 1**, enter the coverage path number from **Section 5.3**.

For analog stations, the **Message Waiting Indicator** may need modification, depending on the type of analog telephone. In the compliance testing, one analog station with phone **Type** of "2500" was required to have the **Message Waiting Indicator** set to "led" for interoperability.

```
change station 63001                                            Page   1 of   4
                                     STATION

Extension: 63001                         Lock Messages? n               BCC: 0
     Type: 2500                          Security Code:                  TN: 1
     Port: 001V302                     Coverage Path 1: 61              COR: 1
     Name:                             Coverage Path 2:                 COS: 1
Unicode Name? n                      Hunt-to Station:                 Tests? y
STATION OPTIONS
      XOIP Endpoint type: auto             Time of Day Lock Table:
              Loss Group: 1            Message Waiting Indicator: led
    Off Premises Station? n                  Message Lamp Ext: 63001
```

Repeat this section and **Section 6.2** to administer all stations from **Section 3**.

In the compliance testing, three stations were configured as shown below.

```
list station 63001 count 3                                             Page   1

                                  STATIONS

Ext/          Port/   Name/                          Room/      Cv1/  COR/
 Hunt-to       Type      Surv GK NN      Move  Cable   Jack   Cv2  COS  TN

63001             001V201 Analog Room                            61   1
                  2500                     no                          1  1
65001             S000103 H323 Staff                             61   1
                  9611                     no                          1  1
66002             S000068 Avaya, SIP 2                           61   1
                  J129                     no                          1  1
```

6. Configure Avaya Aura® Session Manager

This section provides the procedures for configuring Session Manager, which is performed via the web interface of System Manager. The procedures include the following areas:

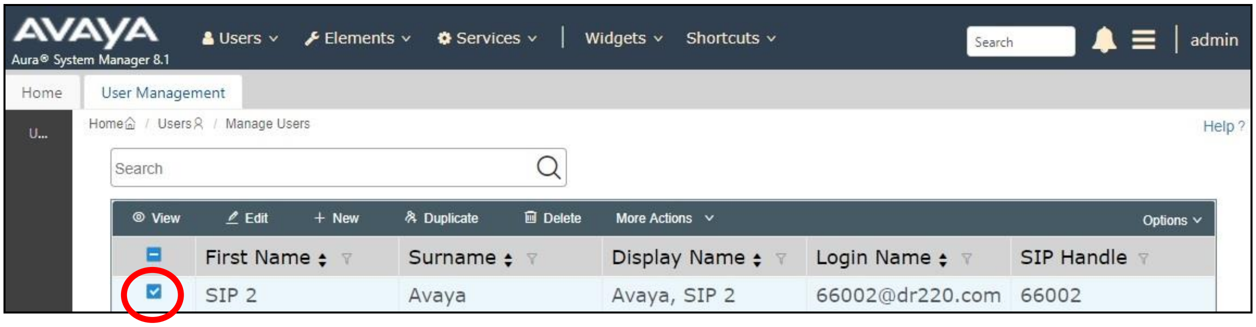
- Launch System Manager
- Administer existing SIP users
- Administer virtual SIP users
- Administer Session Manager entity

6.1. Launch System Manager

Access the System Manager web interface by using the URL "https://ip-address" in an Internet browser window, where "ip-address" is the IP address of System Manager. Log in using the appropriate credentials.

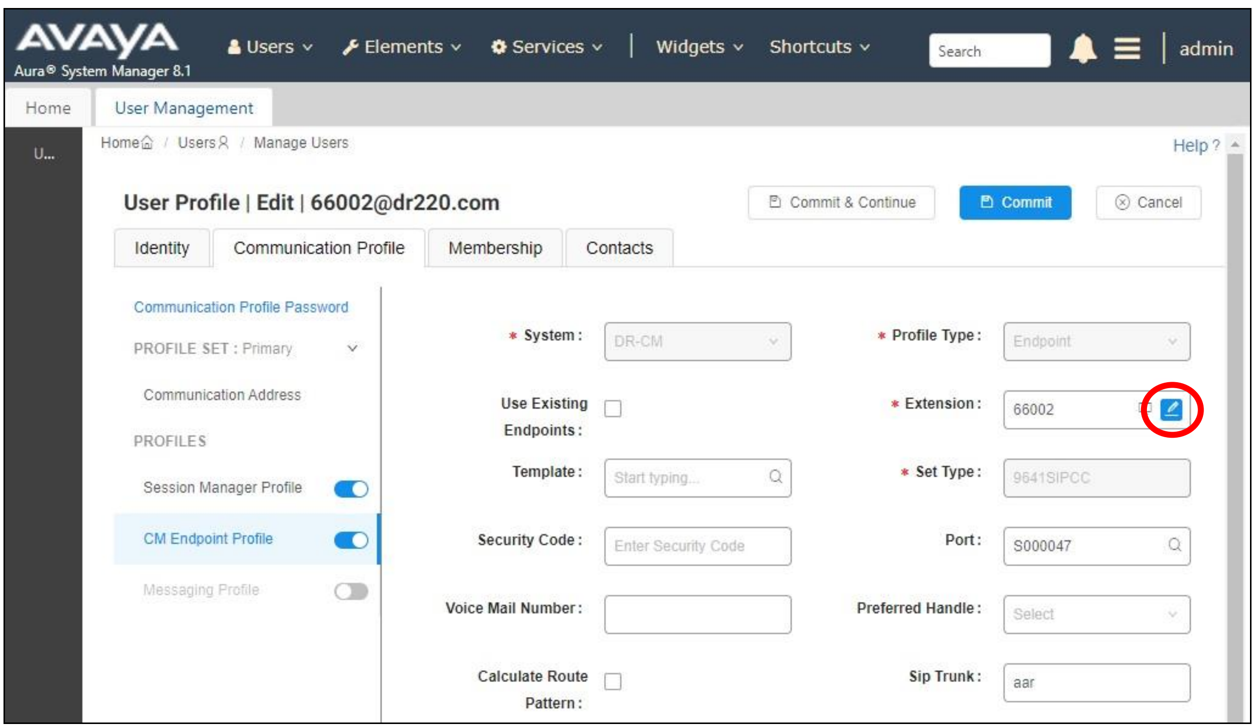
6.2. Administer Existing SIP Users

In the subsequent screen, select **Users → User Management** from the top menu. Select **User Management → Manage Users** (not shown) from the left pane to display the screen below. Select the entry associated with the first SIP station user from **Section 3**, in this case "66002", and click **Edit**.



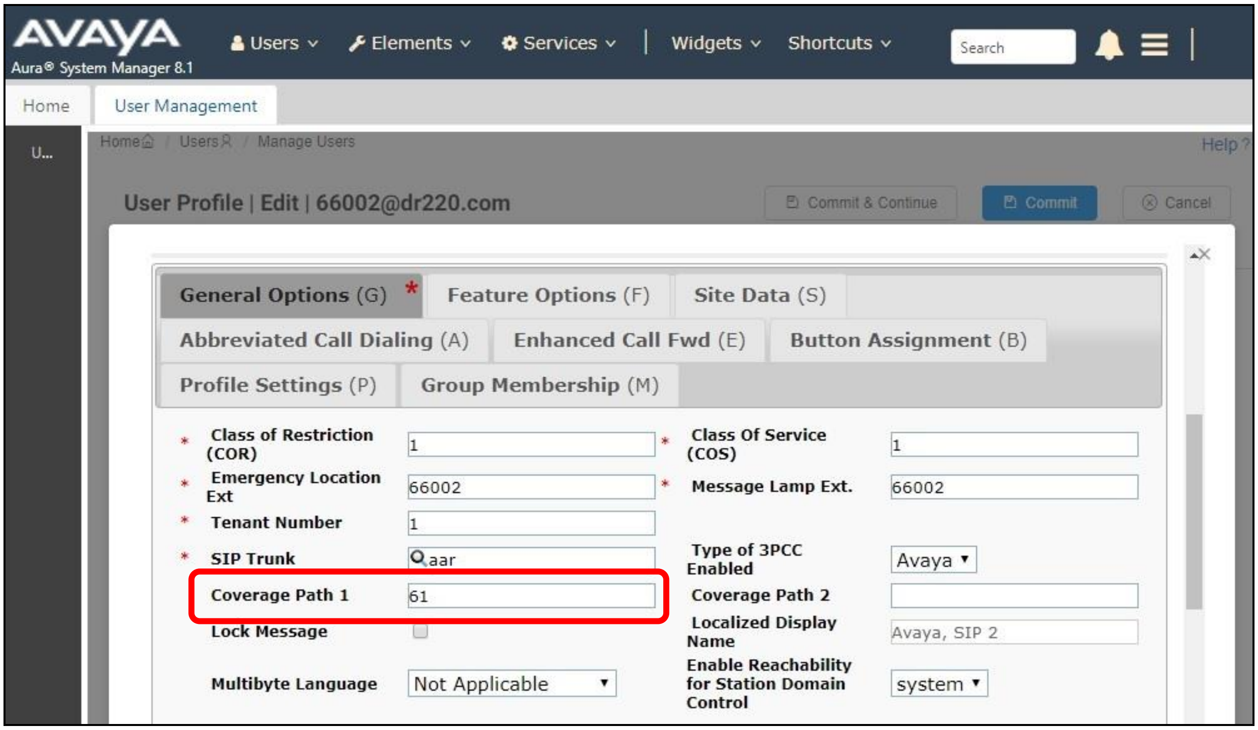
The **User Profile | Edit** screen is displayed. Select the **Communication Profile** tab, followed by **CM Endpoint Profile** to display the screen below.

Click on the **Editor** icon shown below.



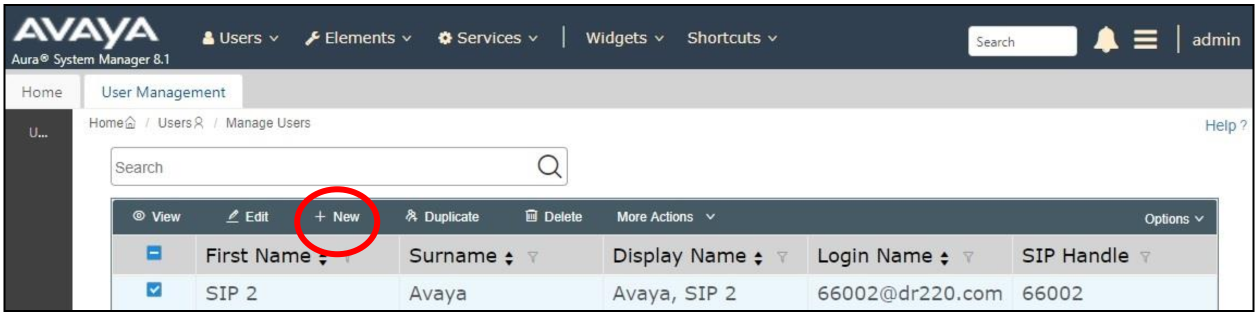
The popped-up screen below is displayed. For **Coverage Path 1**, enter the coverage path number from **Section 5.3**.

Repeat this section to administer all SIP station users that will be using FLAvoice for voicemail. In the compliance testing, one SIP station user was configured as shown below.



6.3. Administer Virtual SIP Users

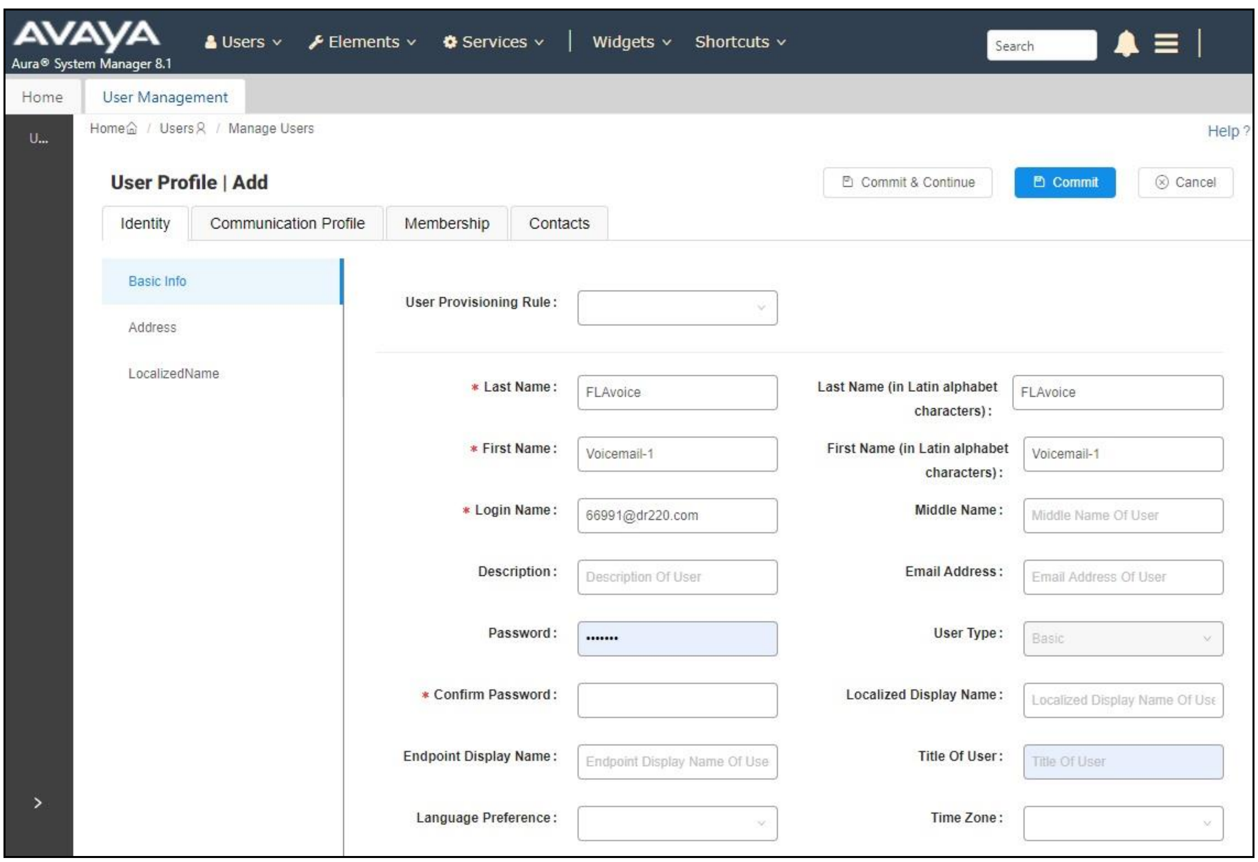
The screen below is displayed again. Click **New** to add a virtual SIP user for handling of FLAvoice voicemail.



6.3.1. Identity

The **User Profile | Add** screen is displayed. Enter desired **Last Name** and **First Name**.

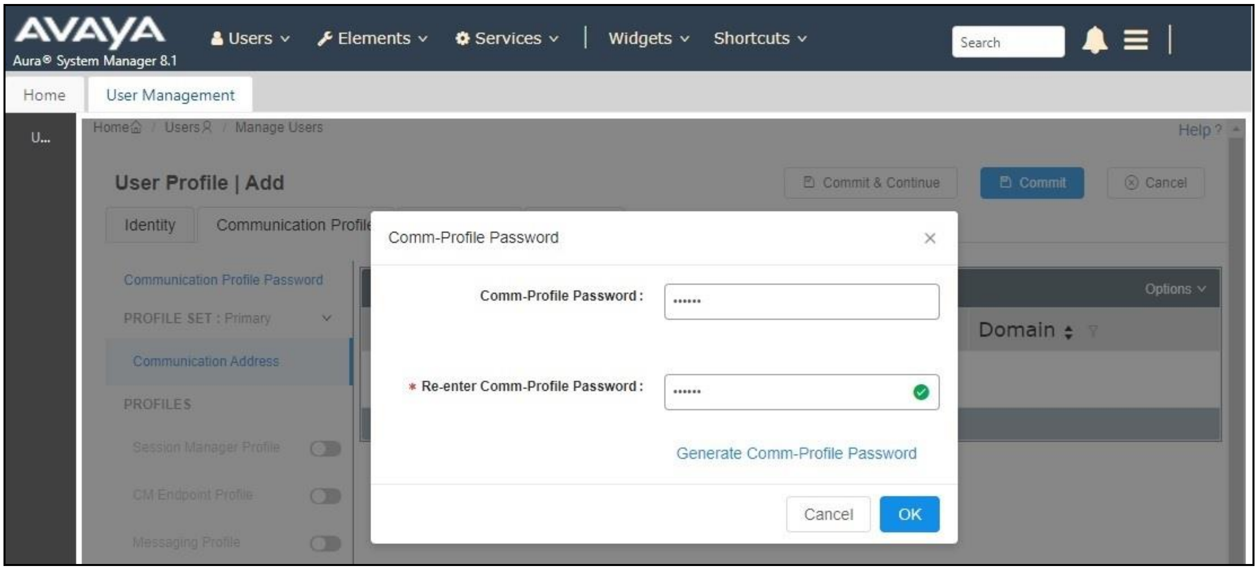
For **Login Name**, enter "n@x", where "n" is the desired user extension and "x" is the applicable domain name from **Section 3**. Retain the default values in the remaining fields.



6.3.2. Communication Profile

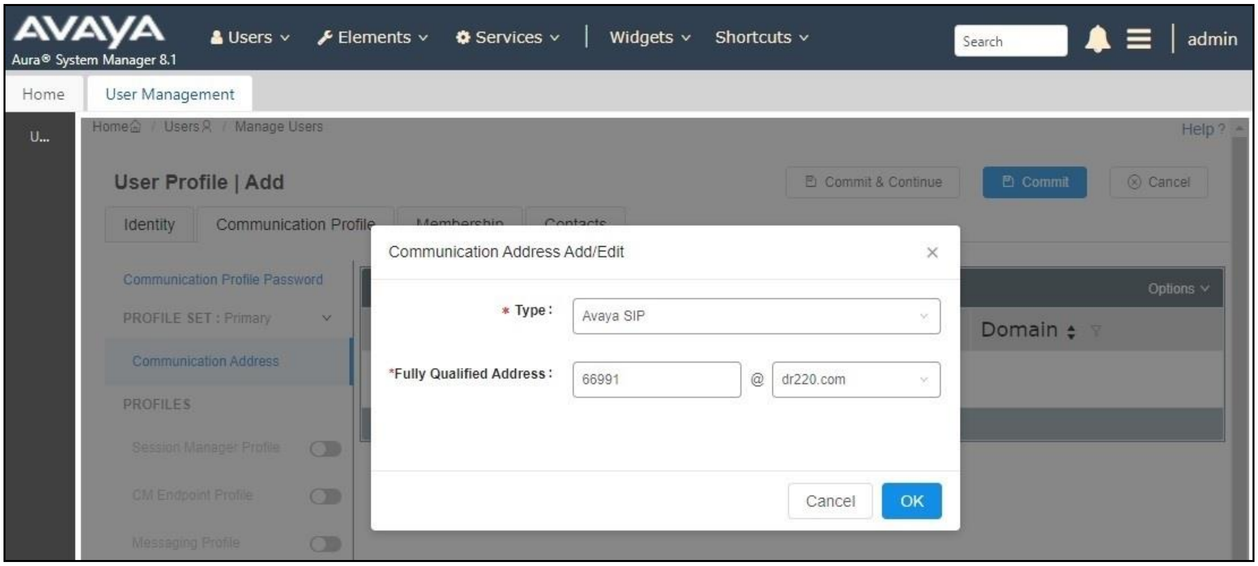
Select the **Communication Profile** tab, followed by **Communication Profile Password** to display the **Comm-Profile Password** pop-up box.

For **Communication-Profile Password** and **Re-enter Comm-Profile Password**, enter the desired password for the virtual SIP user to use for registration.

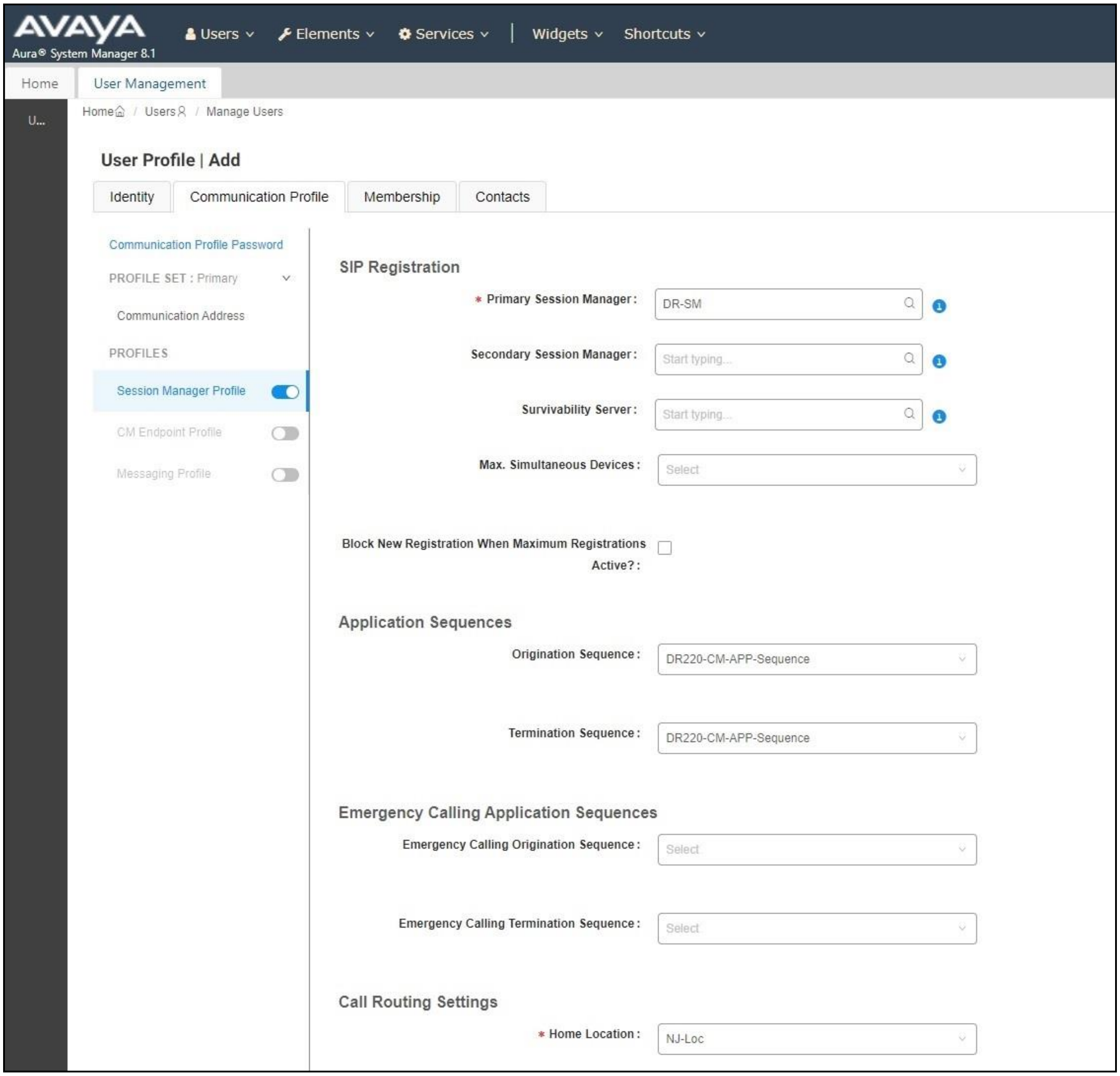


Select **Communication Address** from the left, followed by **New** to display the **Communication Address Add/Edit** pop-up box.

For **Type**, select “Avaya SIP”. For **Fully Qualified Address**, enter and select the SIP user extension and domain name to match the login name from **Section 6.3.1**.



Select **Session Manager Profile**. For **Primary Session Manager**, **Origination Sequence**, **Termination Sequence**, and **Home Location**, select the values corresponding to the applicable Session Manager and Communication Manager as shown below. Retain the default values in the remaining fields.



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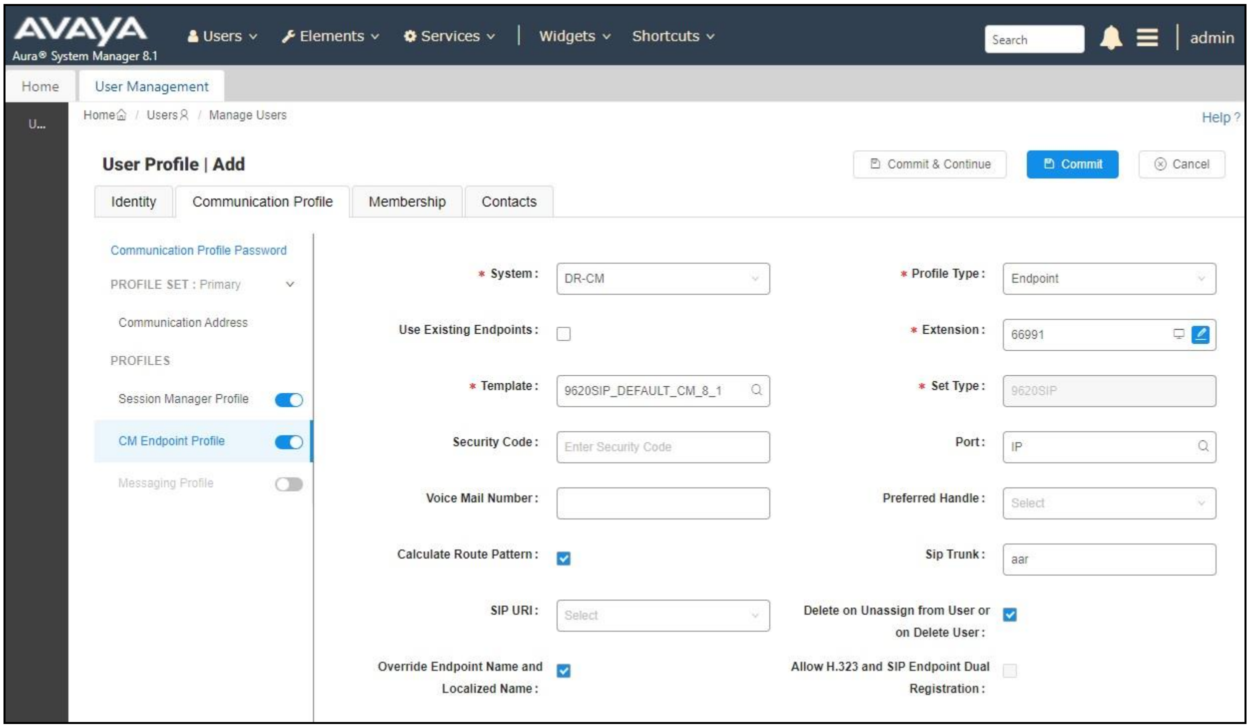
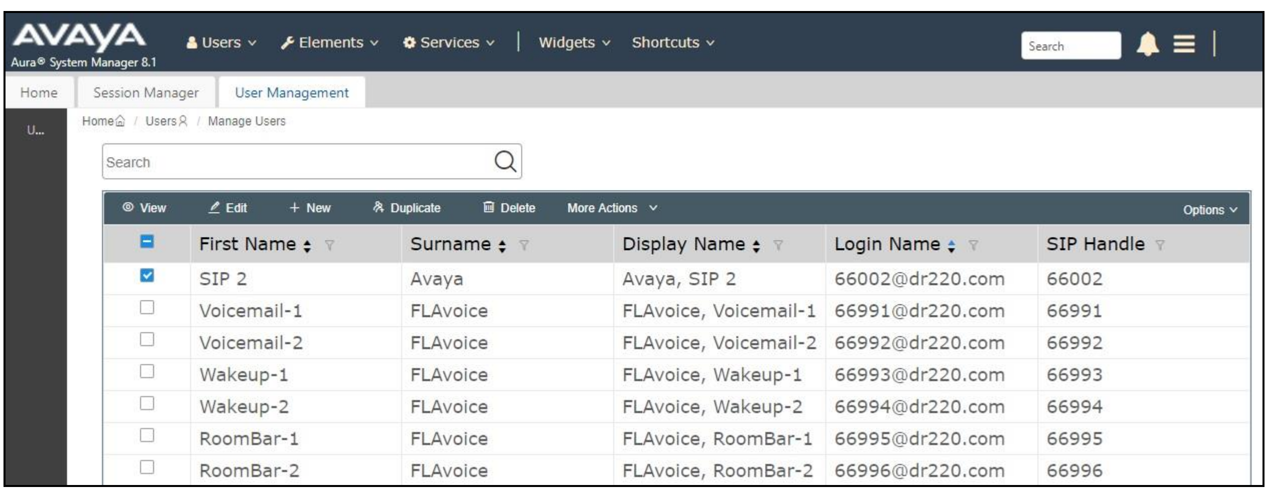
Select **CM Endpoint Profile** from the left. For **System**, select the value corresponding to the applicable Communication Manager. For **Template**, select "9620SIP_DEFAULT_CM_8_1". For **Extension**, enter the SIP user extension from **Section 6.3.1**. Retain the default values in the remaining fields.

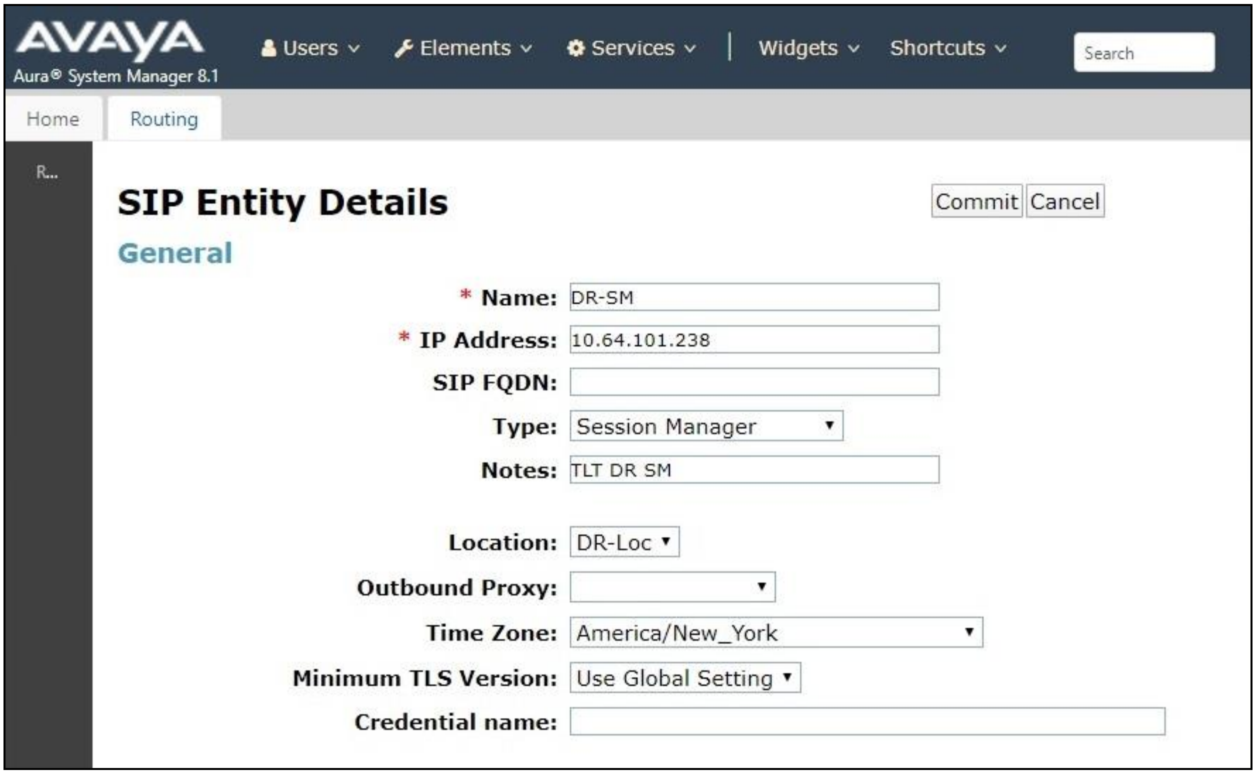


Repeat **Section 6.3** to add the desired number of virtual SIP users for handling of FLAvoice voicemail, wakeup, and combined room status and minibar. In the compliance testing, two SIP users were created for voicemail, two for wakeup call, and two for room status and minibar, as shown below.



6.4. Administer Session Manager Entity

Select **Elements → Routing → SIP Entities** from the top menu to display the **Routing** tab, followed by the applicable SIP entity for Session Manager from the left pane (not shown), in this case "DR-SM". The **SIP Entity Details** screen is displayed.



Scroll down to **Listen Ports** sub-section and verify that the transport protocol used by FLAvoice is specified in the list, in thise case "UDP". Also verify that the corresponding **Endpoint** column is checked, as shown beow.

7. Configure Global BHS FLAvoice

This section provides the procedures for configuring FLAvoice. The procedures include the following areas:

- Launch FLAvoice
- Administer PBX
- Administer channel functions
- Administer mailboxes
- Administer wakeup call
- Administer room status and minibar

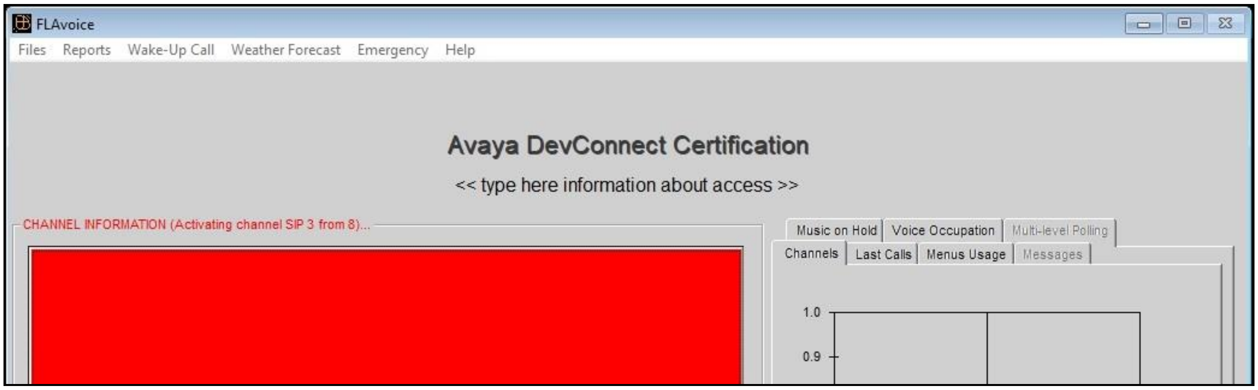
7.1. Launch FLAvoice

From the FLAvoice server, double-click on the **FLAvoice** icon shown below, which was created as part of installation.

The **FLAvoice** screen below is displayed, where "Avaya DevConnect Certification" is the customer name picked up from the applied license file as part of installation.

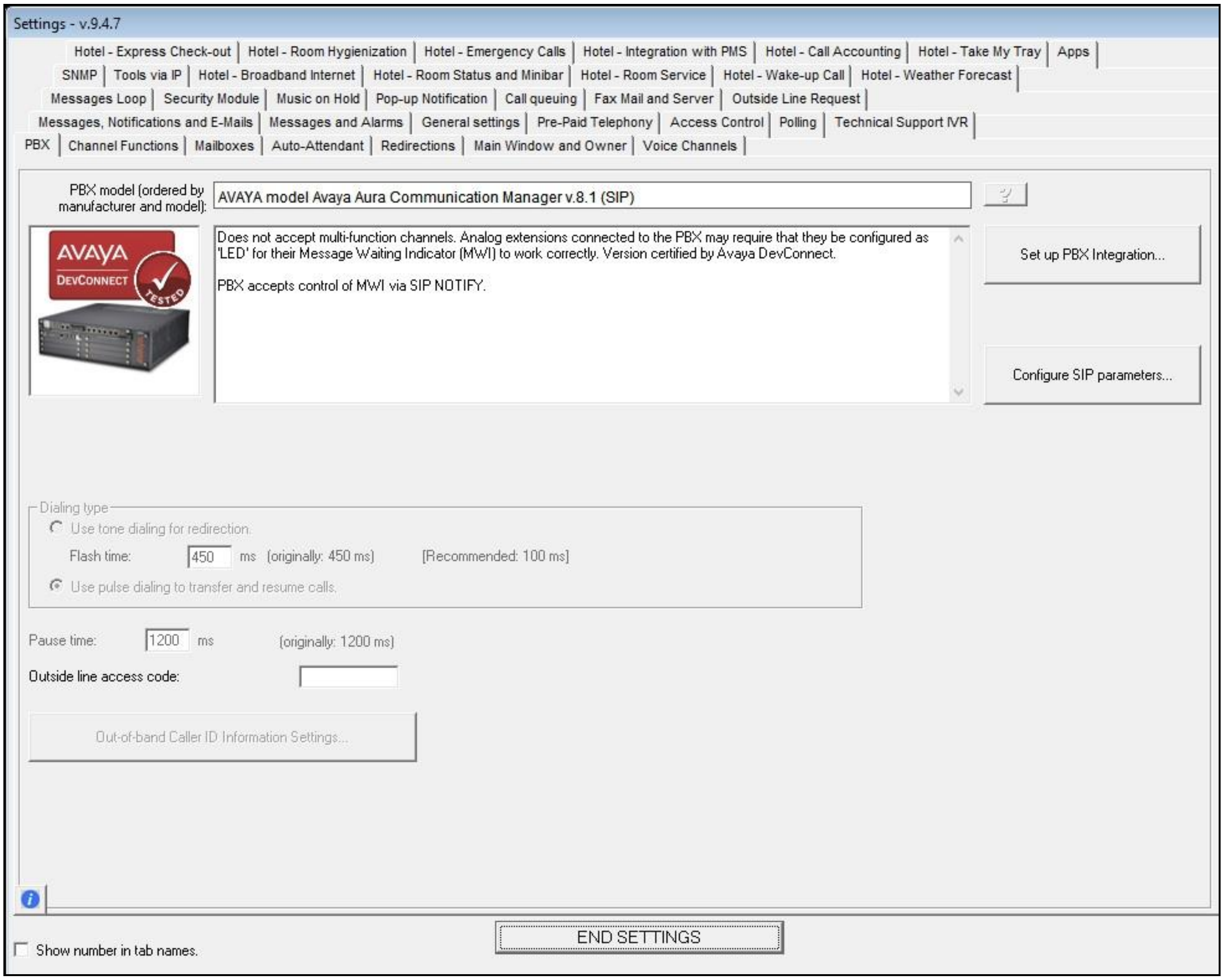
Select **Files → Unlock Access to Settings** from the top menu and enter the appropriate credentials in the subsequent screen (not shown) to unlock settings. The **FLAvoice** screen is displayed again and updated to allow access to settings.

Select **File → Settings** from the top menu.

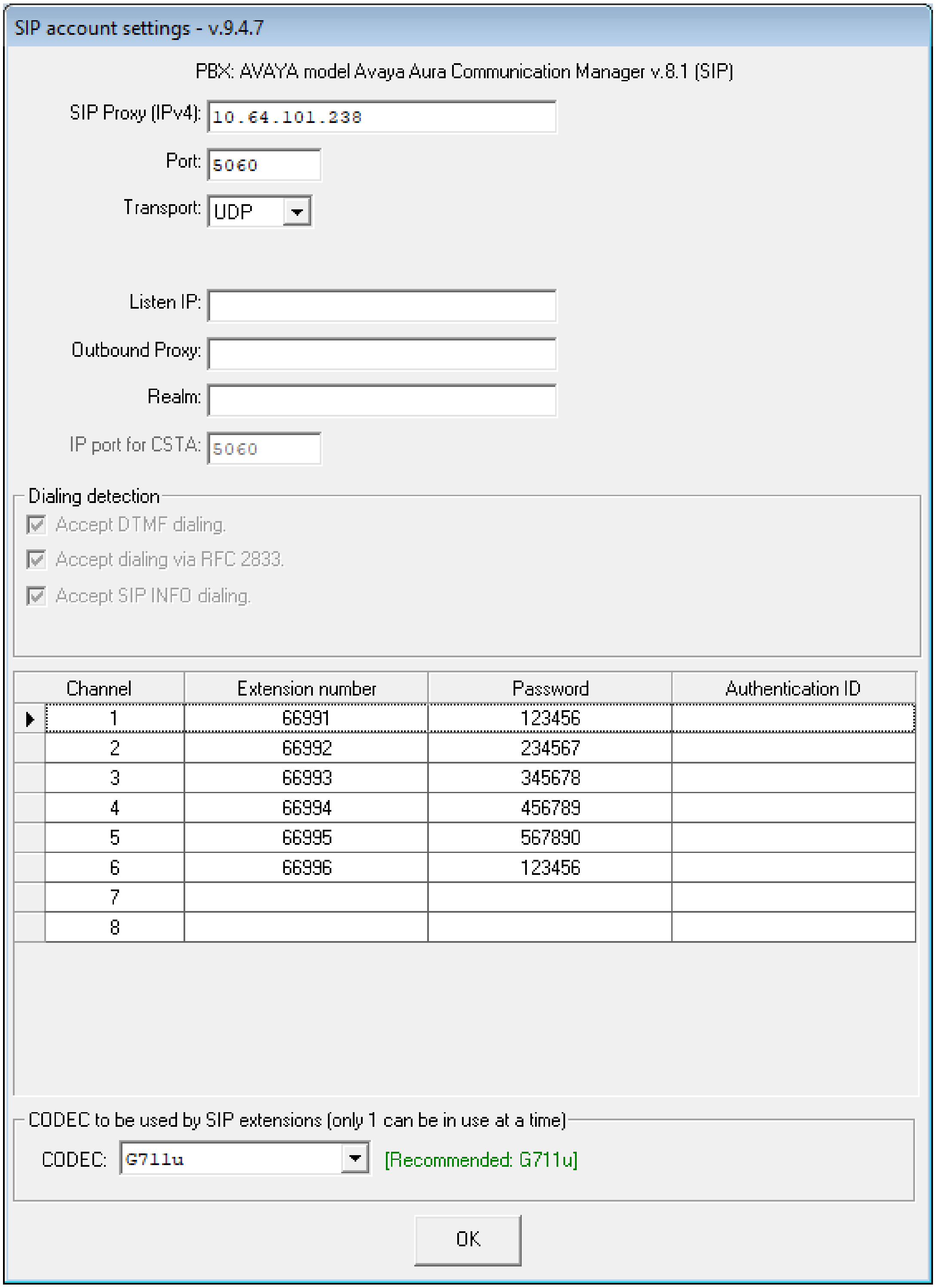


7.2. Administer PBX

The **Settings** screen is displayed. Select the **PBX** tab. For **PBX Model**, select the value shown below. Retain the default values in the remaining fields and click **Configure SIP parameters**.

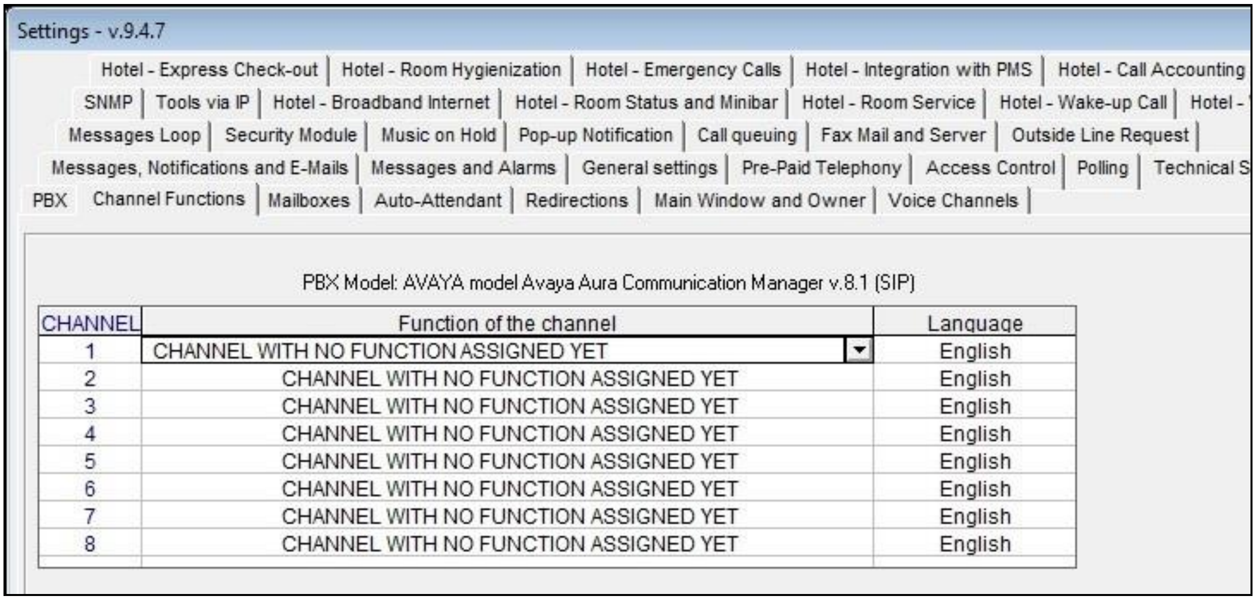


The **SIP account settings** screen is displayed. For **SIP Proxy**, enter the IP address of the Session Manager signaling interface. For **UDP Port**, enter “5060”. In the channel entries sub-section, enter the extension and password for each virtual SIP user from **Section 6.3**. Retain the default values in the remaining fields.



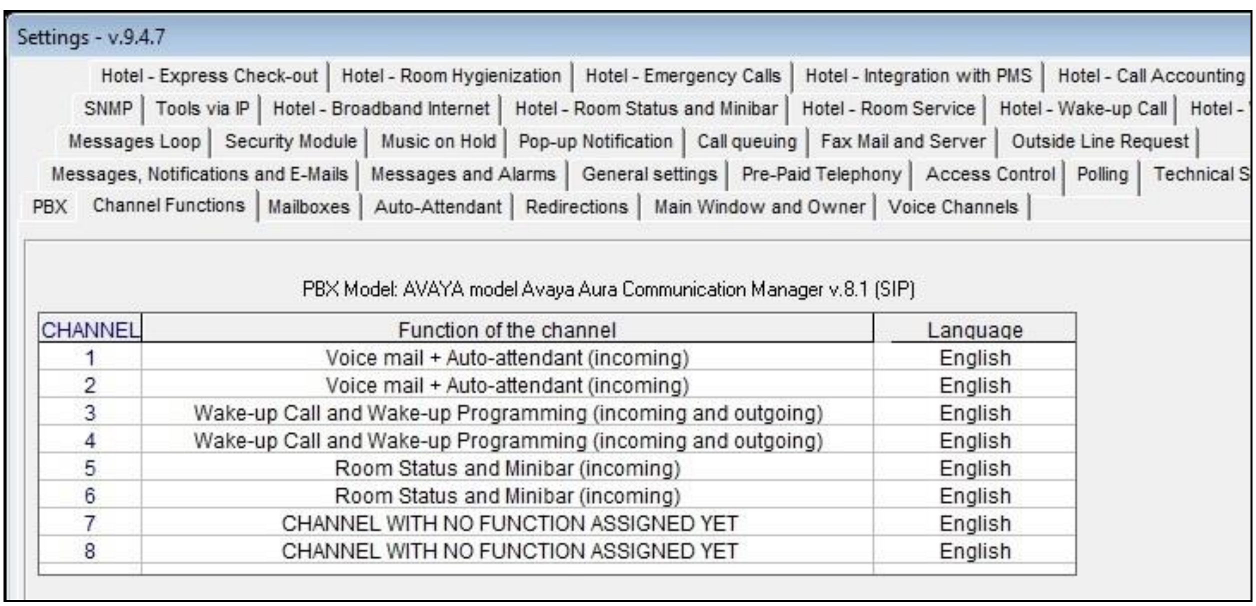
7.3. Administer Channel Functions

The **Settings** screen is displayed again. Select the **Channel Functions** tab to display the screen shown below.



Click the **Function of the channel** field for the first channel, and select the value shown in the screen below from the associated drop-down list. Repeat as necessary for remaining channels.

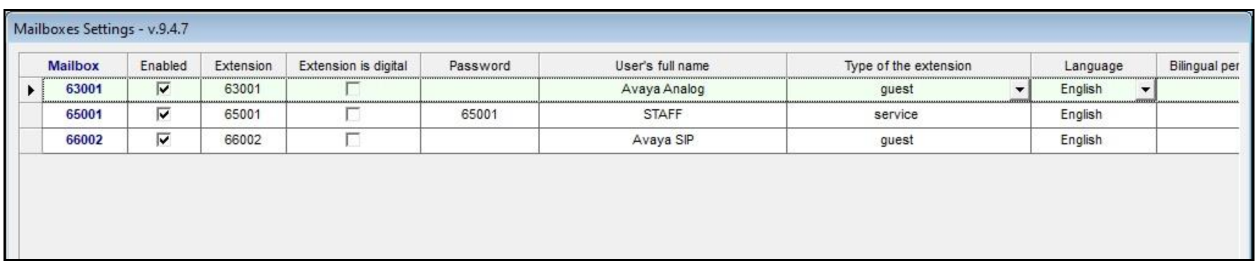
In the compliance testing, the first two channels corresponded to the two virtual SIP users in **Section 6.3** for handling of voicemail; the next two channels corresponded to the two virtual SIP users in **Section 6.3** for handling of wakeup call, and the last two channels corresponded to the two virtual SIP users in **Section 6.3** for handling of room status and minibar.



7.4. Administer Mailboxes

From the **Settings** screen, select the **Mailboxes** tab to display the screen below. Click **Mailboxes Settings**.

Follow reference [3] to create a mailbox for each staff and guest station from **Section 3**. Set **Type of the extension** to "guest" for guest stations and to "service" for staff stations, as shown below.



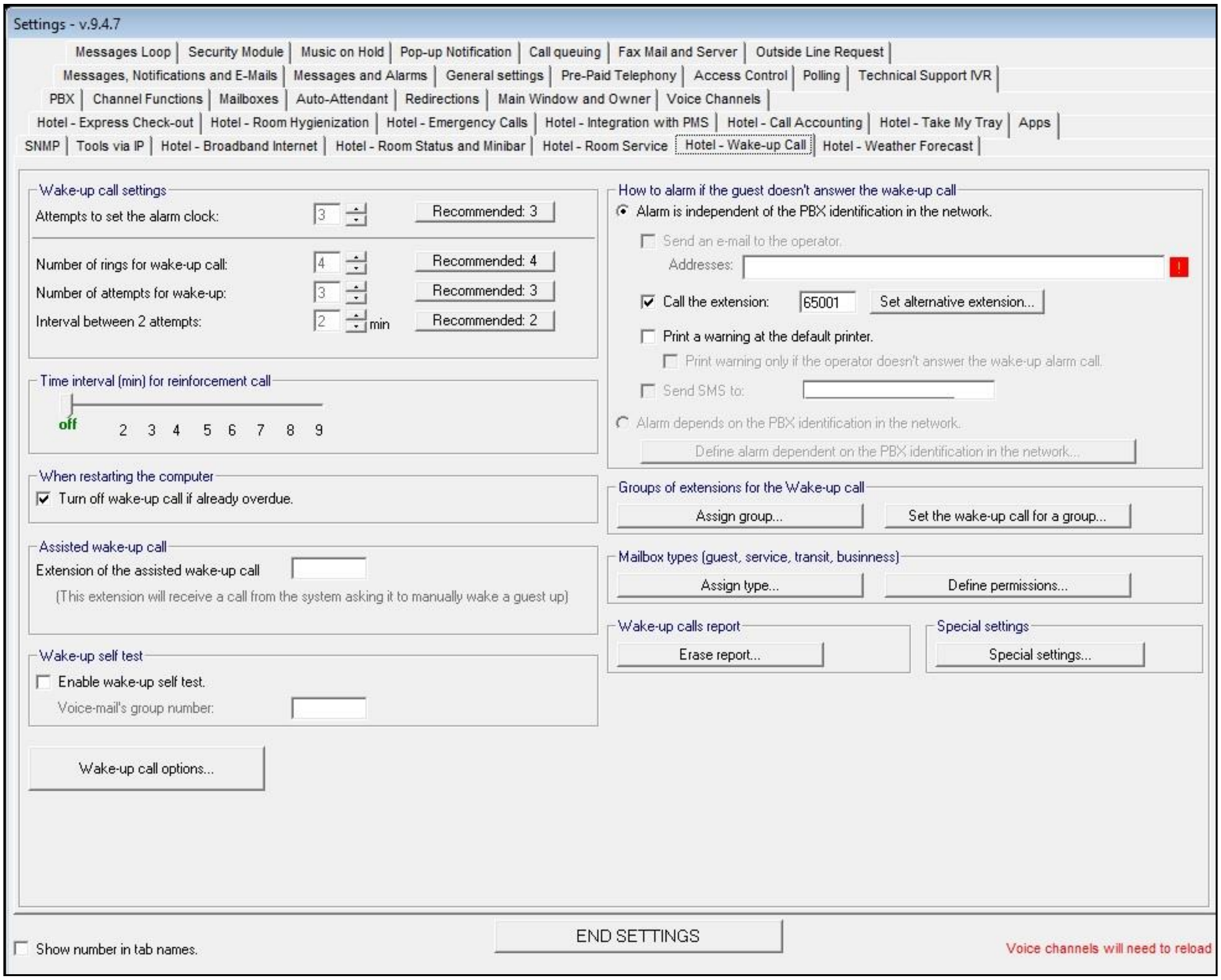
Mailboxes Settings - v.9.4.7

Mailbox	Enabled	Extension	Extension is digital	Password	User's full name	Type of the extension	Language	Bilingual per
63001	☑	63001	☐		Avaya Analog	guest	English	
65001	☑	65001	☐	65001	STAFF	service	English	
66002	☑	66002	☐		Avaya SIP	guest	English	

7.5. Administer Wakeup Call

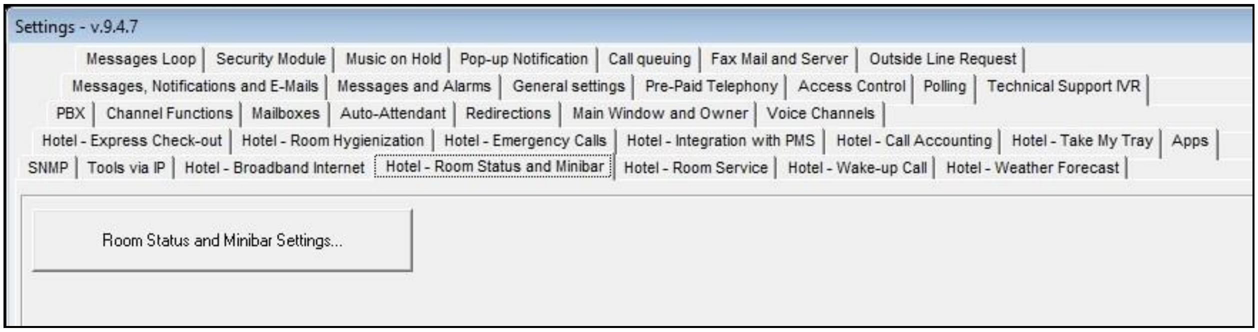
From the **Settings** screen, select the **Hotel – Wake-up Call** tab to display the screen below. Configure the **Wake-up call settings** sub-section as desired.

In the **How to alarm if the guest doesn't answer the wake-up call** sub-section, check **Call the extension**, and enter the staff extension from **Section 3** as shown below. Retain the default values in the remaining fields.



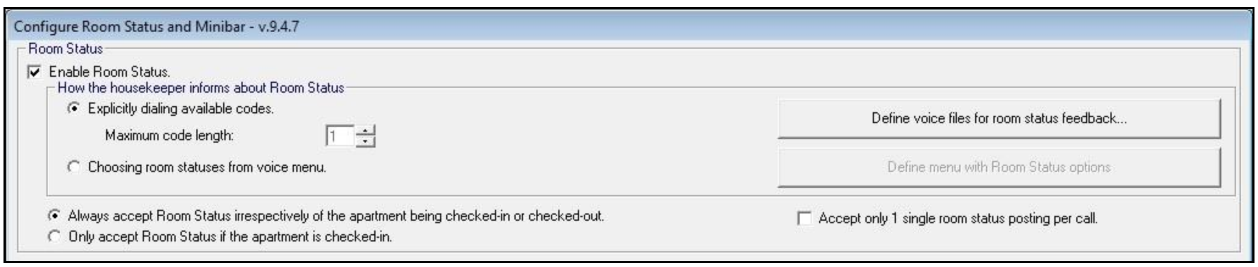
7.6. Administer Room Status and Minibar

From the **Settings** screen, select the **Hotel – Room Status and Minibar** tab to display the screen below. Click **Room Status and Minibar Settings**.

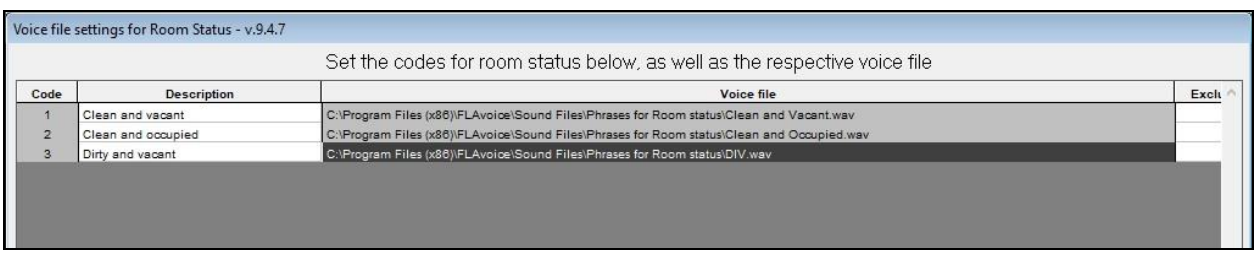


7.6.1. Room Status

The **Configure Room Status and Minibar** screen is displayed. In the **Room Status** sub-section, check **Enable Room Status** and retain the default values in the remaining fields. Select **Define voice files for room status feedback**.

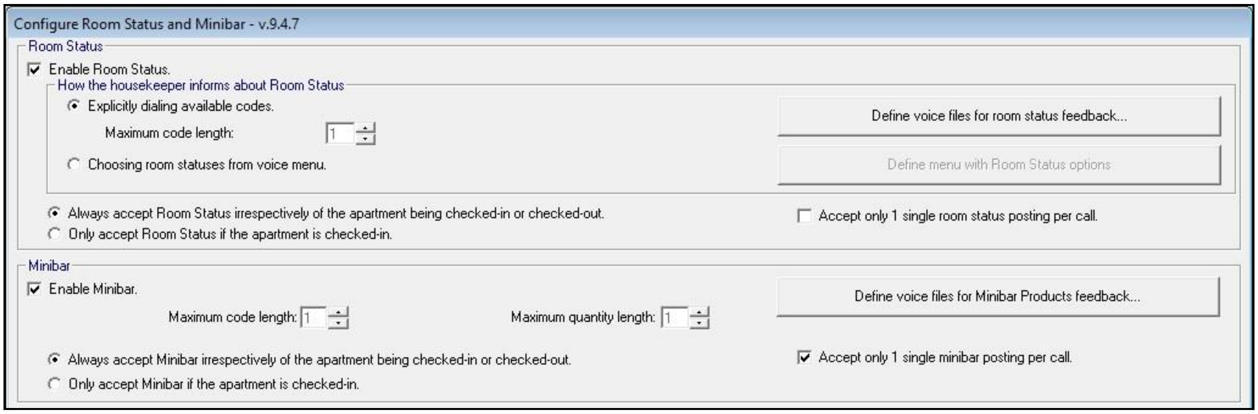


The **Voice file settings for Room Status** screen is displayed next. Follow reference [3] to create desired room status and corresponding voice files. In the compliance testing, three room status entries were created as shown below.



7.6.2. Minibar

The **Configure Room Status and Minibar** screen is displayed again. In the **Minibar** sub-section, check **Enable Minibar** and retain the default values in the remaining fields. Select **Define voice files for Minibar Products feedback**.



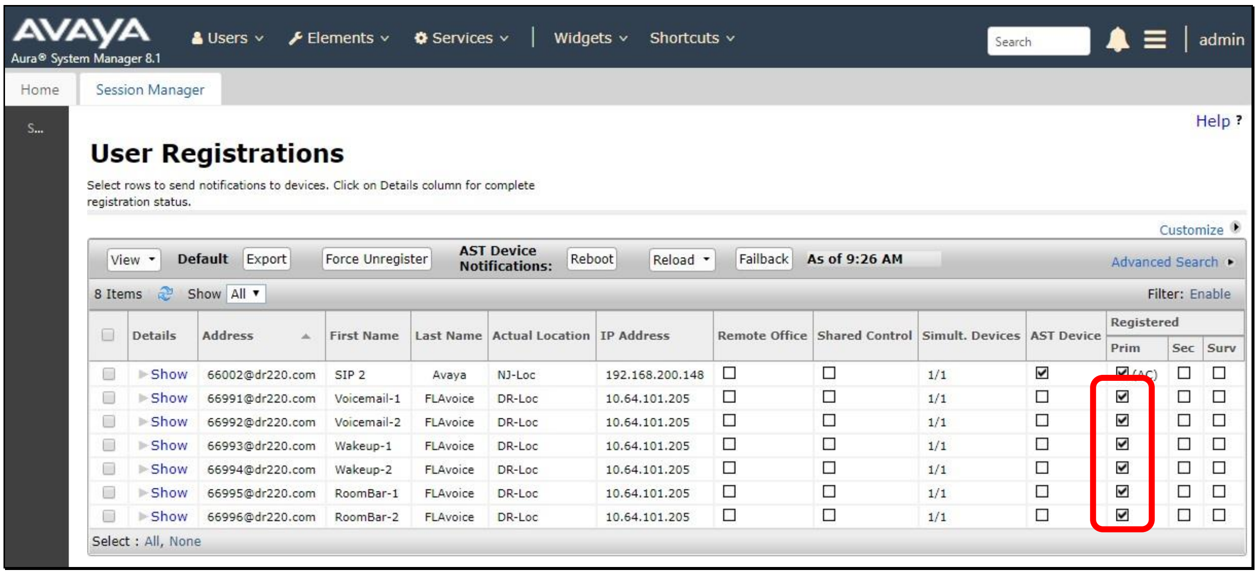
The **Voice file settings for Minibar products** screen is displayed next. Follow reference [3] to create desired minibar products and corresponding voice files. In the compliance testing, two minibar entries were created as shown below.

8. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Communication Manager, Session Manager, and FLAvoice.

From the System Manager web-based interface, select **Elements → Session Manager → System Status → User Registrations** (not shown) to display the **User Registrations** screen.

Verify that all virtual SIP users from **Section 6.3** are registered, as shown below with a check in the **Registered Prim** column.



9. Conclusion

These Application Notes describe the configuration steps required for Global BHS FLAvoice to successfully interoperate with Avaya Aura® Session Manager and Avaya Aura® Communication Manager. All feature and serviceability test cases were completed with observations noted in **Section 2.2**.

10. Additional References

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

1. *Administering Avaya Aura® Communication Manager*, Release 8.1.x, Issue 6, March 2020, available at http://support.avaya.com.

2. *Administering Avaya Aura® Session Manager*, Release 8.1, Issue 4, May 2020, available at http://support.avaya.com.

3. *FLAvoice USER'S MANUAL*, 9.3.1, available from http://www.globalbhs.com/suporte/.

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