



Avaya Solution & Interoperability Test Lab

Application Notes for DuVoice with Avaya IP Office Server Edition 9.1 – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the DuVoice hospitality messaging system to interoperate with Avaya IP Office Server Edition 9.1. In the compliance testing, DuVoice provided automated attendant, Property Management System feature such as check-in, check-out guest, voicemail, wake-up call, do not disturb, name and user profile template change and room clean status.

The Avaya IP Office Server Edition configuration consisted of two Avaya IP Office systems, a primary Linux server at the Main site and an expansion IP500V2 at the Remote site that were connected via Small Community Network trunks. In the compliance testing, DuVoice emulated four SIP users on Avaya IP Office primary server. The four SIP users were registered with Avaya IP Office primary server, 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 DevLink and Web Service from the local Avaya IP Office system to provide hospitality features such as wake-up call, check-in, check-out guest, change name, and update room's cleanness and using short code to turn on and off Message Waiting Indicator, and Do Not Disturb on the Avaya IP Deskphones.

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 Server Edition 9.1. In the compliance testing, DuVoice used the SIP User, DevLink, and Configuration Web Service interfaces from Avaya IP Office to provide automated attendant, check in, check out guest, voicemail, wake-up call, do not disturb, name and user profile template change and room clean status.

The Avaya IP Office Server Edition configuration consisted of two Avaya IP Office systems, a primary Linux server at the Main site and an expansion IP500V2 at the Remote site that were connected via Small Community Network (SCN) trunks.

In the compliance testing, one DuVoice for server was deployed. The SIP User interfaces were used by DuVoice to provide basic hospitality features such as automated attendant, voicemail, wake-up call, and room clean status indication. DuVoice emulated four virtual SIP users on Avaya IP Office. Four virtual SIP users were registered on primary 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, room clean status, and wake-up call scheduling for internal calls. DuVoice used DevLink and Configuration Web Service interfaces with the primary IP Office system to monitor users at the Main site, and the DevLink interface with the expansion IP Office system to monitor users at the Remote site.

For the voicemail coverage scenarios, voicemail messages were recorded and saved on DuVoice. The short codes were used to activate/deactivate the Message Waiting Indicator (MWI), and to set the divert setting for Do Not Disturb when requested manually by the guests.

DuVoice provide Property Management System (PMS) features via a Hospitality Tester windows application and a InnerDesk web-based interface. In the compliance testing, Hospitality tester and InnerDesk were used to initiate hospitality requests such as check-in and check-out, set up wake up call. Two user rights templates were set up on Avaya IP Office for use with check-in and check-out guests, and DuVoice used the Configuration Web Service to send updates to Avaya IP Office on guest name and user rights template as part of the check-in and check-out process.

2. General Test Approach and Test Results

The feature test cases were performed manually. Calls were made from a simulated 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 Hospitality Tester and InnerDesk were 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 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.
- Activate and de-activate Do Not Disturb feature for guests using short codes on Hospitality tester application.
- 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 Configuration Web Service, DevLink to update guest name and user rights template associated with check-in, check-out, and move requests from InnerDesk/Hospitality tester.

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

All test cases were executed with the following observation:

- There is no announcement about caller ID in voice message since there is no information about caller in the log.

2.3. Support

Technical support on DuVoice can be obtained through the following:

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

3. Reference Configuration

The IP Office Server Edition configuration used in the compliance testing consisted of a primary Linux server at the Main site, and an expansion IP500V2 at the Remote site, with SCN trunks for connectivity between the two systems. Each IP Office system has connectivity to the PSTN, for testing cross systems PSTN scenarios.

As shown in **Figure 1** below, one DuVoice server was deployed with SIP Users and a Web Service connection to the primary IP Office system, and DevLink connections to primary and expansion IP Office system. In the compliance testing, varieties of Avaya IP Deskphones are used for Staff, Front Desk and Guest as shown below.

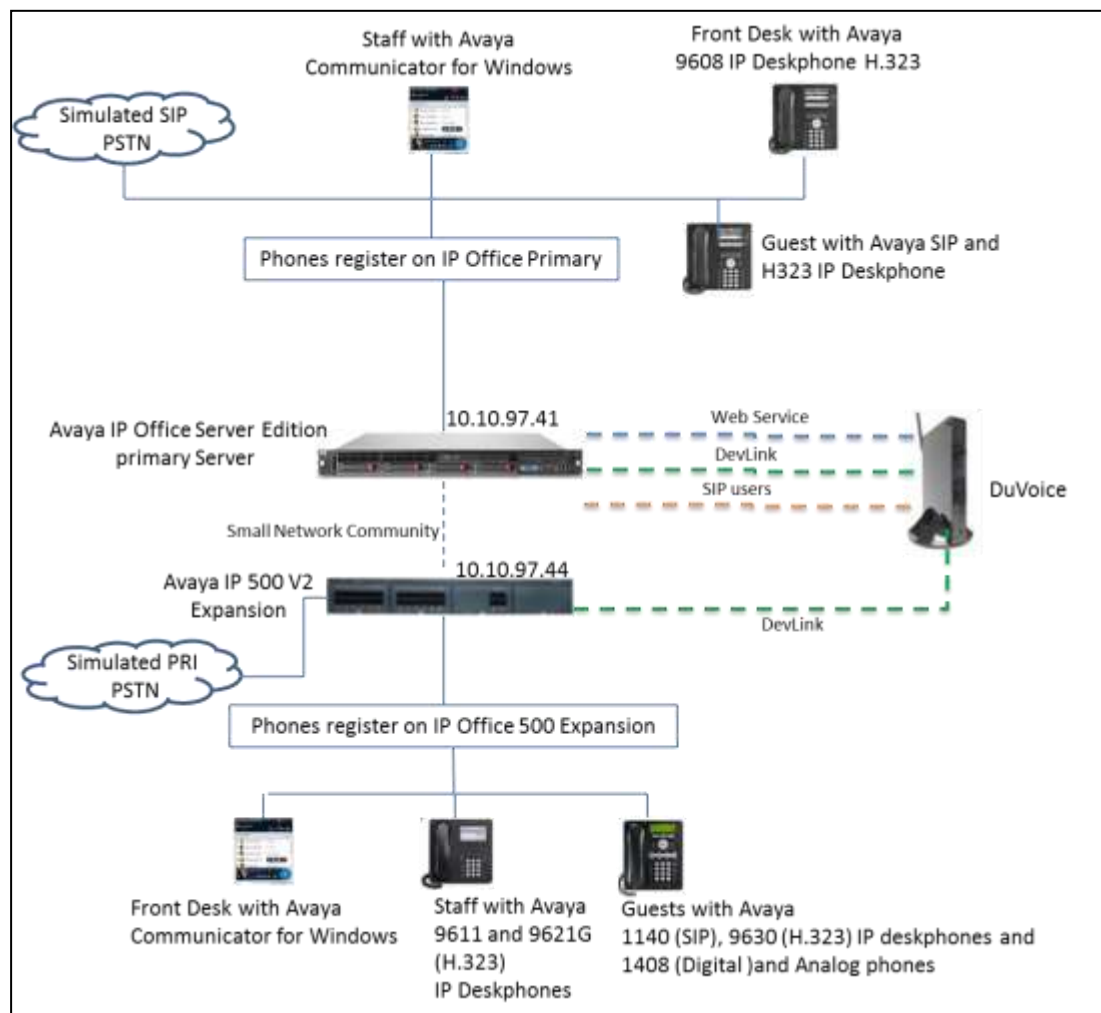


Figure 1: DuVoice with IP Office Server Edition Primary Linux Server and 500 V2 Expansion Compliance Testing Configuration

4. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office Primary Server (Linux based)	9.1 SP 7
Avaya IP Office on IP500 V2 Expansion	9.1 SP7
Avaya 9608, 9611 and 9621G (H323)	6.6
Avaya Communicator for Windows (SIP)	2.1.2.75
Avaya 9630 (H323)	3.22
Avaya 1140E SIP	4.4.25
Avaya 1408 Digital Deskphone	R45
DuVoice for Server	5.30.8

5. Configure Avaya IP Office

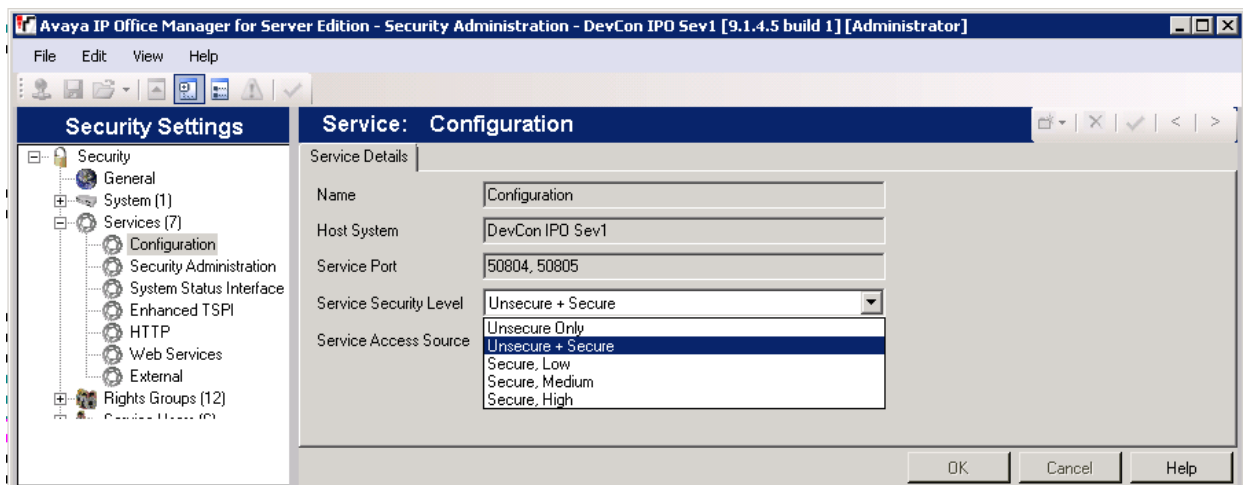
This section provides the procedures for configuring IP Office system on Avaya IP office Manager.

5.1. Security Settings

This section describes the steps to update security settings which are required for Name and User Rights changes. Using Avaya IP Office Manager, select **File → Advance → Security Settings**

...

In **Security Settings** tree, select **Services → Configuration**. Select **Unsecure + Secure** for **Service Security Level** as show in below, click **OK** to save changes.



Select **System**; click on **Unsecured Interfaces** tab, verify that **DevLink** is enabled as shown below:

System: DevCon IPO Sev1

System Details | **Unsecured Interfaces** | Certificates

System Password: [masked] [Change]

Voicemail Password: [masked] [Change] [!]

Monitor Password: [masked] [Change] ☐ Use Service User

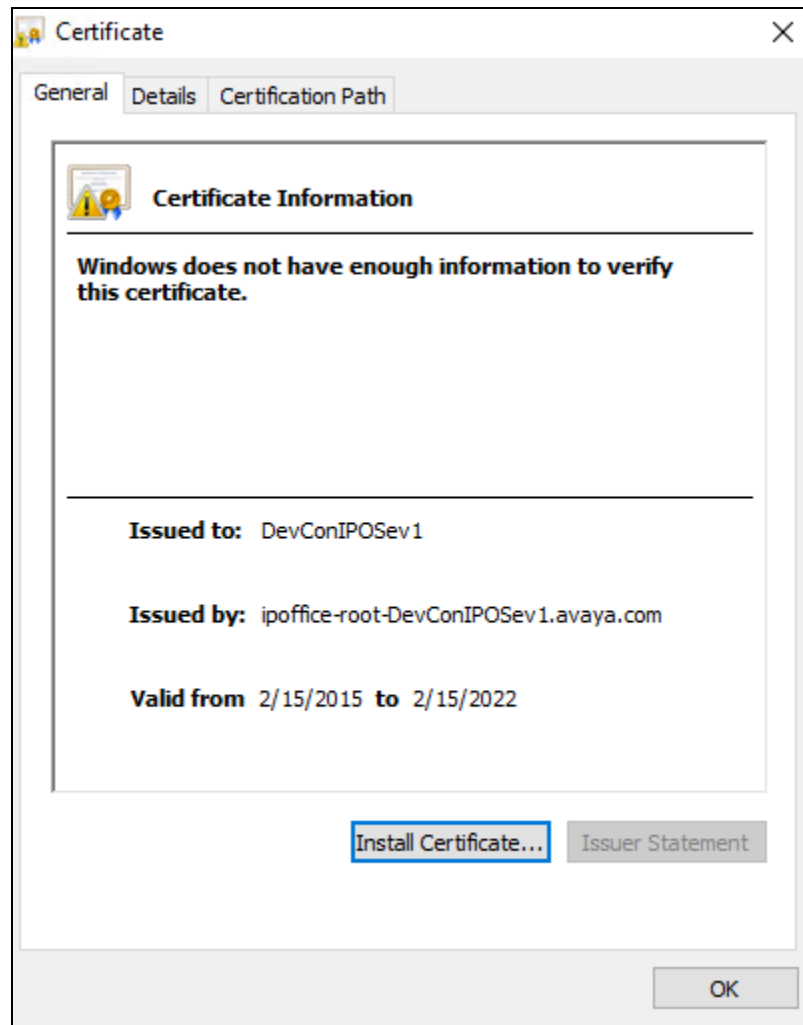
Application Controls

TFTP Server ☒ [!] Program Code ☐ TAPI ☐
TFTP Directory Read ☐ DevLink ☒ [!] HTTP Directory Read ☒ [!]
TFTP Voicemail ☒ [!] HTTP Directory Write ☒ [!]

Application Support

Application	Active	Limitations
Legacy Voicemail	✓	
Voicemail Lite	✓	
Upgrade wizard	✗	
TAPI	✗	
one-X Portal Client	✓	
IP Office Directory Services	✓	
DevLink	✓	
IP DECT	≠	Can't view any Directory entries
Network Viewer	✓	

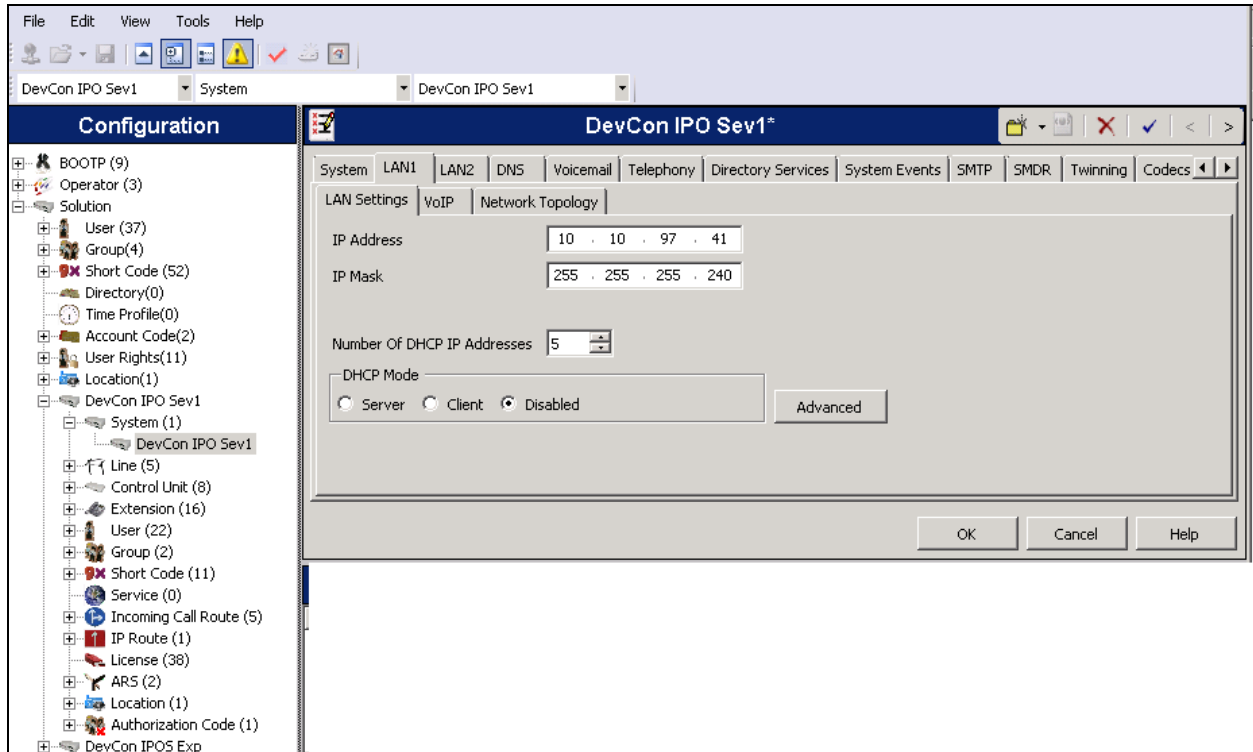
Click on **Certificates** tab, and click on the **View** button to open certificate detail. Check the expiration date. In this example, it is Feb 15, 2022 as shown below:



5.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the screen in the right pane, where **DevCon IPO Sev1** 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.



5.3. Administer SIP Registrar

Select the **VoIP** sub-tab. Make certain that **SIP Registrar Enable** is checked, as shown below. 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** is enabled.

The screenshot displays the IP Office configuration interface with the following settings visible:

- System** tab selected.
- VoIP** sub-tab selected.
- LAN Settings** sub-tab selected.
- H323 Gatekeeper Enable**: ☒
- Auto-create Extn**: ☒ **Auto-create User**: ☒ **H323 Remote Extn Enable**: ☐
- SIP Trunks Enable**: ☒
- SIP Registrar Enable**: ☒ (highlighted with a red box)
- Auto-create Extn/User**: ☐ **SIP Remote Extn Enable**: ☐
- Domain Name**: (empty field)
- Layer 4 Protocol**:
 - UDP**: ☒ **UDP Port**: 5060 (highlighted with a red box)
 - TCP**: ☒ **TCP Port**: 5060 (highlighted with a red box)
 - TLS**: ☐ **TLS Port**: 5061
- Remote UDP Port**: 5060 **Remote TCP Port**: 5060 **Remote TLS Port**: 5061
- Challenge Expiry Time (secs)**: 10

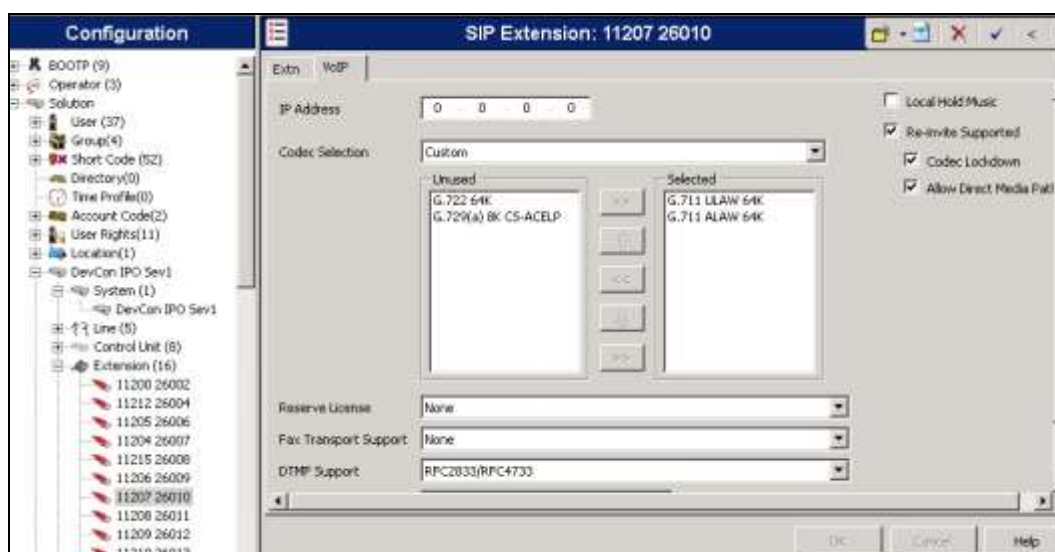
5.4. Administer SIP Extensions for DuVoice

From the configuration tree in the left pane, browse to IP Office primary server **DevCon IPO Sev1**, right-click on **Extension**, and select **New → SIP Extension** from the pop-up list to add a new SIP extension. 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 with base extensions of “26010”, “26011”, “26012” and “26013” 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**.



5.5. 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. Enter desired values for **Name** and **Full Name**; leave **Password** field blank for DuVoice user. For **Extension**, enter the first SIP base extension from **Section 5.4**. Retain the default values in the remaining fields.

The screenshot shows the 'Configuration' window for a user named '26010: 26010*'. The left pane shows a tree view with 'User' selected. The main pane shows the 'User' tab with the following fields:

Field	Value
Name	26010
Password	
Confirm Password	
Conference PIN	
Confirm Conference PIN	
Account Status	Enabled
Full Name	DuVoice SIP User
Extension	26010
Email Address	
Locale	
Priority	5
System Phone Rights	None
ACCS Agent Type	None

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

The screenshot shows the 'Voicemail' tab for the user '26010: 26010*'. The fields and checkboxes are as follows:

Field	Value
Voicemail Code	
Confirm Voicemail Code	
Voicemail Email	
Voicemail On	<input type="checkbox"/>
Voicemail Help	<input type="checkbox"/>
Voicemail Ringback	<input type="checkbox"/>
Voicemail Email Reading	<input type="checkbox"/>
UMS Web Services	<input type="checkbox"/>

Below the fields, there are radio buttons for 'Voicemail Email':

- ☒ Off
- ☐ Copy
- ☐ Forward
- ☐ Alert

At the bottom, there is a 'DTMF Breakout' section.

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.

User	Voicemail	DND	Short Codes	Source Numbers	Telephony	Forwarding	Dial In	Voice Recording	Button Pr
<div>Call Settings Supervisor Settings Multi-line Options Call Log TUI</div> <div> <div> Outside Call Sequence: Default Ring Inside Call Sequence: Default Ring Ringback Sequence: Default Ring No Answer Time (secs): System Default (15) Wrap-up Time (secs): 2 Transfer Return Time (secs): Off Call Cost Mark-Up: 100 </div> <div> <input checked="" type="checkbox"/> Call Waiting On <input type="checkbox"/> Answer Call Waiting On Hold <input type="checkbox"/> Busy On Held <input type="checkbox"/> Offhook Station </div> </div>									

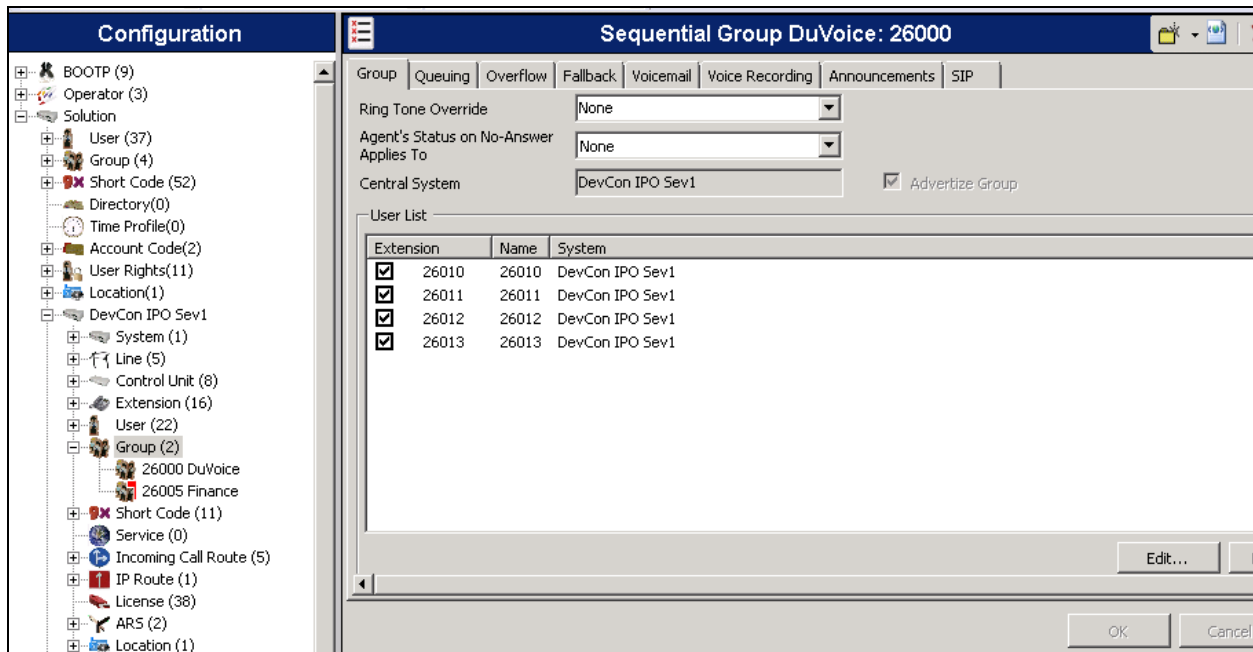
Select the **Button Programming** tab. Retain only the first **Appearance** button and remove all others as shown below.

Repeat this section to add a new user for each SIP extension from **Section 5.4**. In the compliance testing, four users with names of “26010, 26011, 26012 and 26013” were created.

DND	Short Codes	Source Numbers	Telephony	Forwarding	Dial In	Voice Recording	Button Programming	Menu																								
<table border="1"> <thead> <tr> <th>Button ...</th> <th>Label</th> <th>Action</th> <th>Action Data</th> </tr> </thead> <tbody> <tr> <td>1</td> <td></td> <td>Appearance</td> <td>a=</td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								Button ...	Label	Action	Action Data	1		Appearance	a=	2				3				4				5				Remove Edit... Copy Paste
Button ...	Label	Action	Action Data																													
1		Appearance	a=																													
2																																
3																																
4																																
5																																

5.6. 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. This hunt group, 26000 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.

Sequential | Hunt Group | 26000 DuVoice - Select Members

Filters
 Extn Name: Extn Number: PBX Name: PBX Address:

Available Users (37/37)

Name	Extn	PBX Name	PBX Address
26008	26008	DevCon IPO Sev1	1 10.97.41
26009	26009	DevCon IPO Sev1	1 10.97.41
26010	26010	DevCon IPO Sev1	1 10.97.41
26011	26011	DevCon IPO Sev1	1 10.97.41
26012	26012	DevCon IPO Sev1	1 10.97.41
26013	26013	DevCon IPO Sev1	1 10.97.41
26100	26100	DevCon IPOS Exp	1 10.97.44
26102	26102	DevCon IPOS Exp	1 10.97.44
26105	26105	DevCon IPOS Exp	1 10.97.44
26109	26109	DevCon IPOS Exp	1 10.97.44
26202	26202	DevCon IPOS Exp	1 10.97.44
26203	26203	DevCon IPOS Exp	1 10.97.44

Members (0/0)

Order	Enabled	Name	Extn	PBX Name	PBX Address
-------	---------	------	------	----------	-------------

Buttons: Add Before, Add After, Append, Remove

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

Configuration

- BOOTP (9)
- Operator (3)
- Solution
 - User (37)
 - Group (4)
 - Short Code (52)
 - Directory(0)
 - Time Profile(0)
 - Account Code(2)
 - User Rights(11)
 - Location(1)
 - DevCon IPO Sev1
 - System (1)
 - Line (5)
 - Control Unit (8)
 - Extension (16)
 - User (22)
 - Group (2)
 - 26000 DuVoice
 - 26005 Finance
 - Short Code (11)
 - Service (0)
 - Incoming Call Route (5)
 - IP Route (1)
 - License (38)
 - ARS (2)
 - Location (1)

Sequential Group DuVoice: 26000

Group | Queuing | Overflow | Fallback | Voicemail | Voice Recording | Announcements | SIP

Ring Tone Override:
 Agent's Status on No-Answer Applies To:
 Central System: ☒ Advertise Group

User List

Extension	Name	System
<input checked="" type="checkbox"/>	26010	26010 DevCon IPO Sev1
<input checked="" type="checkbox"/>	26011	26011 DevCon IPO Sev1
<input checked="" type="checkbox"/>	26012	26012 DevCon IPO Sev1
<input checked="" type="checkbox"/>	26013	26013 DevCon IPO Sev1

Buttons: Edit..., OK, Cancel

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

The screenshot shows the 'Queuing' tab selected in a configuration window. The 'Queuing On' checkbox is highlighted with a red box and is currently unchecked. Other visible settings include 'Queue Length' set to 'No Limit', 'Normalize Queue Length' checked, 'Queue Type' set to 'Assign Call On Agent Answer', 'Calls In Queue Alarm' set to '1', and 'Analog Extension to Notify' set to '<None>'. The tabs at the top are Group, Queuing, Overflow, Fallback, Voicemail, Voice Recording, Announcements, and SIP.

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

The screenshot shows the 'Voicemail' tab selected in a configuration window. The 'Voicemail On' checkbox is highlighted with a red box and is currently unchecked. Other visible settings include 'Voicemail Code', 'Confirm Voicemail Code', 'Voicemail Email', and 'Voicemail Answer Time'. The 'Voicemail Email' section has radio buttons for 'Off' (selected), 'Copy', 'Forward', and 'Alert'. The 'Voicemail Help', 'Broadcast', and 'UMS Web Services' checkboxes are also visible. The tabs at the top are Group, Queuing, Overflow, Fallback, Voicemail, Voice Recording, Announcements, and SIP.

Under **Voice Recording** tab, **Record Inbound** should be None. **Mailbox** should be empty.
Under the **Announcements** Tab, **Announcements On** should be unchecked.

5.7. Administer Short Codes

5.7.1. Administer short codes for Message Waiting Indicator

This section describe step how to setup short code to activate and de-activate MWI. 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. Two short codes will need to be added, one for MWI On and another for MWI Off.

Configure the short codes as follows.

- **Code:** enter type in ***81*N***.
- **Feature:** select **Display Msg**.
- **Telephone Number:** enter **N";Mailbox Msgs=1 OLD=0 Sav=0"**.

Click **OK** to save changes.

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

The screenshot shows the 'Configuration' window with the 'Short Code' tab selected. The left pane shows a tree view with 'Short Codes' expanded. The right pane shows the configuration for the short code '*81*N*: Display Msg'. The fields are: Code: *81*N*, Feature: Display Msg, Telephone Number: N";Mailbox Msgs=1 OLD=0 Sav=0", Line Group ID: 0, Locale: (empty), Force Account Code: (unchecked), and Force Authorization Code: (unchecked). A red note states: '* This Short Code is common to all systems.'

5.7.2. Short code for Operator

By default the DuVoice assigns the operator mailbox extension "0". This will be dialed for transfers to the operator, and for a Failed wakeup alert. It is required to configure a short code that will direct calls to 0 to the appropriate extension or hunt group. This will normally be the reception desk. The following example sends 0 to hunt group 26000 created in Section 5.6.

The screenshot shows the 'Configuration' window with the 'Short Code' tab selected. The left pane shows a tree view with 'Short Codes' expanded. The right pane shows the configuration for the short code '0: Dial Extn'. The fields are: Code: 0, Feature: Dial Extn, Telephone Number: 26000, Line Group ID: 0, Locale: (empty), Force Account Code: (unchecked), and Force Authorization Code: (unchecked). A red note states: '* This Short Code is common to all systems.'

5.7.3. Administer short code to forward call to DuVoice hunt group number.

Create short code to dial DuVoice hunt group number.

- Type in ***67;** in **Code** field.
- Select **Dial Extn** for **Feature**.
- Type in **26000S##E** for **Telephone Number** field.

Click **OK** to save changes.

The screenshot shows the 'Configuration' window for short code '*67;: Dial Extn'. The 'Short Code' tab is active. The 'Code' field contains '*67;'. A red warning message states: '* This Short Code is common to all systems.' The 'Feature' dropdown is set to 'Dial Extn'. The 'Telephone Number' field contains '26000S##E'. The 'Line Group ID' is set to '0'. The 'Locale' dropdown is empty. The 'Force Account Code' and 'Force Authorization Code' checkboxes are unchecked.

5.7.4. Administer short code to activate and de-activate Do Not Disturb

Configure the short codes as follows.

- **Code:** enter type in ***98*N***.
- **Feature:** select **Forward Unconditional On**.
- **Telephone Number:** enter **"@POST="N";"**.

Click **OK** to save changes.

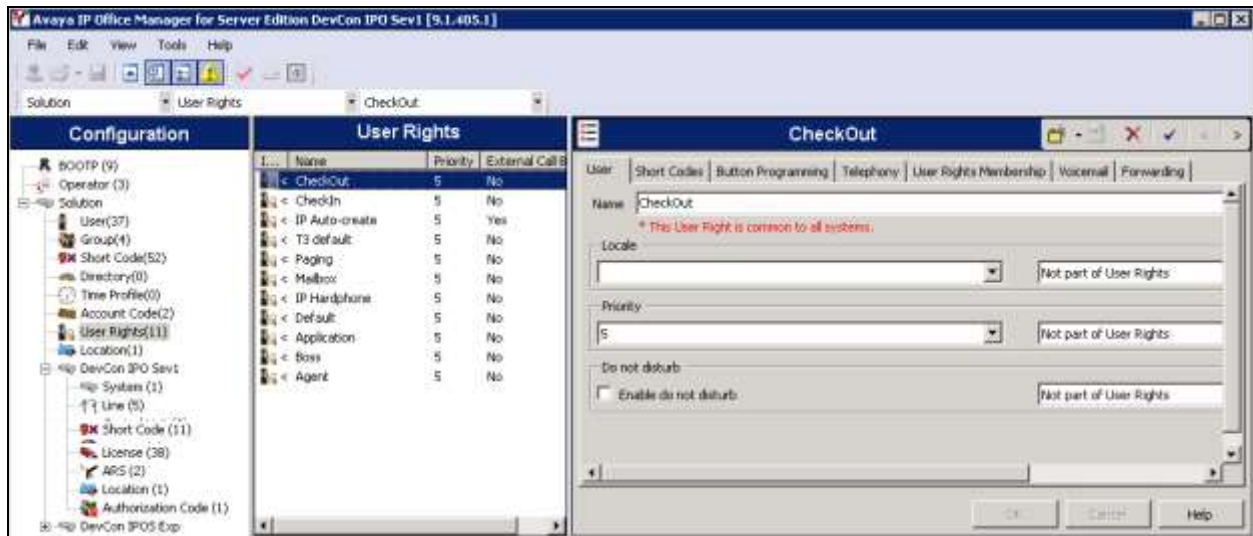
Note: Create another short code, ***99*N*** for MWI Off, where **Telephone Number** field will be set to **"@POST="N";"** and **Feature** is Forward Unconditional Off.

The screenshot shows the 'Avaya IP Office Manager for Server Edition DevCon IPO Sev1 [9.1.701.1]' window. The 'Configuration' window is open, showing the 'Short Code' tab for '*98*N*: Forward Unconditional On'. The 'Code' field contains '*98*N*'. A red warning message states: '* This Short Code is common to all systems.' The 'Feature' dropdown is set to 'Forward Unconditional On'. The 'Telephone Number' field contains '"@POST="N";"'. The 'Line Group ID' is set to '0'. The 'Locale' dropdown is empty. The 'Force Account Code' and 'Force Authorization Code' checkboxes are unchecked. The left pane shows a tree view of the configuration hierarchy, with 'Short Code(54)' selected.

5.8. Administer User Rights

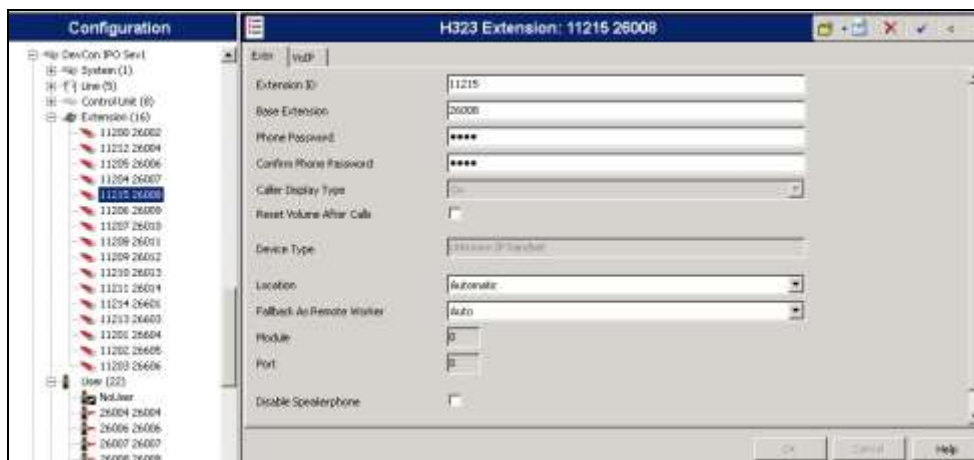
From the configuration tree in the left pane, right-click on **User Rights**, and select **New** to create a new user rights template. Enter a desired **Name** to designate user rights for guests in the check-in state.

Repeat this section to create the desired number of user rights templates for guests in various states. In the compliance testing, two user rights templates with names of “**CheckIn**” and “**CheckOut**” were created.



5.9. 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. Under the **Extn** tab, enter available extension number for **Base Extension**. Enter **Phone Password** such as 1234 and retype password again in **Confirm Phone Password**. Click **Ok** to save changes.



From the configuration tree, right-click on **User**, select **New** from the pop-up list to add a new user. Enter desired values for **Name** and **Full Name**. For **Extension**, enter the extension number that was added earlier in this section. Enter **User Password** such as 123456 and retype password again in **Confirm Password**. Retain the default values in the remaining fields.

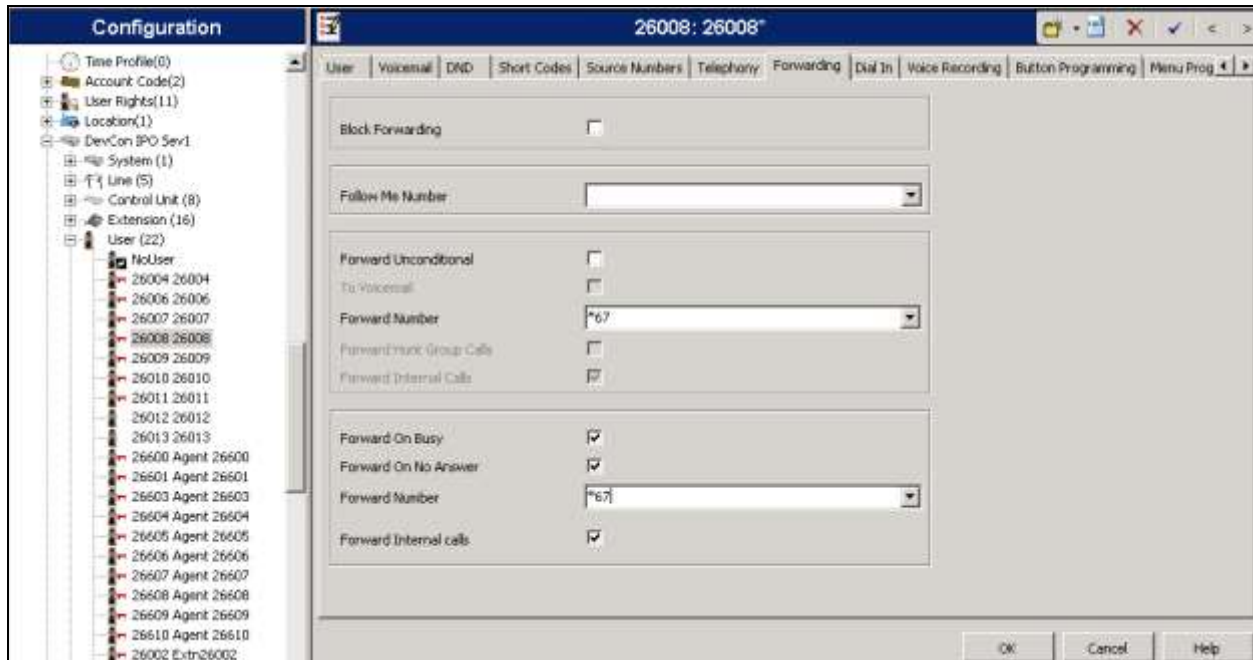
The screenshot shows the 'Configuration' window for a user named '26008: 26008'. The left pane displays a tree view of the system configuration, including 'System (1)', 'Line (5)', 'Control Unit (8)', 'Extension (16)', and 'User (22)'. The 'User (22)' section is expanded, showing a list of users. The '26008: 26008' user is selected. The right pane shows the configuration form for this user. The form includes fields for 'Name' (26008), 'Password' (masked with dots), 'Confirm Password' (masked with dots), 'Conference PIN', 'Confirm Conference PIN', 'Account Status' (set to 'Enabled'), 'Full Name', 'Extension' (26008), 'Email Address', 'Locale', 'Priority' (5), 'System Phone Rights' (None), 'ACCS Agent Type' (None), 'Profile' (Basic User), and checkboxes for 'Receptionist' and 'Enable Softphone'.

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

The screenshot shows the 'Voicemail' configuration window for a user named '<User:0>'. The window has tabs for 'User', 'Voicemail', 'DND', 'Short Codes', 'Source Numbers', 'Telephony', 'Forwarding', 'Dial In', 'Voice Recording', and 'Button Pr'. The 'Voicemail' tab is selected. The form includes fields for 'Voicemail Code', 'Confirm Voicemail Code', and 'Voicemail Email'. On the right side, there are three checkboxes: 'Voicemail On' (unchecked and highlighted with a red box), 'Voicemail Help' (unchecked), and 'Voicemail Ringback' (unchecked).

Select the **Forwarding** tab:

- Check boxes for **Forward On Busy**, **Forward On No Answer** and **Forward Internal Calls**.
- Type in the short cut to DuVoice hunt group that was configured in **Section 5.7.3**.



Click on **Save** icon to save all the changes to server.

5.10. Administer Analog Guest phone

Note: Guest rooms cannot be hidden from the directory.

From the configuration tree in the left pane, click on **Extension**, select an available Analogue Extension. In this example below extension 25 is selected, type in an available extension number for **Base Extension**.

Extension			
ID	Extension	Module	Port
501	26101	5	1
502	26502	5	2
Analogue Extension			
27		BP2	3
28		BP2	4
29		BP2	5
30		BP2	6
31		BP2	7
32		BP2	8
25	26100	BP2	1
26	26111	BP2	2
H323 Extension			
8011	26102	0	0
8012	26103	0	0

Analogue Extension: 25 26100	
Extn	Analogue
Extension ID	25
Base Extension	26100
Caller Display Type	On
Device Type	Analogue Handset
Location	System (2: Belleville)
Module	BP2
Port	1

Select the **Analogue** tab. It is recommended to use the following settings for analog phone:

- **Standard Telephone:** is checked. This will give a phone a positive disconnect.
- **Message Waiting Lamp Indication Type:** ON is selected.

Analogue Extension: 25 26100	
Extn	Analogue
Equipment Classification	
<input type="radio"/> Quiet Headset	
<input type="radio"/> Paging Speaker	
<input checked="" type="radio"/> Standard Telephone	
<input type="radio"/> Door Phone 1	
<input type="radio"/> Door Phone 2	
<input type="radio"/> IVR Port	
<input type="radio"/> FAX Machine	
<input type="radio"/> MOH Source	
Flash Hook Pulse Width	
<input checked="" type="checkbox"/> Use System Defaults	
Minimum Width	20 ms
Maximum Width	500 ms
Message Waiting Lamp Indication Type	
On	
Hook Persistency	
100	

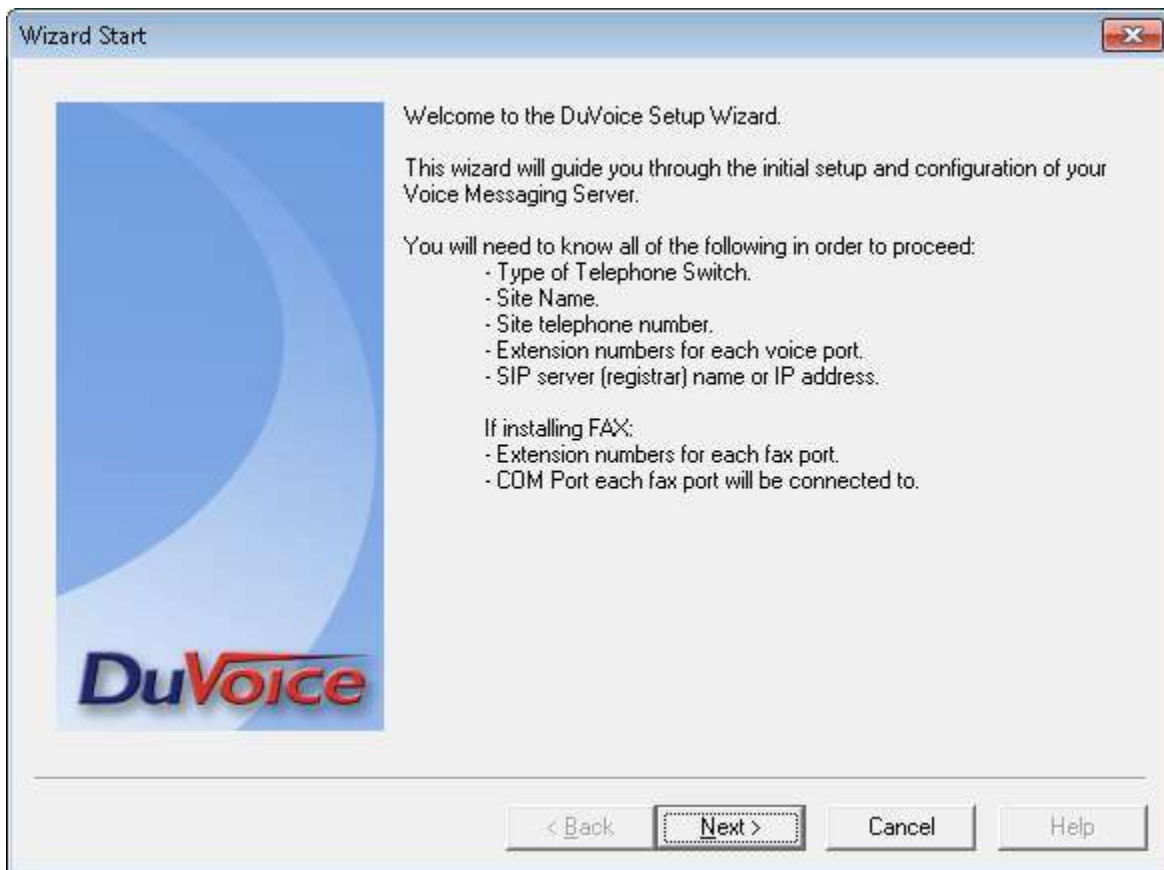
Click **OK** to save changes.

6. Configure DuVoice

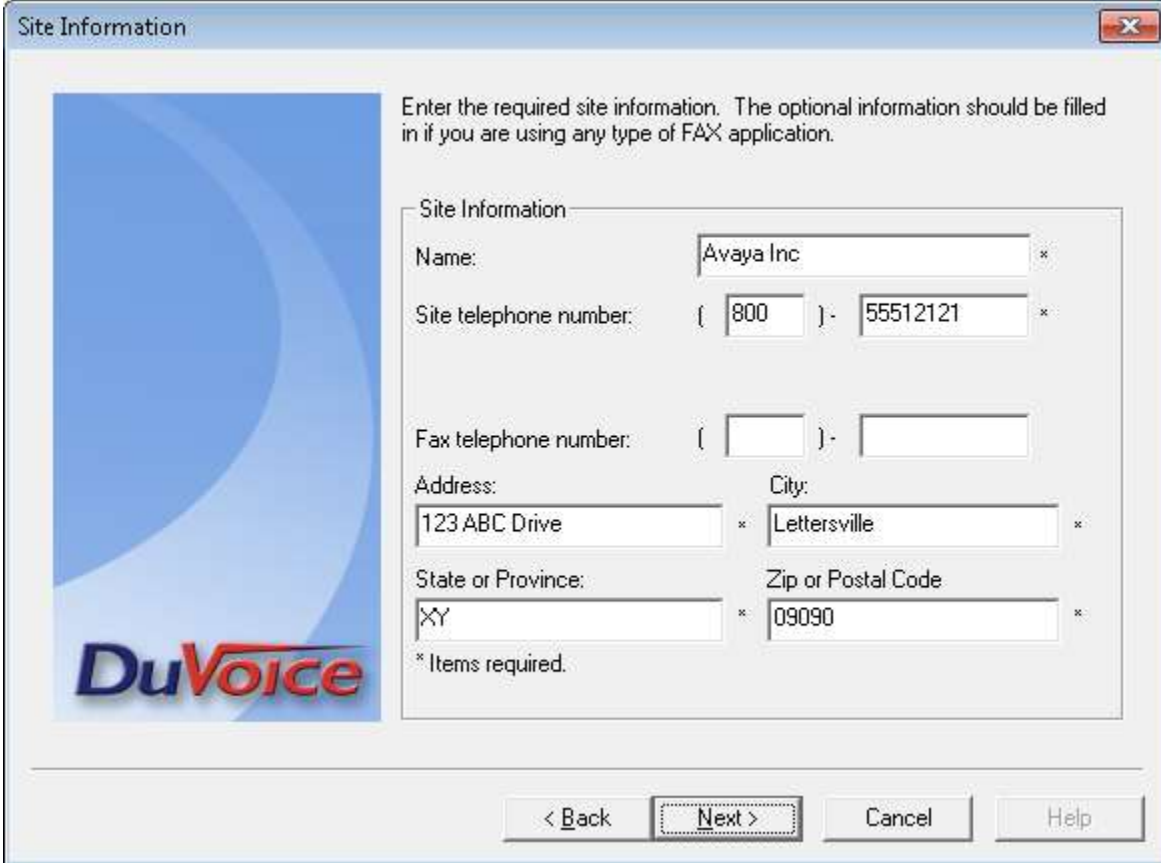
This section provides the procedures for configuring DuVoice.

6.1. Administer Setup Wizard

From the DuVoice server, select **Start → All Programs → DuVoice → System Configuration**. 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**.



The image shows a 'Site Information' dialog box with a blue header bar and a close button. On the left is a blue graphic with the 'DuVoice' logo. The main area contains a form with the title 'Site Information' and a note: 'Enter the required site information. The optional information should be filled in if you are using any type of FAX application.' The form fields are: 'Name' (Avaya Inc), 'Site telephone number' (800-55512121), 'Fax telephone number' (empty), 'Address' (123 ABC Drive), 'City' (Lettersville), 'State or Province' (XY), and 'Zip or Postal Code' (09090). Asterisks indicate required fields. At the bottom are buttons for '< Back', 'Next >', 'Cancel', and 'Help'.

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: Avaya Inc *

Site telephone number: (800) - 55512121 *

Fax telephone number: () - *

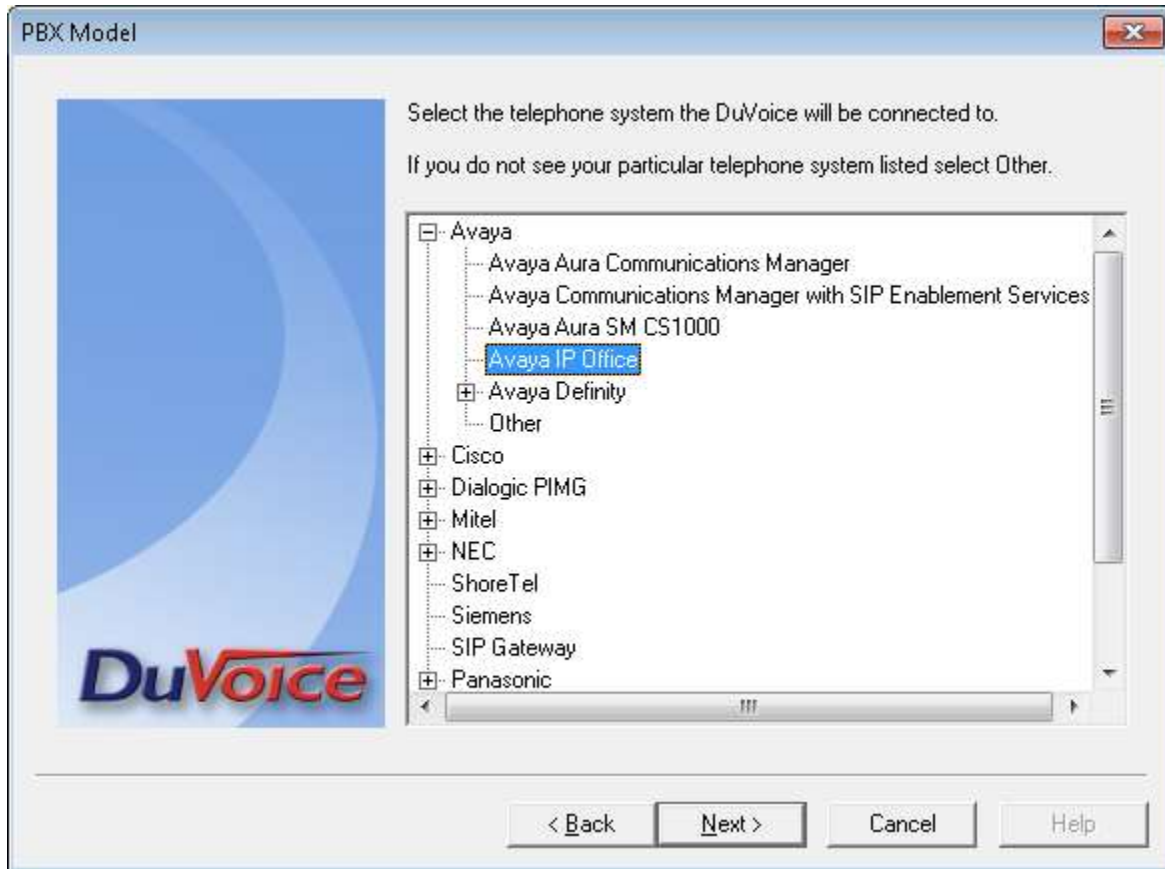
Address: 123 ABC Drive * City: Lettersville *

State or Province: XY * Zip or Postal Code: 09090 *

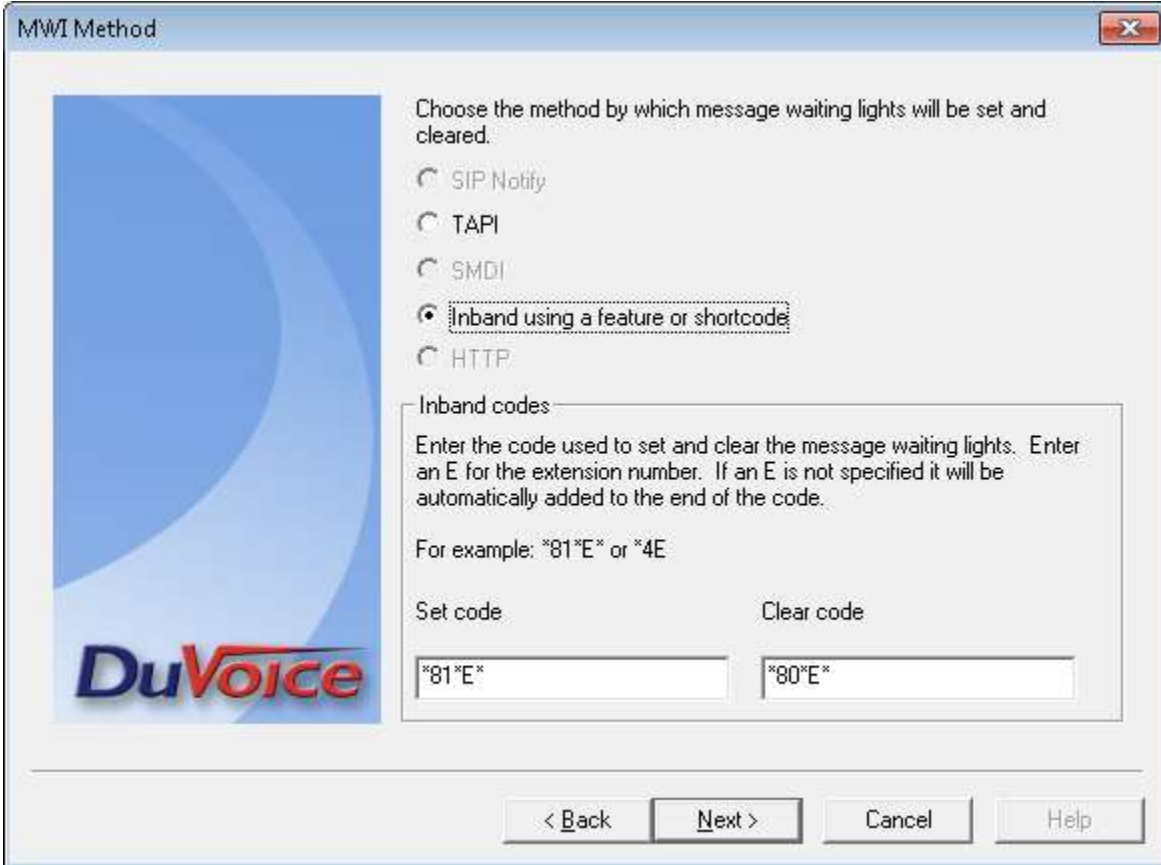
* Items required.

< 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.



The image shows a Windows-style dialog box titled "MWI Method". On the left is a blue graphic with the "DuVoice" logo. The main area contains a list of radio buttons for selecting a method: "SIP Notify", "TAPI", "SMDI", "Inband using a feature or shortcode" (which is selected and highlighted with a dotted border), and "HTTP". Below this is a section titled "Inband codes" with explanatory text and an example. At the bottom are four buttons: "< Back", "Next >", "Cancel", and "Help".

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

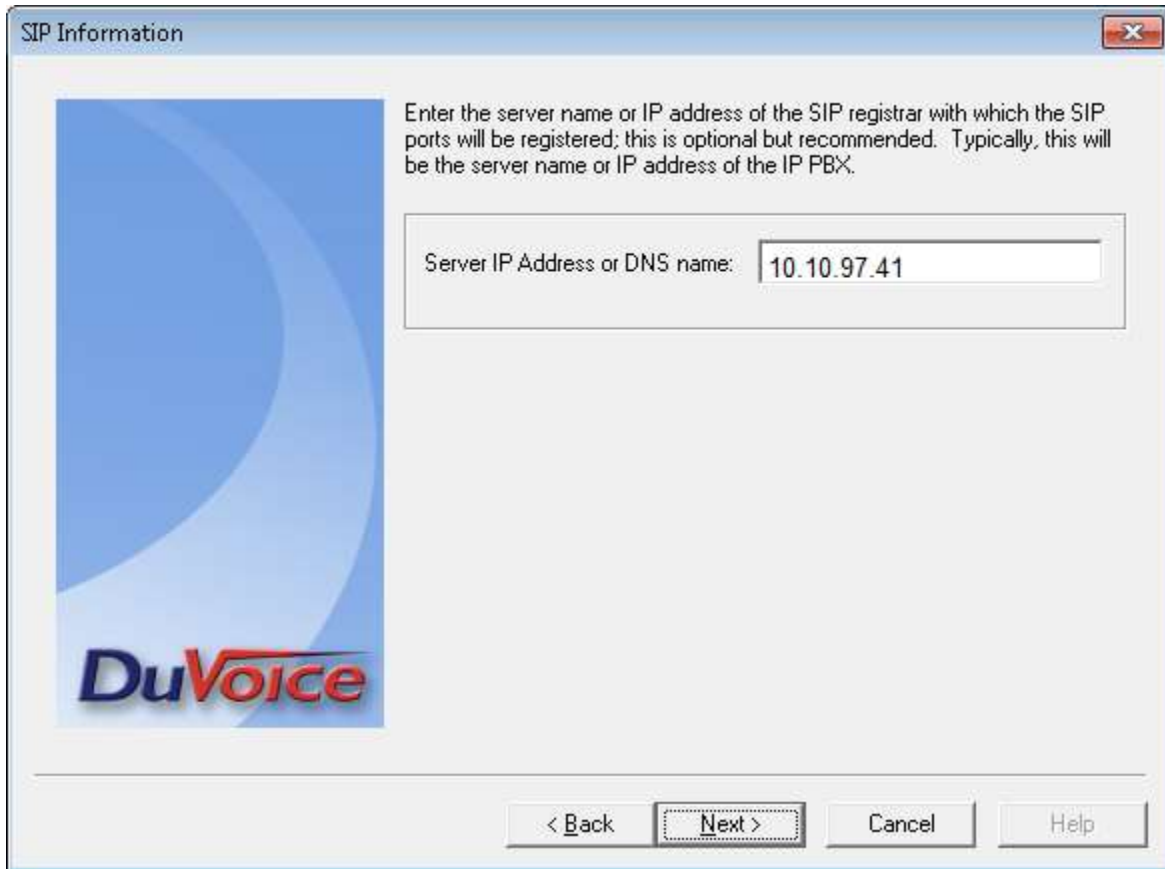
Enter the code used to set and clear the message waiting lights. Enter an E for the extension number. If an E is not specified it will be automatically added to the end of the code.

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

Set code	Clear code
<input type="text" value="*81*E*"/>	<input type="text" value="*80*E*"/>

< 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 as mention in Section 5.2, and click **Next**.



The screenshot shows a window titled "SIP Information" with a close button in the top right corner. On the left side, there is a blue graphic with the "DuVoice" logo. The main area contains instructional text: "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." Below this text is a text input field labeled "Server IP Address or DNS name:" containing the value "10.10.97.41". At the bottom of the window, there are four buttons: "< Back", "Next >", "Cancel", and "Help". The "Next >" button is highlighted with a dashed border.

The **Voice Ports** screen is displayed. For **Voicemail Huntgroup**, enter the hospitality hunt group extension from **Section 5.6**. Assign each SIP base extension from **Section 5.5** 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** in the subsequent screen to complete the wizard.

Voice Ports

This system will be configured for 4 voice mail ports. If you know the extension of each port enter it in the space provided by clicking the ports extension field below. Entering the extension numbers is required for some integrations and will help with resolving integration issues.

If You do not know the extensions leave them blank, they can be entered later in System Configuration.

Voicemail Huntgroup: 26000

☒ Auto increment extension numbers based on line 1.

Number	Extension
Port 1	26010
Port 2	26011
Port 3	26012
Port 4	26013

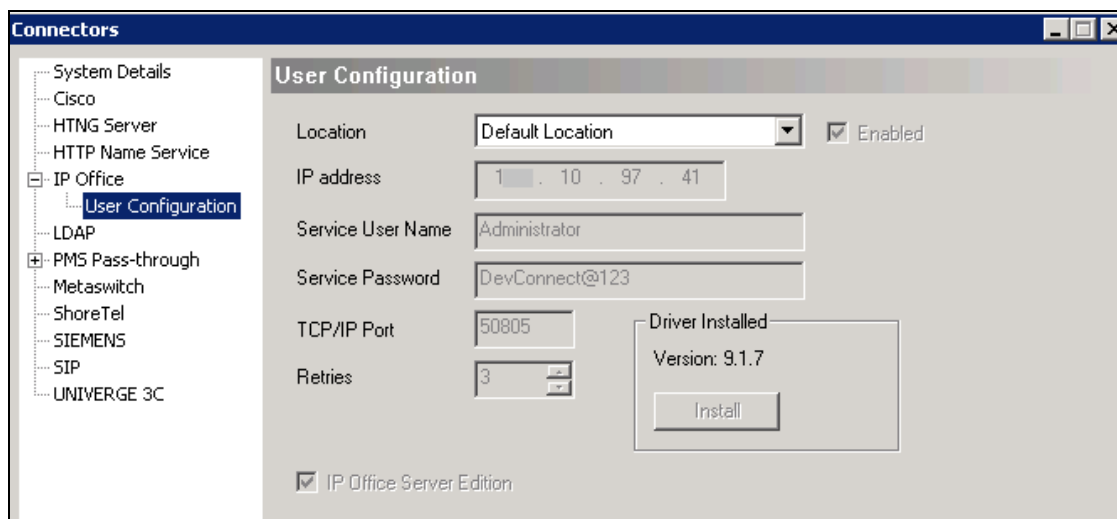
< Back Next > Cancel Help

6.2. Administer Connectors

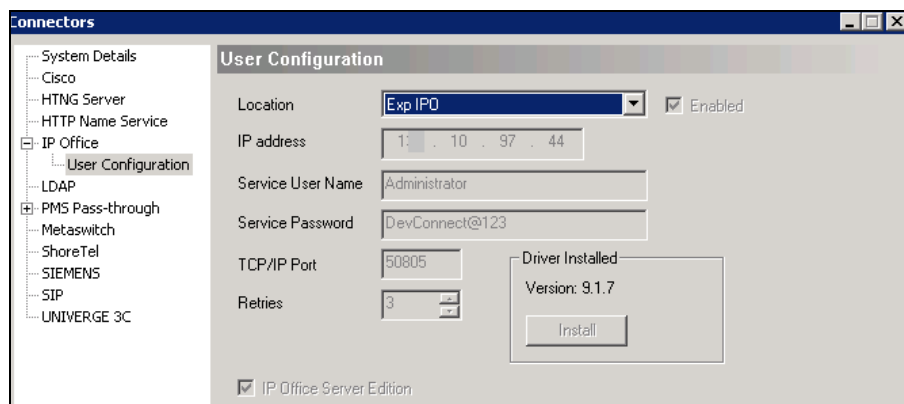
From the DuVoice server, select **Start → All Programs → DuVoice → System Configuration**. The **System Configuration** screen is displayed. Select **Features → Connectors...** from the top menu. Select **IP Office → User Configuration**, enter the following information:

- **Location:** select Default Location.
- Check **Enabled** checkbox.
- **IP address:** enter IP Office primary Linux Server, in this case it is 10.10.97.41
- **Service User Name:** enter user name to login primary server, it is Administrator.
- **Service Password:** enter password for above user name.
- **IP Office Server Edition** checkbox is checked.
- **Driver Installed:** verified the installed Version is 9.1.7.

Click **OK** to save changes. This connector is used to establish a Configuration Web Service connection to IP Office, for update of guest user names and user rights template

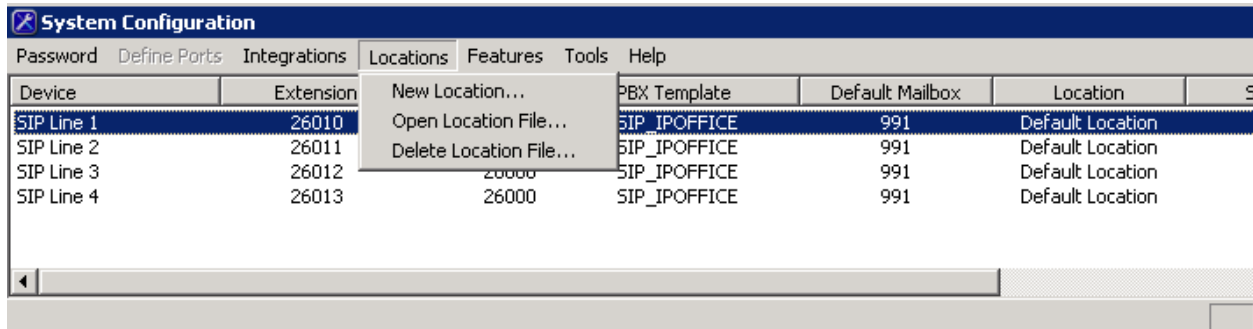


Repeat the same step for Expansion system:

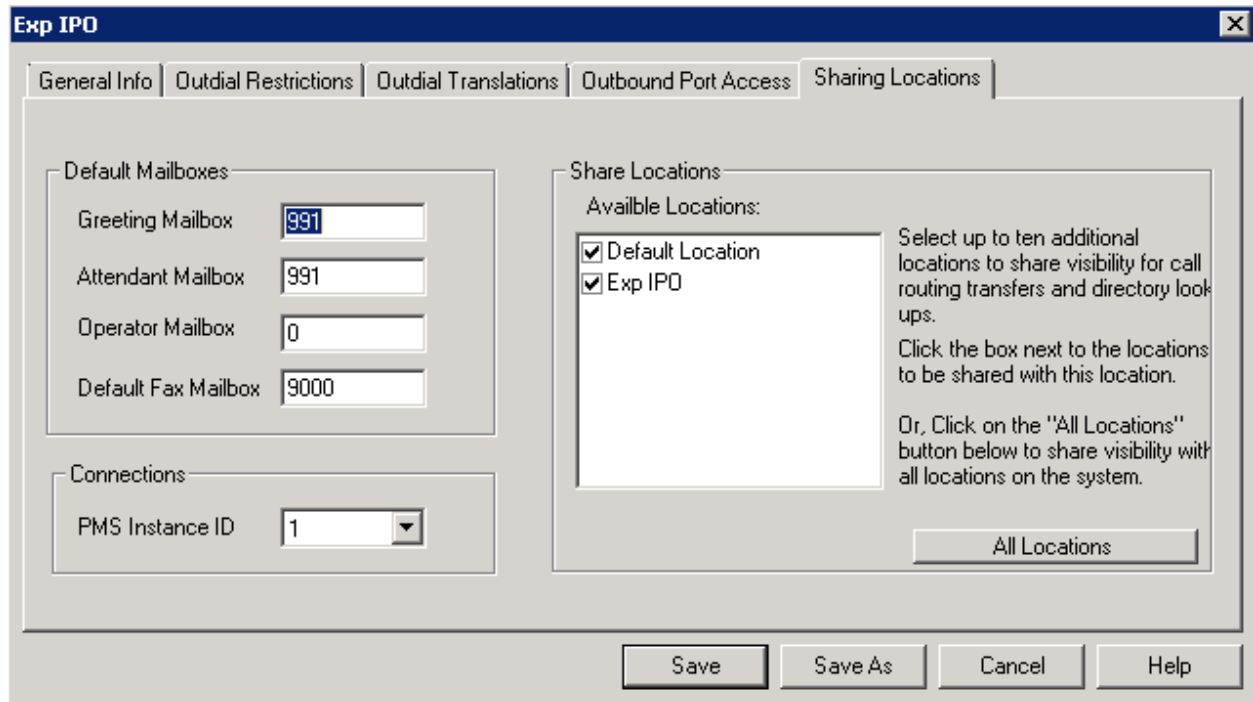


6.3. Administer Location

From the DuVoice server, select **Start → All Programs → DuVoice → System Configuration**. The **System Configuration** screen is displayed. Select **Locations → New Location...** from the top menu.



Follow the screen to create a new location for 500v2. Below screenshot is an example of location created for **Exp IPO** Expansion during compliance test.



6.4. Administer Hospitality

From the **System Configuration** screen shown in **Section 6.3**, 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.

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: ☐ Notify PMS

Every night, set to: ☐ Notify PMS

Select **Phone Control** from the left pane, to display the **Phone Control** screen in the right pane. For **PBX Type**, select “Avaya IP Office”.

In the **User group restrictions / call restriction values** section (bottom half of screen), add an entry to match each user rights template in **Section 5.8**. Note that the **PBX Value** is case sensitive and must match the user rights template name in **Section 5.8**. Enter desired names for **Display Text**. In the compliance testing, two entries were created to match the two user rights template in **Section 5.8**. Click **Apply**.

After clicking **Apply**, the new user group rights will show up in the field drop-down list for **Check-In** and **Check-out**. In the **Auto-set phone state on** section, check **Check-in** and **Check-out**, and select the corresponding drop-down values as shown below.

Retain the default values in the remaining fields

Hospitality Configuration

Server 1

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

Phone Control

PBX

Type: Avaya IP Office

Call accounting

Type: --none--

Enabled: --no change--

Disabled: --no change--

Auto-set phone state on

☒ Check-in: Checked In

☒ Check-out: Checked Out

Vodavi-specific settings

Outdial prefix: 470

User group restrictions / call restriction values

To edit an entry, left-click on it. For all other actions, right-click any row to display a menu.

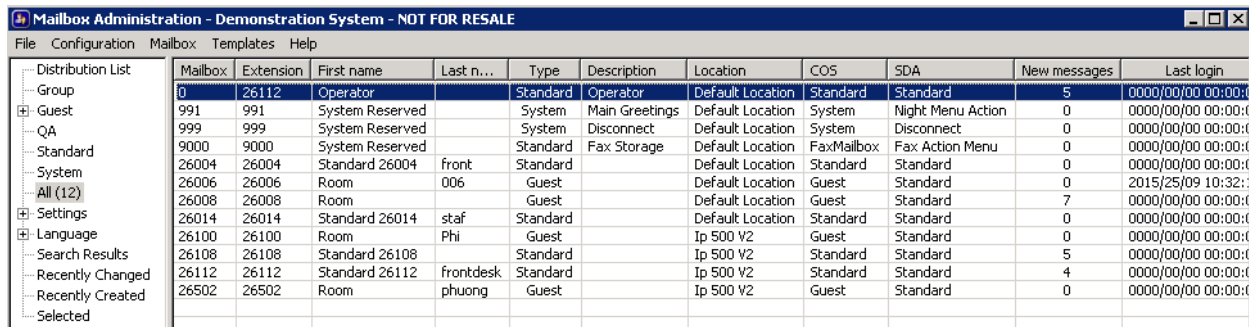
Display Text	PBX Value	PMS Value
Checked In	CheckIn	
Checked Out	CheckOut	

Active PMS: Centigram (ENCORE)

OK Cancel Apply

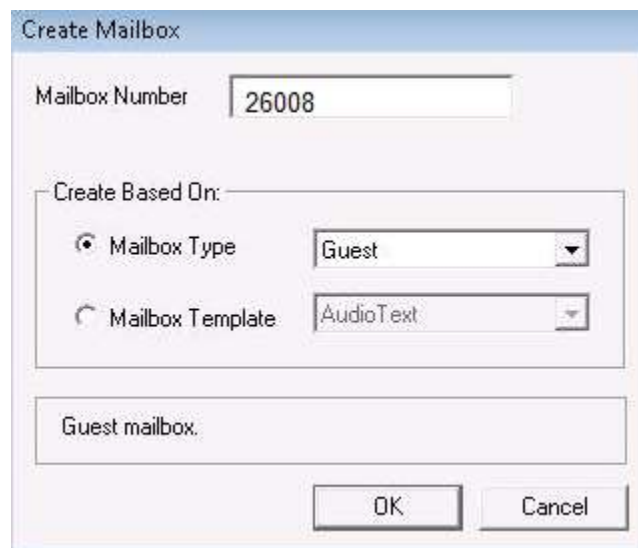
6.5. Administer Mailboxes

From the DuVoice server, select **Start → All Programs → DuVoice → Mailbox Administration**. The **Mailbox Administration** screen is displayed. Select **Mailbox → Create** from the top menu.



Mailbox	Extension	First name	Last n...	Type	Description	Location	COS	SDA	New messages	Last login
0	26112	Operator		Standard	Operator	Default Location	Standard	Standard	5	0000/00/00 00:00:00
991	991	System Reserved		System	Main Greetings	Default Location	System	Night Menu Action	0	0000/00/00 00:00:00
999	999	System Reserved		System	Disconnect	Default Location	System	Disconnect	0	0000/00/00 00:00:00
9000	9000	System Reserved		Standard	Fax Storage	Default Location	FaxMailbox	Fax Action Menu	0	0000/00/00 00:00:00
26004	26004	Standard 26004	front	Standard		Default Location	Standard	Standard	0	0000/00/00 00:00:00
26006	26006	Room	006	Guest		Default Location	Guest	Standard	0	2015/25/09 10:32:00
26008	26008	Room		Guest		Default Location	Guest	Standard	7	0000/00/00 00:00:00
26014	26014	Standard 26014	staf	Standard		Default Location	Standard	Standard	0	0000/00/00 00:00:00
26100	26100	Room	Phi	Guest		Ip 500 V2	Guest	Standard	0	0000/00/00 00:00:00
26108	26108	Standard 26108		Standard		Ip 500 V2	Standard	Standard	5	0000/00/00 00:00:00
26112	26112	Standard 26112	frontdesk	Standard		Ip 500 V2	Standard	Standard	4	0000/00/00 00:00:00
26502	26502	Room	phuong	Guest		Ip 500 V2	Guest	Standard	0	0000/00/00 00:00:00

The **Create Mailbox** screen is displayed next. For **Mailbox Number**, enter the first voicemail user extension from **Section Error! Reference source not found.**, in this case “26008”. For **Mailbox Type**, select “Guest” for guest users, and “Standard” for front desk and staff users.



Create Mailbox

Mailbox Number: 26008

Create Based On:

☒ Mailbox Type: Guest

☐ Mailbox Template: AudioText

Guest mailbox.

OK Cancel

The **Create Mailbox 26008** screen is displayed. Enter desired values for **Password**, **First Name**, **Last Name** and **Location**, and retain the default values in the remaining fields.

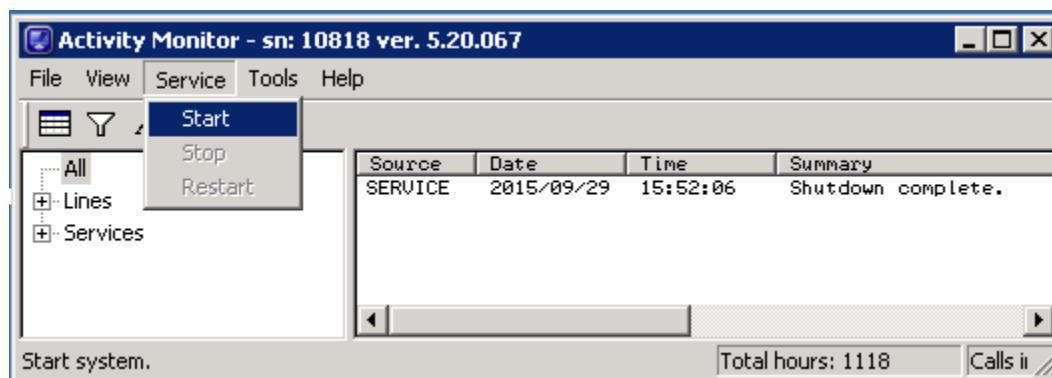
Click on Notification verify the following **Notifications** is added as shown in below screenshot:

Repeat this section for all voicemail users from **Section Error! Reference source not found.**, as shown below.

Mailbox Administration - Demonstration System - NOT FOR RESALE											
File Configuration Mailbox Templates Help											
	Mailbox	Extension	First name	Last n...	Type	Description	Location	COS	SDA	New messages	Last login
..... Distribution List	0	26112	Operator		Standard	Operator	Default Location	Standard	Standard	5	0000/00/00 00:00:00
..... Group	991	991	System Reserved		System	Main Greetings	Default Location	System	Night Menu Action	0	0000/00/00 00:00:00
..... Guest	999	999	System Reserved		System	Disconnect	Default Location	System	Disconnect	0	0000/00/00 00:00:00
..... QA	9000	9000	System Reserved		Standard	Fax Storage	Default Location	FaxMailbox	Fax Action Menu	0	0000/00/00 00:00:00
..... Standard	26004	26004	Standard 26004	front	Standard		Default Location	Standard	Standard	0	0000/00/00 00:00:00
..... System	26006	26006	Room	006	Guest		Default Location	Guest	Standard	0	2015/25/09 10:32:00
..... All (12)	26008	26008	Room		Guest		Default Location	Guest	Standard	7	0000/00/00 00:00:00
..... Settings	26014	26014	Standard 26014	staf	Standard		Default Location	Standard	Standard	0	0000/00/00 00:00:00
..... Language	26100	26100	Room	Phi	Guest		Ip 500 V2	Guest	Standard	0	0000/00/00 00:00:00
..... Search Results	26108	26108	Standard 26108		Standard		Ip 500 V2	Standard	Standard	5	0000/00/00 00:00:00
..... Recently Changed	26112	26112	Standard 26112	frontdesk	Standard		Ip 500 V2	Standard	Standard	4	0000/00/00 00:00:00
..... Recently Created	26502	26502	Room	phuong	Guest		Ip 500 V2	Guest	Standard	0	0000/00/00 00:00:00
..... Selected											

6.6. Startup Server

From the DuVoice server, select **Start → All Programs → DuVoice → Activity Monitor**. The **Activity Monitor** screen is displayed. Select **Service → Start** from the top menu to start all services.

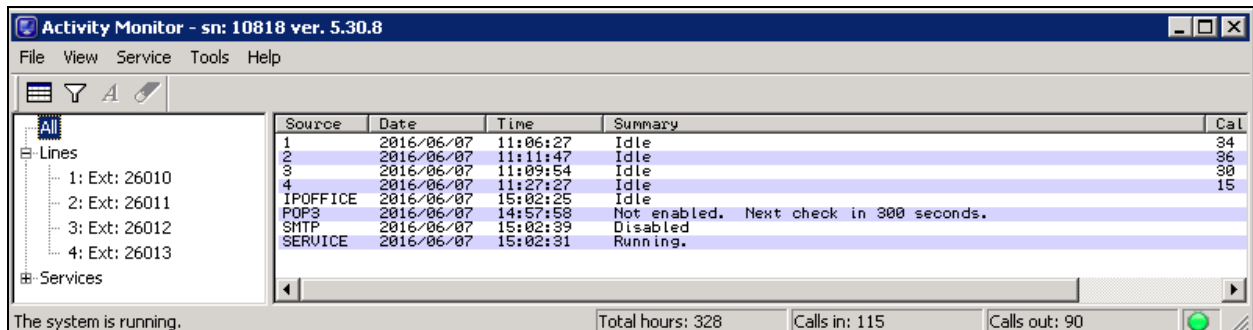


7. Verification Steps

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 6.6** to display the **Activity Monitor** screen. Verify that ports 1-4, **IPOffice** is in the “Idle” state, as shown below.



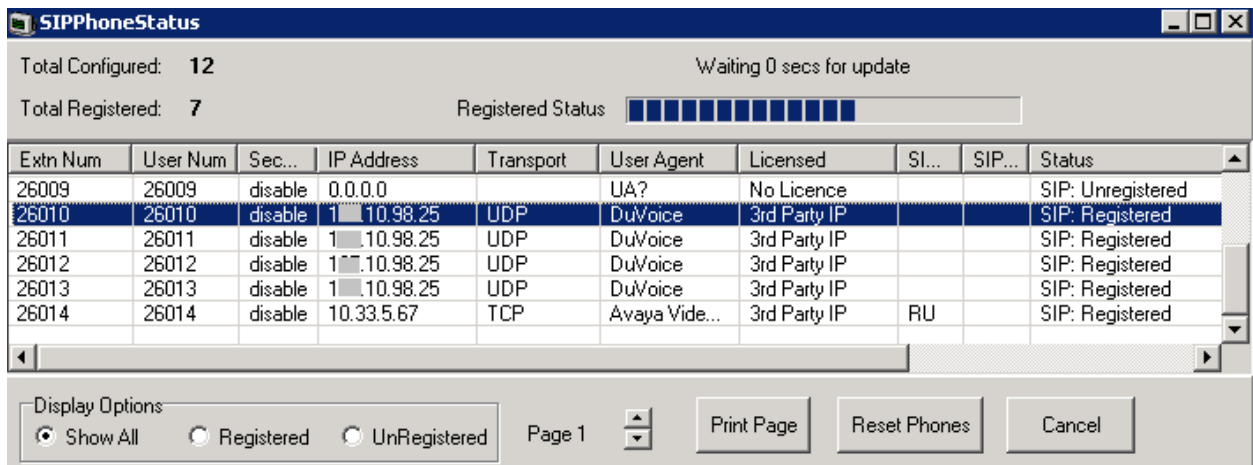
The screenshot shows the 'Activity Monitor - sn: 10818 ver. 5.30.8' window. It has a menu bar (File, View, Service, Tools, Help) and a toolbar. On the left is a tree view with 'Lines' and 'Services'. The main area is a table with columns: Source, Date, Time, Summary, and Cal. The table lists several components: 1, 2, 3, and 4 (all 'Idle'), IPOFFICE (Idle), POP3 (Not enabled), SHTP (Disabled), and SERVICE (Running). A status bar at the bottom shows 'The system is running.', 'Total hours: 328', 'Calls in: 115', and 'Calls out: 90'.

Source	Date	Time	Summary	Cal
1	2016/06/07	11:06:27	Idle	34
2	2016/06/07	11:11:47	Idle	36
3	2016/06/07	11:09:54	Idle	30
4	2016/06/07	11:27:27	Idle	15
IPOFFICE	2016/06/07	15:02:25	Idle	
POP3	2016/06/07	14:57:58	Not enabled. Next check in 300 seconds.	
SHTP	2016/06/07	15:02:39	Disabled	
SERVICE	2016/06/07	15:02:31	Running.	

7.2. Verify SIP User Integration

From a PC running the Avaya IP Office Monitor application, select **Start → Programs → IP Office → Monitor** to launch the application. The **Avaya IP Office R9 SysMonitor** screen is displayed. Select **Status > SIP Phone Status** from the top menu.

The **SIPPhoneStatus** screen is displayed. Verify that there is an entry for each SIP extension from **Section 5.4**, that the **User Agent** is “DuVoice”, and that the **Status** is “SIP: Registered”, as shown below.



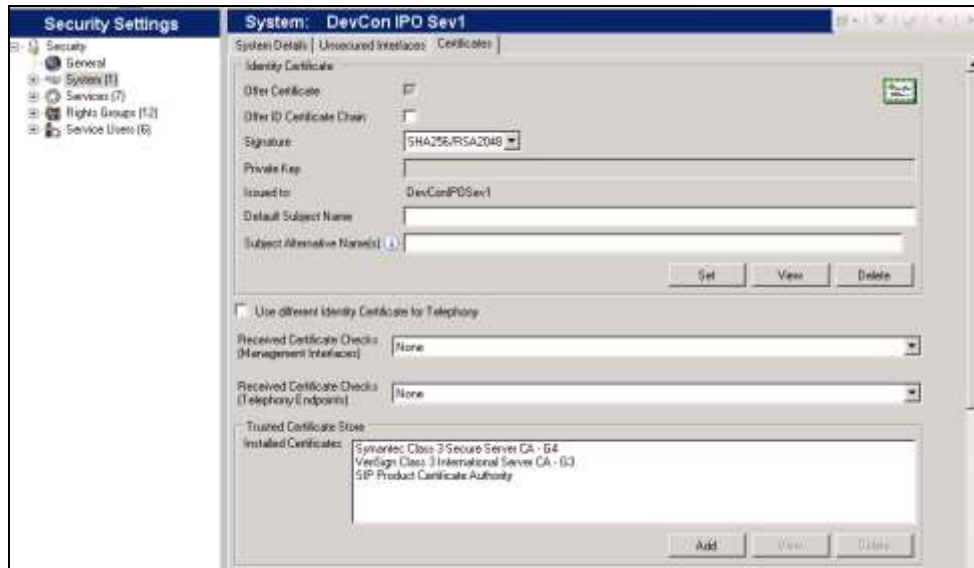
The screenshot shows the 'SIPPhoneStatus' window. It displays 'Total Configured: 12' and 'Total Registered: 7'. A progress bar for 'Registered Status' is shown. Below is a table with columns: Extn Num, User Num, Sec..., IP Address, Transport, User Agent, Licensed, SI..., SIP..., and Status. The table lists extensions 26009 through 26014. Extensions 26010-26013 are registered with 'DuVoice' as the user agent. Extension 26014 is registered with 'Avaya Vide...'. A status bar at the bottom includes 'Display Options' (Show All, Registered, UnRegistered), 'Page 1', and buttons for 'Print Page', 'Reset Phones', and 'Cancel'.

Extn Num	User Num	Sec...	IP Address	Transport	User Agent	Licensed	SI...	SIP...	Status
26009	26009	disable	0.0.0.0		UA?	No Licence			SIP: Unregistered
26010	26010	disable	10.98.25	UDP	DuVoice	3rd Party IP			SIP: Registered
26011	26011	disable	10.98.25	UDP	DuVoice	3rd Party IP			SIP: Registered
26012	26012	disable	10.98.25	UDP	DuVoice	3rd Party IP			SIP: Registered
26013	26013	disable	10.98.25	UDP	DuVoice	3rd Party IP			SIP: Registered
26014	26014	disable	10.33.5.67	TCP	Avaya Vide...	3rd Party IP	RU		SIP: Registered

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.

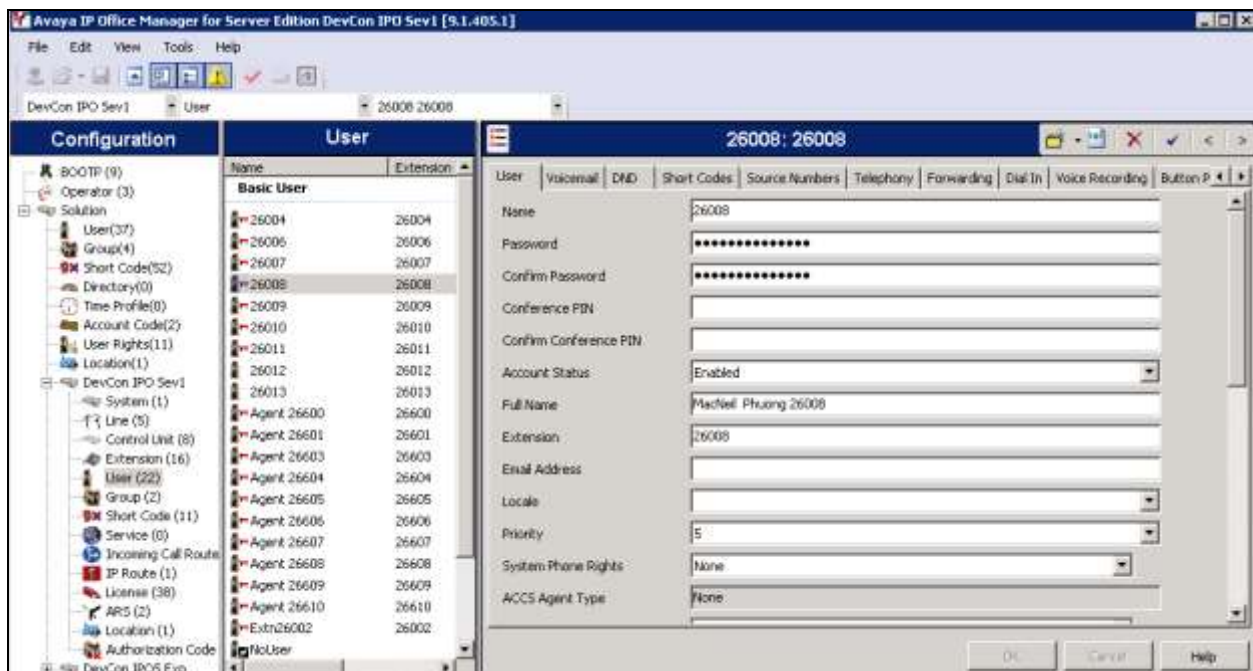
7.3. Verify Configuration Web Service Integration

Open the **Avaya IP Office R9 Manager – Security Administration** screen. Select **System** from the left pane, followed by **Certificates** in the right pane. Verify that **Offer Certificate** is checked, and that **Issued to** contain an automatically generated string to IP Office name, in this case, it is **DevCon IPO Sev1**, as shown below.

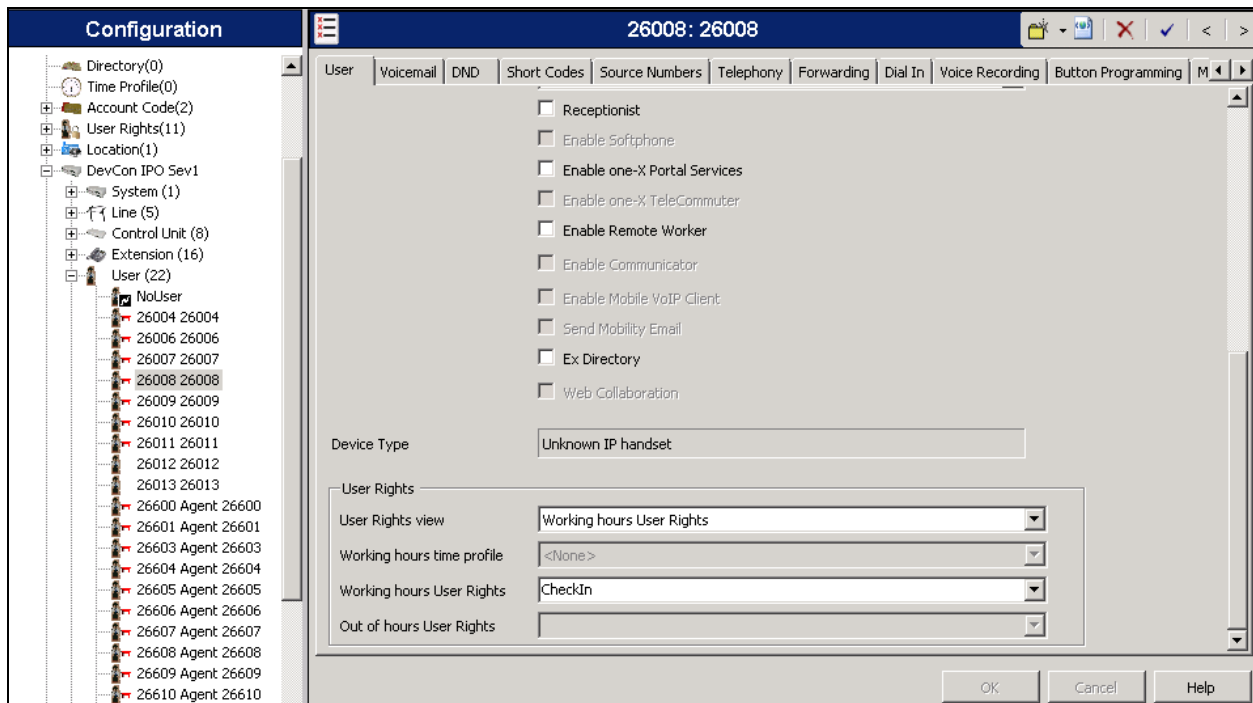


7.4. Verify user name change and check-in/out status for guest

Use Hospitality tester to perform check in a guest for room 26008 with name **Phuong MacNeil**. Verify that the guest name **Phuong MacNeil 26008** is updated automatically on **Full Name** field.



Verify user right template CheckIn is updated on **Working hours User Rights** field 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 Server Edition 9.1. All feature and serviceability test cases were completed 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 9.14 0, September 2015, available at <http://support.avaya.com>.
2. <http://support.duvoice.com/dv530/pbx/avaya/ipofficev91/usingsip>

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