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Avaya Solution & Interoperability Test Lab

Application Notes for DuVoice with Avaya IP Office 8.1 – Issue 1.1

Abstract

These Application Notes describe the configuration steps required for the DuVoice hospitality messaging system to interoperate with Avaya IP Office 8.1. In the compliance testing, DuVoice used the SIP User, TAPI, DevLink, 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, room clean status, and 911 alerting 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 hospitality messaging system to interoperate with Avaya IP Office 8.1. In the compliance testing, DuVoice used the SIP User, TAPI, DevLink, 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, room clean status, and 911 alerting 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. 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. 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) application called InnDesk with a web-based interface. In the compliance testing, InnDesk was running on the DuVoice server and used for initiation of hospitality requests such as check-in and check-out. 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.

The DevLink interface was used by DuVoice to send 911 alerting messages. Upon being notified of any user dialing "911" on Avaya IP Office, DuVoice sends a 911 alerting voice message to the mailbox of a predetermined list of staff users.

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 analog, 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 TAPI to set MWI and do not disturb for guests.

- Use of Configuration Web Services to update guest name and user rights template associated with check-in, check-out, and move requests from InnDesk.

- Use of real-time DevLink events to monitor "911" dialing, and sending of 911 alerting voice message to a staff user. The 911 alerting voice message included the name and extension of the user making the "911" call.

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.

The one observation on DuVoice from the compliance testing was that when the DNS server setting for the network card on the DuVoice server is left blank, then calls connected to the first couple of DuVoice ports will not have audio. The workaround is to always configure the DNS server setting on the network card, followed by a server reboot.

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 configuration used for the compliance testing is shown below.
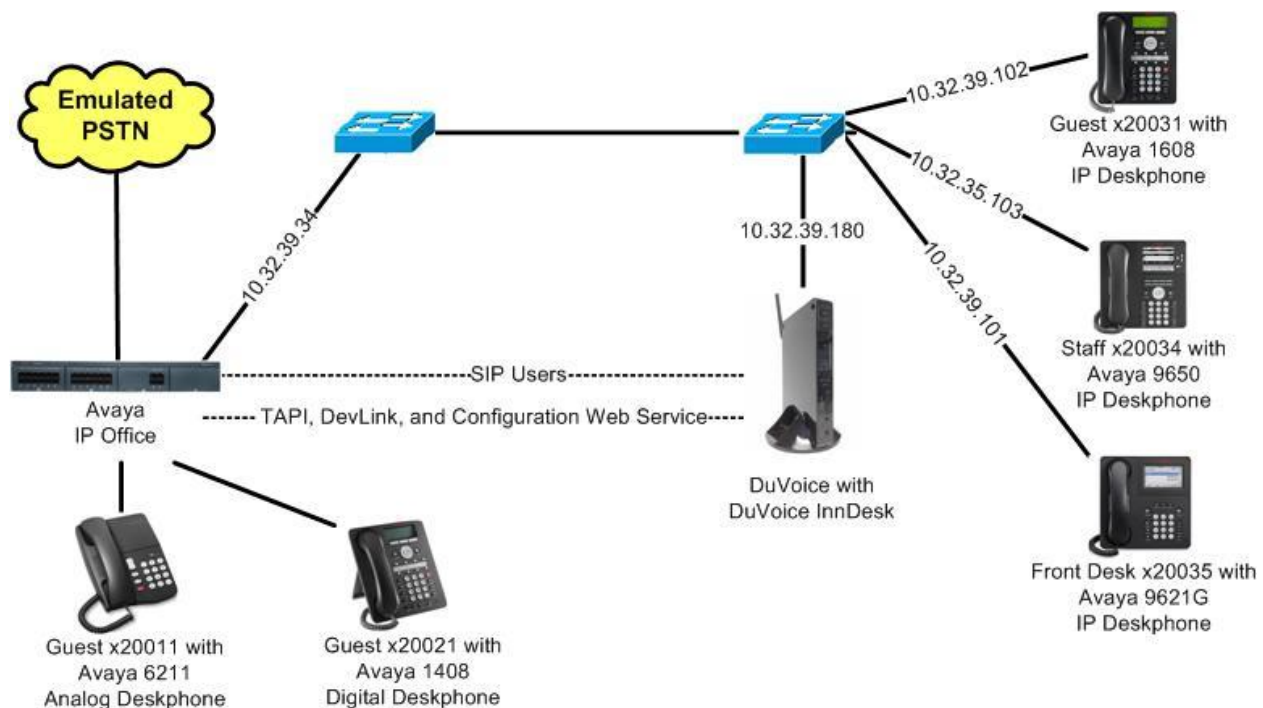
Figure 1: Compliance Testing Configuration

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	8.1 (52)
Avaya 1608 IP Deskphone (H.323)	1.302S
Avaya 9650 IP Deskphone (H.323)	3.104S
Avaya 9621G IP Deskphone (H.323)	6.2209
Avaya 1408 Digital Deskphone	NA
Avaya 6211 Analog Deskphone	NA
DuVoice on Microsoft Windows 7 Professional • InnDesk • Avaya TAPI (tspi2w.tsp) • Avaya DevLink (devlink.dll)	5.11.010 SP 1 1.49 1.0.0.37 1.0.0.5

Testing was performed with IP Office 500 V2 R8.1. Testing does not apply to an IP Office Server Edition, as it does not support TAPI Wave or Group Voicemail.

5. Configure Avaya IP Office

This section provides the procedures for configuring 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 user rights
- Administer security service

5.1. Verify IP Office License

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

The **Avaya IP Office R8.1 Manager** screen is displayed. From the configuration tree in the left pane, select **License → 3rd Party IP Endpoints** to display the **3rd Party IP Endpoints** 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".
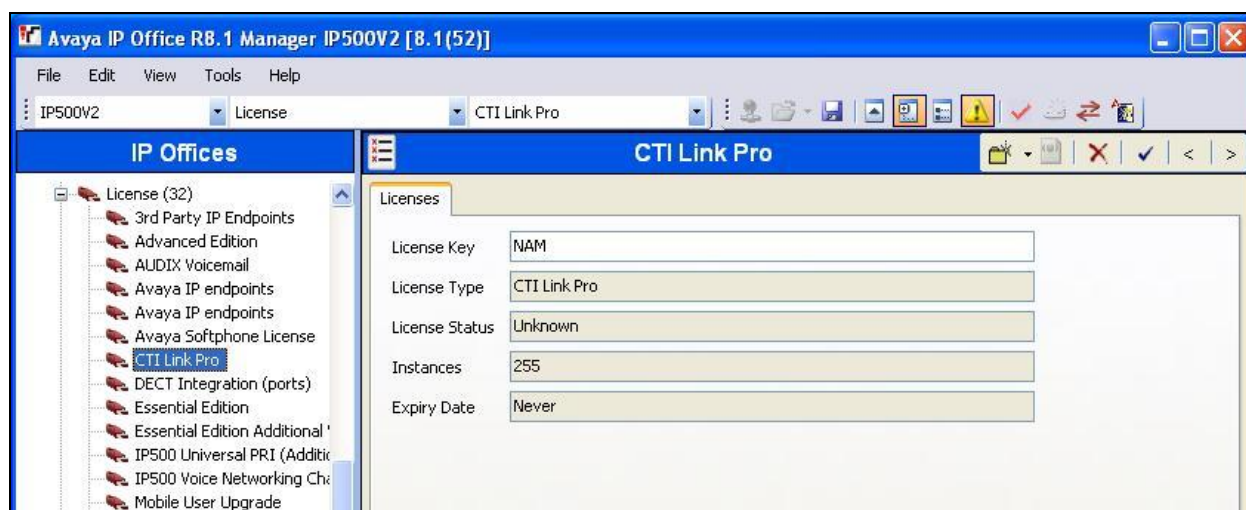
5.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **IP500V2** screen in the right pane, where **IP500V2** 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.
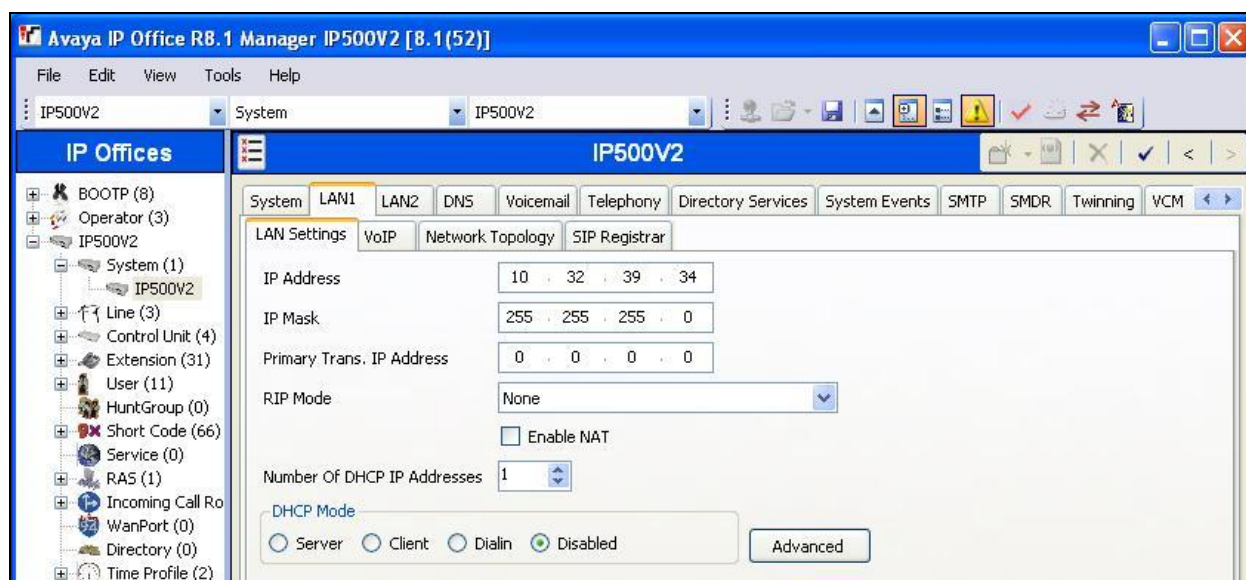
5.3. Administer SIP Registrar

Select the **VoIP** sub-tab. Make certain that **SIP Registrar Enable** is checked, as shown below.
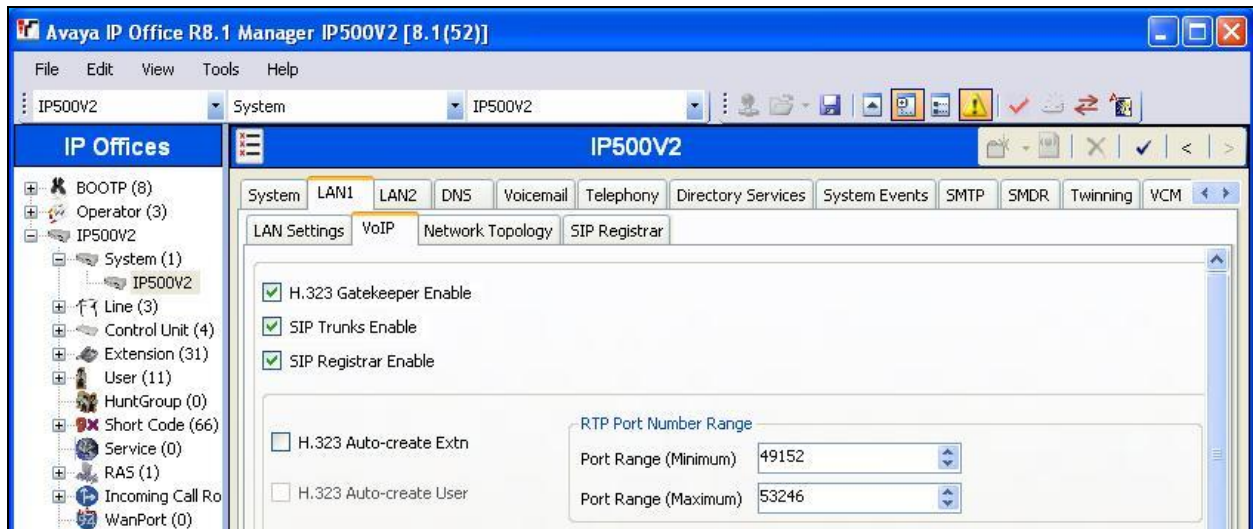
Select the **SIP Registrar** sub-tab, and enter a valid **Domain Name** for SIP endpoints to use for registration with IP Office. In the compliance testing, the **Domain Name** was left blank, so the LAN IP address was used for registration.
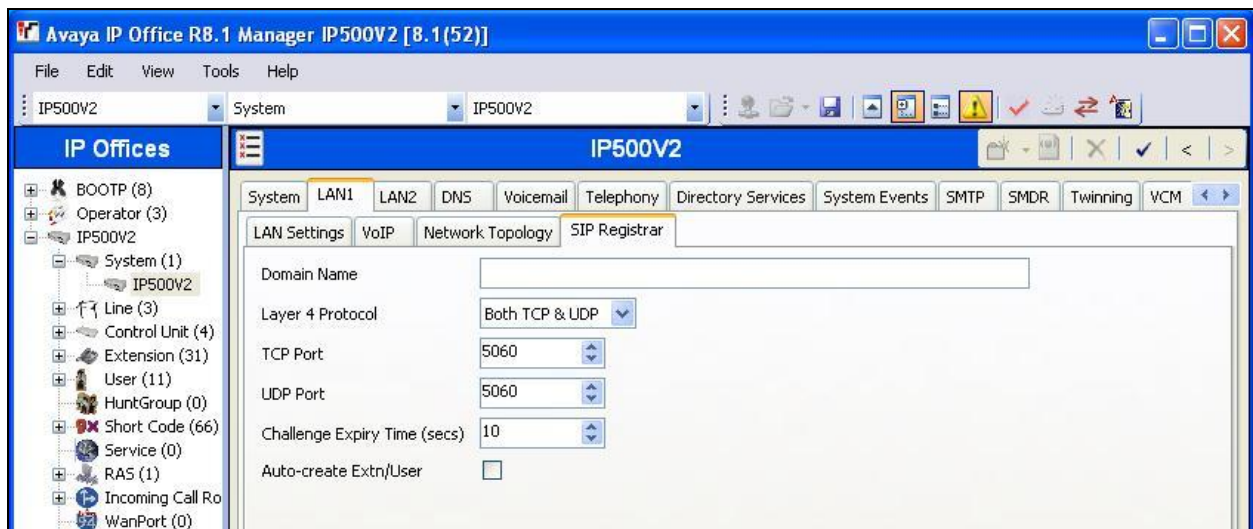
5.4. Administer SIP Extensions

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 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, two SIP extensions with base extensions of "29001" and "29002" were created.
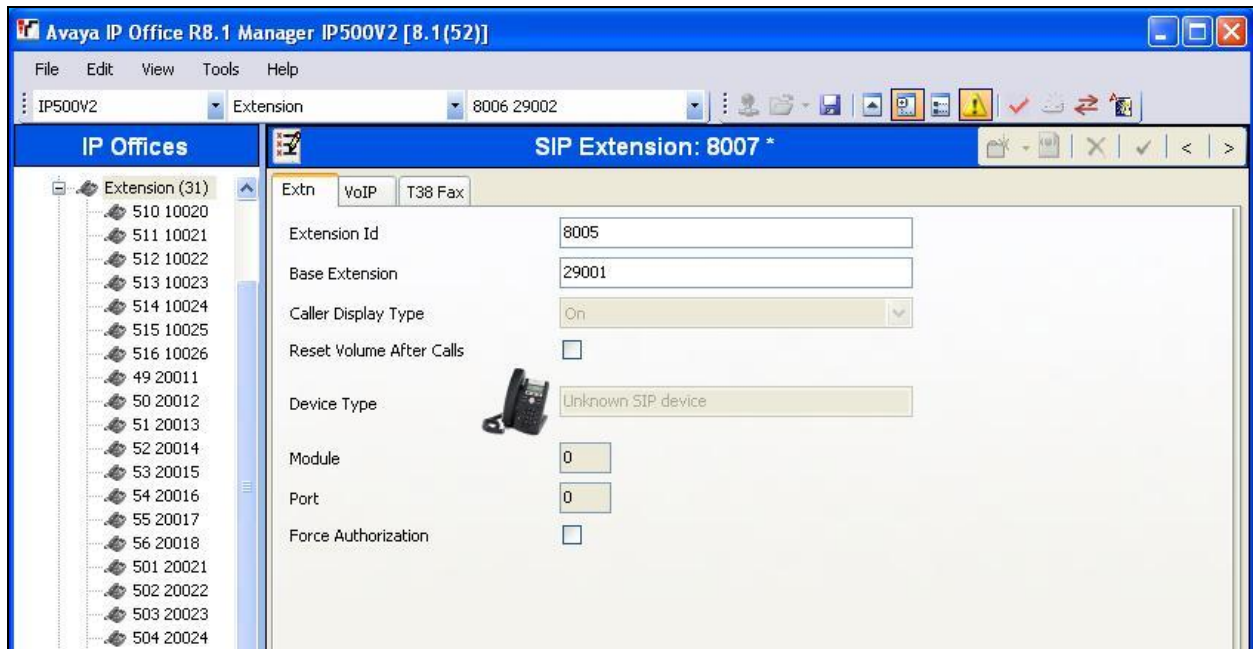
5.5. Administer SIP Users

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**. For **Extension**, enter the first SIP base extension from **Section 5.4**. 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.
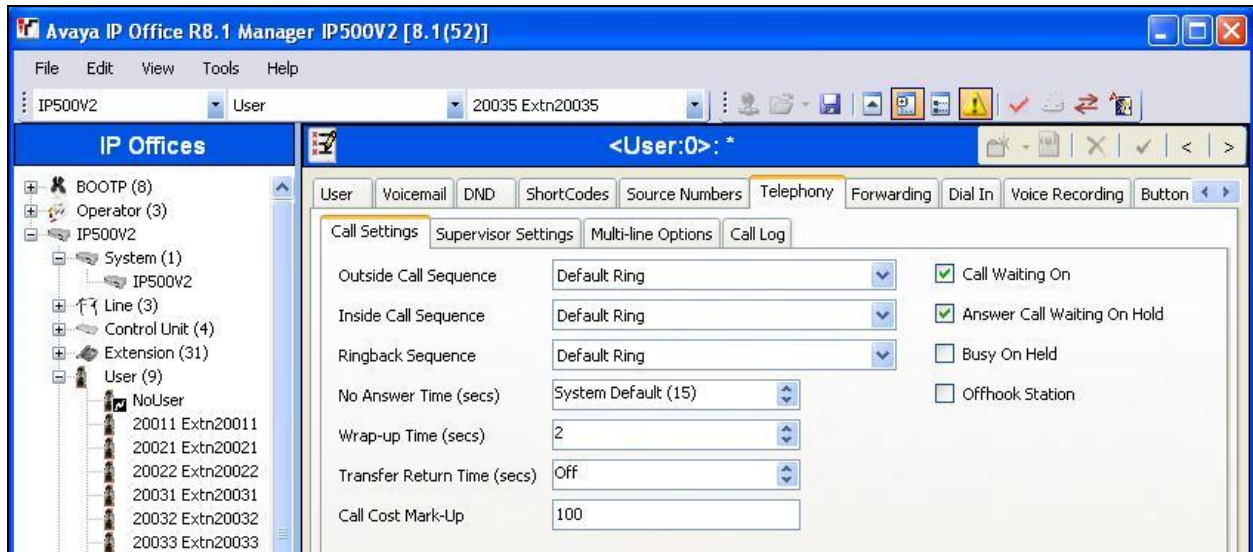
Select the **Supervisor Settings** sub-tab. Check the **Cannot be Intruded** field, as shown below. Retain the default values in the remaining fields.
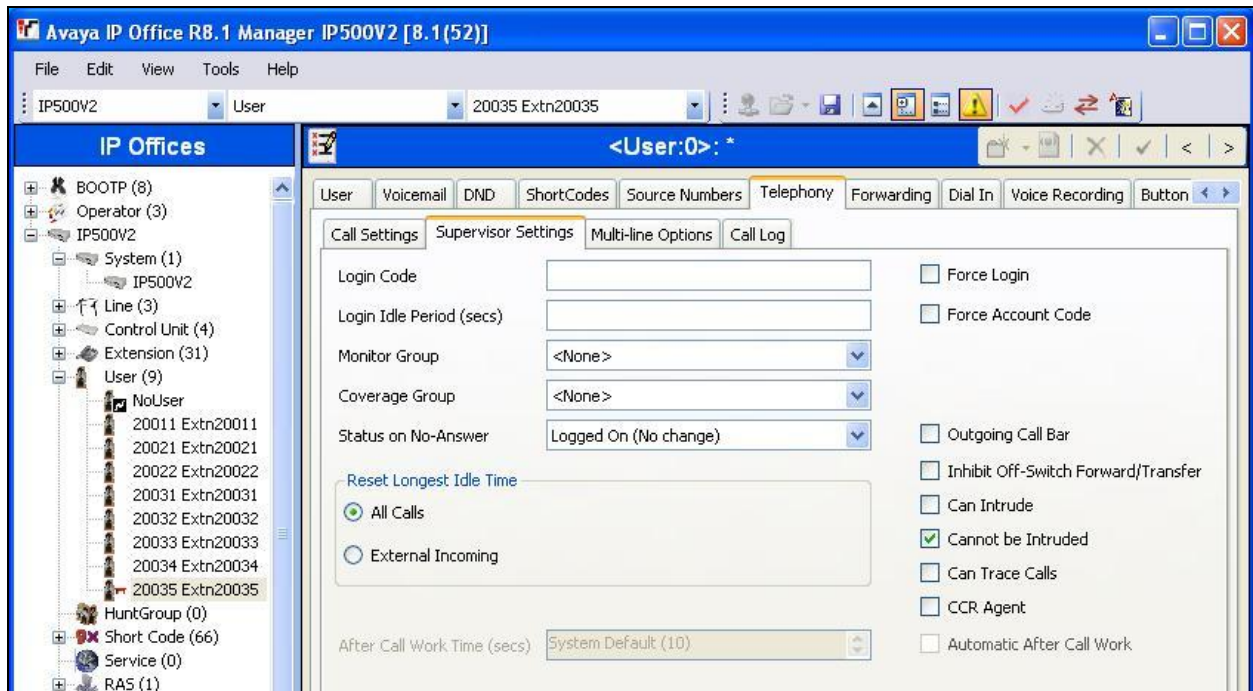
Select the **Button Programming** tab. Retain only the first **Appearance** button and remove all others as shown below.

Repeat this section to add a new user for each SIP extension from **Section 5.4**. In the compliance testing, two users with names of "sip29001" and "sip29002" were created.
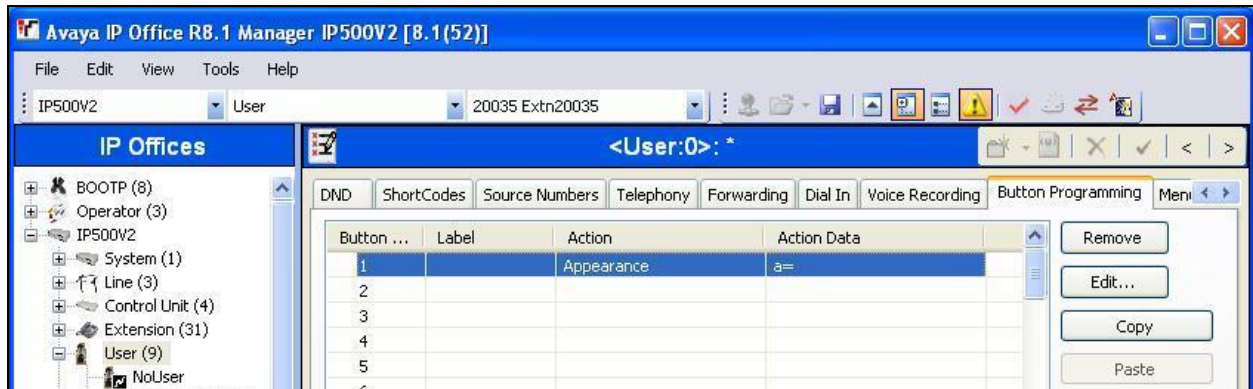
5.6. Administer Hospitality Hunt Group

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 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.
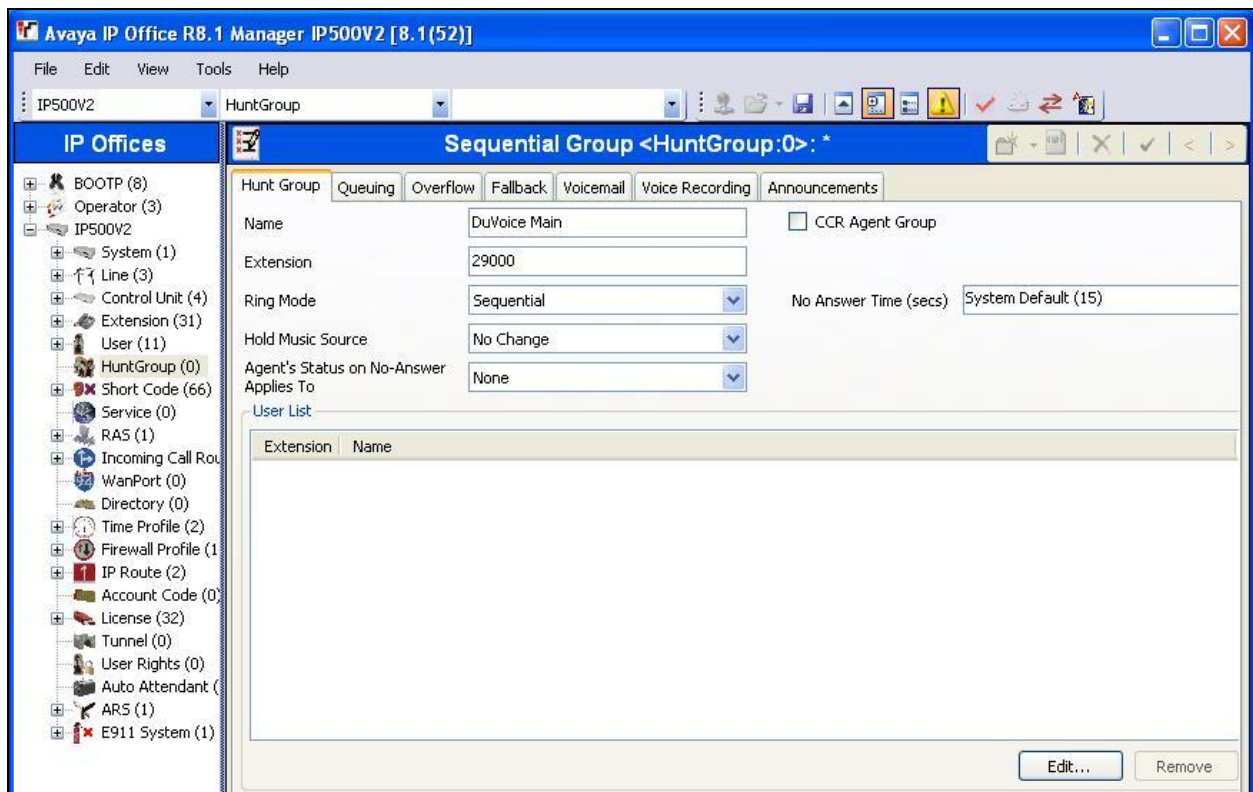
The **Sequential HuntGroup** screen is displayed. Select all SIP users from **Section 5.5**, and click the **Append** button to move the selected entries to the right.

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

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

Select the **Queuing** tab, and uncheck **Queuing On**, as shown below.
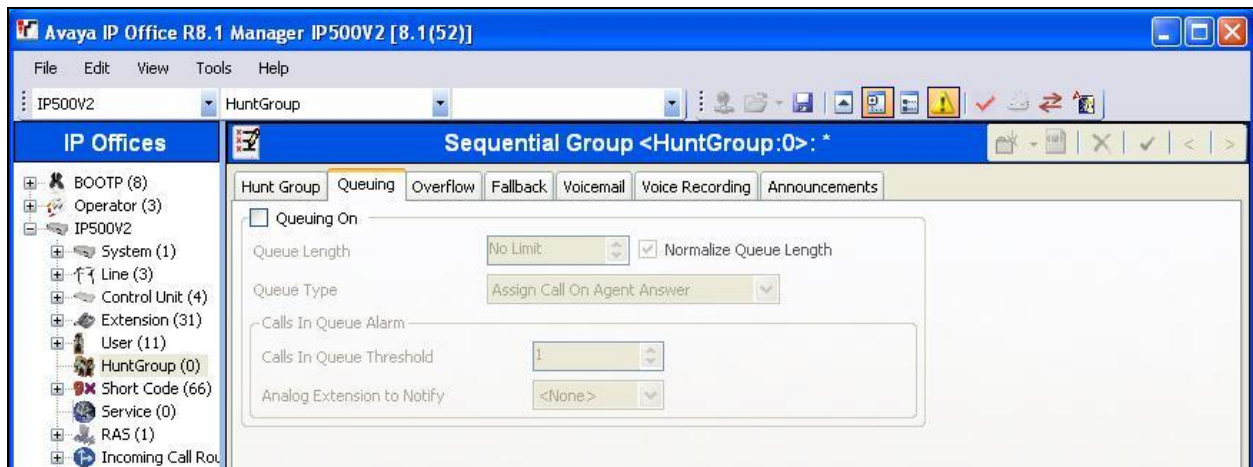
5.7. Administer Incoming Call Route

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.
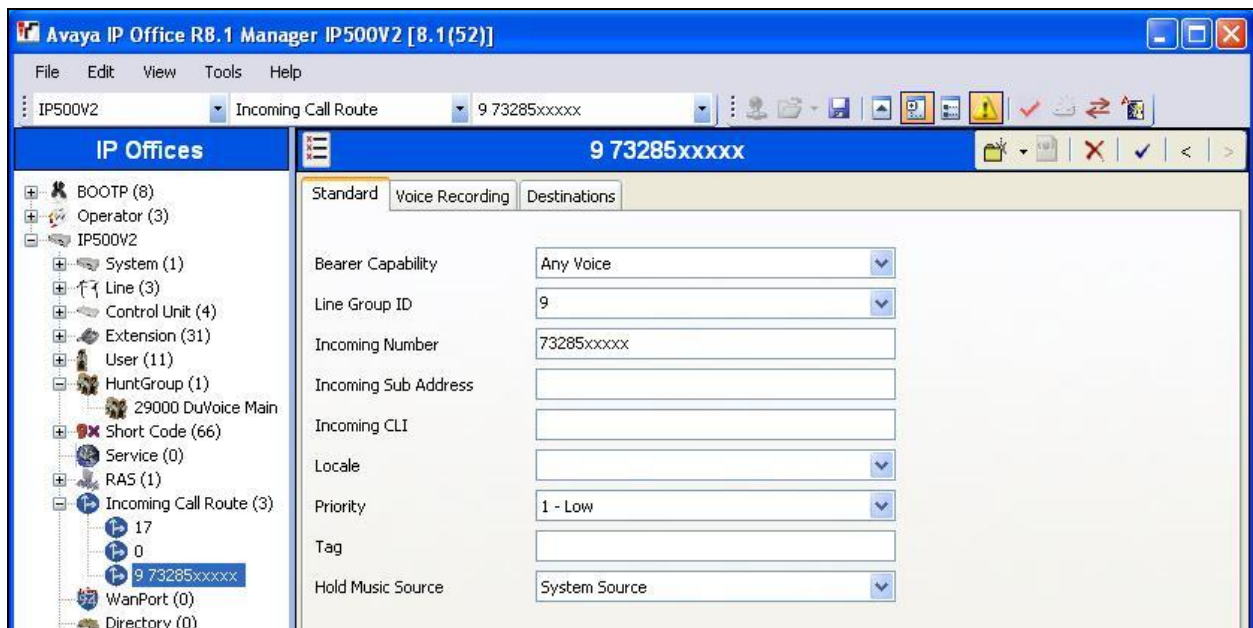
In the **Destinations** tab, the use of "#" in the **Destination** field enables the routing to be based on the "xxxxx" from the **Incoming Number** field from above. Therefore, incoming calls to "7328529000" will be routed to the hospitality hunt group configured in **Section 5.6**.

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

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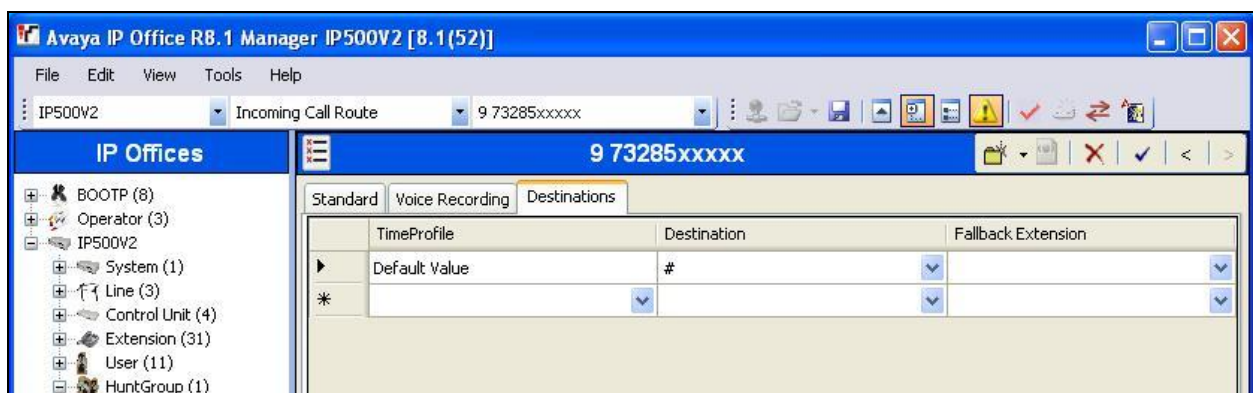
5.8. Administer System Voicemail

From the configuration tree in the left pane, select **System → IP500V2** to display the **IP500V2** screen in the right pane. Select the **Voicemail** tab in the right pane.

Uncheck **Messages Button Goes To Visual Voice**. For **Voicemail Type**, select "Group Voicemail". For **Voicemail Destination**, select the name of the hospitality hunt group from **Section 5.6**, as shown below.

5.9. 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 "20011". Enter desired **Name** and **Full Name**. Retain the default values in the remaining fields.

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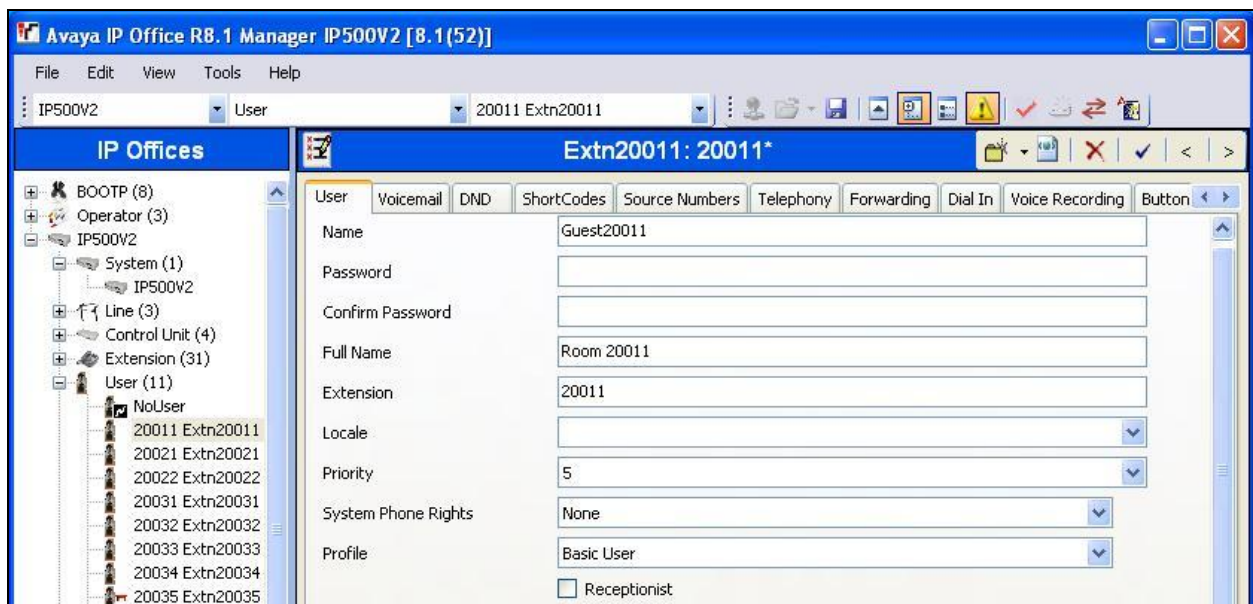
Select the **Voicemail** tab. Check **Voicemail On**, and uncheck **Voicemail Help**, as shown below.
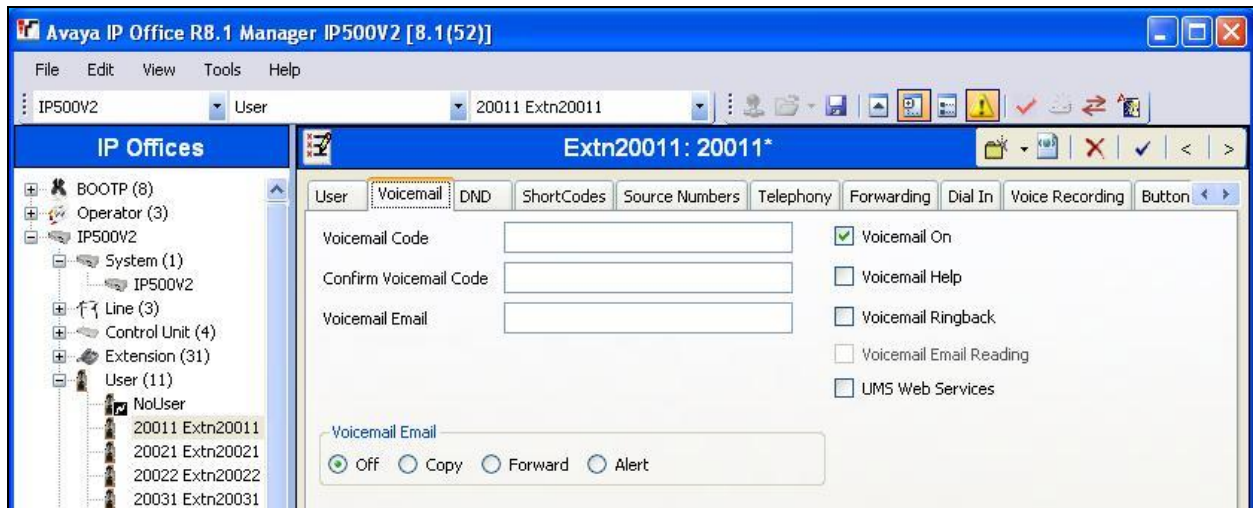
Select the **Forwarding** tab. Uncheck and unselect all fields, as shown below.
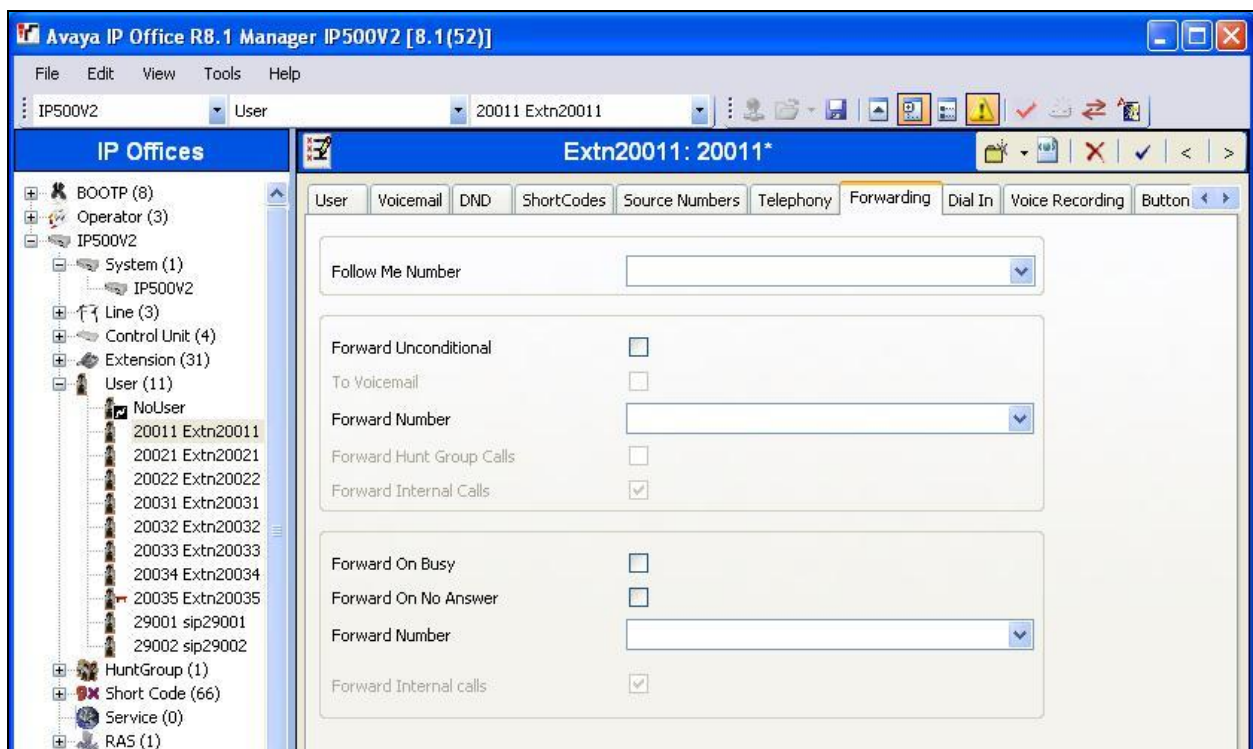
Repeat this section for all users using DuVoice for voicemail, including all guests, front desk, and staff. In the compliance testing, the voicemail users consisted of one front desk with extension "20035", three guests with extensions "20011, 20021, and 20031", and one staff with extension "20034", as shown below in the left pane.
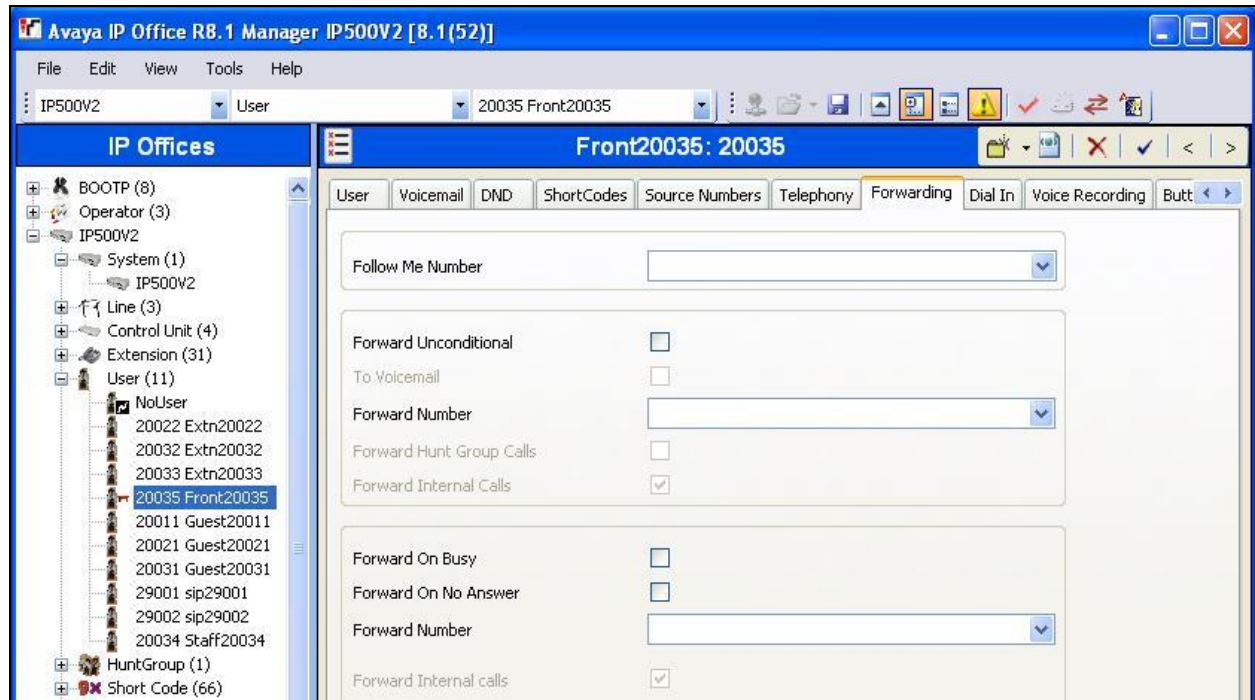
5.10. Administer User Rights

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.
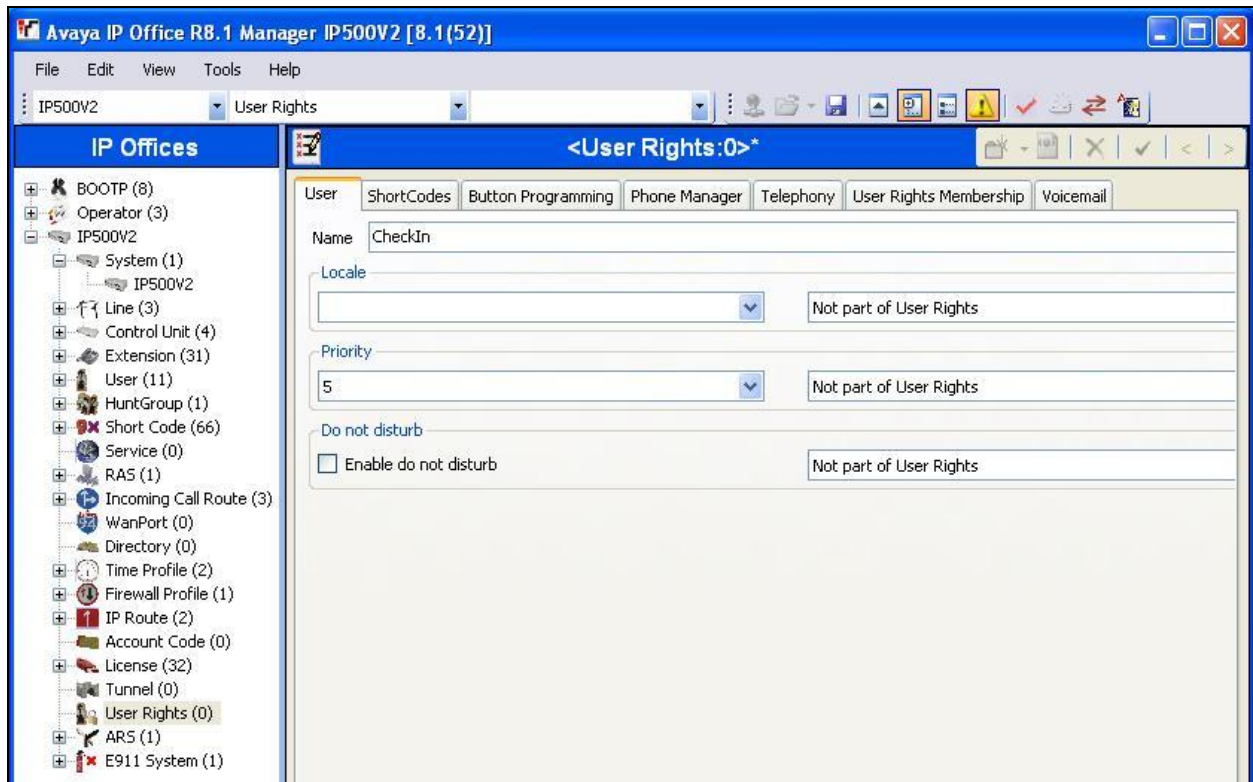
5.11. Administer Security Service

From the **Avaya IP Office R8.1 Manager** screen, select **File → Advanced → Security Settings** from the top menu. Select the proper IP Office system, and log in using the appropriate security user credentials.

The **Avaya IP Office R8.1 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.
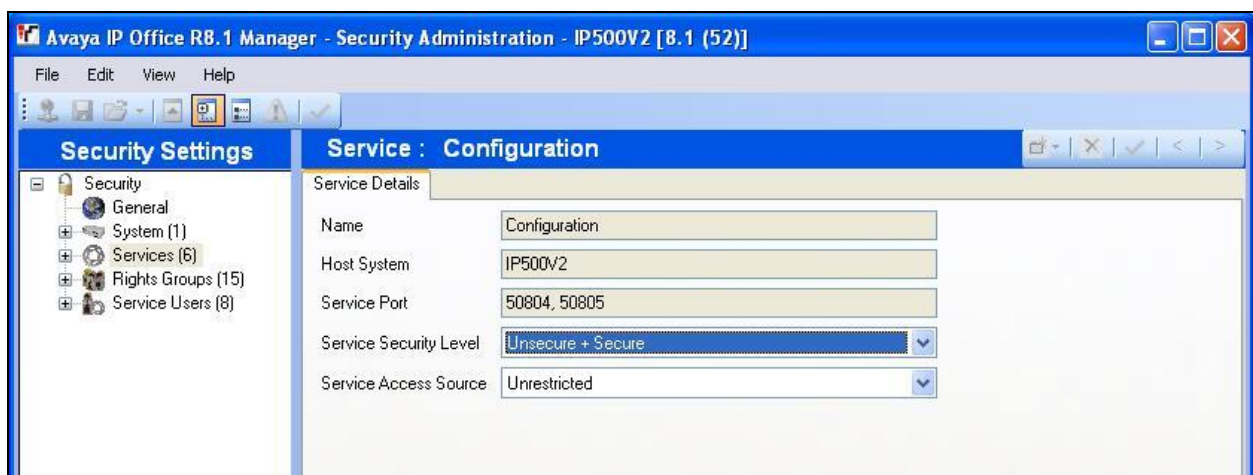
6. Configure DuVoice

This section provides the procedures for configuring DuVoice. The procedures include the following areas:
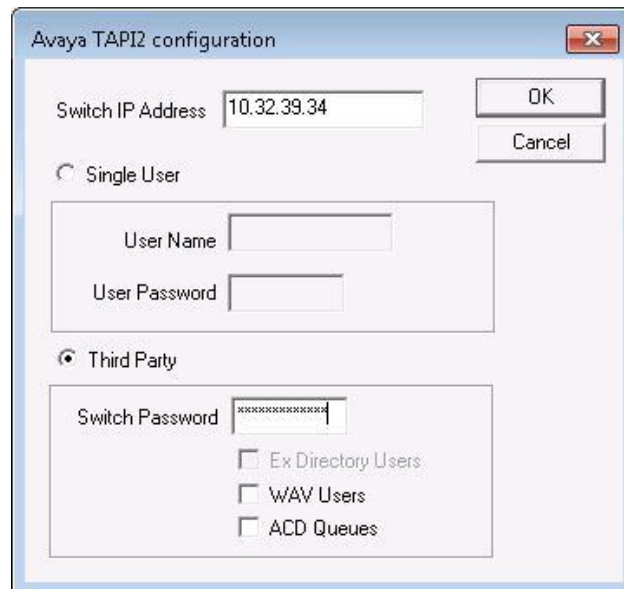
- Administer TAPI driver
- Administer setup wizard
- Administer TAPI integration
- Administer connectors
- Administer hospitality
- Administer push server
- Administer mailboxes
- Startup server

6.1. Administer TAPI Driver

From the DuVoice server, select **Start → Control Panel**, and click on the **Phone and Modem** icon (not shown below). In the displayed **Phone and Modem** screen, select the **Advanced** tab. Select the **Avaya IP Office TAPI2 Service Provider** entry, and click **Configure**.
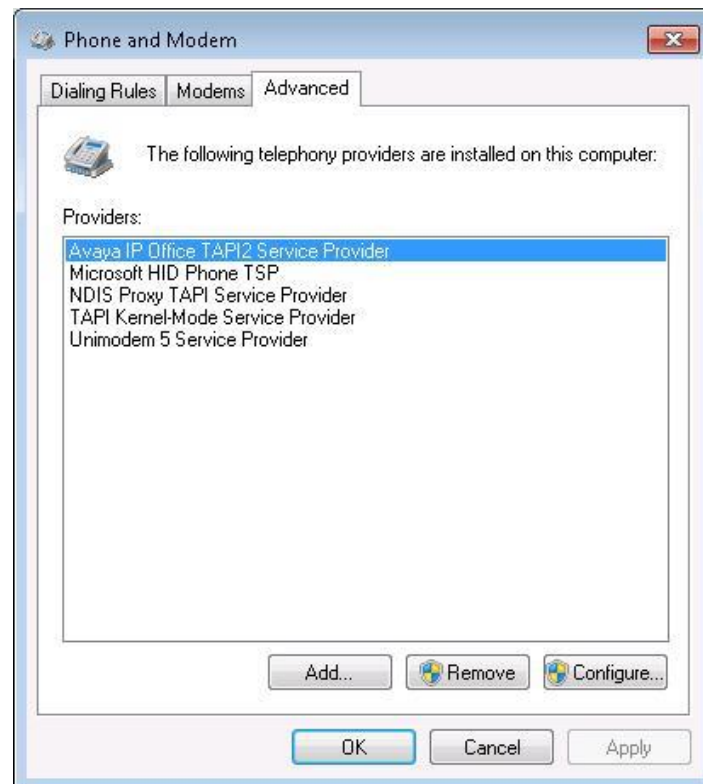
The **Avaya TAPI2 configuration** screen is displayed. For **Switch IP Address**, enter the IP address of IP Office. Select the radio button for **Third Party**, and enter the IP Office password into the **Switch Password** field. Reboot the DuVoice server.

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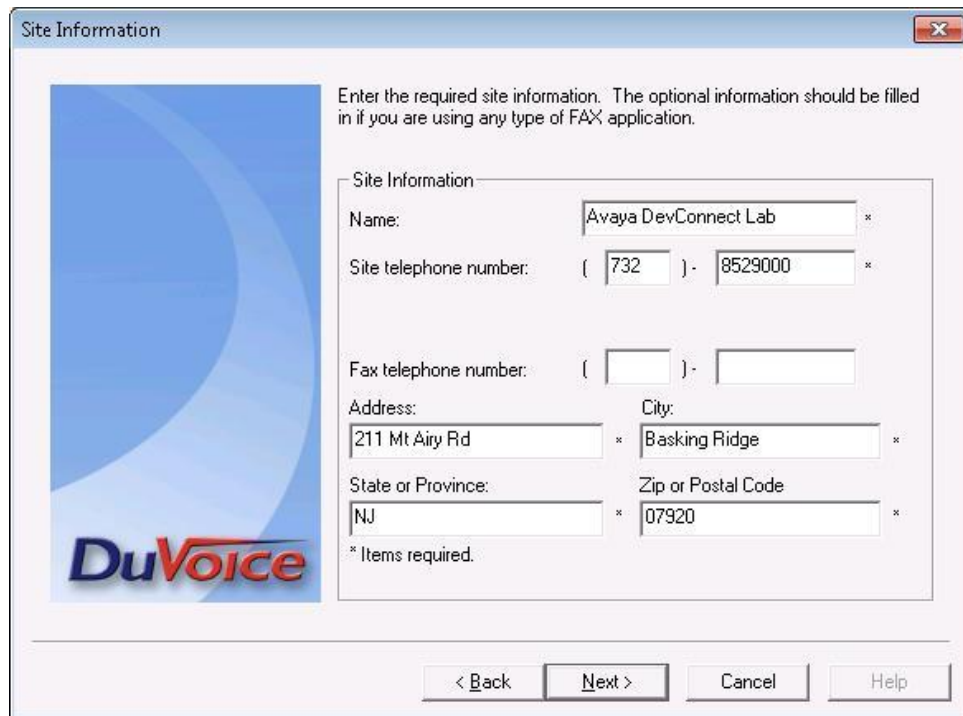
From the DuVoice server, select **Start** → **All Programs** → **DuVoice** → **System Configuration**. The **Wizard Start** screen is displayed upon initial access. Click **Next**.

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

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

The **MWI Method** screen is displayed. Retain the default **TAPI** selection, and click **Next**.

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**.

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 5.4** to an available **Port**, as shown below.

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

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

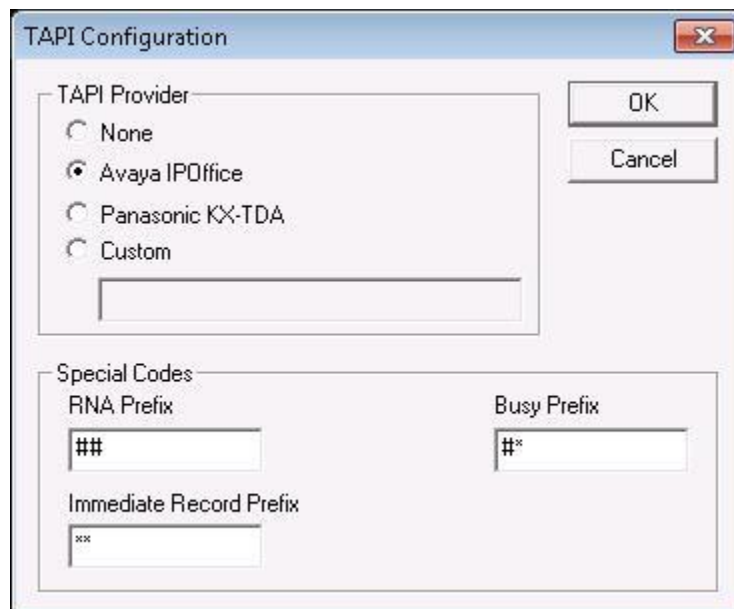## 6.3. Administer TAPI Integration

From the DuVoice server, select **Start → All Programs → DuVoice → System Configuration**. The **System Configuration** screen is displayed. Select **Integrations → TAPI Integration** from the top menu.
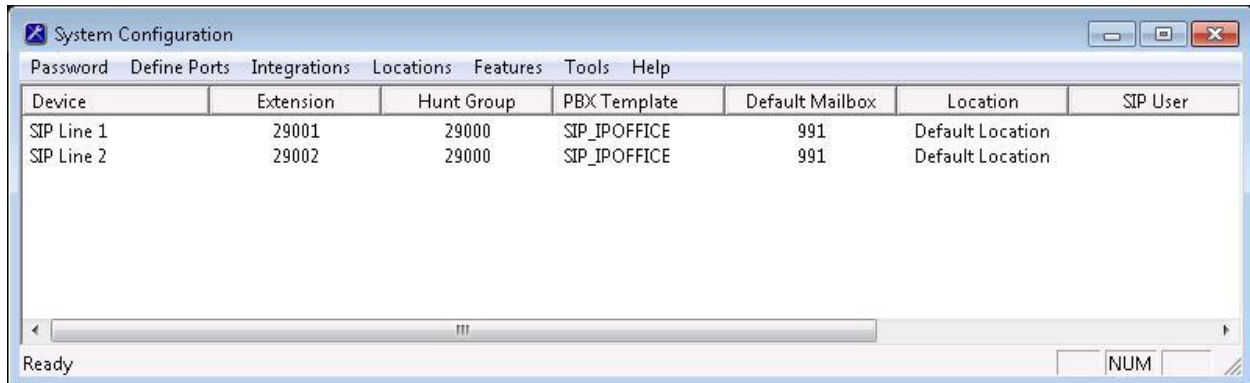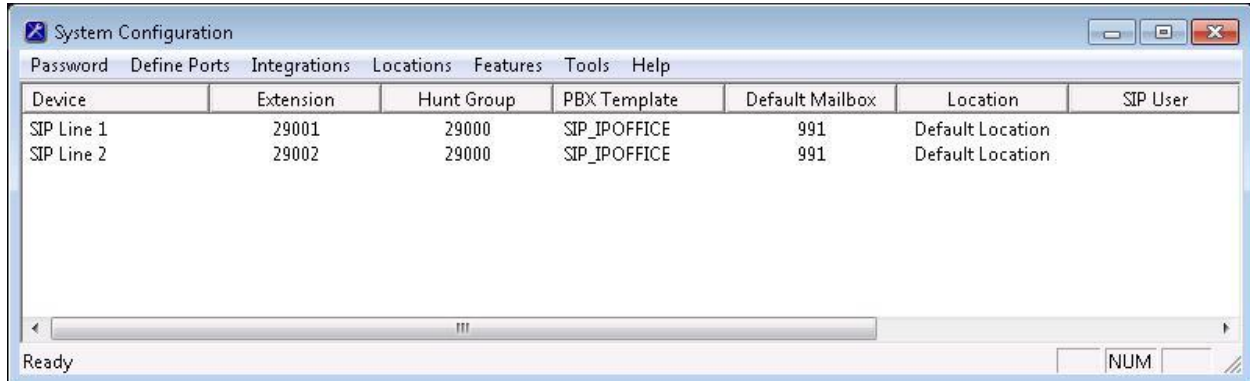

The **TAPI Configuration** screen is displayed next. For **TAPI Provider**, select **Avaya IPOffice**. Retain the default values in the remaining fields.

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6.4. 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. Check **Enabled**. For **IP address**, enter the IP address of IP Office. Enter the IP Office administrator 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 IP Office, for update of guest user names and user rights template.
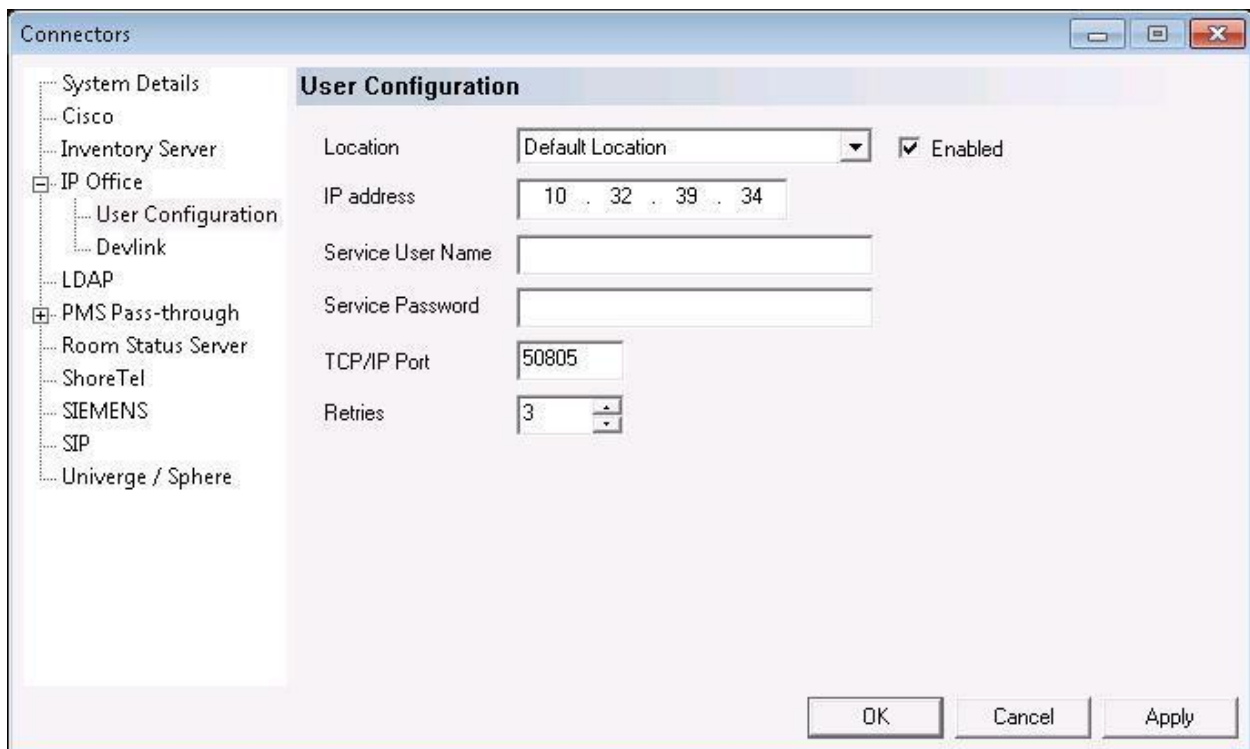
6.5. Administer Hospitality

From the **System Configuration** screen shown in **Section 6.4**, 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.
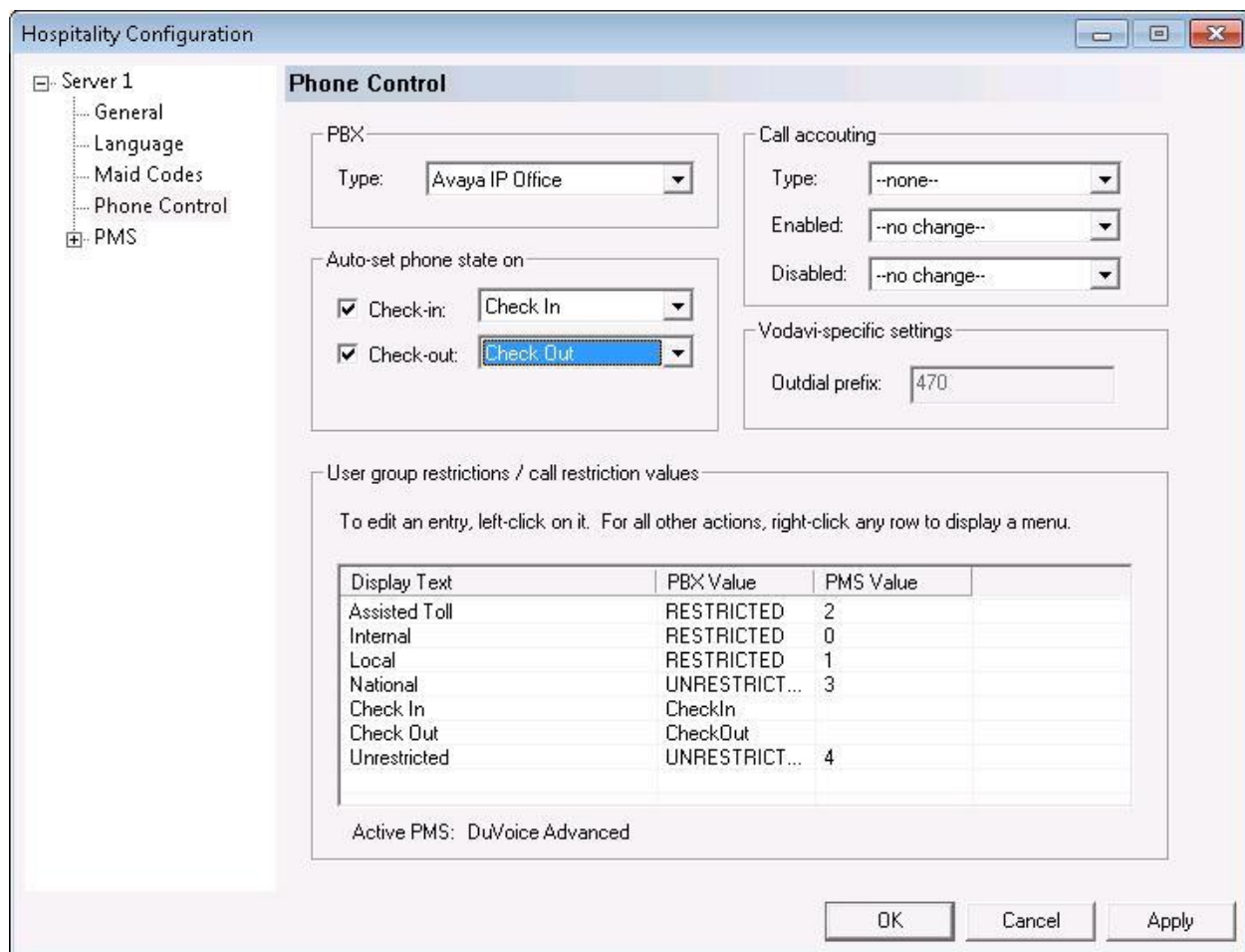
Select **Phone Control** from the left pane, to display the **Phone Control** screen in the right pane. For **PBX Type**, select "Avaya IP Office".

In the **User group restrictions / call restriction values** section (bottom half of screen), add an entry to match each user rights template in **Section 5.10**. Note that the **PBX Value** is case sensitive and must match the user rights template name in **Section 5.10**. Enter desired names for **Display Text**. In the compliance testing, two entries were created to match the two user rights template in **Section 5.10**. 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.

6.6. Administer Push Server

From the **System Configuration** screen shown in **Section 6.4**, select **Features → Push Server** from the top menu. The **Push Server** screen is displayed.

Select **General** from the left pane, to display the **General** screen in the right pane. Check **Push server enabled**, and retain the default values in the remaining fields.

Select **Phones** from the left pane, to display the **Phones** screen in the right pane. For each phone that will be used for receiving 911 alerting voice messages, enter the phone extension number in the **Extension** field, and click **Add/Modify**.

The screen is updated with an entry for each added phone. Click the **Alert Voice** field for each entry, and select "Enabled" as shown below. In the compliance testing, the 911 alerting voice messages were sent to the front desk with extension "20035".

6.7. 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.
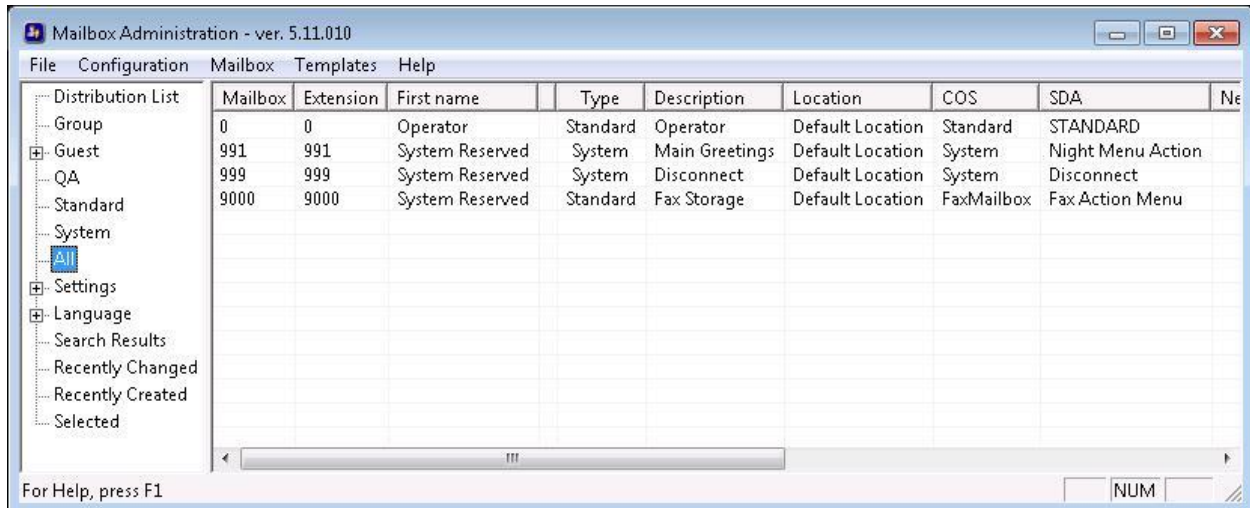
The **Create Mailbox** screen is displayed next. For **Mailbox Number**, enter the first voicemail user extension from **Section 5.9**, in this case "20011". For **Mailbox Type**, select "Guest" for guest users, and "Standard" for front desk and staff users.

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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 5.9**, as shown below.

6.8. 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.
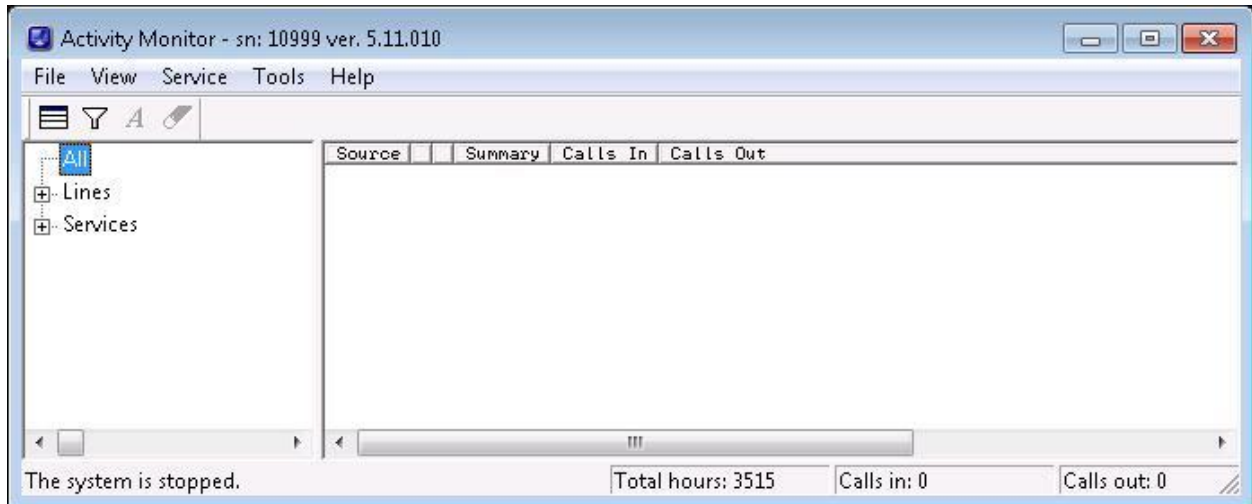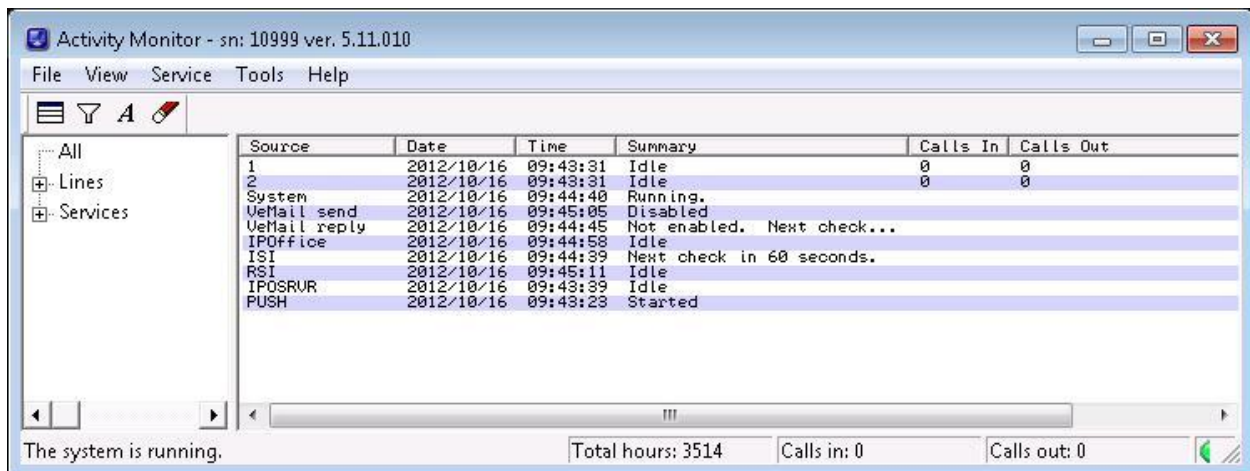
7. Verification Steps

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 6.8** 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.

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 R8.1 SysMonitor** screen is displayed. Select **Status > SIP Phone Status** from the top menu.
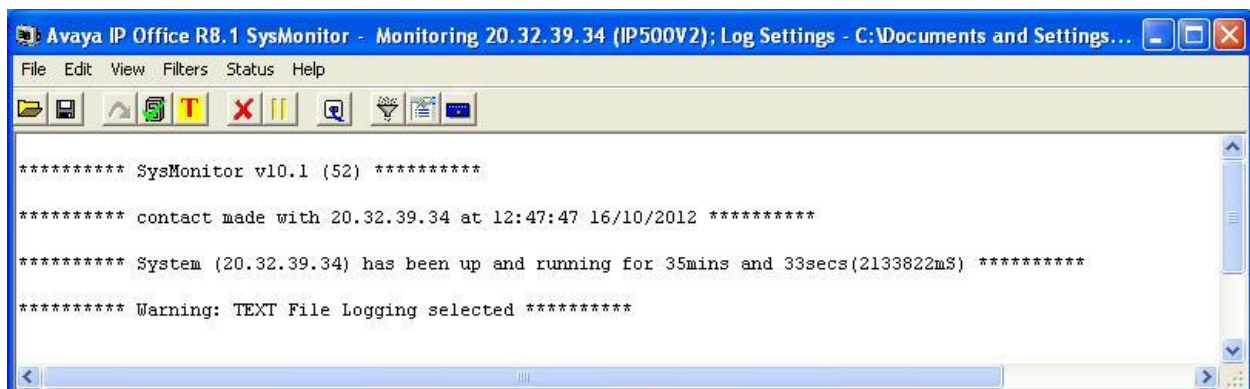
The **SIPPhoneStatus** screen is displayed. Verify that there is an entry for each SIP extension from **Section 5.4**, that the **User Agent** is "DuVoice", and that the **Status** is "SIP: Registered", as shown below.
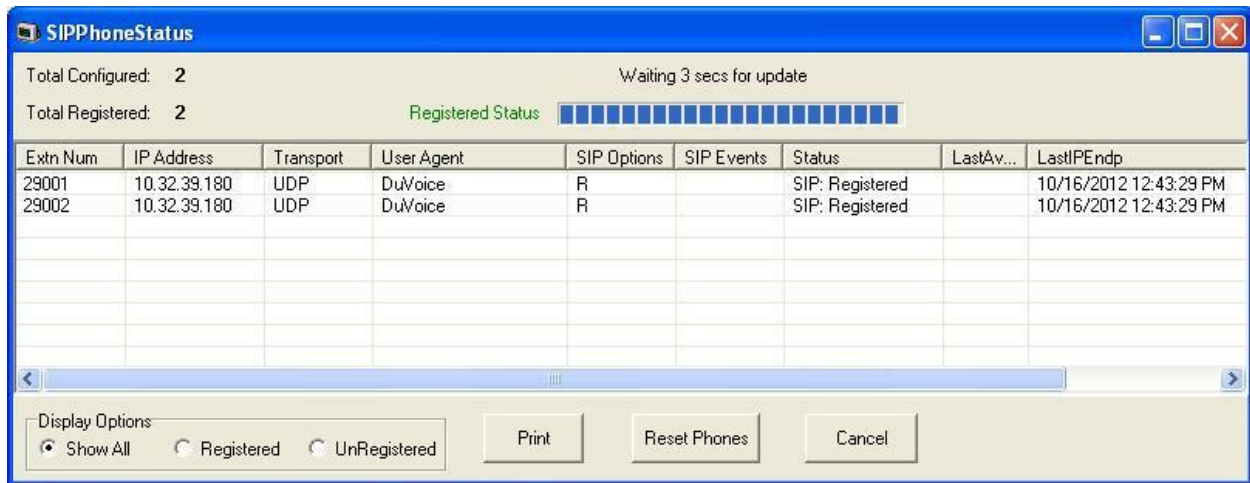
Place an incoming call from the PSTN to the hospitality hunt group. Verify that the calling party hears the greeting announcement from DuVoice. Enter the extension of a guest user, and verify that the call is transferred to the guest user.

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, that the voice message can be retrieved, and that the MWI is turned off.

7.4. Verify DevLink Integration

Dial "911" from any guest user on IP Office. Verify that a 911 alerting voice message is sent to the configured staff user mailbox.

7.5. Verify Configuration Web Service Integration

Follow the procedures in **Section 5.11** to display the **Avaya IP Office R8.1 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** 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.
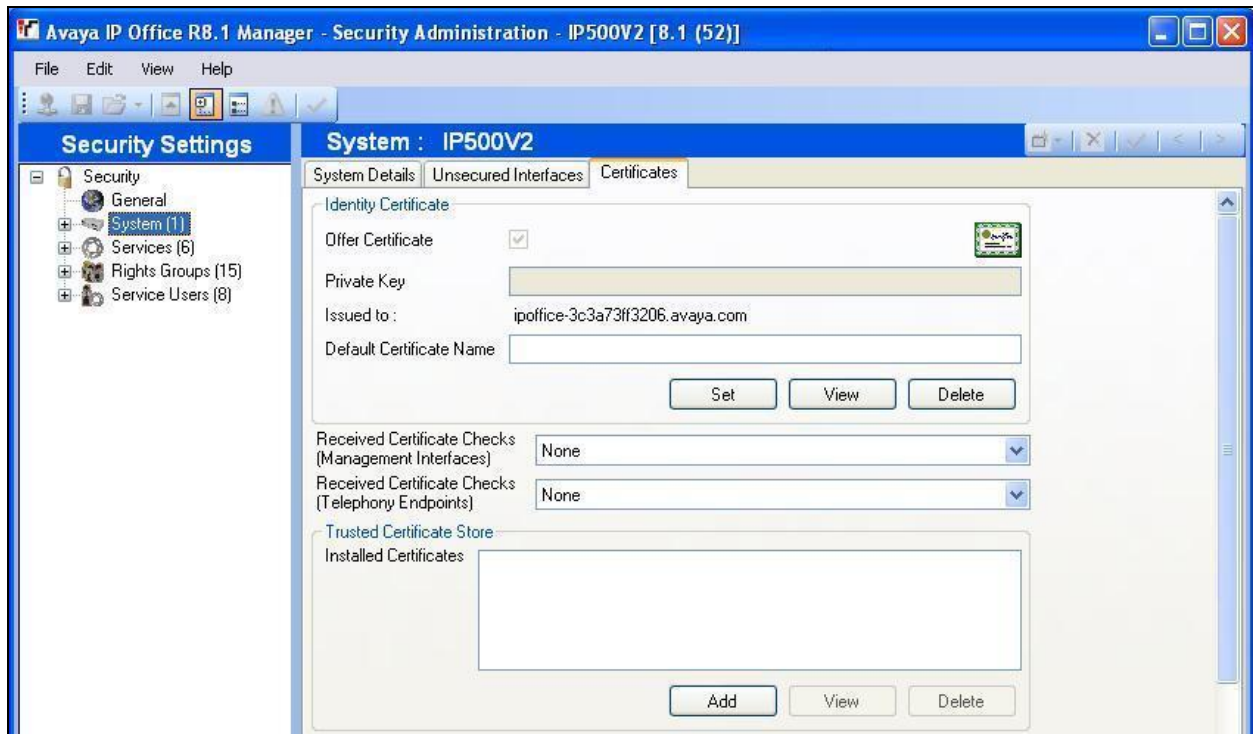
8. Conclusion

These Application Notes describe the configuration steps required for DuVoice to successfully interoperate with Avaya IP Office 8.1.   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 8.1*, Document 15-601011, Issue 25o, April 2012, available at http://support.avaya.com.

2. *System Reference Guide*, 3rd Edition, Version 5.10.014, February 2012, available on the DuVoice server as part of the installation.

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