



Avaya Solution & Interoperability Test Lab

Application Notes for DuVoice with Avaya IP Office 9.0 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the DuVoice hospitality messaging system to interoperate with Avaya IP Office 9.0. In the compliance testing, DuVoice provided automated attendant, voicemail, wake-up call, do not disturb, name and user profile template change and room clean status.

Readers should pay attention to section 2, in particular the scope of testing as outlined in Section 2.1 as well as the 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 the DuVoice hospitality messaging system to interoperate with Avaya IP Office. In the compliance testing, DuVoice used SIP User and Web Services API interface from Avaya IP Office to provide automated attendant, voicemail, wake-up call, do not disturb, name and user profile template change and room clean status.

The SIP User and Web Services API interfaces were used by DuVoice to provide basic hospitality features such as automated attendant, voicemail, wake-up call, do not disturb, and room clean status indication. In the compliance testing, DuVoice emulated four virtual SIP users on Avaya IP Office. The four virtual SIP users were registered with Avaya IP Office, and configured as members of a hospitality hunt group. Incoming calls to the hospitality hunt group were delivered over an available virtual SIP user to DuVoice. DuVoice used the SIP packets to determine the type of call and hence the service to provide, such as automated attendant for incoming trunk calls, voicemail coverage for redirected call, voicemail, do not disturb, room clean status, and wake-up call scheduling for internal calls.

For the voicemail coverage scenarios, voicemail messages were recorded and saved on DuVoice. Short Codes were used to activate/deactivate the Message Waiting Indicator (MWI).

2. General Test Approach and Test Results

The feature test cases were performed manually. Calls were made from the PSTN and from local users to the hospitality hunt group, with different options selected for extension transfer, voice message retrieval, and wake-up call schedule. The DuVoice InnDesk was used to manually initiate check-in and check-out requests, to monitor the room and wake-up call status, and to set Do Not Disturb.

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to DuVoice.

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.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on DuVoice:

- Registration of emulated SIP users.
- Automated attendant navigation for incoming trunk calls, such as transfer to guests and staff.
- Voicemail recording, logging, and retrieval, with proper message waiting lamp activation/deactivation for users with digital, and IP telephone types.
- Scheduling and delivering of wake-up call requests, including retried attempts and escalation to staff.
- Handling of maid codes as indication of room clean status from hospitality hunt group calls.
- Use of Short Codes to set MWI and do not disturb for guests.

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

2.2. Test Results

Interoperability testing of the sample configuration was completed with successful results for DuVoice DV2000 with the following observation.

There is a known issue with Avaya 1100 and 1200 Series phone, where MWI cannot be activated using short codes.

2.3. Support

Technical support on DuVoice can be obtained through the following:

- **Phone:** (425) 250-2393
- **Email:** support@duvoice.com

3. Reference Configuration

Figure 1: Test configuration used during compliance testing consisted of following:

- Avaya IP Office 500v2
- Avaya 9600 Series IP Deskphones
- Avaya 1100 and 1200 Series IP Deskphones
- DuVoice DV2000 running on Windows 7 Enterprise

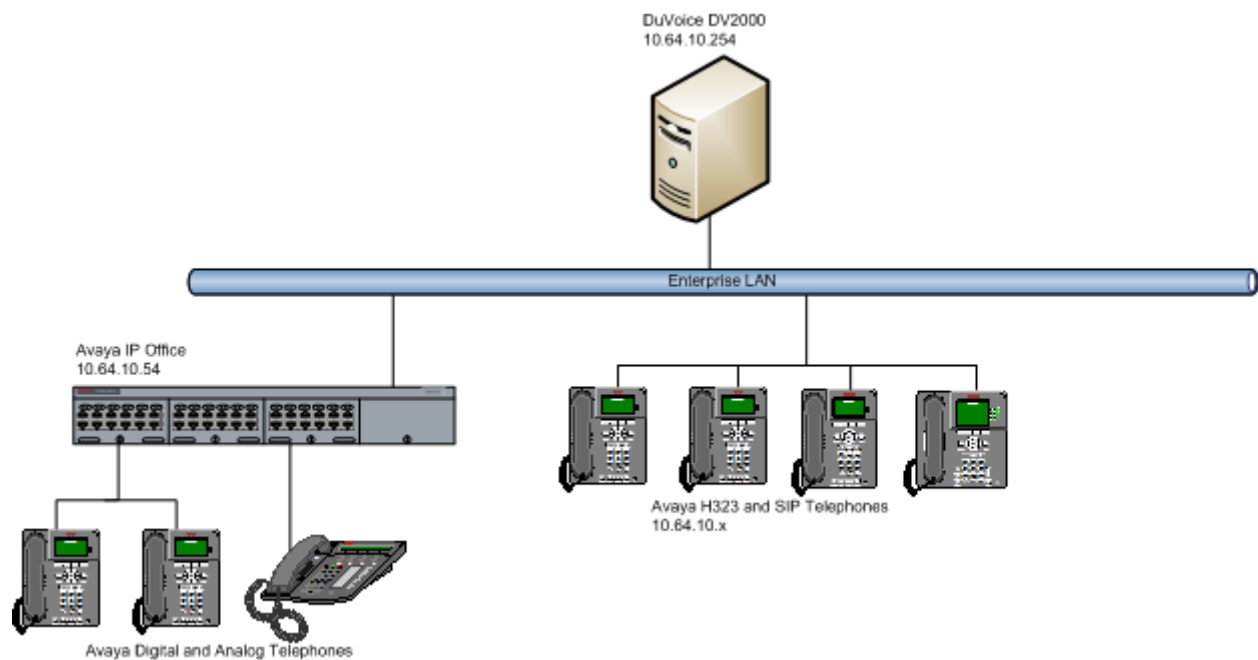


Figure 1: Compliance Testing Configuration

4. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office on IP500 V2	9.0
Avaya 1608 IP Deskphone (H.323)	1.302S
Avaya 9630 IP Deskphone (H.323)	3.104S
Avaya 9621G IP Deskphone (H.323)	6.2209
Avaya 1100 Series IP Deskphone (SIP)	4.4 SP1
Avaya 1200 Series IP Deskphone (SIP_	4.4 SP1
Avaya 1408 Digital Deskphone	NA
DuVoice	5.2.0

Note: Testing was performed with IP Office 500 v2 R9.0, but it also applies to IP Office Server Edition R9.0. Note that IP Office Server Edition requires an Expansion IP Office 500 v2 R9.0 to support analog or digital endpoints or trunks. IP Office Server Edition does not support TAPI Wave or Group Voicemail.

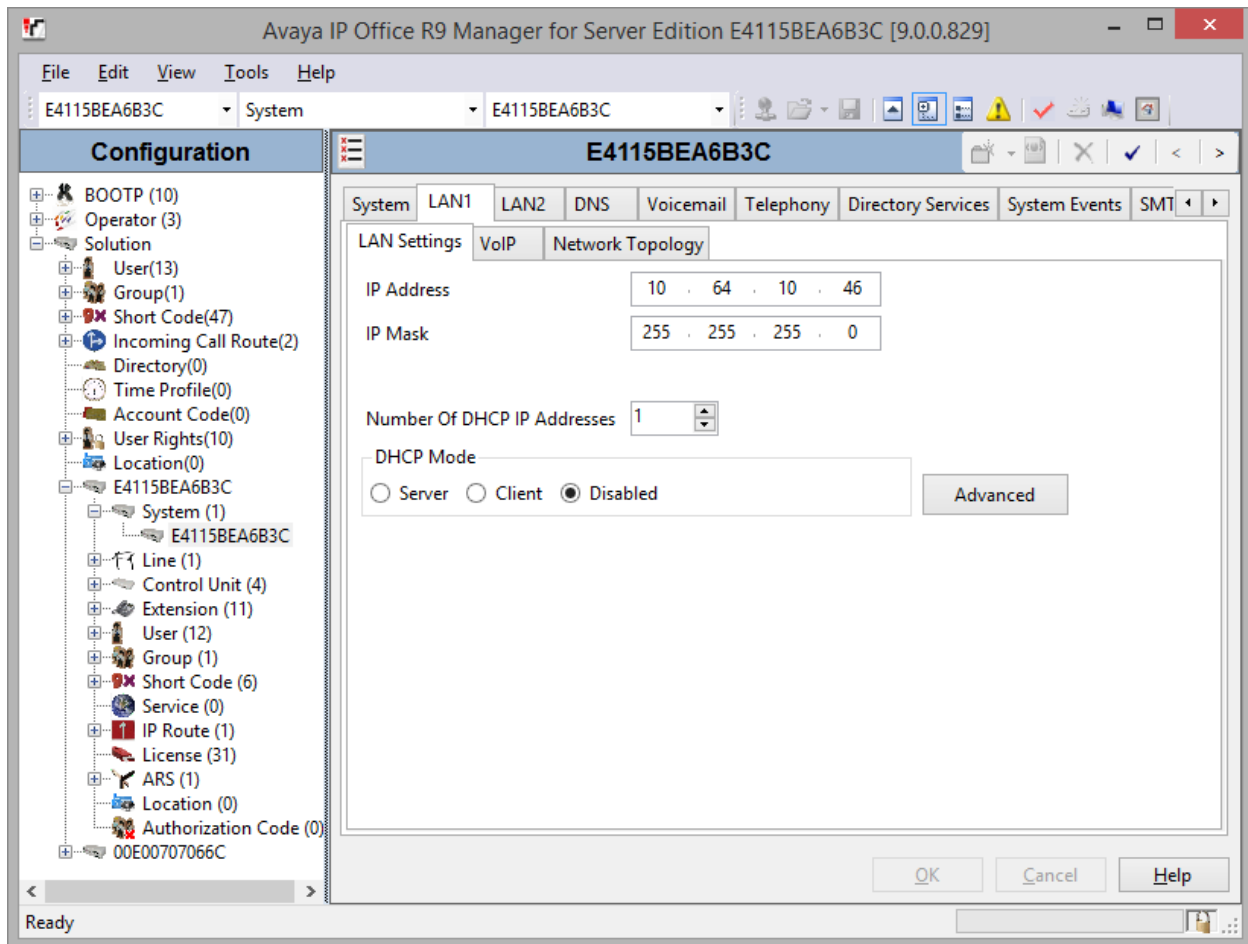
5. Configure Avaya IP Office

This section provides the procedures for configuring IP Office.

5.1. Obtain LAN IP Address

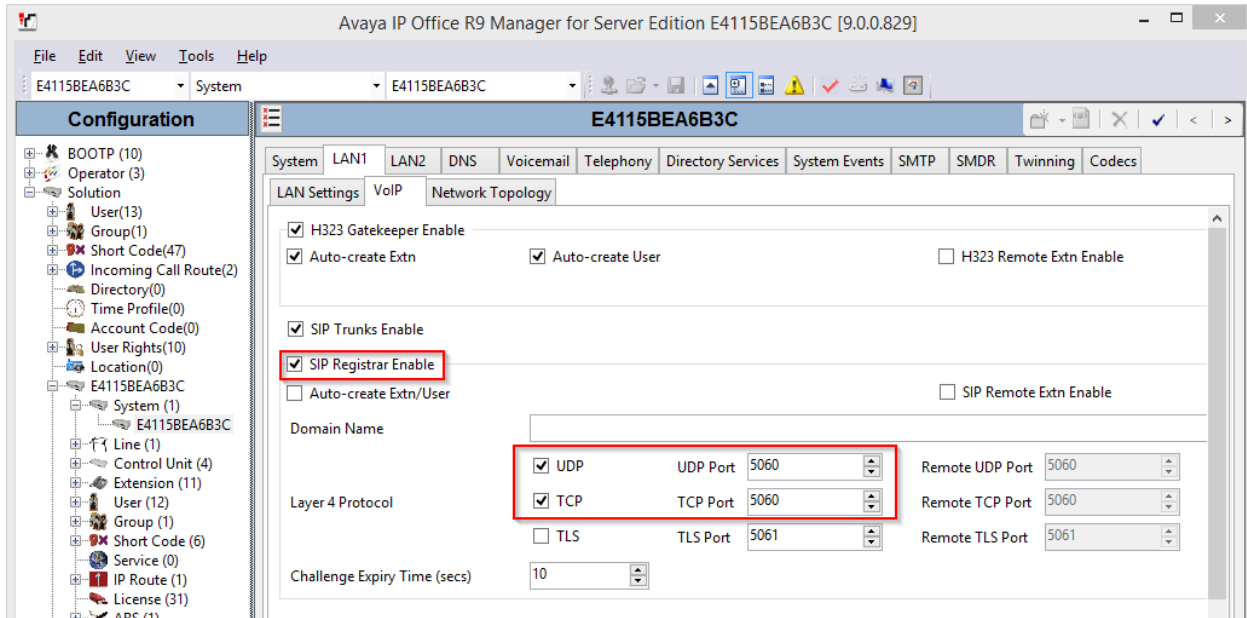
From the configuration tree in the left pane, select **System** to display the screen in the right pane, where **E4115BEA6B3C** is the name of the IP Office system.

Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure DuVoice. Note that IP Office can support SIP on the LAN1 and/or LAN2 interfaces, and the compliance testing used the LAN1 interface.



5.2. Administer SIP Registrar

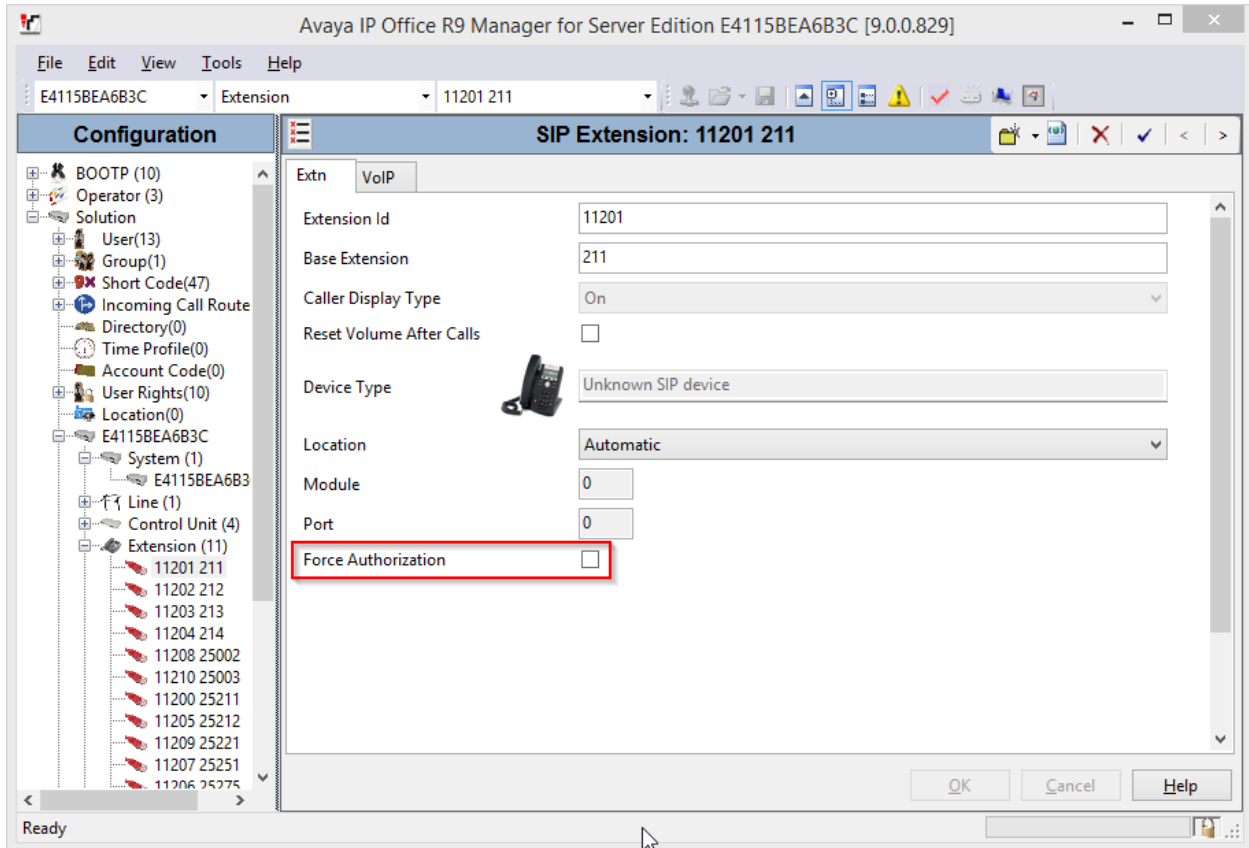
Select the **VoIP** sub-tab. Make certain that **SIP Registrar Enable** is checked, as shown below. Select the **SIP Registrar** sub-tab, and enter a valid **Domain Name** for SIP endpoints to use for registration with IP Office. In the compliance testing, the **Domain Name** was left blank, so the LAN IP address was used for registration. Also, ensure that depending on the setup either **UDP** or **TCP** are enabled. During Compliance Testing, DuVoice registered with IP Office using UDP.



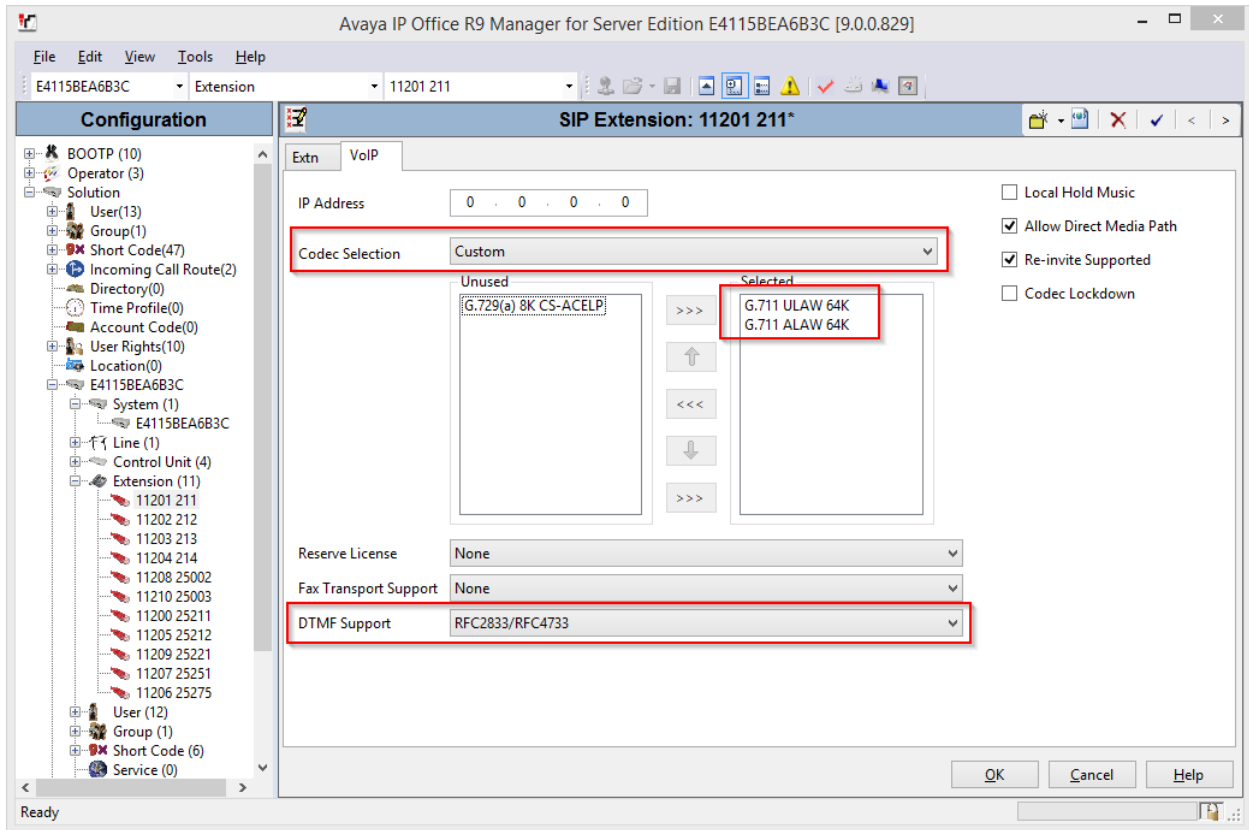
5.3. Administer SIP Extensions for DuVoice

From the configuration tree in the left pane, right-click on **Extension**, and select **New** → **SIP Extension** from the pop-up list to add a new SIP extension (not shown). Under the **Extn** tab, enter the desired digits for **Base Extension**, and uncheck **Force Authorization**, as shown below. Retain the default values in the remaining fields.

Repeat this section to add the desired number of SIP extensions. In the compliance testing, four SIP extensions, 211-214, were created. .

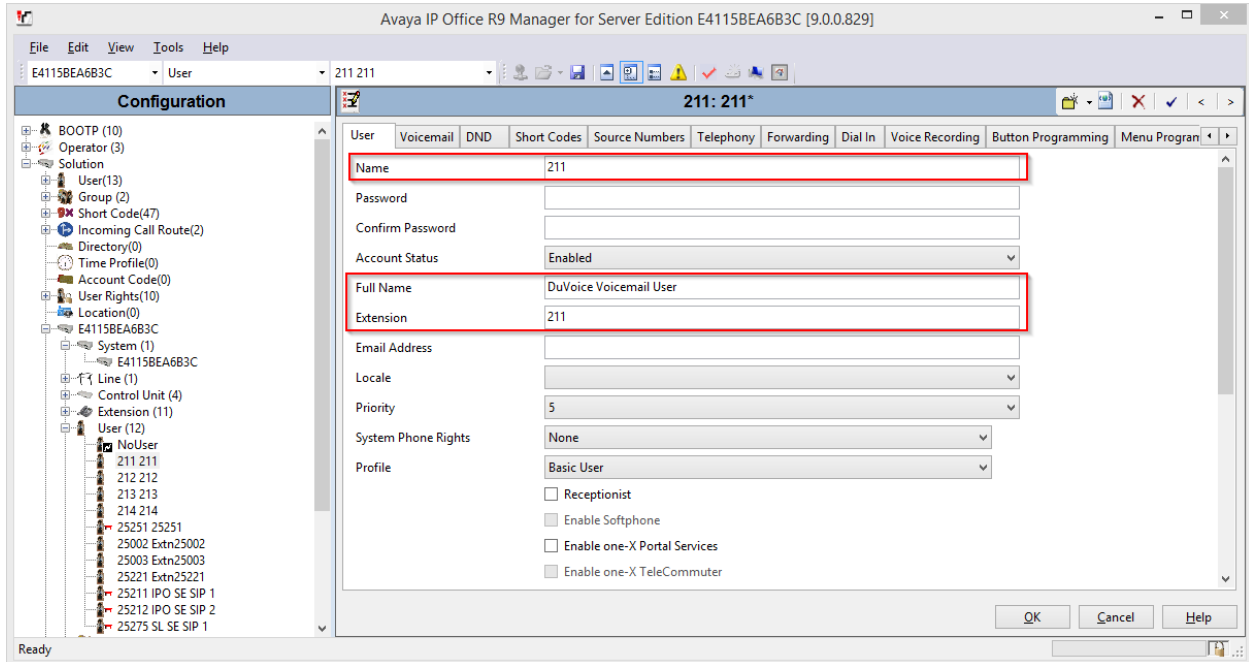


Select the **VoIP** tab. For **Codec Selection**, select **Custom** and move **G.711 ULAW 64K** and **G.711 ALAW 64K** to **Selected** box, as shown in the screen capture. Set the **DTMF Support** to **RFC2833/RFC4733**.

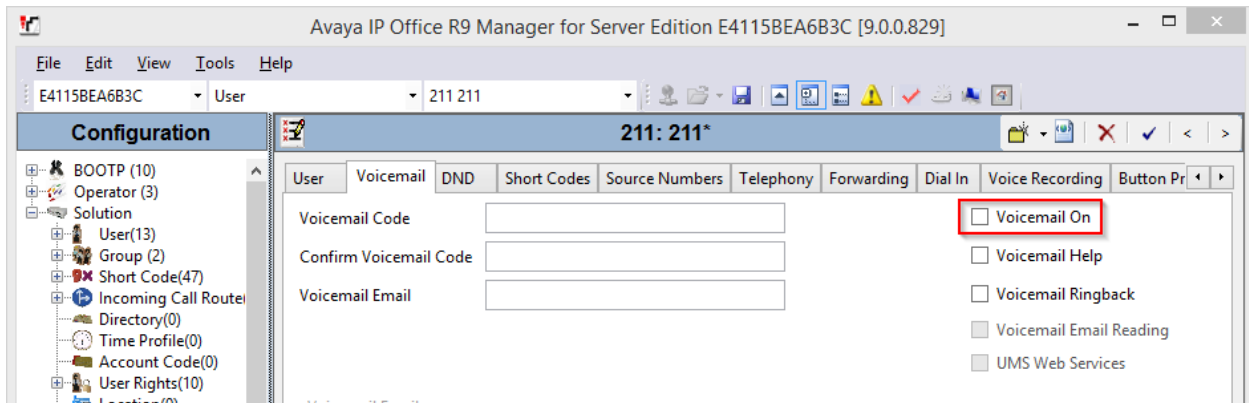


5.4. Administer SIP Users for DuVoice

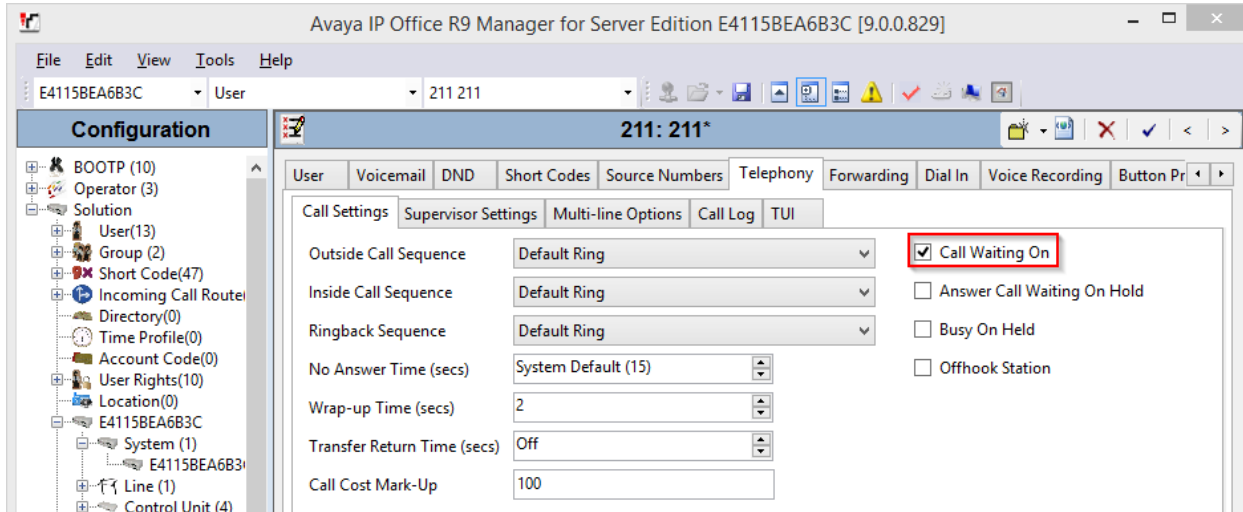
From the configuration tree in the left pane, right-click on **User**, and select **New** from the pop-up list to add a new user (not shown). Enter desired values for **Name** and **Full Name**. For **Extension**, enter the first SIP base extension from **Section 5.3**. Retain the default values in the remaining fields.



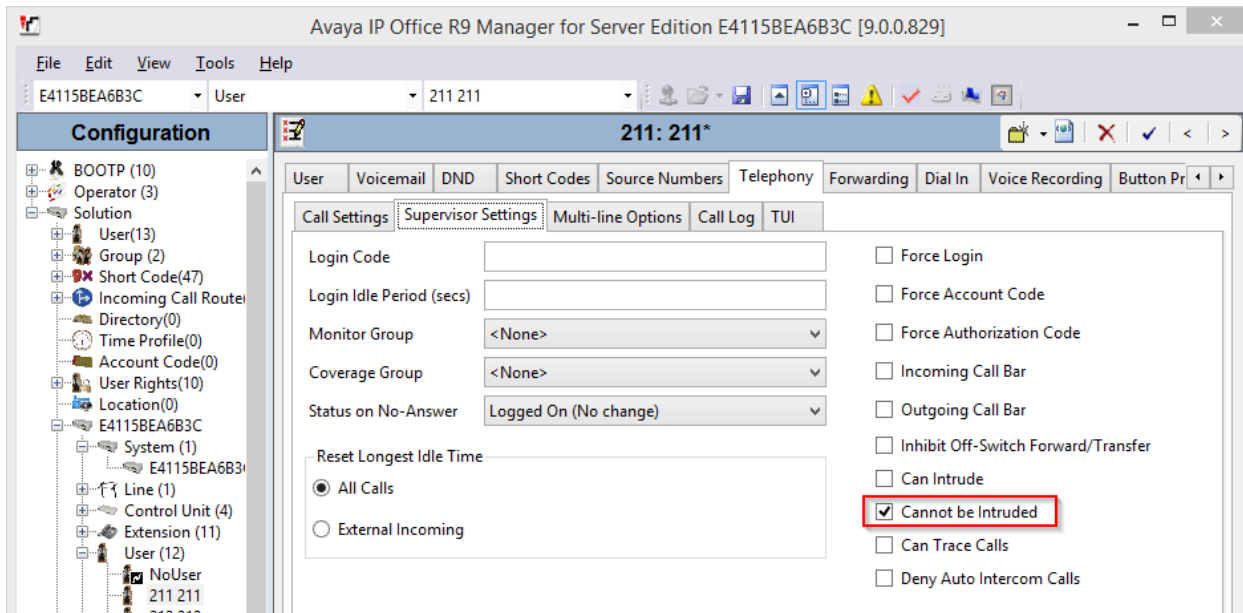
Select the **Voicemail** tab, and uncheck **Voicemail On**, as shown below.



Select the **Telephony** tab, followed by the **Call Settings** sub-tab. Check **Call Waiting On**, as shown below. Retain the default values in the remaining fields.

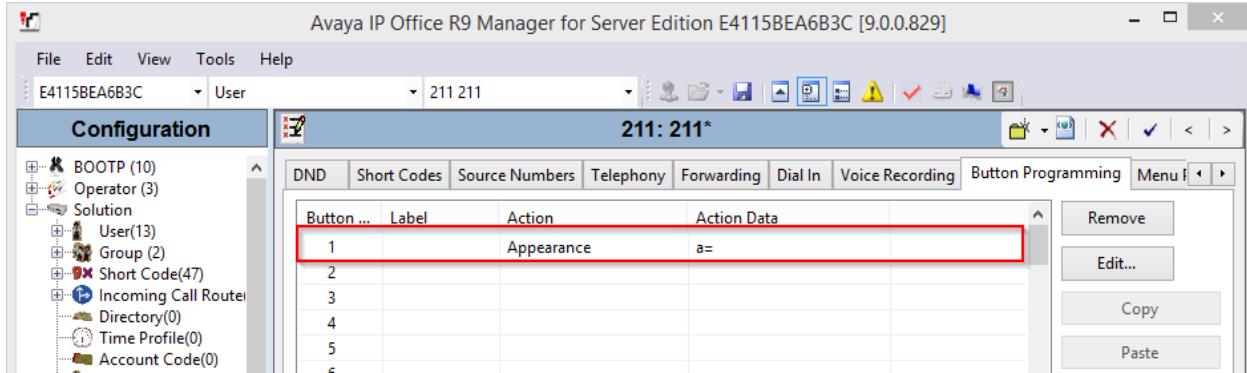


Select the **Supervisor Settings** sub-tab. Check the **Cannot be Intruded** field, as shown below. Retain the default values in the remaining fields.



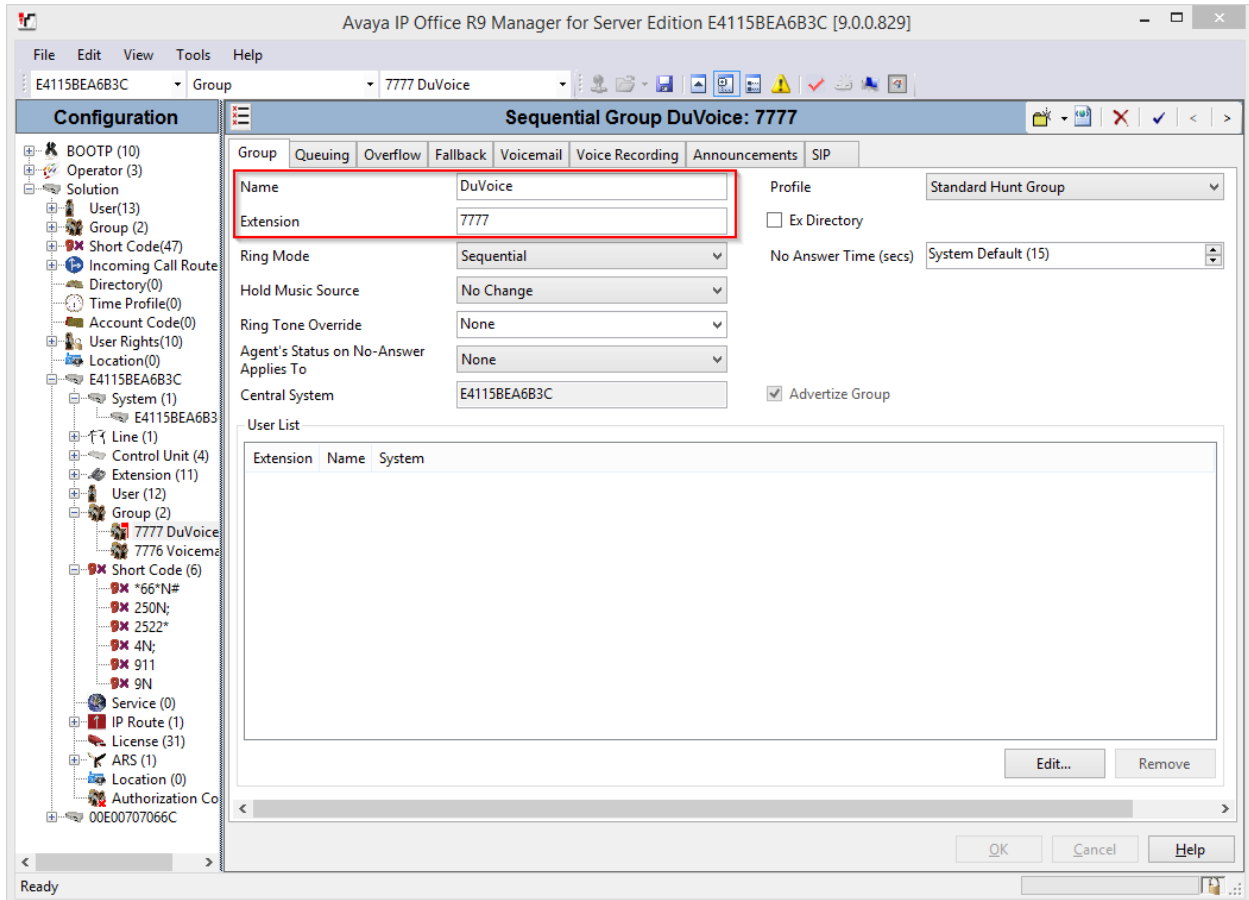
Select the **Button Programming** tab. Retain only the first **Appearance** button and remove all others as shown below.

Repeat this section to add a new user for each SIP extension from **Section 3**.

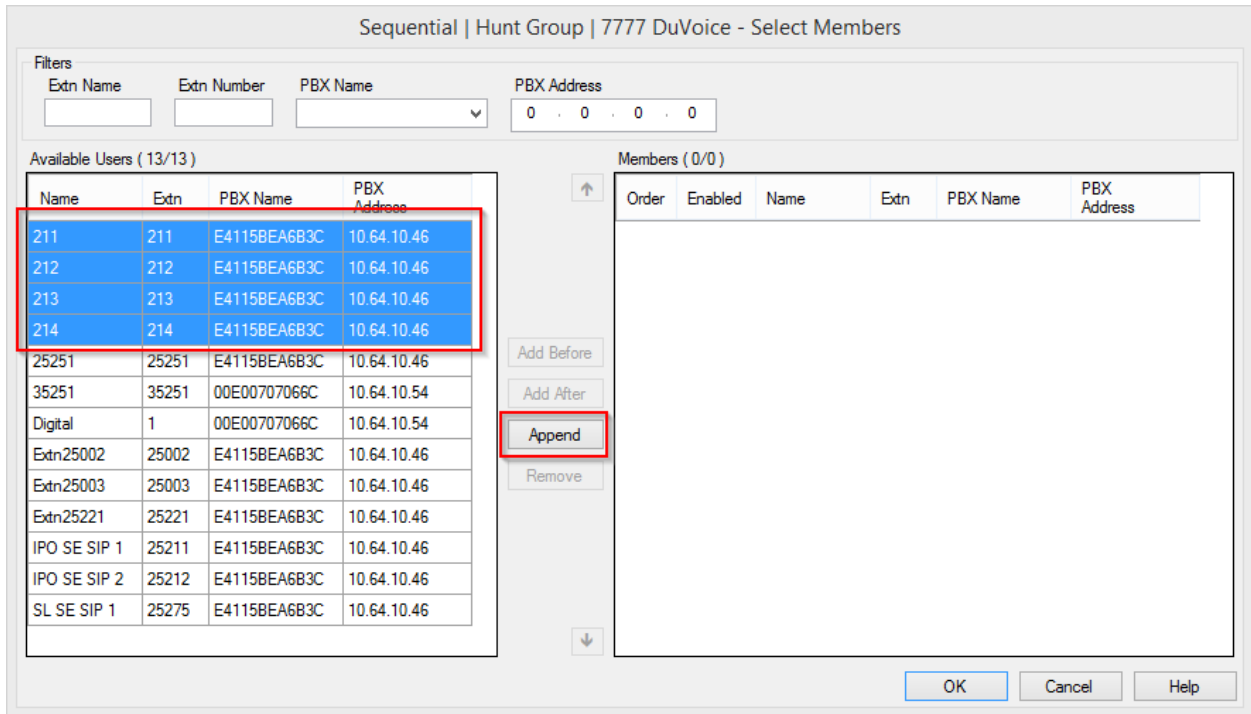


5.5. Administer Hunt Group

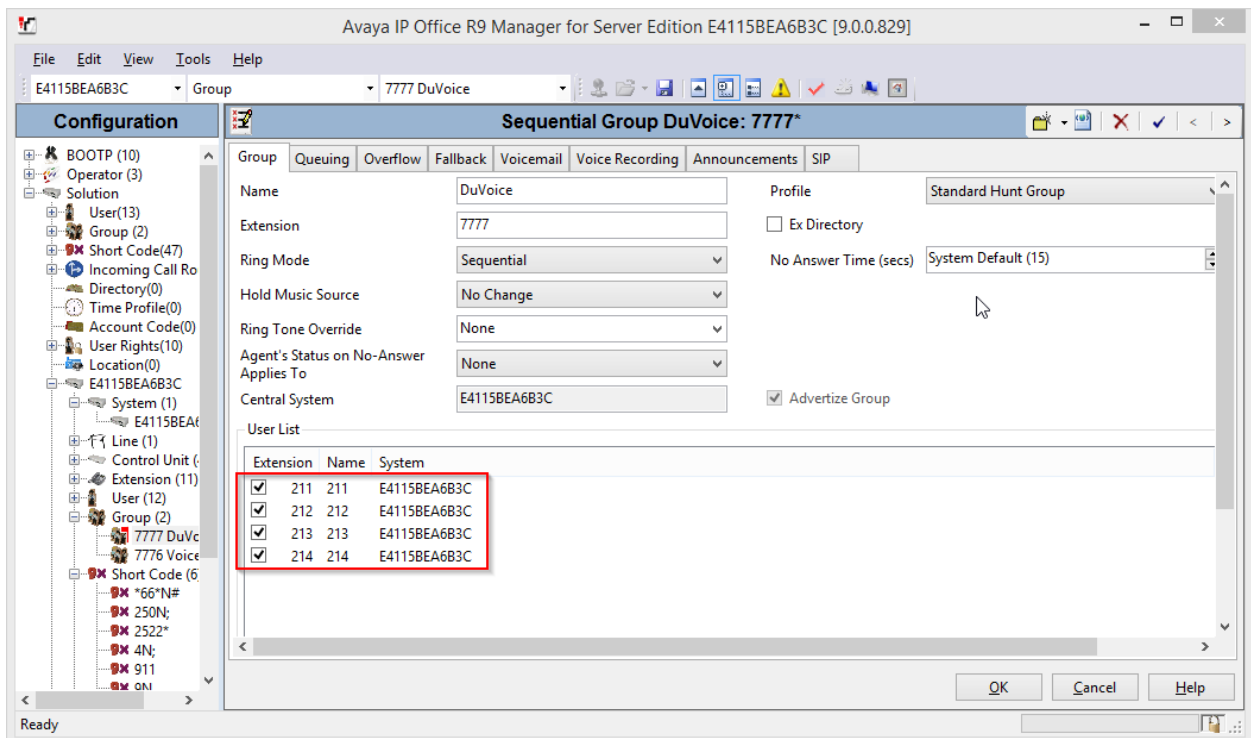
From the configuration tree in the left pane, right-click on **Group** and select **New** from the pop-up list to add a new hunt group (not shown). This hunt group will be used to deliver calls to DuVoice for hospitality features. Under the **Group** tab, enter desired values for the **Name** and **Extension** fields, and retain the default values in the remaining fields. Click on **Edit** in the **User List** section to add members.



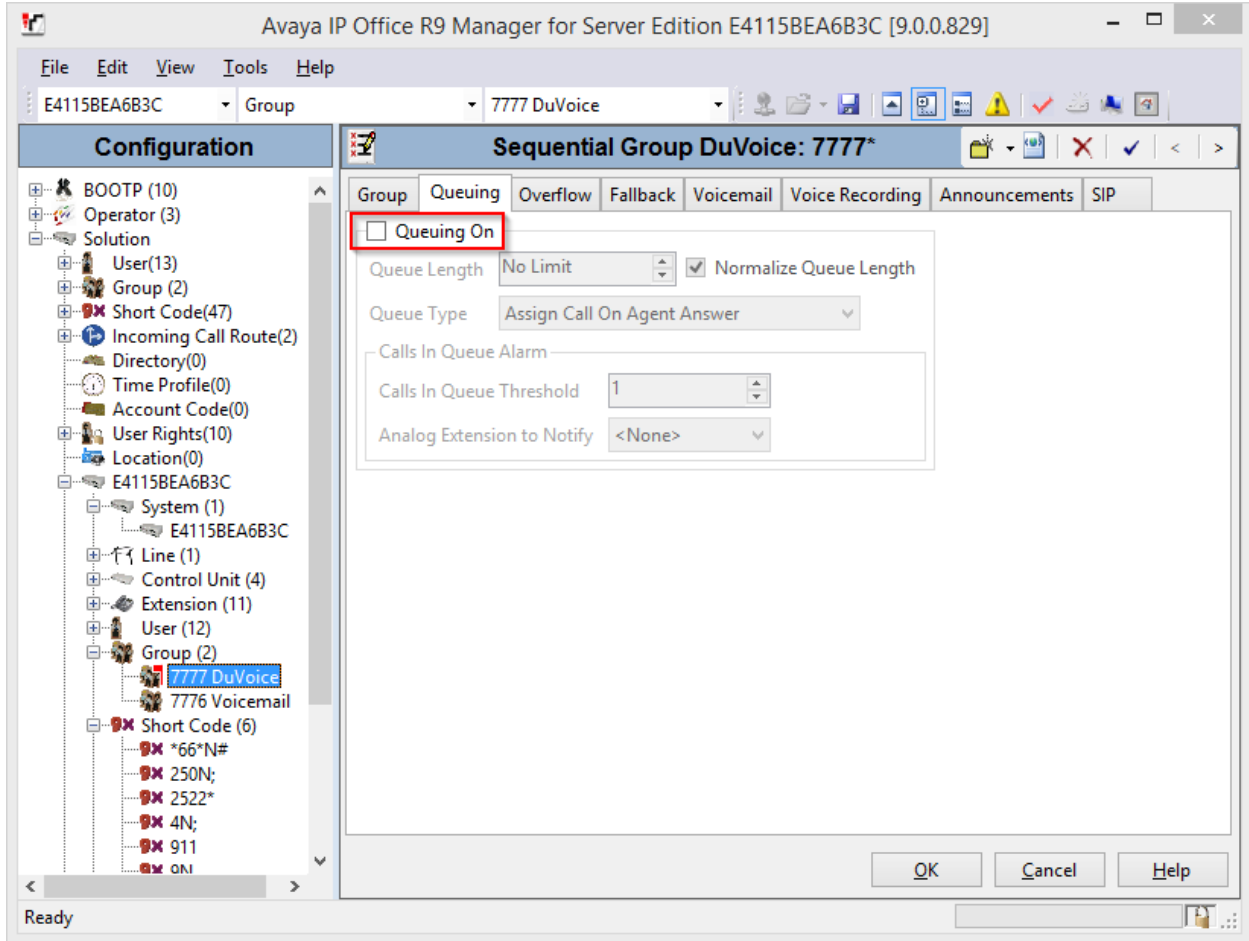
The **Sequential | Hunt Group** screen is displayed. Select all SIP users created earlier in this document, and click the **Append** button to move the selected entries to the right.



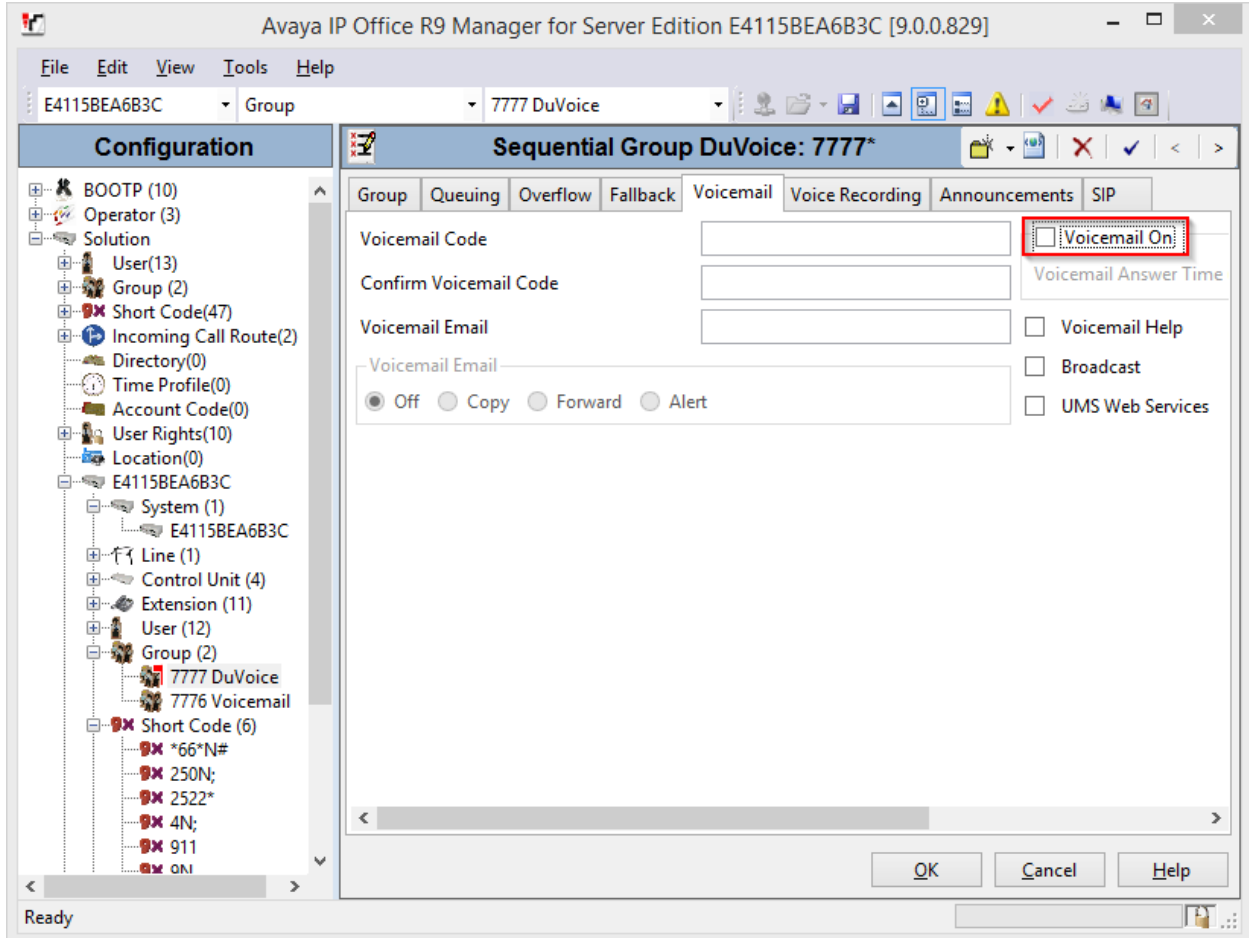
The **Sequential Group** screen is displayed again and updated with the selected members.



Under the **Queuing** tab, uncheck box for **Queuing On**.



Under the **Voicemail** tab, uncheck box for **Voicemail On**.

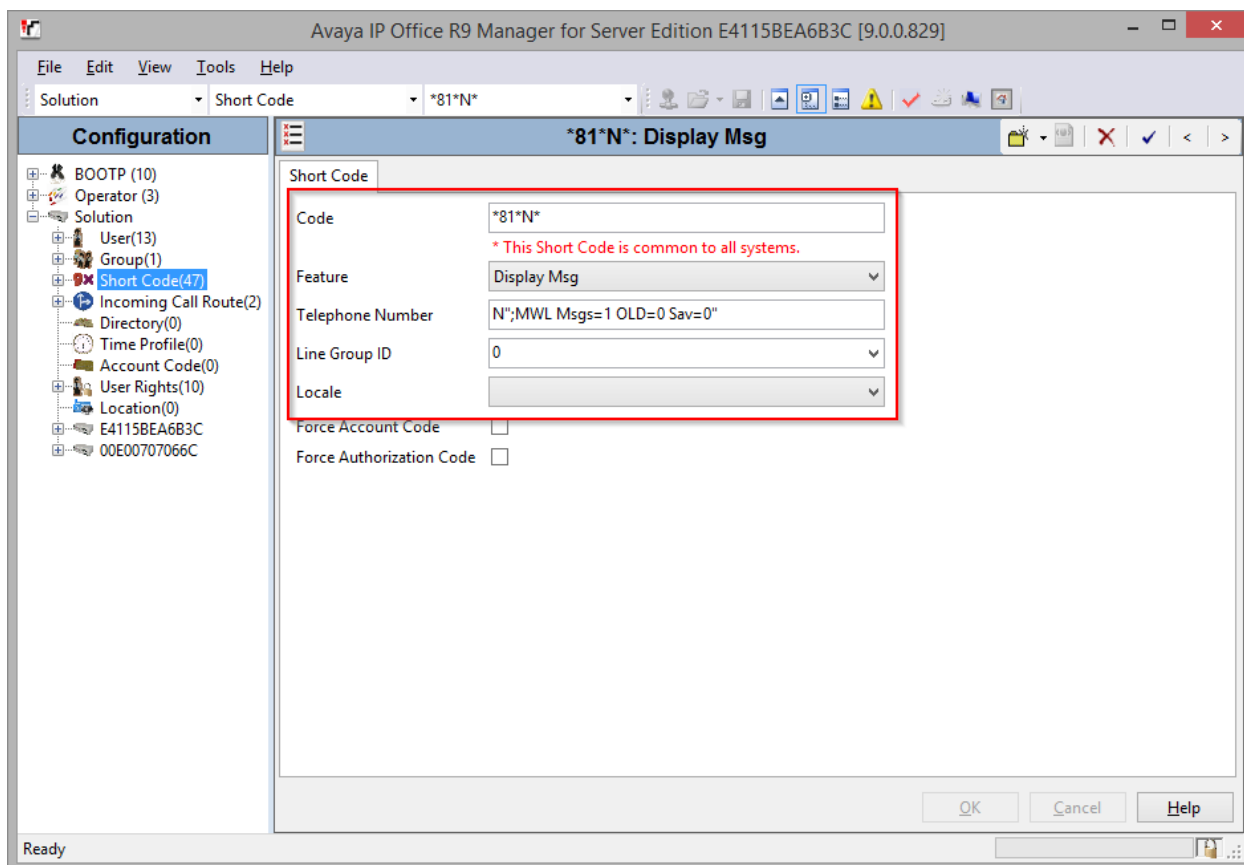


5.6. Administer Short Codes

From the configuration tree in the left pane, navigate to **Solutions** → **Short Codes**. Right-click **Short Codes** and select **New** from the pop-up menu (not shown). Two short codes will need to be added, one for MWI On and another for MWI Off. Configure the short codes as follows.

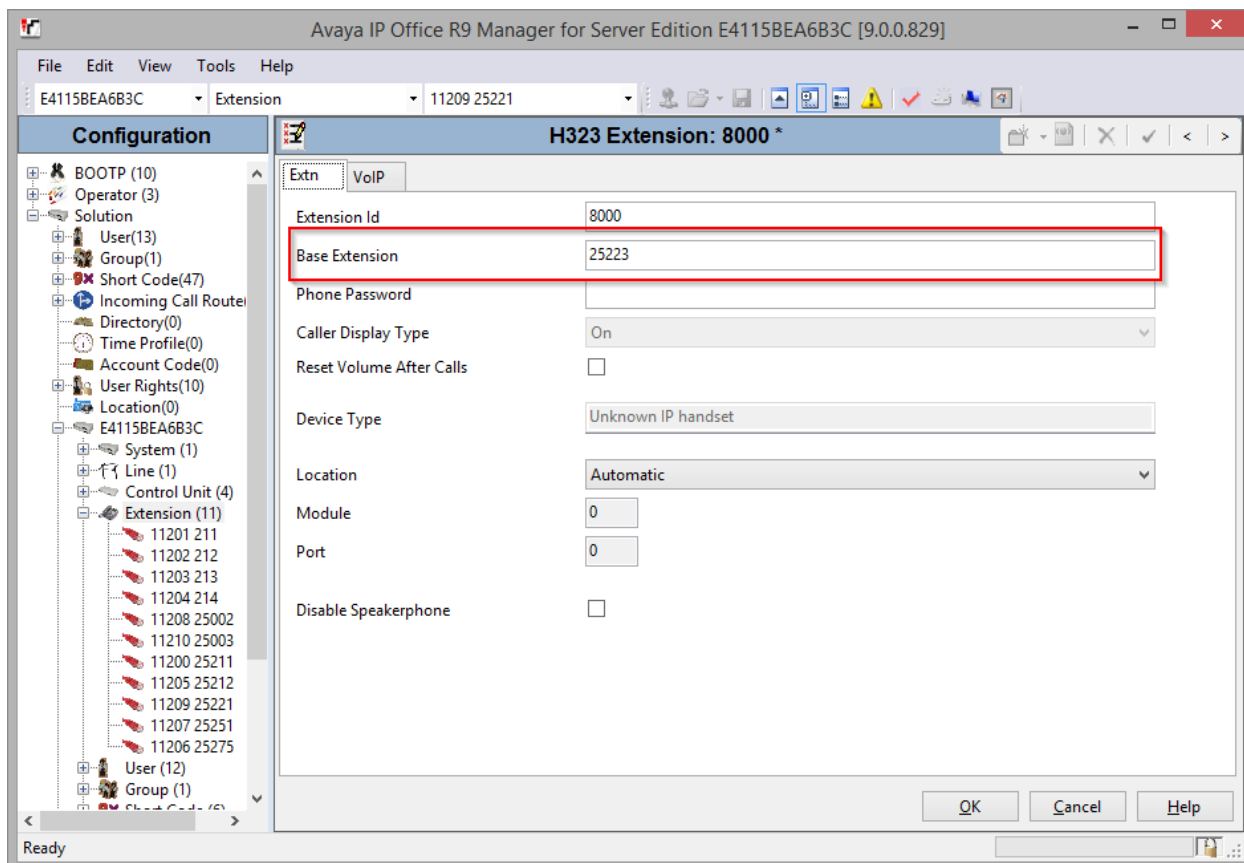
- Type in ***81*N*** in **Code** field
- Select **Display Msg** for **Feature**
- Type in **N";MWL Msgs=1 OLD=0 Sav=0"** for **Telephone Number** field

Note: Create another short code, ***80*N*** for MWI Off, where **Telephone Number** field will be set to **N";MWL Msgs=0 OLD=0 Sav=0"**

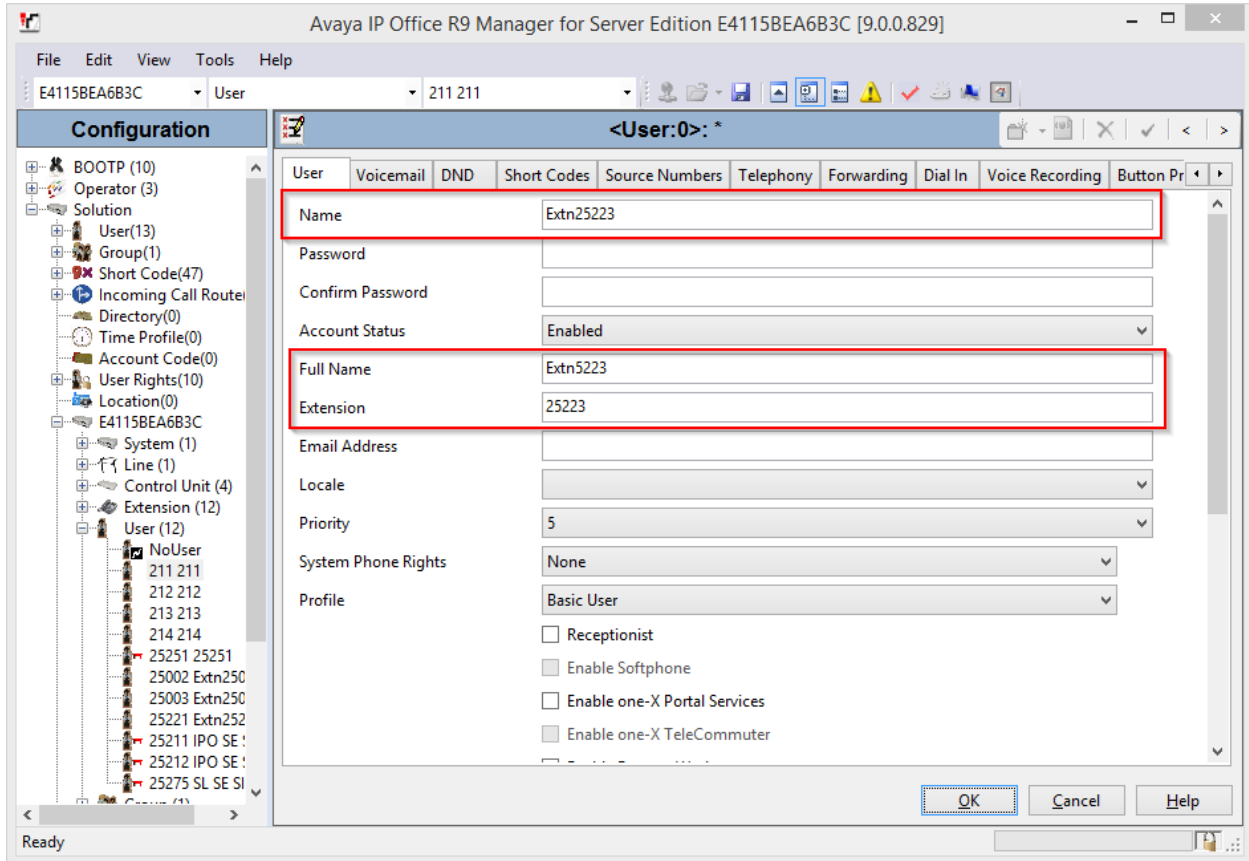


5.7. Administer Guest Phones

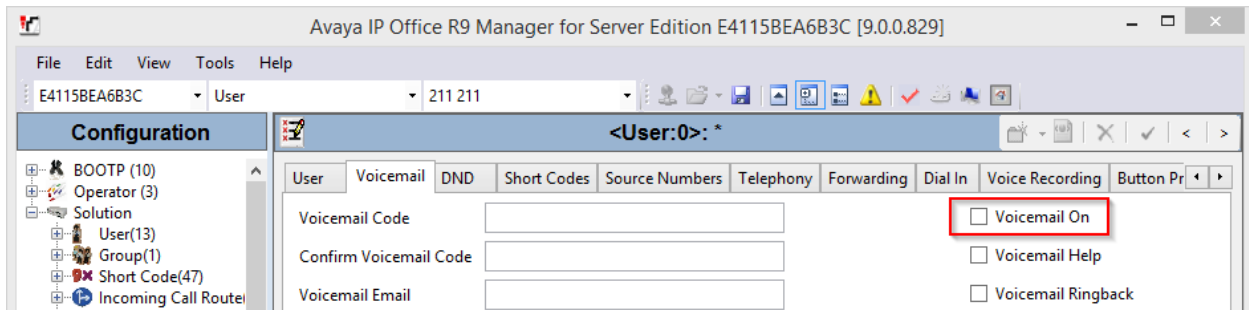
From the configuration tree in the left pane, right-click on **Extension**, and select **New** → **SIP Extension** from the pop-up list to add a new SIP or H.323 extension; H.323 in this case (not shown). Under the **Extn** tab, type in an available extension number for **Base Extension**.



From the configuration tree in the left pane, right-click on **User**, and select **New** from the pop-up list to add a new user (not shown). Enter desired values for **Name** and **Full Name**. For **Extension**, enter the extension number that was added earlier in this section. Retain the default values in the remaining fields.

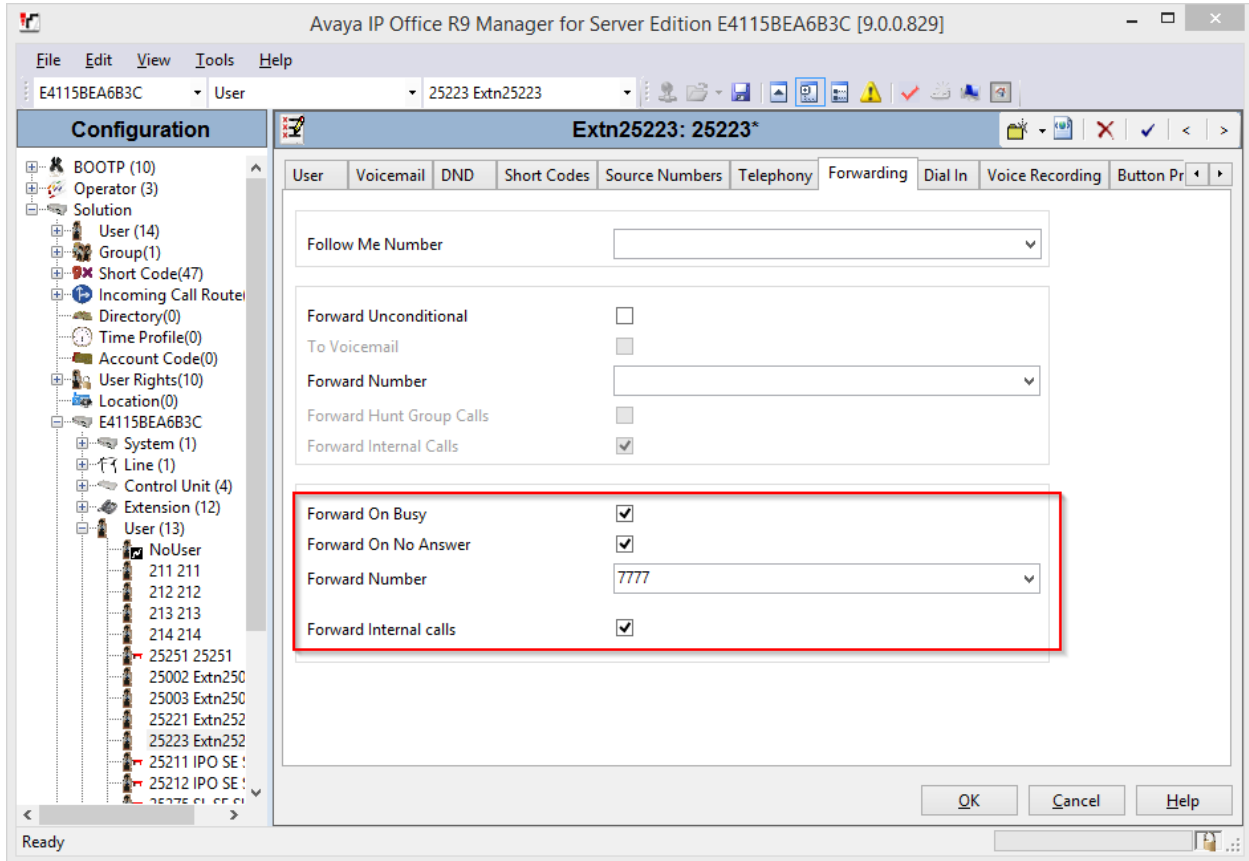


Select the **Voicemail** tab, and uncheck **Voicemail On**, as shown below.



Select the **Forwarding** tab:

- Check boxes for **Forward On Busy**, **Forward On No Answer** and **Forward Internal Calls**.
- Type in the hunt group number that was configured in **Section 5.5** in **Forward Number**.

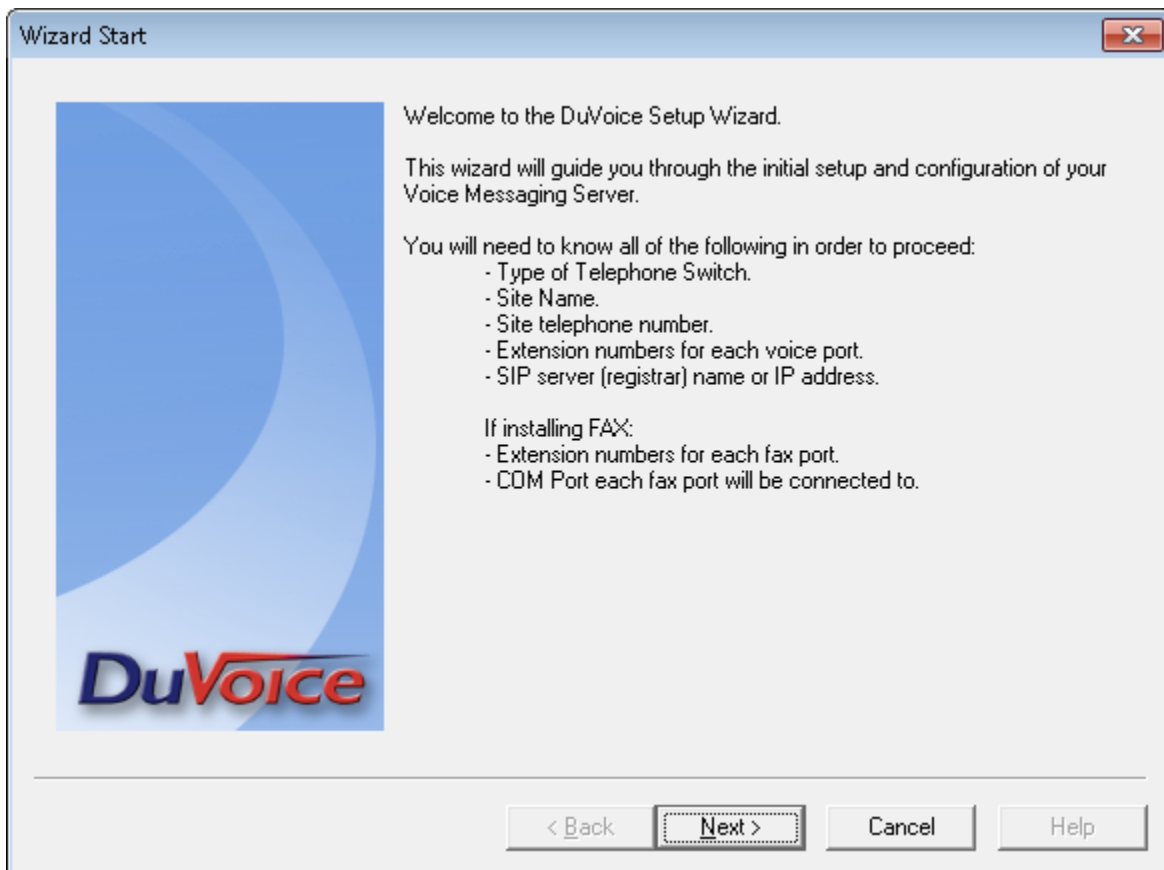


6. Configure DuVoice

This section provides the procedures for configuring DuVoice.

6.1. Administer Setup Wizard

From the DuVoice server, select **Start → All Programs → DuVoice → System Configuration** (not shown). The **Wizard Start** screen is displayed upon initial access. Click **Next**.



The **Site Information** screen is displayed next. Enter desired values for the required fields, and click **Next**.

Site Information

Enter the required site information. The optional information should be filled in if you are using any type of FAX application.

Site Information

Name: *

Site telephone number: () - *

Fax telephone number: () -

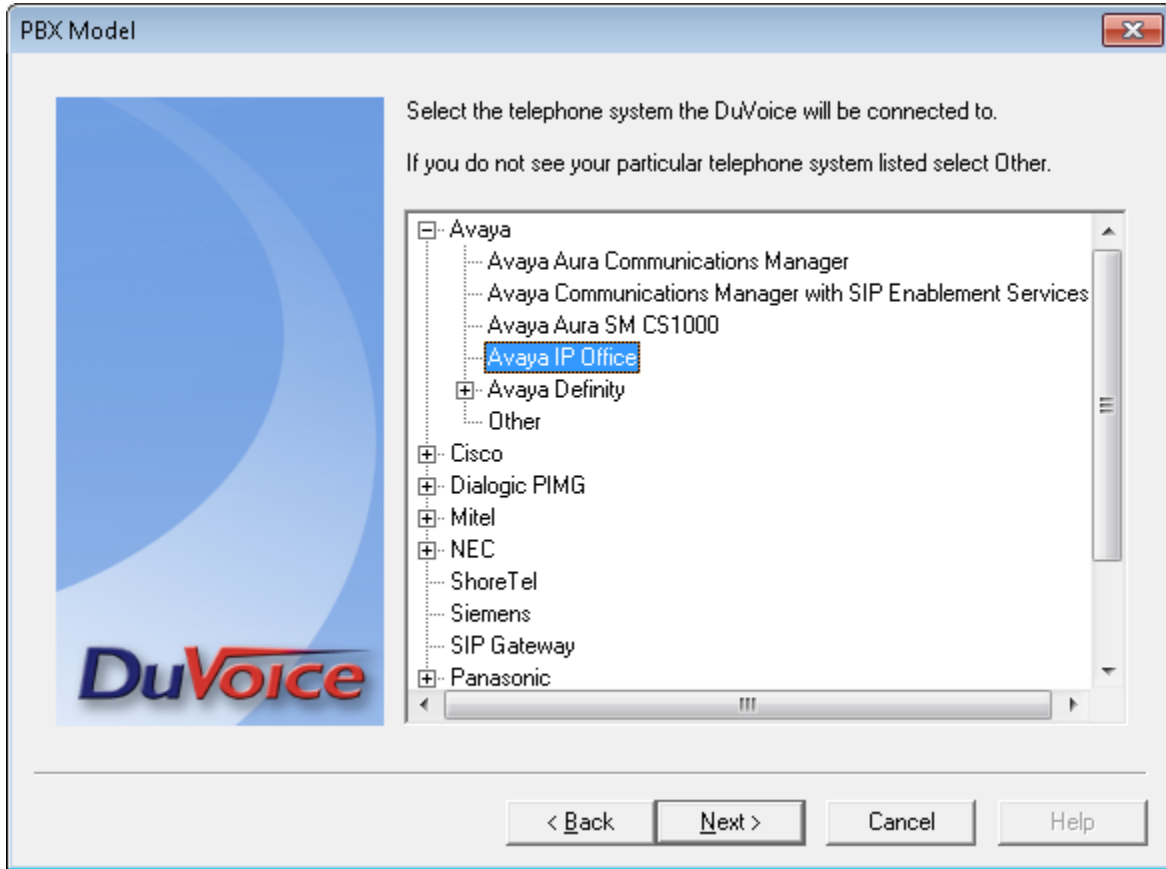
Address: * City: *

State or Province: * Zip or Postal Code: *

* Items required.

< Back **Next >** Cancel Help

The **PBX Model** screen is displayed next. Select **Avaya** → **Avaya IP Office** from the listing, and click **Next**.



The **MWI Method** screen is displayed. Select **Inband using a feature or shortcode** and retain rest of the default values. Click **Next** to continue.

MWI Method

Choose the method by which message waiting lights will be set and cleared.

- SIP Notify
- TAPI
- SMDI
- Inband using a feature or shortcode
- HTTP

Inband codes

Enter the code used to set and clear the message waiting lights. Enter an E for the extension number. If an E is not specified it will be automatically added to the end of the code.

For example: *81*E* or *4E

Set code Clear code

< Back Next > Cancel Help

The **SIP Information** screen is displayed next. For **Server IP Address or DNS name**, enter the IP address or DNS name of IP Office, and click **Next**.

SIP Information

Enter the server name or IP address of the SIP registrar with which the SIP ports will be registered; this is optional but recommended. Typically, this will be the server name or IP address of the IP PBX.

Server IP Address or DNS name: 10.64.10.46

DuVoice

< Back Next > Cancel Help

The **Voice Ports** screen is displayed. For **Voicemail Huntgroup**, enter the hospitality hunt group extension from **Section 5.5**. Assign each SIP base extension from **Section 5.3** to an available **Port**, as shown below.

In the compliance testing, four DuVoice ports were configured to correspond to the four SIP extensions created on IP Office.

Click **Next**, followed by **Finish** (not shown) in the subsequent screen to complete the wizard.

Voicemail Huntgroup: 7777

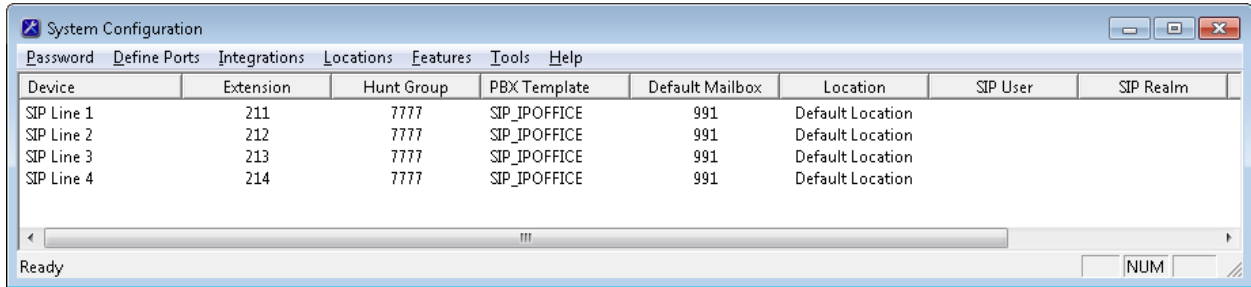
Auto increment extension numbers based on line 1.

Number	Extension
Port 1	211
Port 2	
Port 3	
Port 4	

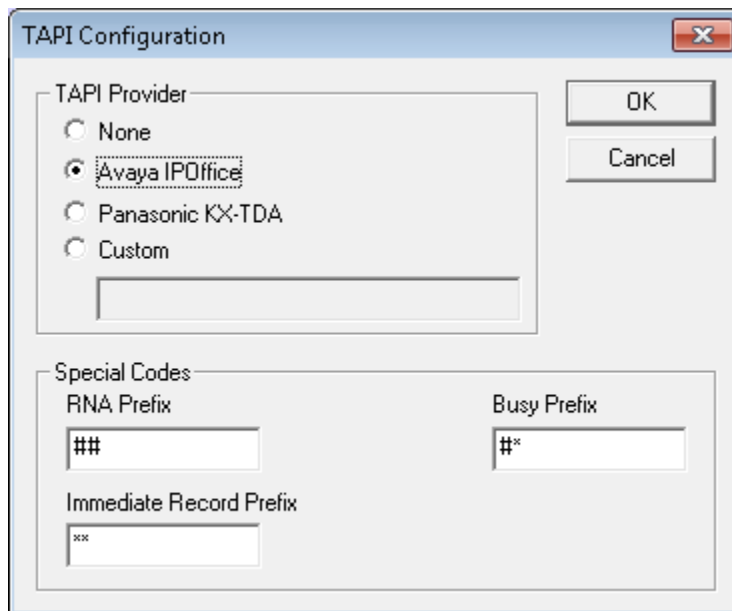
6.2. Administer TAPI Integration

From the DuVoice server, select **Start → All Programs → DuVoice → System Configuration** (not shown).

The **System Configuration** screen is displayed. Select **Integrations → TAPI Integration** (not shown) from the top menu.



The **TAPI Configuration** screen is displayed next. For **TAPI Provider**, select **Avaya IPOffice**. Retain the default values in the remaining fields. Click **OK**, to save the changes.



6.3. Administer Hospitality

From the **System Configuration** screen shown in **Section 2**, select **Features** → **Hospitality** from the top menu. The **Hospitality Configuration** screen is displayed. Select **Maid Codes** from the left pane, to display the **Maid Codes** screen in the right pane.

Check the desired **PMS Digit** to be used, and enter the desired **Display Text**. The digits can be used by the maids to indicate the room clean status, upon dialing into the hospitality hunt group and selecting the appropriate option. Click **OK**, to save changes.

Hospitality Configuration

Server 1

- General
- Language
- Maid Codes**
- Phone Control
- PMS
- Reports
- Translations

Maid Codes

Valid codes:

PBX Digit	Display Text
<input checked="" type="checkbox"/> 0	Dirty
<input checked="" type="checkbox"/> 1	Clean
<input checked="" type="checkbox"/> 2	In progress
<input checked="" type="checkbox"/> 3	Maintenance
<input checked="" type="checkbox"/> 4	Out of service
<input type="checkbox"/> 5	
<input type="checkbox"/> 6	
<input type="checkbox"/> 7	
<input type="checkbox"/> 8	
<input type="checkbox"/> 9	

Protocol defaults: --no change--

Automation

On check-out, set to: Dirty Notify PMS

Every night, set to: Dirty Notify PMS

OK Cancel Apply

PBX Digit: Digit sent by the PBX or dialed by the housekeeping staff. Can only be dialed if the box is checked.

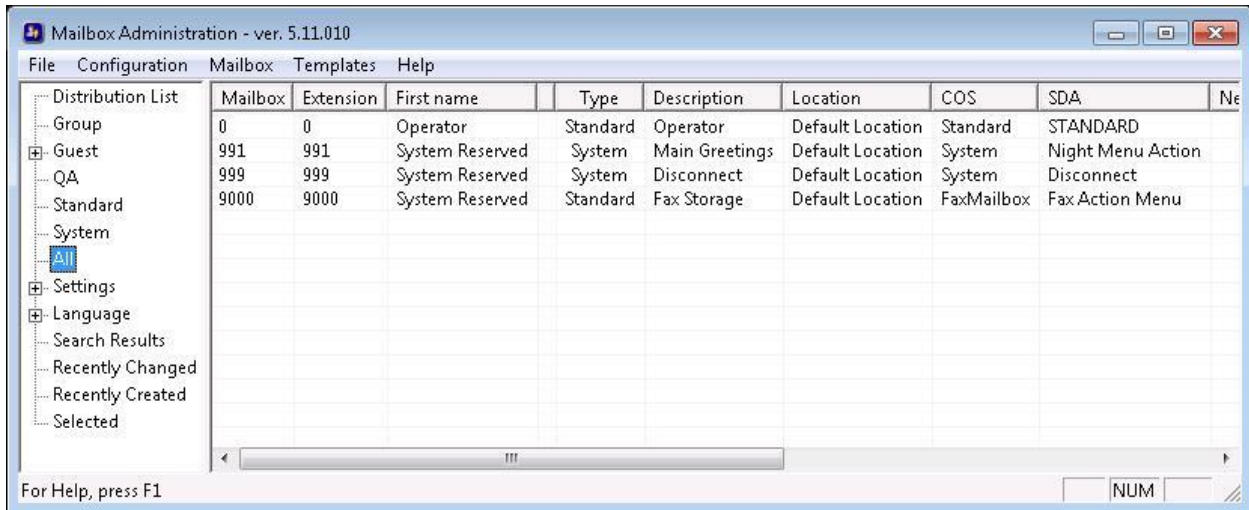
Display Text: The text displayed in InnDesk. Leave blank if not used.

If the first character is a number, that digit may be sent to the PMS instead of the PBX Digit.

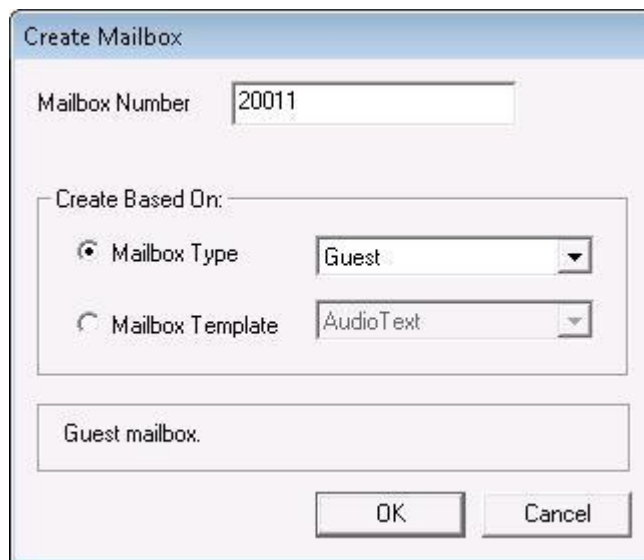
Reset: Load the default display text for a chosen PMS protocol.

6.4. Administer Mailboxes

From the DuVoice server, select **Start → All Programs → DuVoice → Mailbox Administration** (not shown). The **Mailbox Administration** screen is displayed. Select **Mailbox → Create** (not shown) from the top menu.



The **Create Mailbox** screen is displayed next. For **Mailbox Number**, enter the first voicemail user extension from **Section 7**, in this case “20011”. For **Mailbox Type**, select “Guest” for guest users, and “Standard” for front desk and staff users.



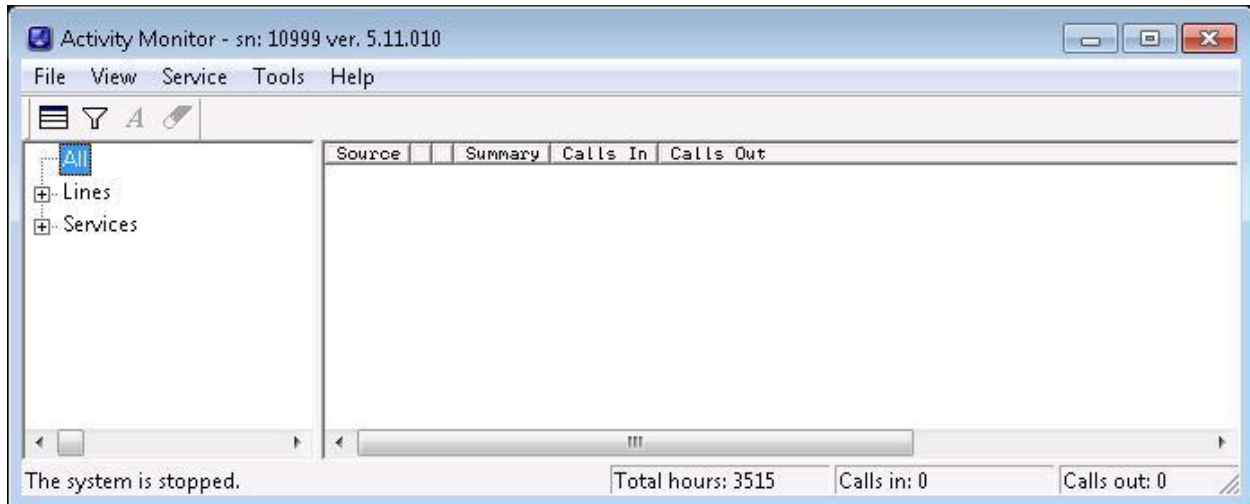
The **Create Mailbox 20011** screen is displayed. Enter desired values for **Password**, **First Name**, and **Last Name**, and retain the default values in the remaining fields.

Repeat this section for all voicemail users from **Section 7**, as shown below.

Mailbox	Extension	First name	Last n...	Type	Description	Location	COS	SDA
0	0	Operator		Standard	Operator	Default Location	Standard	STANDARD
991	991	System Reserved		System	Main Greetings	Default Location	System	Night Menu Action
999	999	System Reserved		System	Disconnect	Default Location	System	Disconnect
9000	9000	System Reserved		Standard	Fax Storage	Default Location	FaxMailbox	Fax Action Menu
20011	20011	Guest20011	DuVoice	Guest		Default Location	Guest	Standard
20021	20021	Guest20021	DuVoice	Guest		Default Location	Guest	Standard
20031	20031	Guest20031	DuVoice	Guest		Default Location	Guest	Standard
20034	20034	Staff20034	DuVoice	Standard		Default Location	Standard	Standard
20035	20035	Front20035	DuVoice	Standard		Default Location	Standard	Standard

6.5. Startup Server

From the DuVoice server, select **Start** → **All Programs** → **DuVoice** → **Activity Monitor** (not shown). The **Activity Monitor** screen is displayed. Select **Service** → **Start** (not shown) from the top menu to start all services.

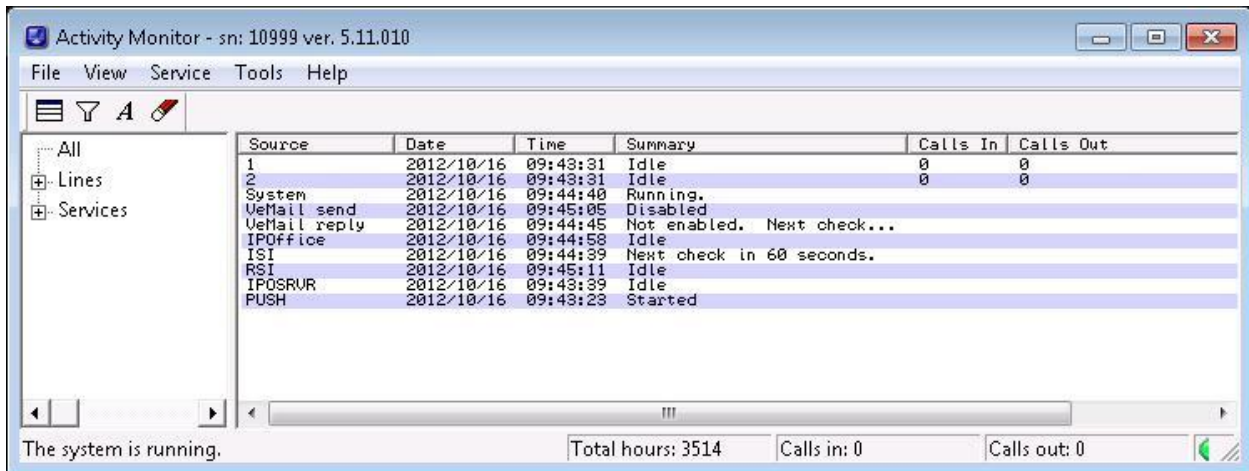


7. Verification Steps

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and DuVoice.

7.1. Verify DuVoice Activity Monitor

Follow the procedures in **Section 5** to display the **Activity Monitor** screen. Verify that ports **1-2, IPOffice**, and **IPOSRVR** are all in the “Idle” state, as shown below. Verify that **PUSH** is in the “Started” state.



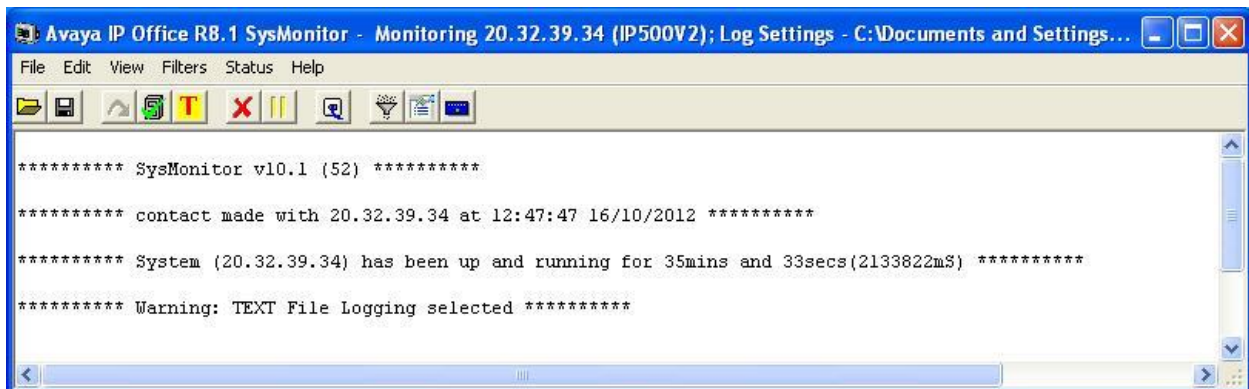
The screenshot shows the 'Activity Monitor' application window. The title bar reads 'Activity Monitor - sn: 10999 ver. 5.11.010'. The menu bar includes 'File', 'View', 'Service', 'Tools', and 'Help'. A toolbar contains icons for list, filter, bold, and edit. On the left, a tree view shows 'All', 'Lines', and 'Services'. The main area displays a table with the following data:

Source	Date	Time	Summary	Calls In	Calls Out
1	2012/10/16	09:43:31	Idle	0	0
2	2012/10/16	09:43:31	Idle	0	0
System	2012/10/16	09:44:40	Running.		
Uemail send	2012/10/16	09:45:05	Disabled		
Uemail reply	2012/10/16	09:44:45	Not enabled. Next check...		
IPOffice	2012/10/16	09:44:58	Idle		
ISI	2012/10/16	09:44:39	Next check in 60 seconds.		
IPOSRVR	2012/10/16	09:43:39	Idle		
PUSH	2012/10/16	09:43:23	Started		

At the bottom of the window, a status bar shows 'The system is running.', 'Total hours: 3514', 'Calls in: 0', and 'Calls out: 0'.

7.2. Verify SIP User Integration

From a PC running the Avaya IP Office Monitor application, select **Start → Programs → IP Office → Monitor** (not shown) to launch the application. The **Avaya IP Office R9 SysMonitor** screen is displayed. Select **Status > SIP Phone Status** (not shown) from the top menu.



The screenshot shows the 'Avaya IP Office R8.1 SysMonitor' application window. The title bar reads 'Avaya IP Office R8.1 SysMonitor - Monitoring 20.32.39.34 (IP500V2); Log Settings - C:\Documents and Settings...'. The menu bar includes 'File', 'Edit', 'View', 'Filters', 'Status', and 'Help'. A toolbar contains icons for home, save, undo, redo, print, and other functions. The main area displays the following text:

```
***** SysMonitor v10.1 (52) *****  
  
***** contact made with 20.32.39.34 at 12:47:47 16/10/2012 *****  
  
***** System (20.32.39.34) has been up and running for 35mins and 33secs(2133822mS) *****  
  
***** Warning: TEXT File Logging selected *****
```


The **SIPPhoneStatus** screen is displayed. Verify that there is an entry for each SIP extension from **Section 5.3**, that the **User Agent** is “DuVoice”, and that the **Status** is “SIP: Registered”, as shown below.

The screenshot shows the SIPPhoneStatus application window. At the top, it displays 'Total Configured: 2' and 'Total Registered: 2'. A progress bar indicates 'Registered Status' with 100% completion. Below this is a table with the following data:

Extn Num	IP Address	Transport	User Agent	SIP Options	SIP Events	Status	LastAv...	LastIPEndp
29001	10.32.39.180	UDP	DuVoice	R		SIP: Registered		10/16/2012 12:43:29 PM
29002	10.32.39.180	UDP	DuVoice	R		SIP: Registered		10/16/2012 12:43:29 PM

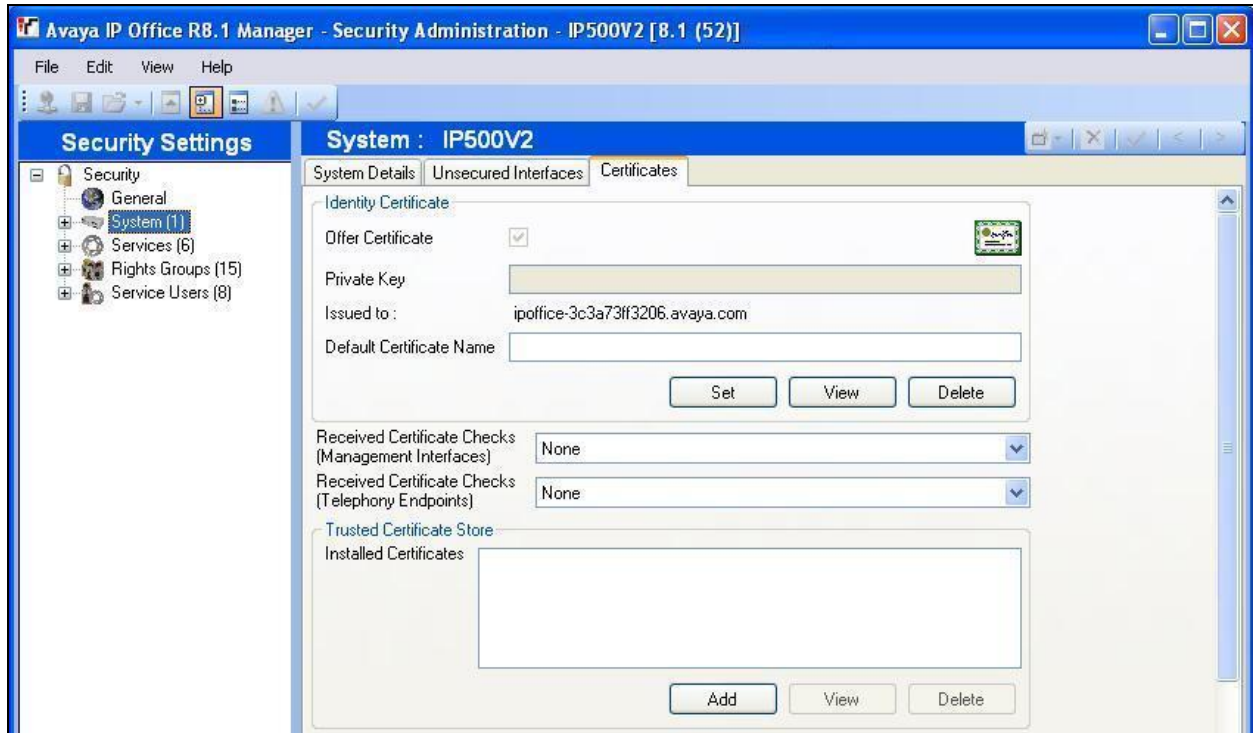
At the bottom of the window, there are 'Display Options' with radio buttons for 'Show All' (selected), 'Registered', and 'UnRegistered'. There are also buttons for 'Print', 'Reset Phones', and 'Cancel'. A status bar at the top right says 'Waiting 3 secs for update'.

Place an incoming call from the PSTN to the hospitality hunt group. Verify that the calling party hears the greeting announcement from DuVoice. Enter the extension of a guest user, and verify that the call is transferred to the guest user.

7.3. Verify Configuration Web Service Integration

Open the **Avaya IP Office R9 Manager – Security Administration** screen. Select **System** from the left pane, followed by **Certificates** tab in the right pane. Verify that **Offer Certificate** is checked, and that **Issued to** contains an automatically generated string, as shown below.

Use InnDesk to perform a guest check-in. Verify that the guest name and user rights template is updated automatically on IP Office as part of the check-in process.



8. Conclusion

These Application Notes describe the configuration steps required for DuVoice to successfully interoperate with Avaya IP Office 9. All feature and serviceability test cases were passed with an observation noted in **Section 2.2**.

9. Additional References

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

1. *IP Office Manager 9*, Document 15-601011, Issue 27o, April 2014, available at <http://support.avaya.com>.

Product documentation for DuVoice DV2000 may be directly obtained from DuVoice.

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