



Avaya Solution & Interoperability Test Lab

Application Notes for DuVoice 5.0 with Avaya IP Office – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for the DuVoice 5.0 hospitality messaging system to interoperate with Avaya IP Office. In the compliance testing, DuVoice used the SIP User, TAPI, and Configuration Web Service interfaces 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 indication features.

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 5.0 hospitality messaging system to interoperate with Avaya IP Office. In the compliance testing, DuVoice used the SIP User, TAPI, and Configuration Web Service interfaces 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 indication features.

The SIP User and TAPI 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 two virtual SIP users on Avaya IP Office. The two virtual SIP users were registered with Avaya IP Office, and configured as members of a hospitality hunt group. DuVoice used the TAPI interface to monitor the virtual SIP users. Incoming calls to the hospitality hunt group were delivered over an available virtual SIP user to DuVoice. DuVoice used the TAPI events 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. The TAPI lineDevSpecific capability was used to activate/deactivate the Message Waiting Indicator (MWI), and to optionally set the divert setting for do not disturb when requested manually by the guests.

DuVoice also has a Property Management System (PMS) interface, and a PMS simulator was used in the compliance testing to initiate the room check-in, check-out, and move requests to DuVoice. In the compliance testing, two user rights templates were set up on Avaya IP Office for use with check-in and check-out guests. DuVoice used the Configuration Web Service to send updates to Avaya IP Office on the guest name and user rights template as part of the check-in, check-out, and move process.

1.1. 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.
- Handling of voicemail messages and message waiting lamps for check-out and move requests initiated via the PMS simulator.
- Voicemail recording, logging, and retrieval, with proper message waiting lamp activation/deactivation for users with analog, digital, and IP telephone types.
- Scheduling and delivering of wake-up call requests, including retried attempts and escalation to staff.
- Handling of TAPI events and messages for calls, and setting of MWI and do not disturb divert parameters.
- Handling of maid codes as indication of room clean status from the hospitality hunt group calls.
- Use of Configuration Web Services to update guest name and user rights template associated with check-in, check-out, and move requests from the PMS simulator.

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

1.2. Support

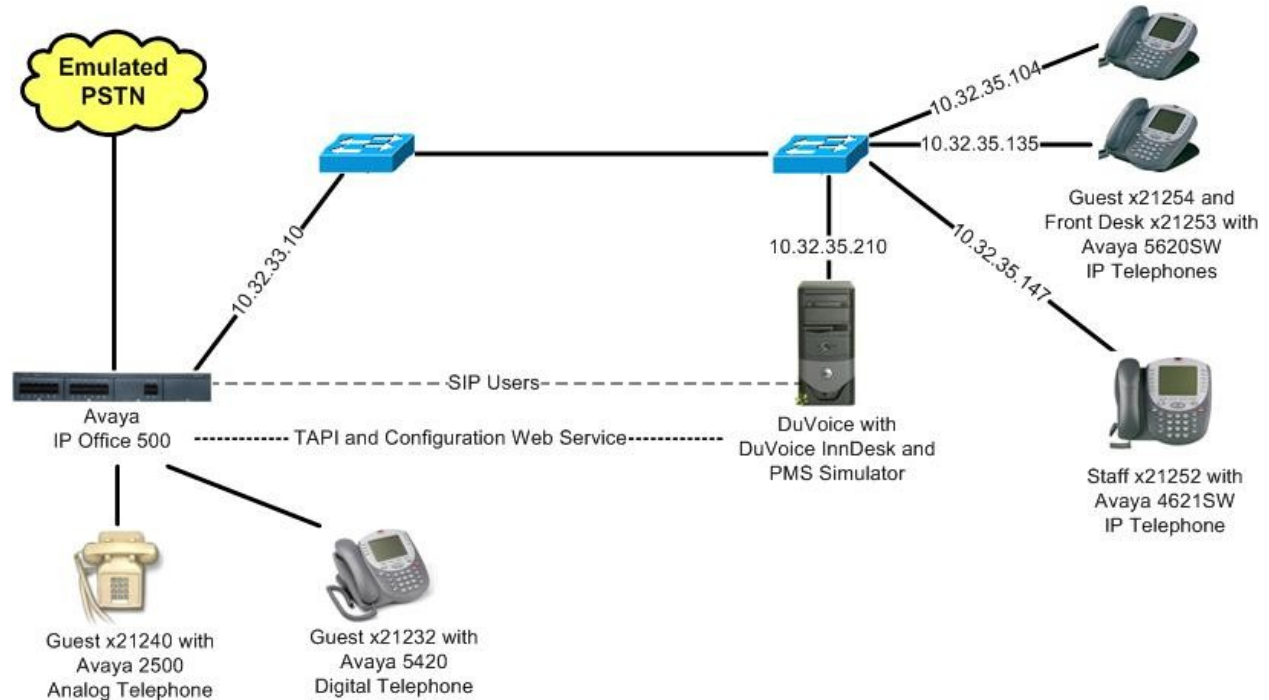
Technical support on DuVoice can be obtained through the following:

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

2. Reference Configuration

The configuration used for the compliance testing is shown below.

A PMS simulator was used to initiate room check-in, check-out, and move requests to DuVoice. In addition, the DuVoice InnDesk web interface was used to monitor the guest check-in, check-out, and wake-up call status.



3. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office 500	6.0 (8)
Avaya 4621SW IP Telephone (H.323)	2.9
Avaya 5620 IP Telephones	2.9
Avaya 5420 Digital Telephone	NA
DuVoice on Microsoft Windows 7 Professional	5.00.005
• InnDesk	1.20
• PMS Simulator	1.0.0.1
• Avaya TAPI	1.0.0.35

4. Configure Avaya IP Office

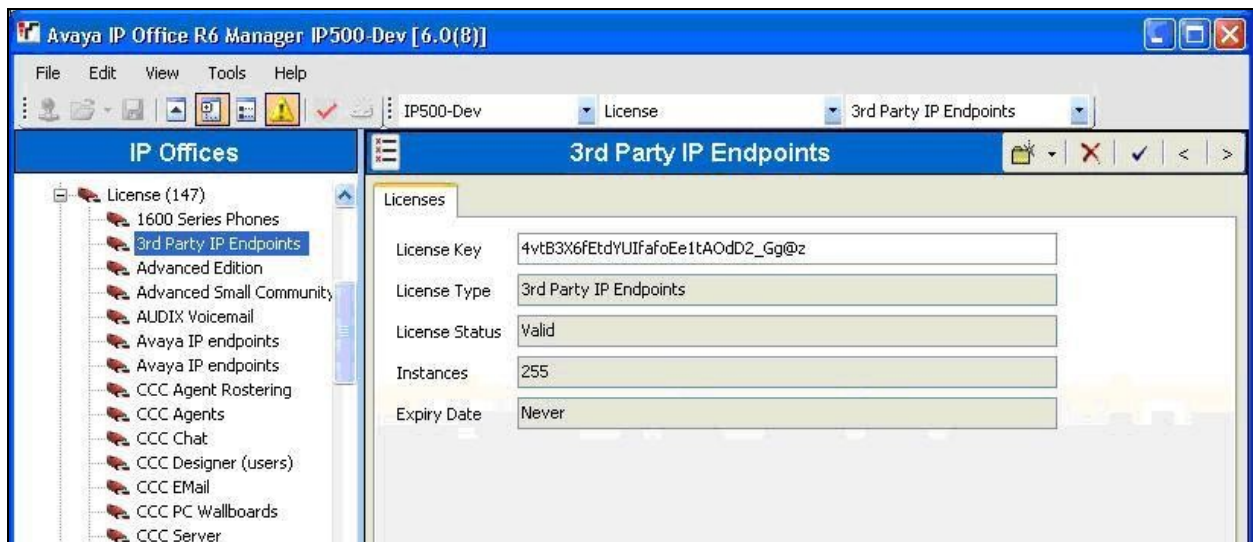
This section provides the procedures for configuring Avaya IP Office. The procedures include the following areas:

- Verify IP Office license
- Obtain LAN IP address
- Administer SIP Registrar
- Administer SIP extensions
- Administer SIP users
- Administer hospitality hunt group
- Administer incoming call route
- Administer system voicemail
- Administer voicemail users
- Administer analog user MWI
- Administer user rights
- Administer security service

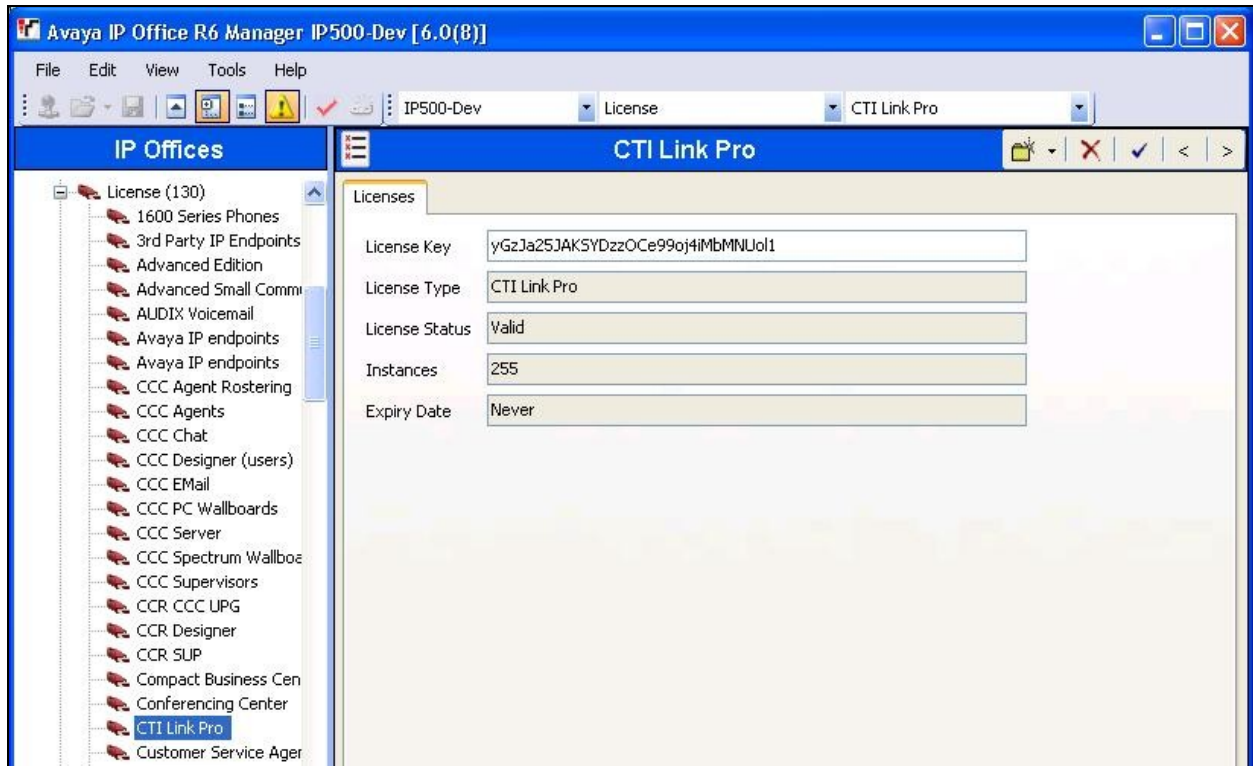
4.1. Verify IP Office License

From a PC running the Avaya IP Office Manager application, select **Start > Programs > IP Office > Manager** to launch the Manager application. Select the proper IP Office system, and log in with the appropriate credentials.

The **Avaya IP Office Manager** screen is displayed. From the configuration tree in the left pane, select **License > 3rd Party IP End-points** to display the **3rd Party IP End-points** screen in the right pane. Verify that the **License Status** is “Valid”.

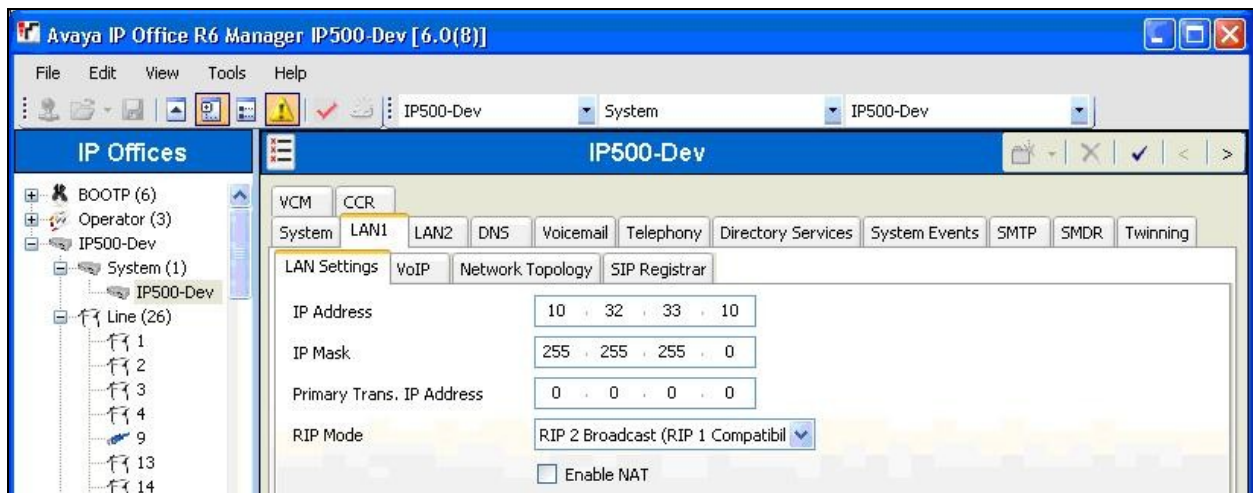


Scroll down the left pane and select **License > CTI Link Pro**, to display the **CTI Link Pro** screen in the right pane. Verify that the **License Status** is “Valid”.



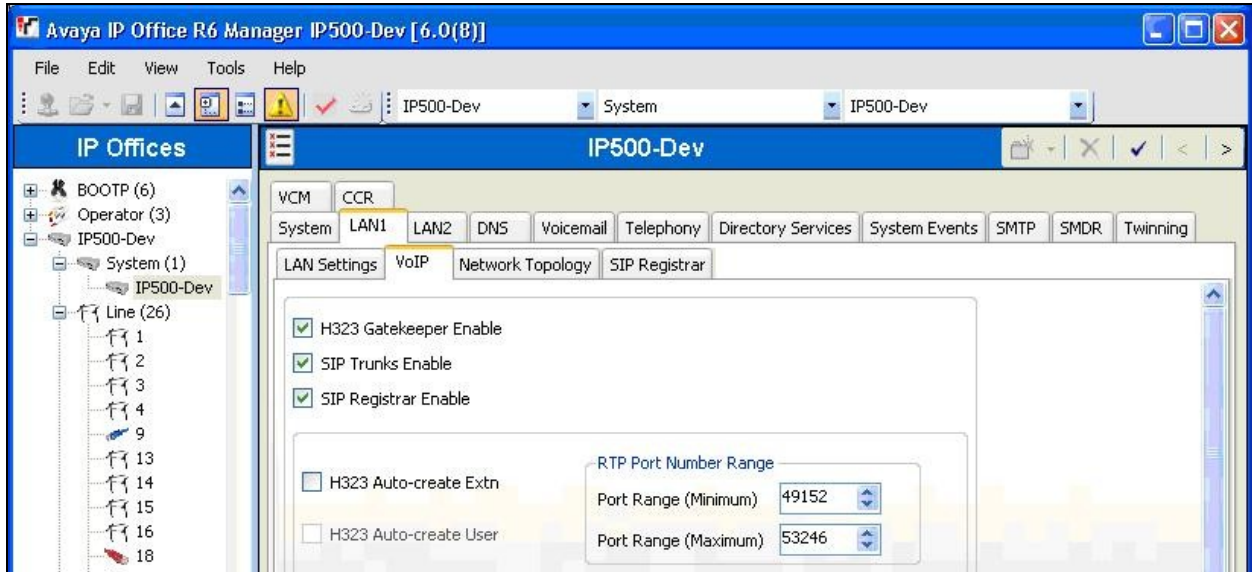
4.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **IP500-Dev** screen in the right pane. 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.

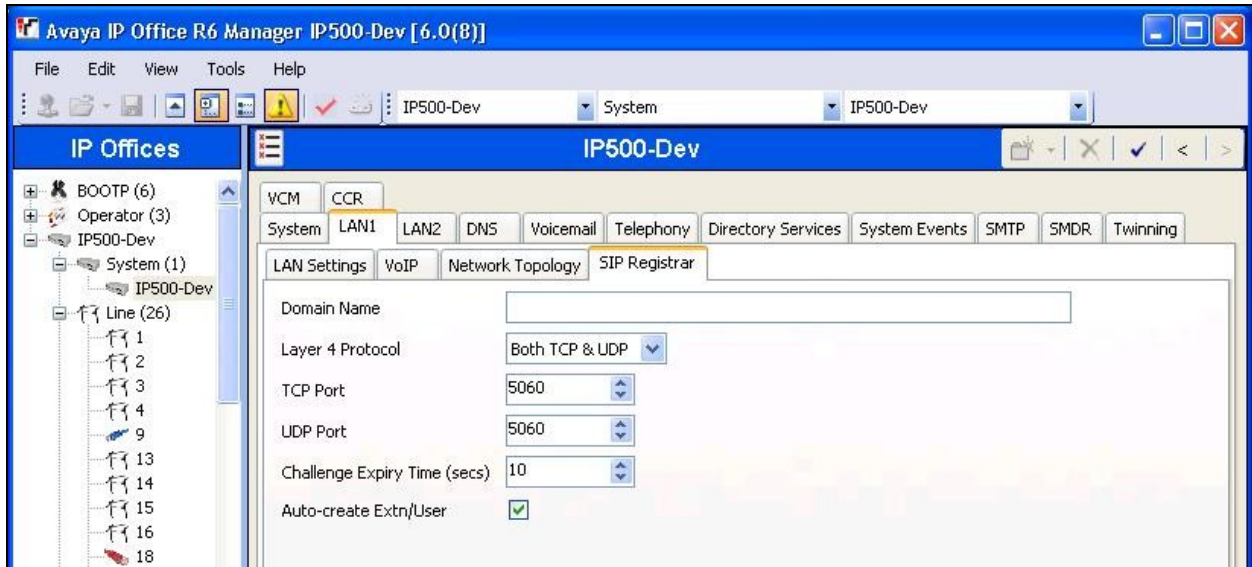


4.3. Administer SIP Registrar

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



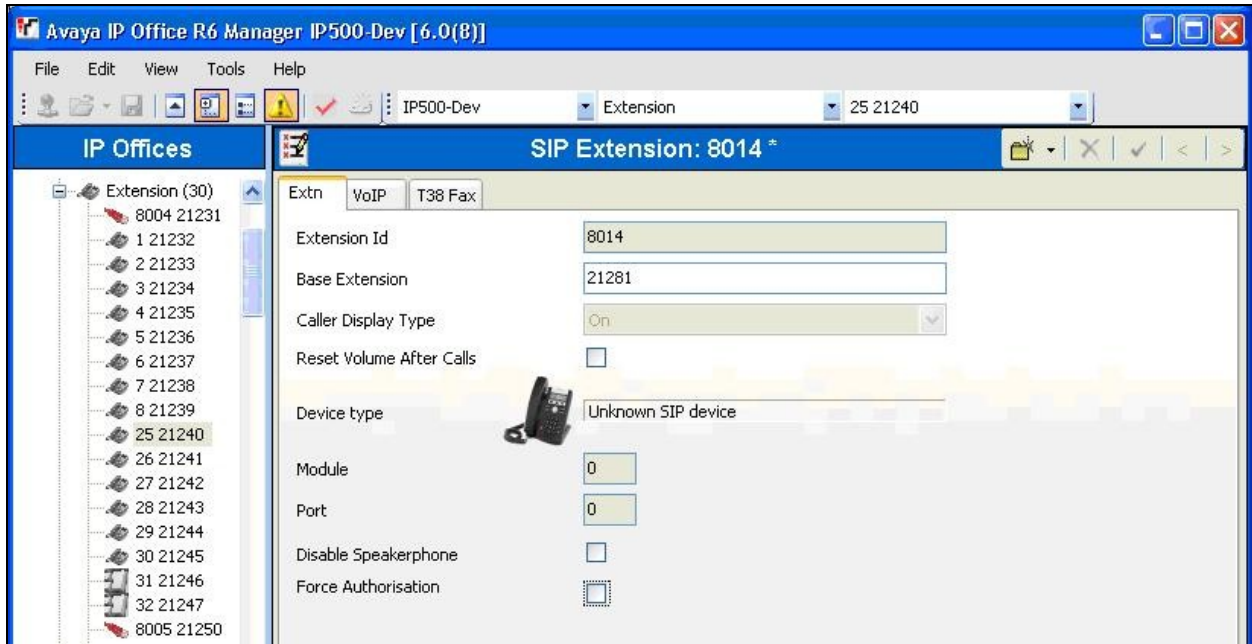
Select the **SIP Registrar** sub-tab, and enter a valid **Domain Name** for SIP endpoints to use for registration with IP Office. In the compliance testing, the **Domain Name** was left blank, so the LAN IP address was used for registration.



4.4. Administer SIP Extensions

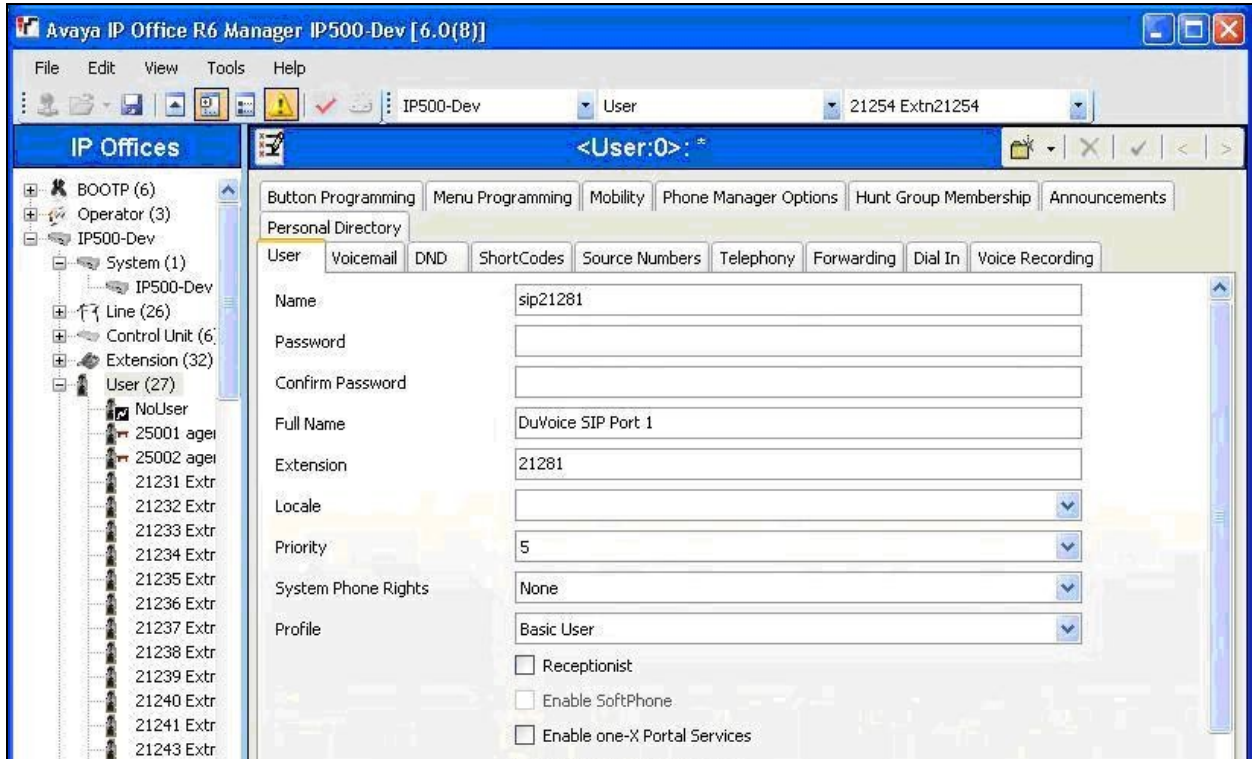
From the configuration tree in the left pane, right-click on **Extension**, and select **New > SIP Extension** from the pop-up list to add a new SIP extension. Enter the desired digits for **Base Extension**, and uncheck **Force Authorisation**, as shown below.

Repeat this section to add the desired number of SIP extensions. In the compliance testing, two SIP extensions with base extensions of “21281” and “21282” were created.

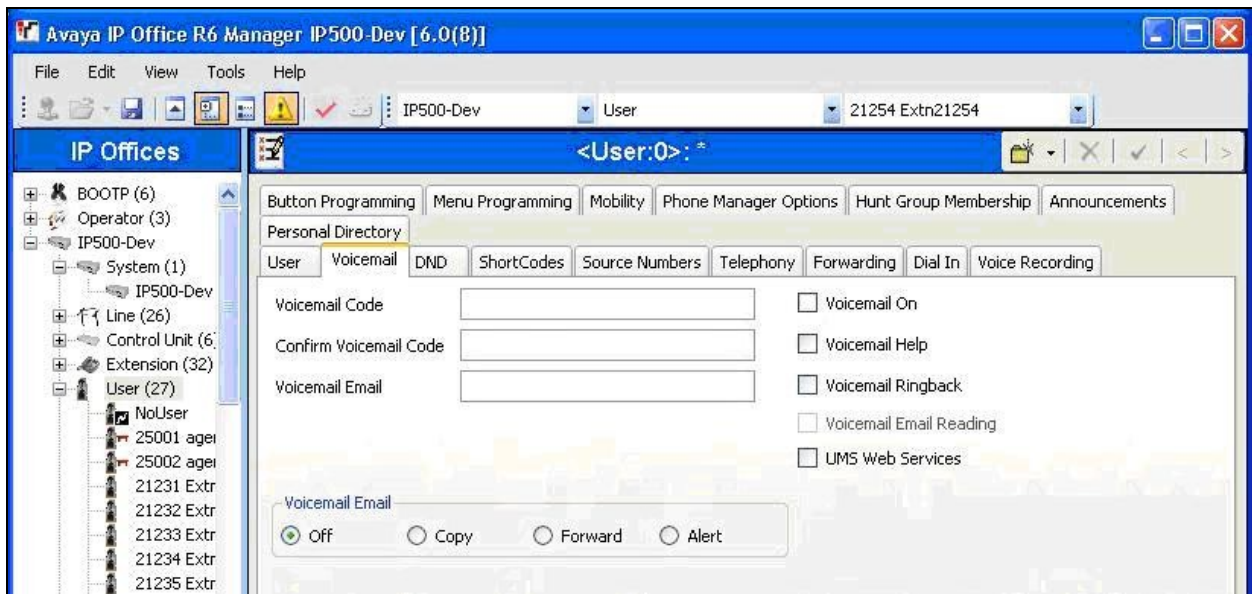


4.5. Administer SIP Users

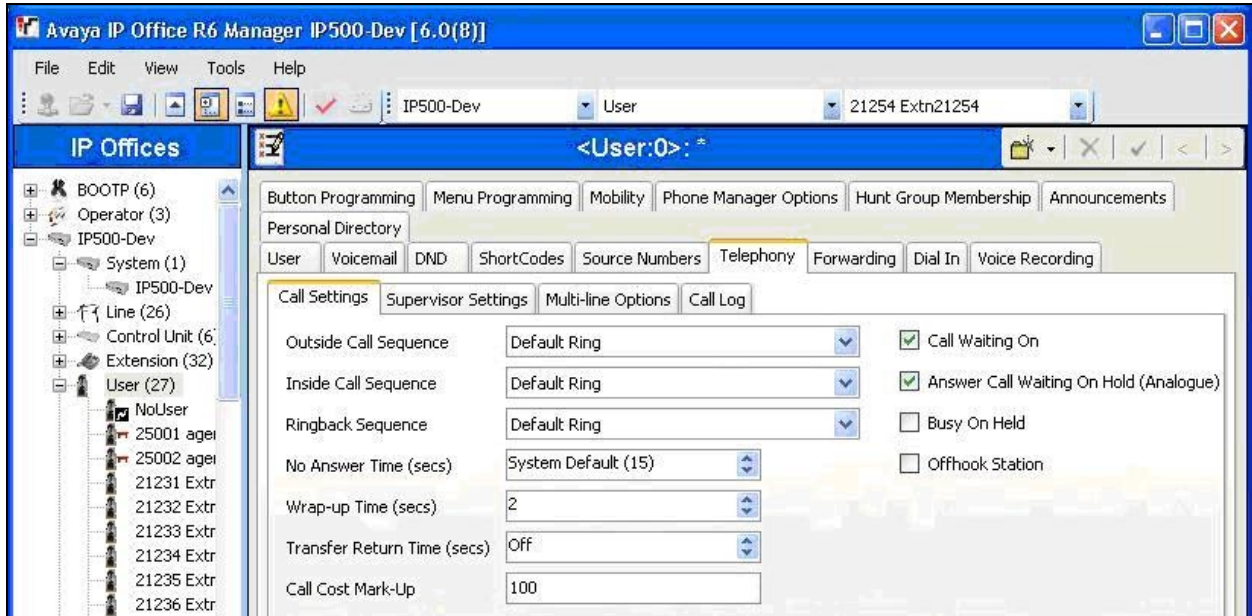
From the configuration tree in the left pane, right-click on **User**, and select **New** from the pop-up list. Enter desired values for **Name** and **Full Name**. For **Extension**, enter the first SIP base extension from **Section 4.4**.



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

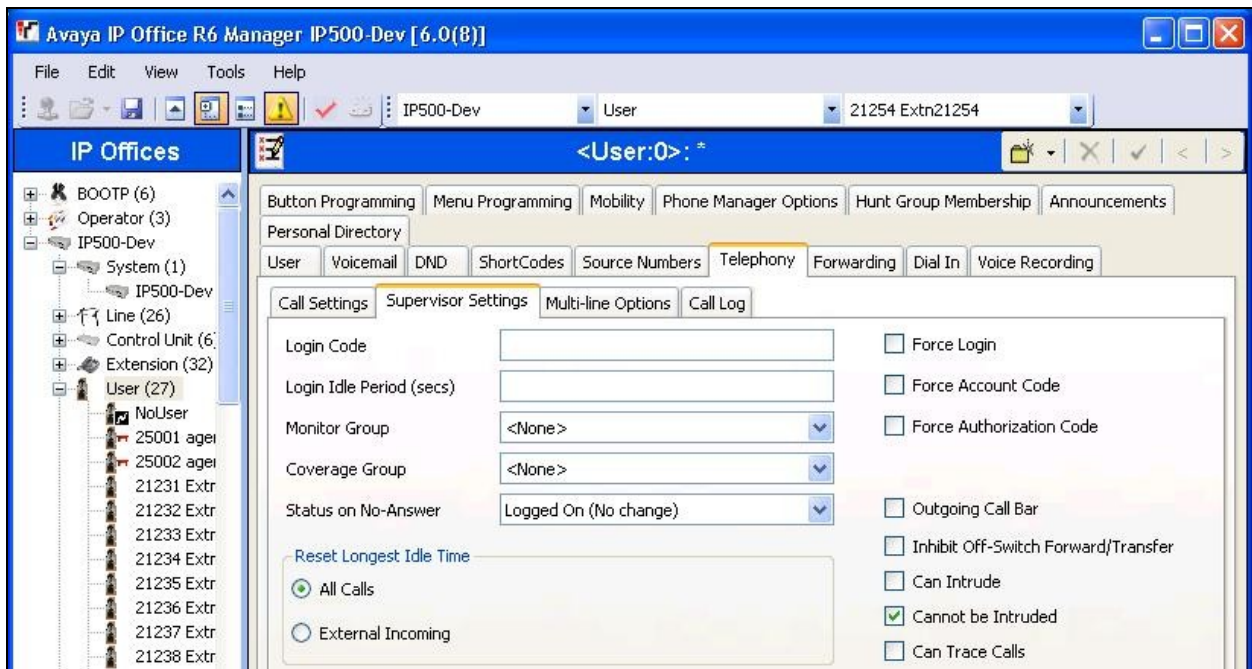


Select the **Telephony** tab, followed by the **Call Settings** sub-tab. Check **Call Waiting On**, as shown below.



Select the **Supervisor Settings** sub-tab. Check the **Cannot be Intruded** field, as shown below.

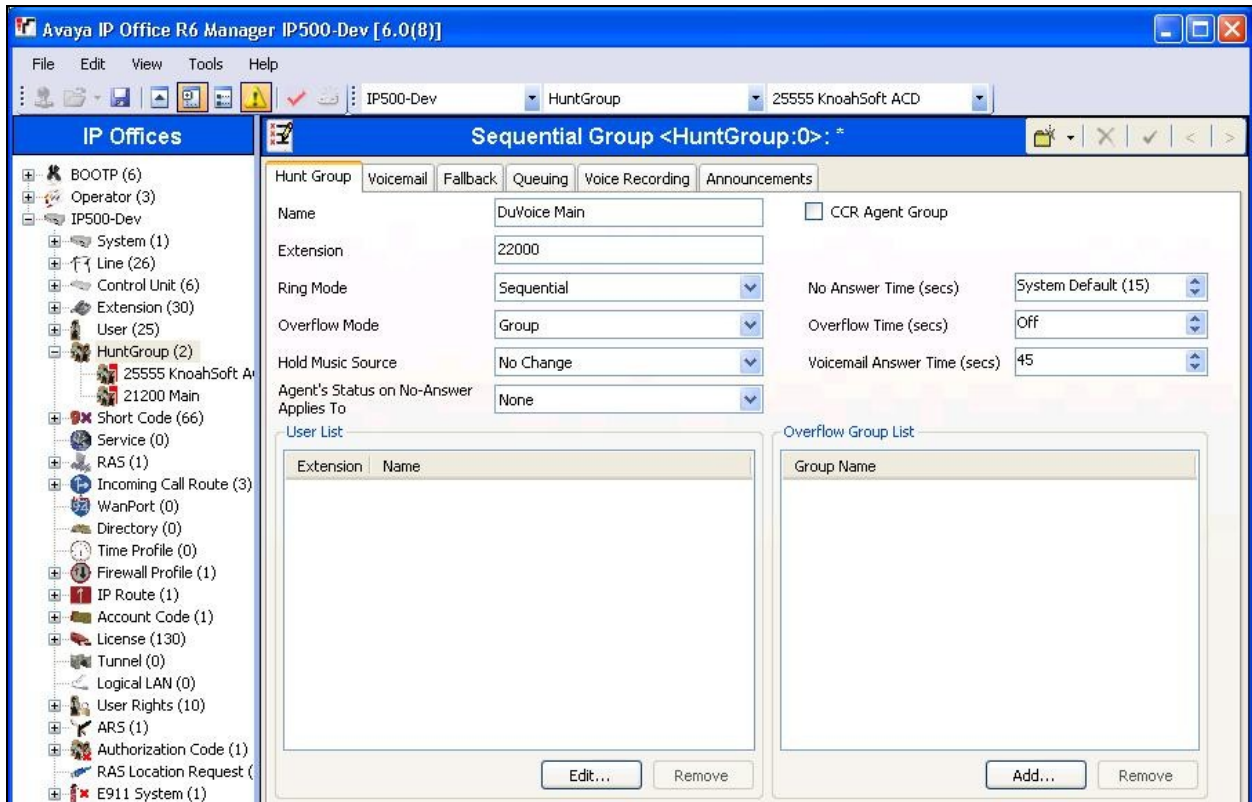
Repeat this section to add a new user for each SIP extension from **Section 4.4**. In the compliance testing, two users with names of “sip21281” and “sip21282” were created.



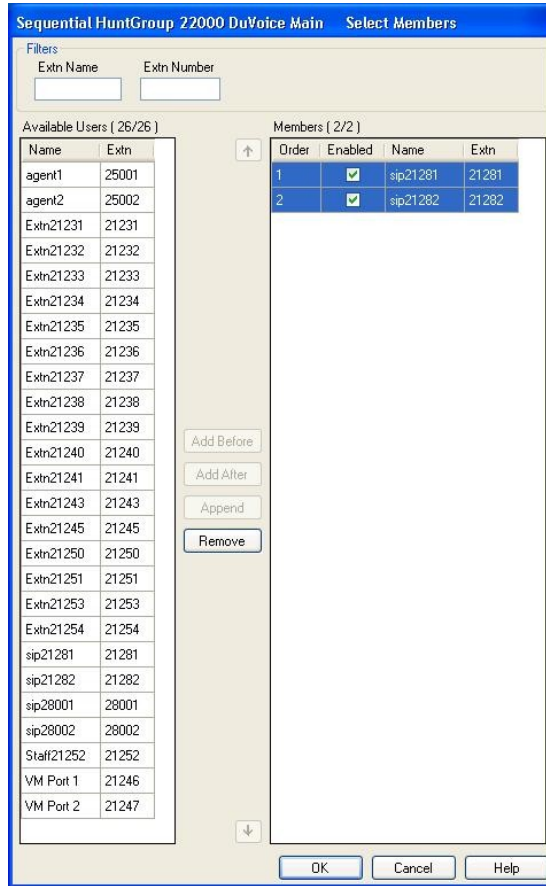
4.6. Administer Hospitality Hunt Group

From the configuration tree in the left pane, right-click on **HuntGroup** and select **New** from the pop-up list to add a new hunt group. This hunt group will be used to deliver calls to DuVoice for the hospitality features. Enter desired values for the **Name** and **Extension** fields, and retain the default values in the remaining fields.

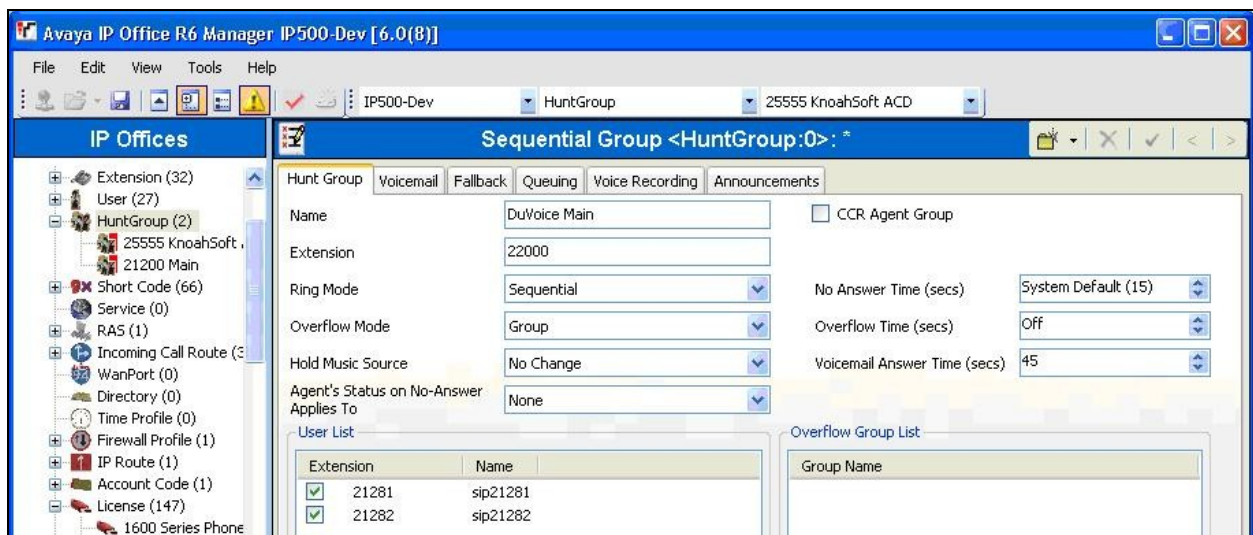
Click on **Edit** in the **User List** section to add members.



The **Select Members** screen is displayed. Select all SIP users from **Section 4.5**, and click the **Append** button to move the selected entries to the right.



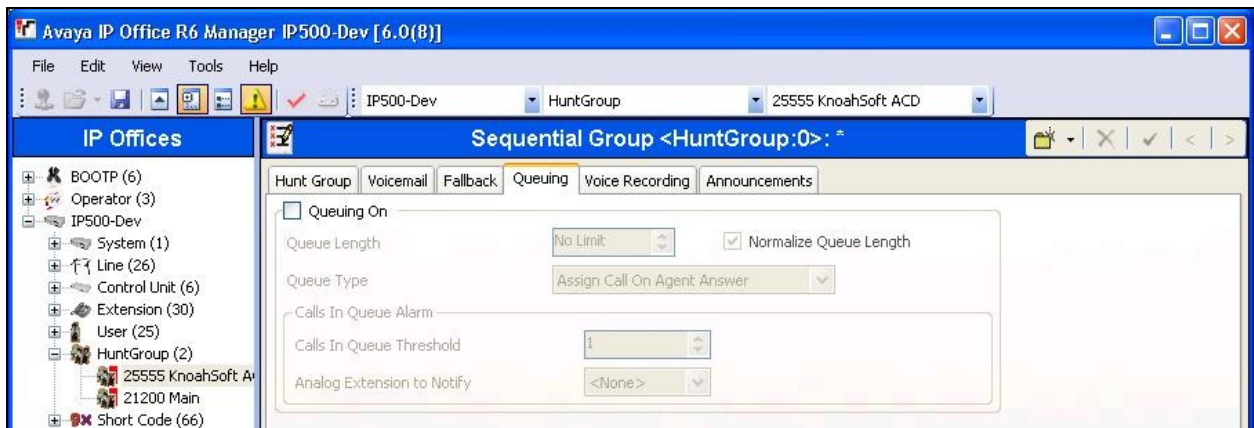
The **Sequential Group** screen is displayed again and updated with the selected members.



Select the **Voicemail** tab, and make sure **Voicemail On** is unchecked, as shown below.



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



4.7. Administer Incoming Call Route

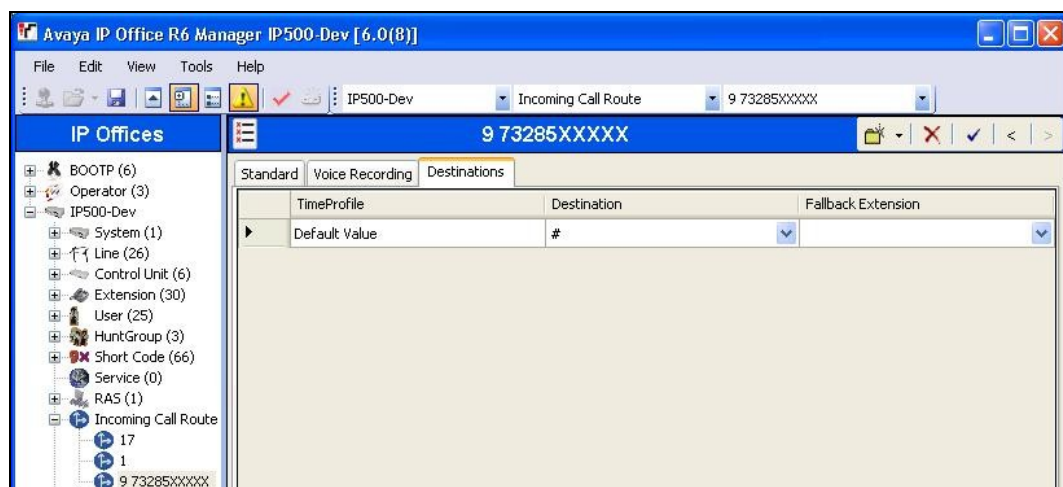
If necessary, create an incoming call route to route incoming calls to the hospitality hunt group. In the compliance testing, the existing incoming call route for the ISDN PRI line can route to any five digit extensions on IP Office.

As shown in the screen below, the **Incoming Number** for the ISDN PRI line “9” is “73285XXXXX”, which uses five single digit wildcards “X” allowing the last five digits to be any number.



In the **Destinations** tab, the use of “#” in the **Destination** field enables the routing to be based on the “XXXXX” from the **Incoming Number** field from above. Therefore, incoming calls to “7328522000” will be routed to the hospitality hunt group configured in **Section 4.6**.

If desired, the hospitality hunt group can be selected from the **Destination** drop-down to route all incoming trunk calls to DuVoice.



4.8. Administer System Voicemail

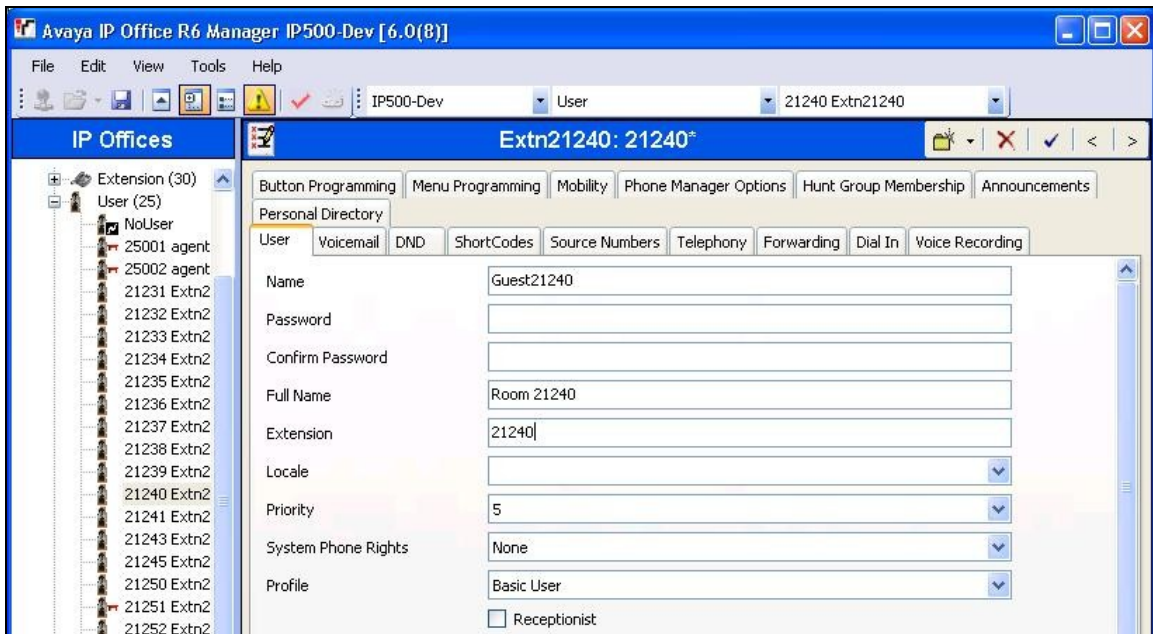
From the configuration tree in the left pane, select **System > IP500-Dev** to display the **IP500-Dev** screen in the right pane. Select the **Voicemail** tab in the right pane.

For **Voicemail Type**, select “Group Voicemail” from the field drop-down list. For **Voicemail Destination**, select the name of the hospitality hunt group from **Section 4.6**.

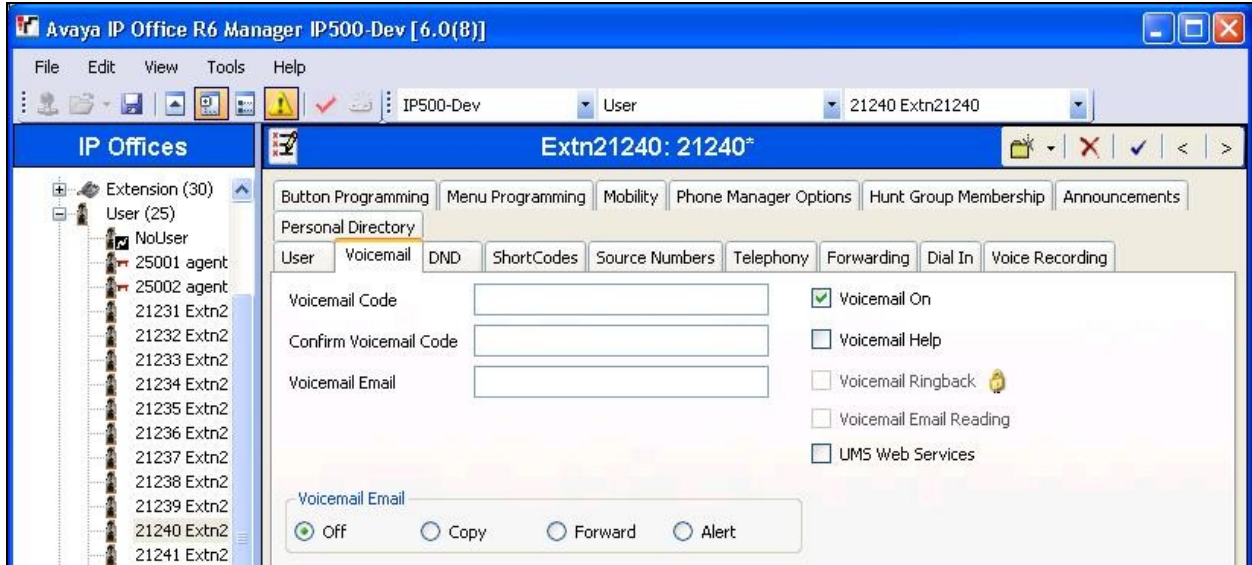


4.9. Administer Voicemail Users

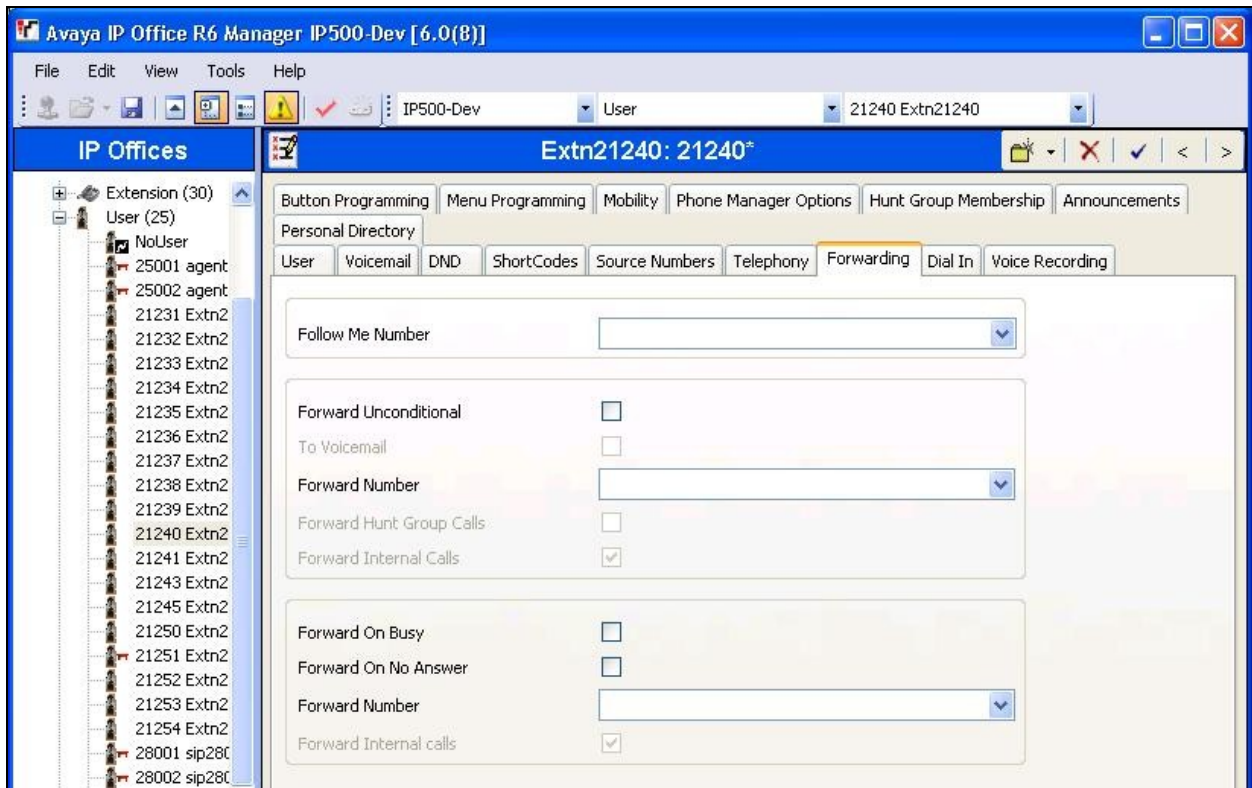
From the configuration tree in the left pane, select the first user that will be using DuVoice for voicemail. In this case, the user is “21240”. Enter a descriptive **Name**.



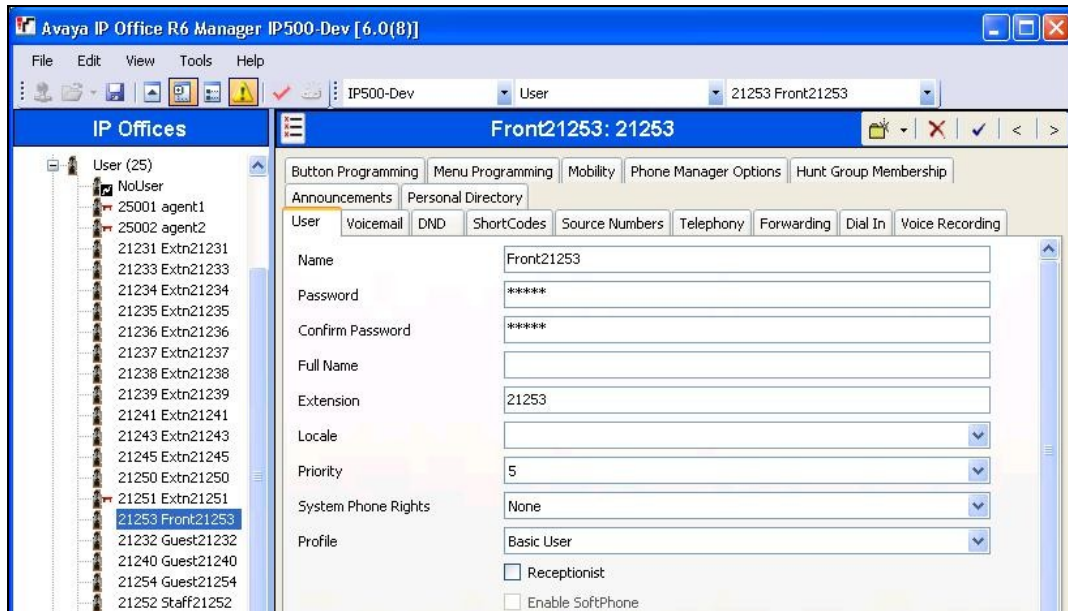
Select the **Voicemail** tab. Check **Voicemail On**, and uncheck **Voicemail Help**, as shown below.



Select the **Forwarding** tab. Uncheck and unselect all fields, as shown below.



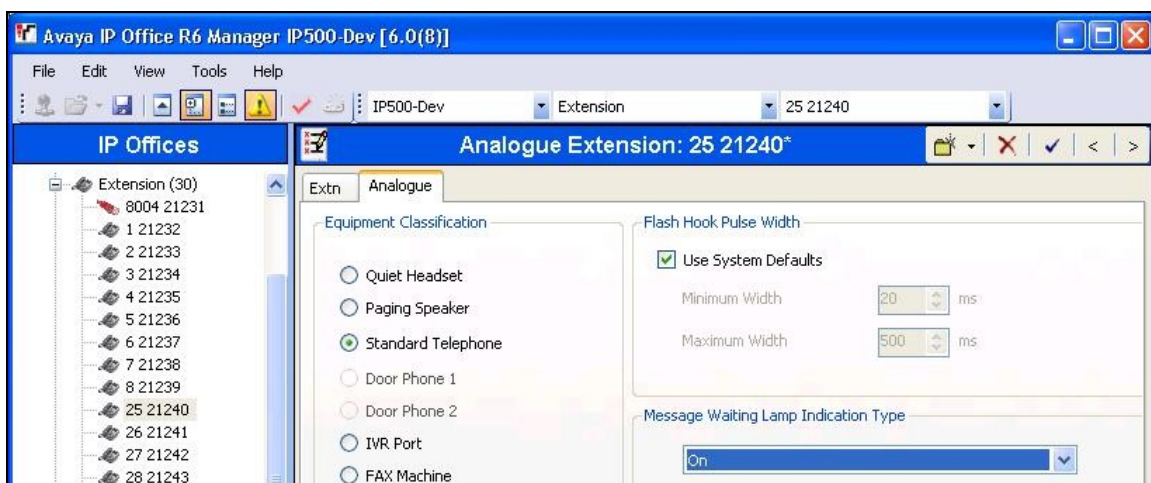
Repeat this section for all users using DuVoice for voicemail, including all guests, front desk, and staff. In the compliance testing, the voicemail users consisted of one front desk with extension “21253”, three guests with extensions “21232, 21240, and 21254”, and one staff with extension “21252”, as shown below in the left pane.



4.10. Administer Analog User MWI

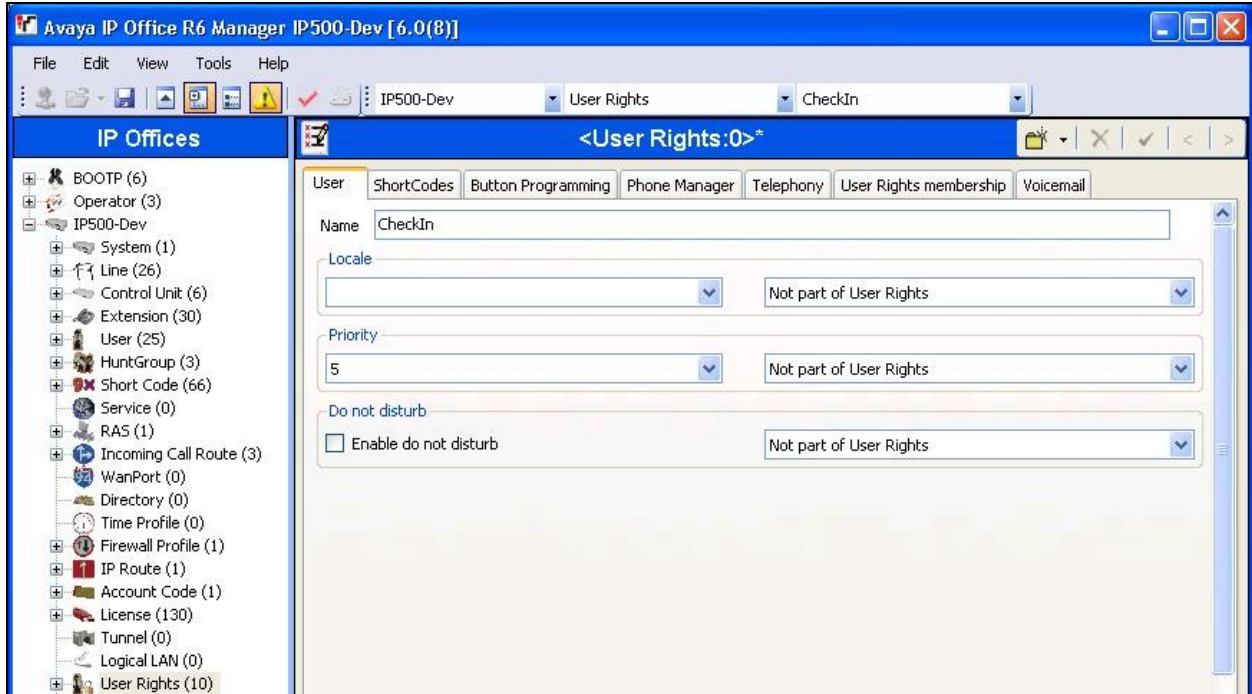
For voicemail users with analog telephones, the MWI setting on the analog extension may need modification, depending on the type of analog telephone. Refer to [2] for details on the specific analog telephone types requiring the MWI setting. In the compliance testing, one guest had an analog telephone type 2500, which required an update to the MWI setting.

From the configuration tree in the left pane, select **Extension**, followed by the extension corresponding to the analog user. In this case, the extension is “21240”. In the **Message Waiting Lamp Indication Type** section, select “On” from the drop-down list, as shown below.

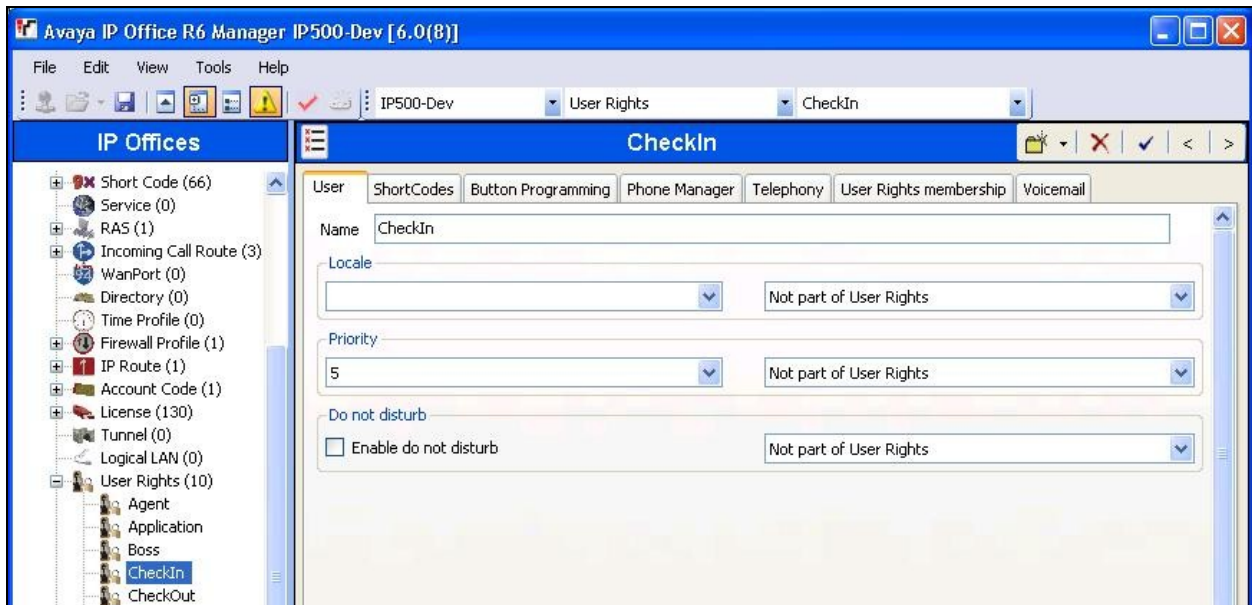


4.11. Administer User Rights

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.



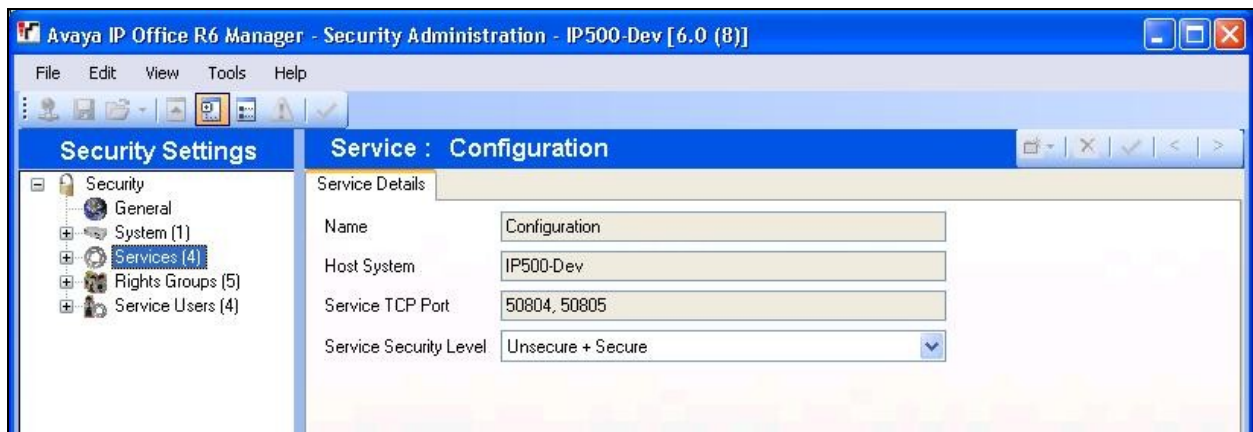
Repeat this section to create the desired number of user rights templates for guests in various states. In the compliance testing, two user rights templates with names of “CheckIn” and “CheckOut” were created, as shown below in the left pane.



4.12. Administer Security Service

From the **Avaya IP Office R6 Manager** screen, select **File > Advanced > Security Settings** from the top menu. Select the proper IP Office system, and log in with the appropriate security user credentials.

The **Avaya IP Office R6 Manager – Security Administration** screen is displayed. From the configuration tree in the left pane, select **Security > Services** to display the **Service : Configuration** screen in the right pane. For **Service Security Level**, select “Unsecure + Secure” as shown below. The additional “Secure” level is needed for the Configuration Web Service interface.



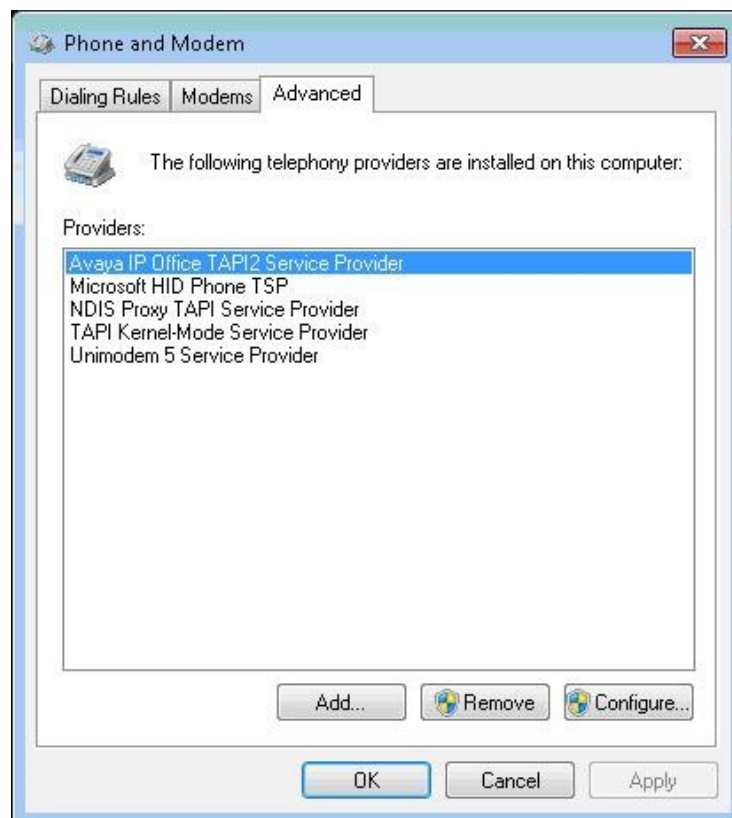
5. Configure DuVoice

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

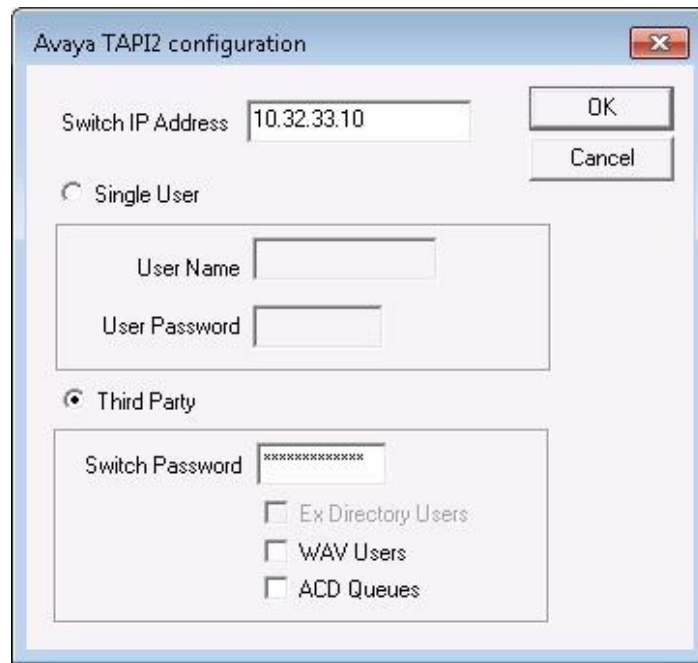
- Administer TAPI driver
- Shutdown server
- Administer setup wizard
- Administer TAPI integration
- Administer connectors
- Administer hospitality
- Administer mailboxes
- Startup server

5.1. Administer TAPI Driver

From the DuVoice server, select **Start > Control Panel**, and click on the **Phone and Modem** icon (not shown below). In the **Phone and Modem** screen, select the **Advanced** tab. Select the **Avaya IP Office TAPI2 Service Provider** entry, and click **Configure**.

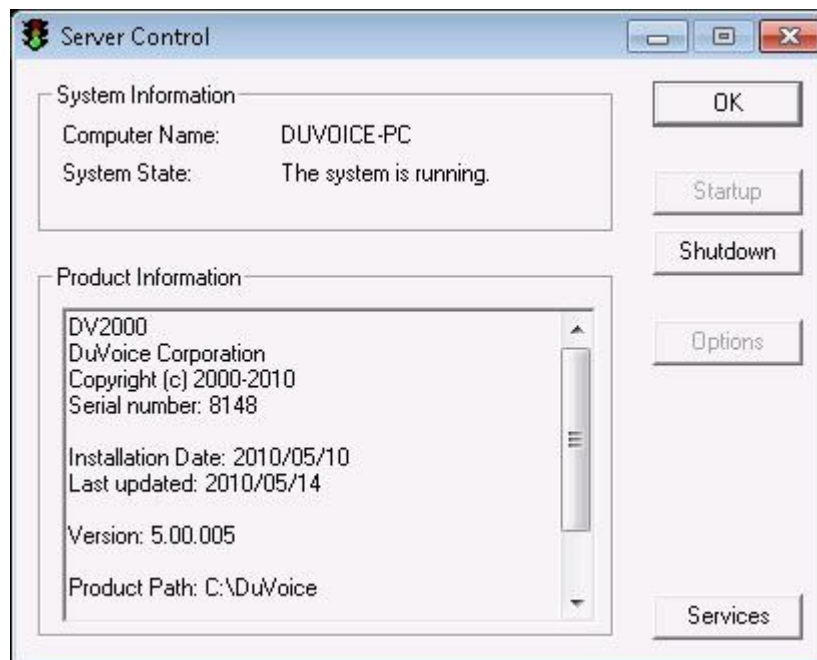


The **Avaya TAPI2 configuration** screen is displayed. For **Switch IP Address**, enter the IP address of Avaya IP Office. Select the radio button for **Third Party**, and enter the IP Office password into the **Switch Password** field. Reboot the DuVoice server.



5.2. Shutdown Server

From the DuVoice server, select **Start > All Programs > DuVoice > Server Control**. The **Server Control** screen is displayed. Select **Shutdown** to stop the server, in order to make subsequent configuration changes.

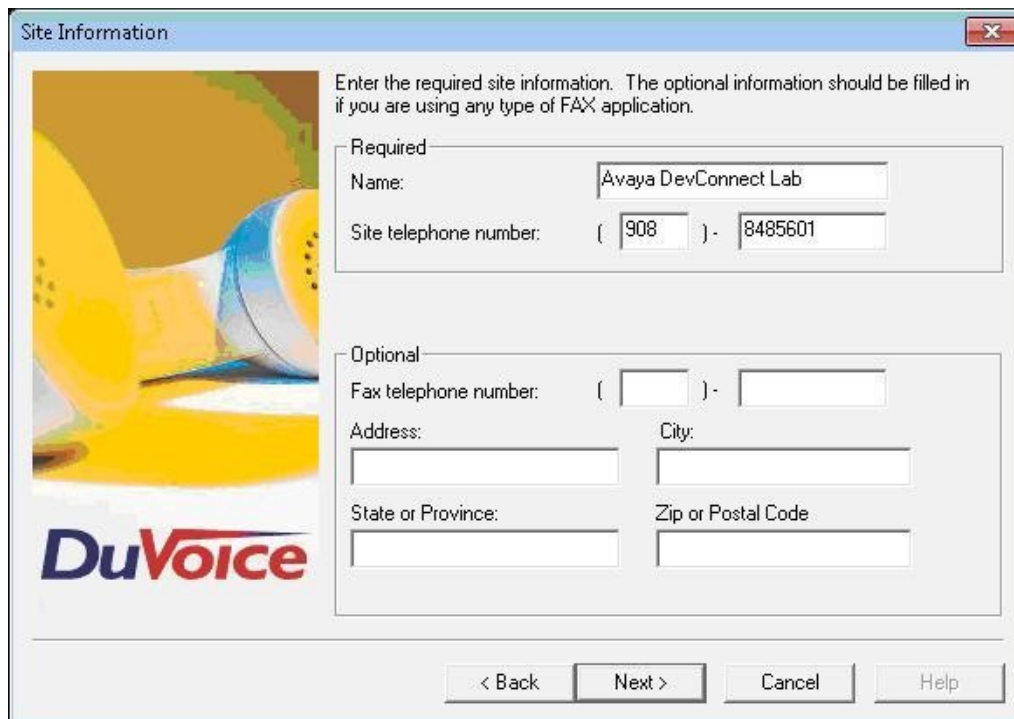


5.3. Administer Setup Wizard

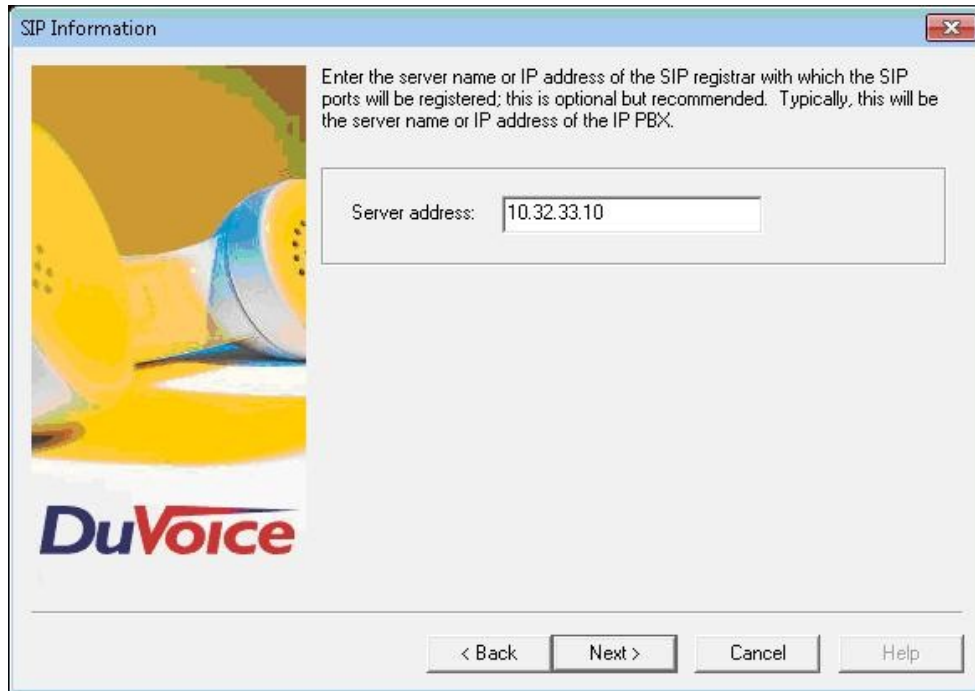
From the DuVoice server, select **Start > All Programs > DuVoice > System Configuration**. The **Wizard Start** screen is displayed upon initial access. Click **Next**.



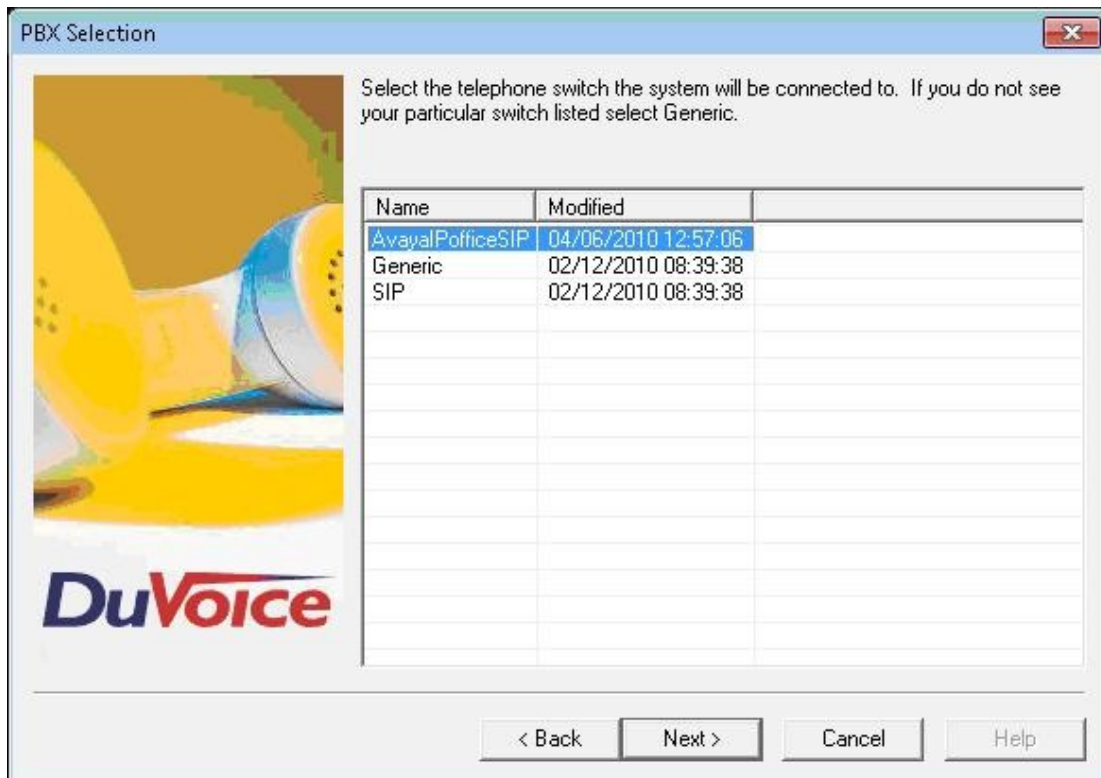
The **Site Information** screen is displayed next. Enter desired values for **Name** and **Site telephone number**, and click **Next**.



The **SIP Information** screen is displayed. For **Server address**, enter the IP address of Avaya IP Office, and click **Next**.

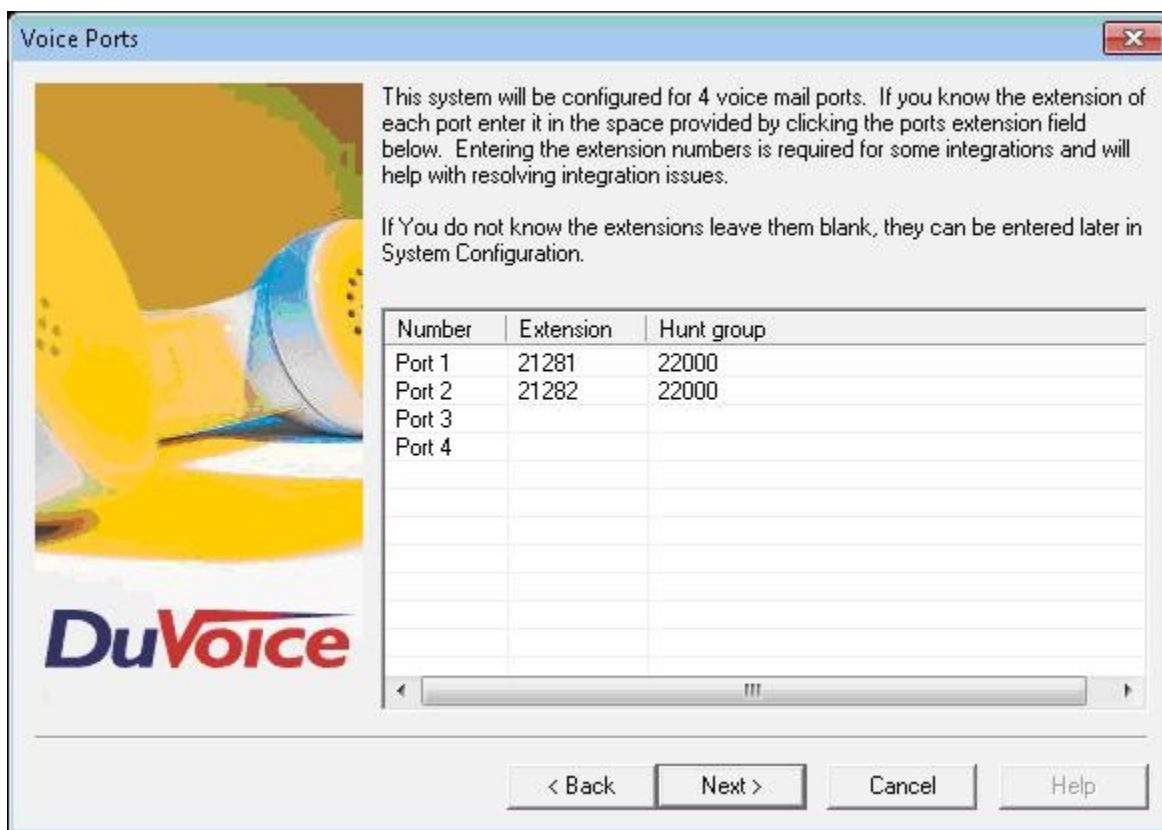


The **PBX Selection** screen is displayed. Select the **AvayaIPOfficeSIP** entry, and click **Next**.



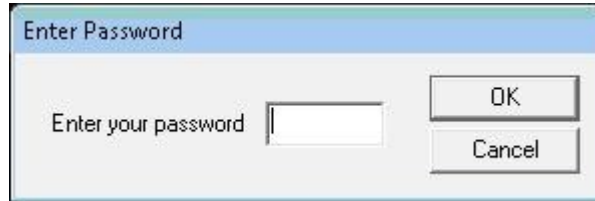
The **Voice Ports** screen is displayed. Assign each SIP base extension from **Section 4.4** to an available **Port**, and enter the hunt group extension from **Section 4.6**, as shown below. In the compliance testing, two DuVoice ports were configured to correspond to the two SIP extensions created on Avaya IP Office.

Click **Next**, followed by **Finish** in the subsequent screen to complete the wizard.

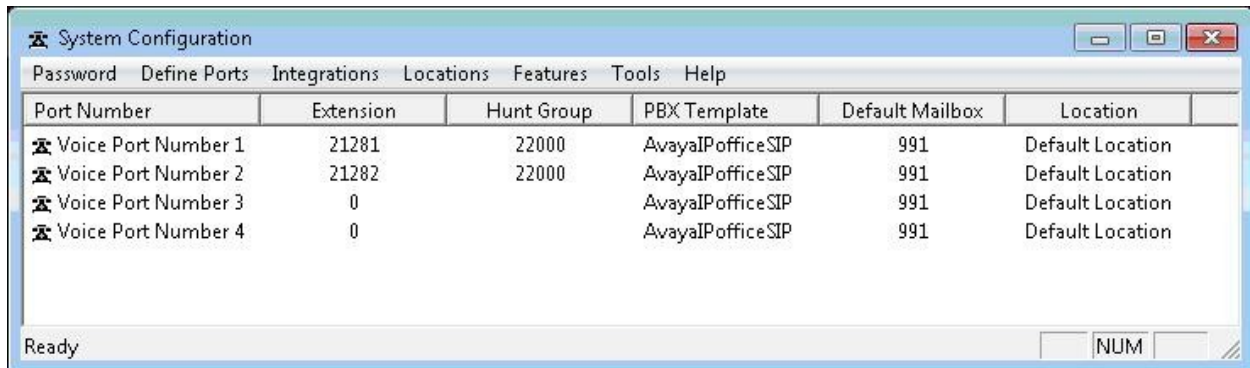


5.4. Administer TAPI Integration

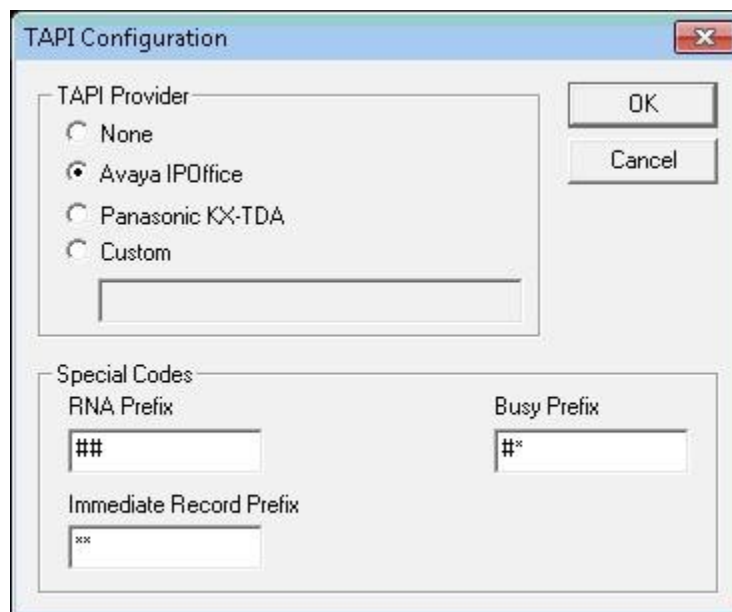
From the DuVoice server, select **Start > All Programs > DuVoice > System Configuration**. The **Enter Password** screen is displayed. Enter the appropriate password.



The **System Configuration** screen is displayed next. Select **Integrations > TAPI Integration** from the top menu.

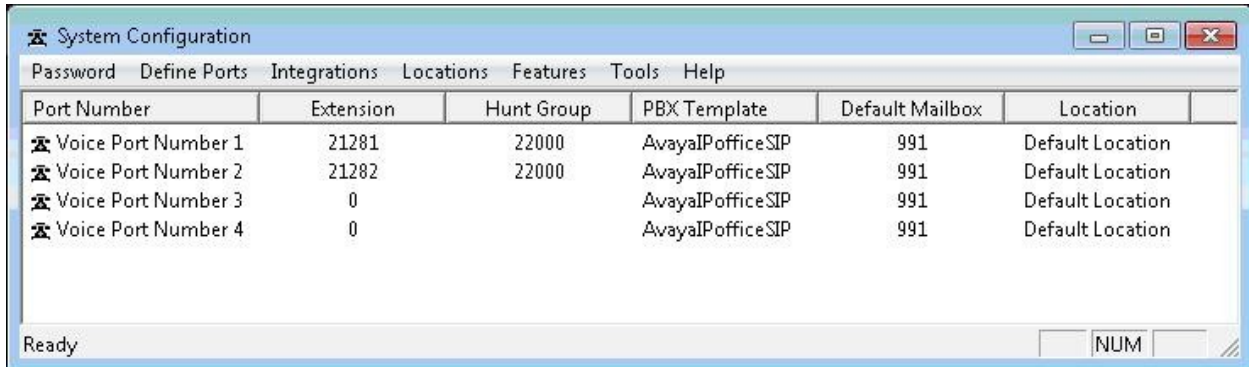


The **TAPI Configuration** screen is displayed. For **TAPI Provider**, select **Avaya IPOffice**. Retain the default values in the remaining fields.



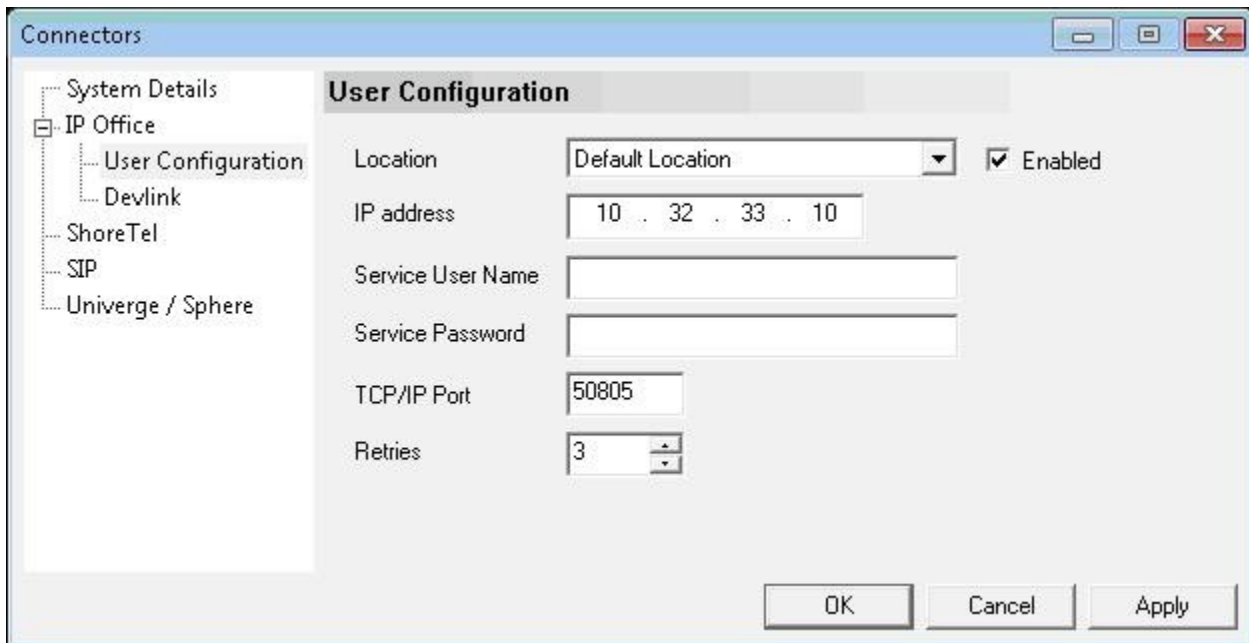
5.5. Administer Connectors

The **System Configuration** screen is displayed again. Select **Features > Connectors** from the top menu.



The **Connectors** screen is displayed. Select **IP Office > User Configuration** from the left pane, to display the **User Configuration** screen in the right pane. For **IP address**, enter the IP address of Avaya IP Office. Enter the appropriate Avaya IP Office credentials for **Service User Name** and **Service Password**. Retain the default values in the remaining fields.

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



5.6. Administer Hospitality

From the **System Configuration** screen shown in **Section 5.5**, 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.

Hospitality Configuration

General
Language
Maid Codes
Phone Control
PMS

Maid Codes

Valid codes:

PMS 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	

PMS Digit: Digit sent to the PMS to signify a specific room clean status. Maid can dial the code only if the box is checked.

Display Text: The text to use whenever the system displays the room clean status. Leave blank if not used.

Reset: Load the default display text for the active PMS protocol.

Current settings:

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 4.11**. Note that the **PBX Value** must match the user rights template name in **Section 4.11**. Enter desired names for **Display Text**. In the compliance testing, two entries were created to match the two user rights template in **Section 4.11**. Click **Apply**.

After clicking **Apply**, then 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.

Phone Control

PBX
Type: Avaya IP Office

Call accounting
Type: --none--
Enabled: --no change--
Disabled: --no change--

Auto-set phone state on
 Check-in: Check In
 Check-out: Check 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.

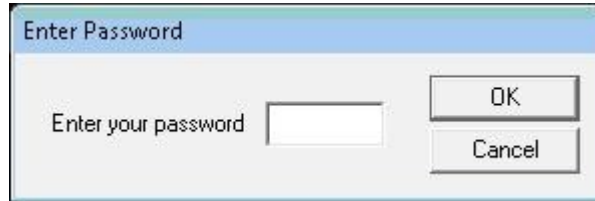
Display Text	PBX Value	PMS Value
Check In	CheckIn	
Check Out	CheckOut	

Active PMS: DuVoice IVMP (DUVOICEIVMP)

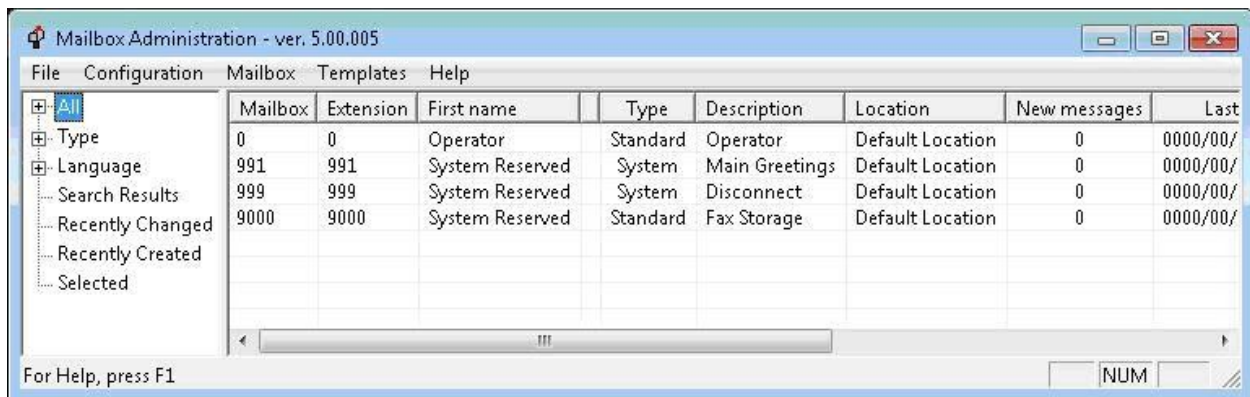
OK Cancel Apply

5.7. Administer Mailboxes

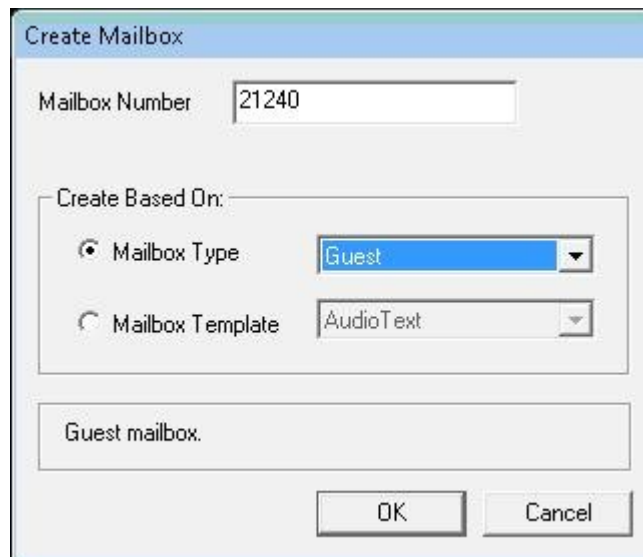
From the DuVoice server, select **Start > All Programs > DuVoice > Mailbox Administration**. The **Enter Password** screen is displayed. Enter the appropriate password.



The **Mailbox Administration** screen is displayed. Select **Mailbox > Create** from the top menu.



The **Create Mailbox** screen is displayed next. For **Mailbox Number**, enter the first voicemail user extension from **Section 4.9**, in this case "21240". For **Mailbox Type**, select "Guest" for guest users, and "Standard" for front desk and staff users.



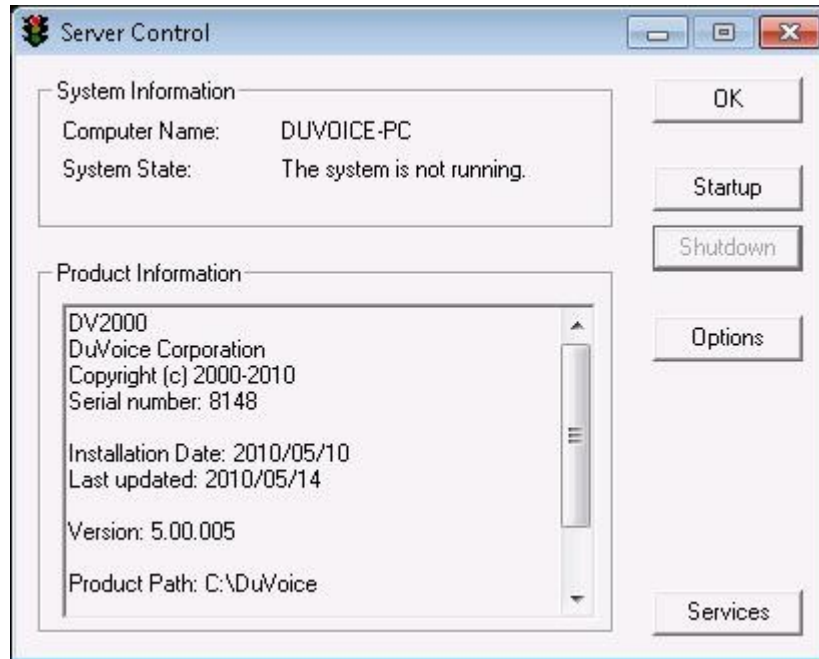
The **Create Mailbox 21240** screen is displayed next. Enter desired values for **Password**, **First Name**, and **Last Name**, and retain the default values in the remaining fields.

Repeat this section for all voicemail users from **Section 4.9**, as shown below.

Mailbox	Extension	First name	Type	Description	Location	New messages	Last
0	0	Operator	Standard	Operator	Default Location	0	0000/00/
991	991	System Reserved	System	Main Greetings	Default Location	0	0000/00/
999	999	System Reserved	System	Disconnect	Default Location	0	0000/00/
9000	9000	System Reserved	Standard	Fax Storage	Default Location	0	0000/00/
21232	21232	Guest21232	C Guest		Default Location	0	0000/00/
21240	21240	Guest21240	C Guest		Default Location	0	0000/00/
21252	21252	Staff21252	C Standard		Default Location	0	0000/00/
21253	21253	Front21253	C Standard		Default Location	0	0000/00/
21254	21254	Guest21254	C Guest		Default Location	0	0000/00/

5.8. Startup Server

From the DuVoice server, select **Start > All Programs > DuVoice > Server Control**. The **Server Control** screen is displayed. Select **Startup** to start the server.



6. 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 PMS simulator was used to manually send check-in and check-out requests to DuVoice, and the DuVoice InnDesk was used to monitor the guest check-in, check-out, and wake-up call status.

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

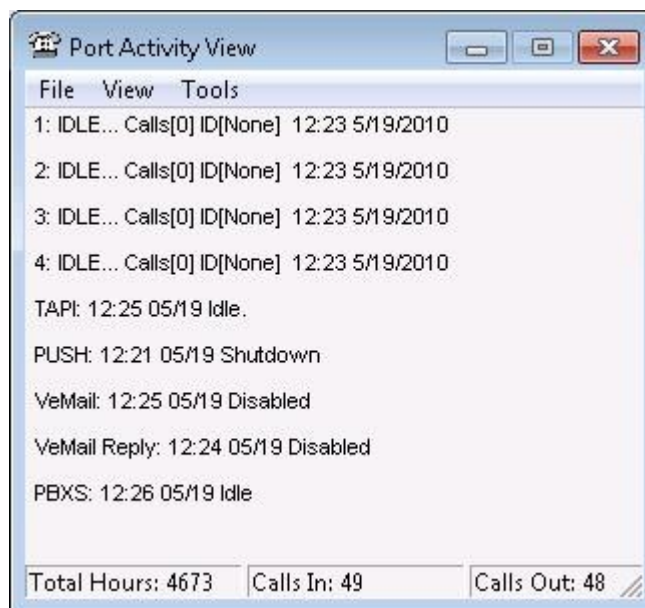
All test cases were executed and passed.

7. Verification Steps

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

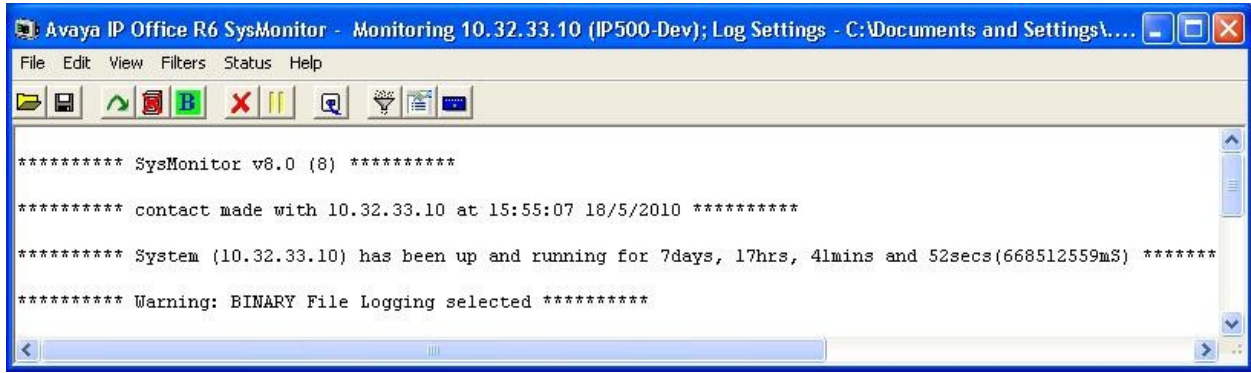
7.1. Verify DuVoice Port Activity

From the DuVoice server, select **Start > All Programs > DuVoice > Port Activity**. The **Port Activity View** screen is displayed. Verify that ports **1-4, TAPI, and PBXS** are all in the idle state, as shown below.

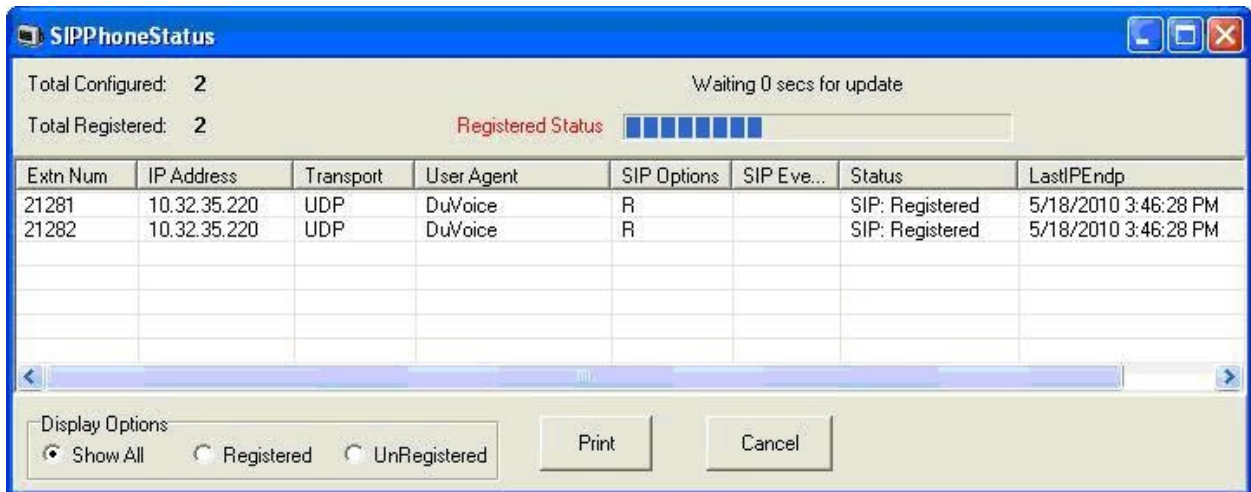


7.2. Verify SIP User Integration

From a PC running the Avaya IP Office Monitor application, select **Start > Programs > IP Office > Monitor** to launch the application. The **Avaya IP Office R6 SysMonitor** screen is displayed, as shown below. 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 4.4**, and that the **User Agent** is “DuVoice”, and the **Status** is “SIP: Registered”, as shown below.



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 TAPI Integration

Place an incoming call from the PSTN to the hospitality hunt group, and leave a voice message for a guest user. Verify that the MWI is turned on for the guest user.

Place a call from the guest user to the hospitality hunt group. Verify that DuVoice recognizes the calling party as a voicemail user. Verify that the voice message can be retrieved, and that the MWI is turned off.

7.4. Verify Configuration Web Service Integration

Use the PMS simulator to perform a guest check-in request. Verify that the guest name and user right template is updated automatically on Avaya IP Office as part of the check-in process.

8. Conclusion

These Application Notes describe the configuration steps required for DuVoice 5.0 to successfully interoperate with Avaya IP Office. All feature and serviceability test cases were completed.

9. Additional References

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

1. *IP Office 6.0 Documentation CD*, February 2010, available at <http://support.avaya.com>.
2. *System Reference Guide*, 3rd Edition, Version 5.00.005, May 2010, available on the DuVoice server as part of the installation.

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