Avaya Solution & Interoperability Test Lab

Application Notes for Objectworld UC Server with Avaya IP Office Using TAPI Wave Integration – Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Objectworld UC Server to interoperate with Avaya IP Office. Objectworld UC Server is a messaging system that provides users with a single storage and access point for voice, fax, and email messages. In the compliance testing, the Objectworld UC Server used the TAPI and TAPI Wave interfaces from Avaya IP Office to provide automated attendant and voicemail services to users in the Central and Remote sites.

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.

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1. Introduction

Objectworld UC Server is a messaging system that provides users with a single storage and access point for voice, fax, and email messages. In the compliance testing, the Objectworld UC Server used the TAPI and TAPI Wave interfaces from Avaya IP Office to provide automated attendant and voicemail services to users in the Central and Remote sites.

The TAPI Wave user interface was used to terminate calls to the Objectworld UC Server. In the test configuration for the Central site shown in **Section 2**, the Avaya IP Office 412 system was connected to the Objectworld UC Server over virtual TAPI Wave users. The virtual TAPI Wave users were configured as members of a voicemail hunt group on Avaya IP Office. Incoming calls to the voicemail hunt group were delivered over an available TAPI Wave user to the Objectworld UC Server.

The TAPI interface in Third Party Mode was used for event reporting and third party call control. The TAPI event reports were used by the Objectworld UC Server to determine the type of call and hence the service to provide – such as automated attendant for incoming trunk calls, voicemail access for voicemail users, and voicemail coverage for redirected calls. The TAPI call controls were used by the Objectworld UC Server to control the call at the virtual TAPI Wave users, such as disconnect the call or transfer the call to a voicemail user in the Central or Remote site. The TAPI interface was also used for activation/deactivation of the Message Waiting Indicator (MWI) for the voicemail users.

The Objectworld UC Server can work with Microsoft Exchange, Lotus Notes, and other IMAP-compliant email systems as the central repository of all messages. The compliance testing focused on the voice messages, and utilized an internal message store on Objectworld UC Server. The compliance testing did not include the fax service, as fax is not supported by Avaya IP Office TAPI Wave.

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1.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing focused on verifying the following on the Objectworld UC Server:

- Proper identification of all voicemail users from the Central and Remote sites in direct calls to the voicemail hunt group, and in the voicemail messages.
- Creation and appropriate playback of internal, external, and out-of-office greetings for all voicemail users.
- Proper activation and deactivation of the MWI for all voicemail users.
- Proper identification of the called party in call forwarding and multiple call forwarding scenarios.
- Proper operations of the personal operator, call sender, message delivery, and transfer from auto attendant features for all voicemail users.

The serviceability testing focused on verifying the ability of Objectworld UC Server and Objectworld Remote Agent to recover from adverse conditions, such as disconnecting/ reconnecting the Ethernet cable to the Objectworld UC Server, and disconnecting/reconnecting the Ethernet cable to the Objectworld Remote Agent.

1.2. Support

Technical support on Objectworld UC Server can be obtained through the following:

- **Phone:** (613) 599-9698 (Option 5)
- **Email:** support@objectworld.com

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2. Reference Configuration

The test configuration shown in **Figure 1** consists of two Avaya IP Office systems in a Small Community Network configuration. The Objectworld UC Server at the Central site provided automated attendant and voicemail services for Avaya IP Office users at the Central and Remote sites.

The Objectworld UC Server has a UC Client application. The UC Client application is used to configure the UC Server, and also used to configure advanced user settings such as custom greetings for the voicemail users. In the compliance testing, the UC Client application was running on the Objectworld UC Server.

The Objectworld UC Server also has a Remote Client application. The Remote Agent application was used for activation/deactivation of the MWI for the voicemail users in the Remote site. The Objectworld UC Server communicates with the Remote Agent via TCP/IP.

The detailed administration of Small Community Networking between the Avaya IP Office systems at the Central and Remote sites are assumed to be in place and will not be described in these Application Notes.

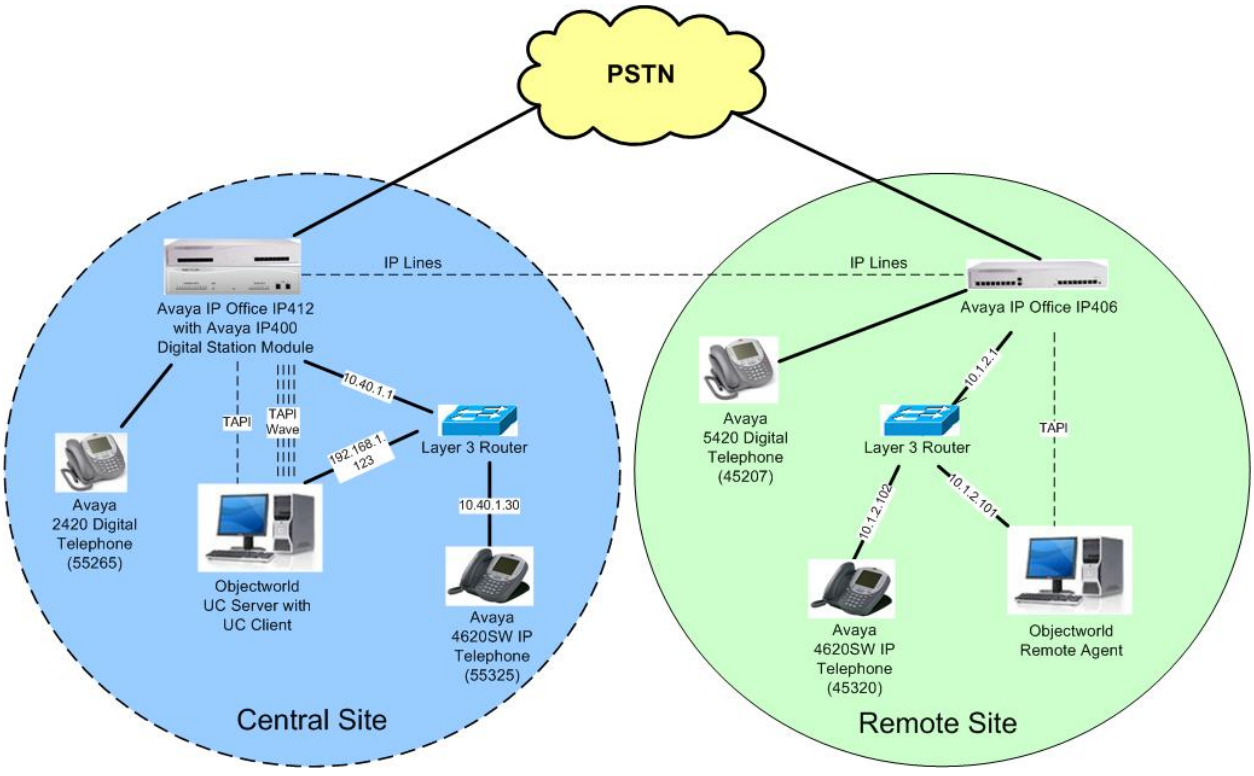

Figure 1: Objectworld UC Server with Avaya IP Office

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3. Equipment and Software Validated

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

Equipment	Software
Avaya IP Office IP412	4.2 (11)
Avaya 4600 Series IP Telephones	2.8870
Avaya 2420 Digital Telephone	NA
Avaya 5420 Digital Telephone	NA
Objectworld UC Server with Objectworld UC Client • Avaya IP Office TAPI2 Driver (tspi2w) • Avaya IP Office TAPI Wave Driver (nawave32)	4.4.0 4.4.0 1.0.0.32 2.0.0.0
Objectworld Remote Agent • Avaya IP Office TAPI2 Driver (tspi2w)	4.4.0 1.0.0.32

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4. Configure Avaya IP Office in Central Site

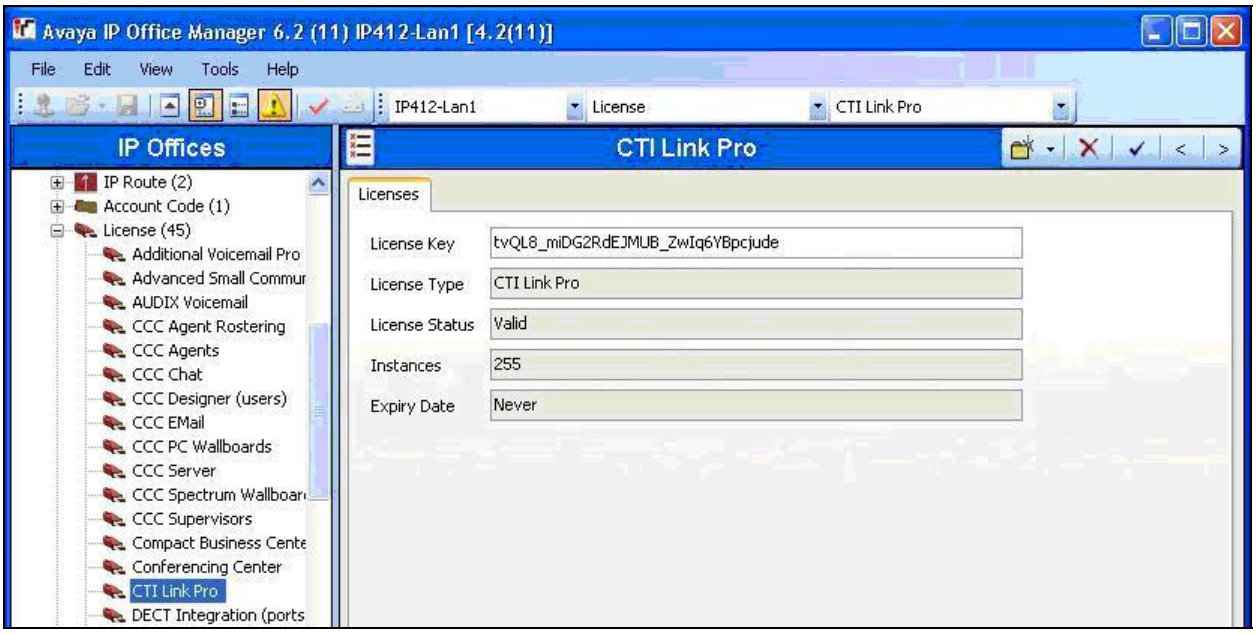
This section provides the procedures for configuring the Avaya IP Office in the Central site. The procedures include the following areas:

- Verify IP Office license
- Administer TAPI Wave users
- Administer hunt groups
- Administer system voicemail
- Administer voicemail users
- Administer incoming call route

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 > CTI Link Pro** to display the **CTI Link Pro** screen in the right pane. Verify that the **License Status** is "Valid".



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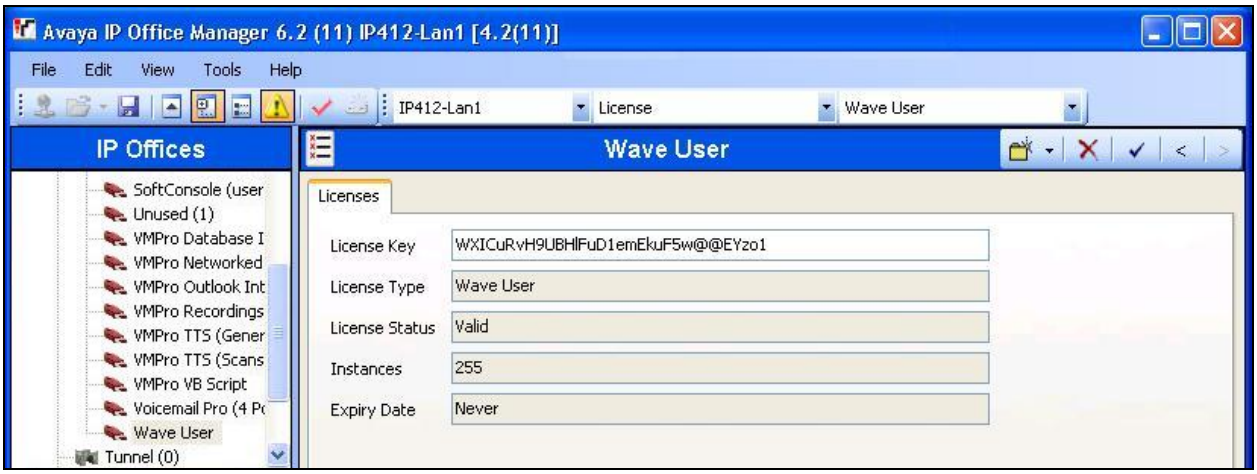
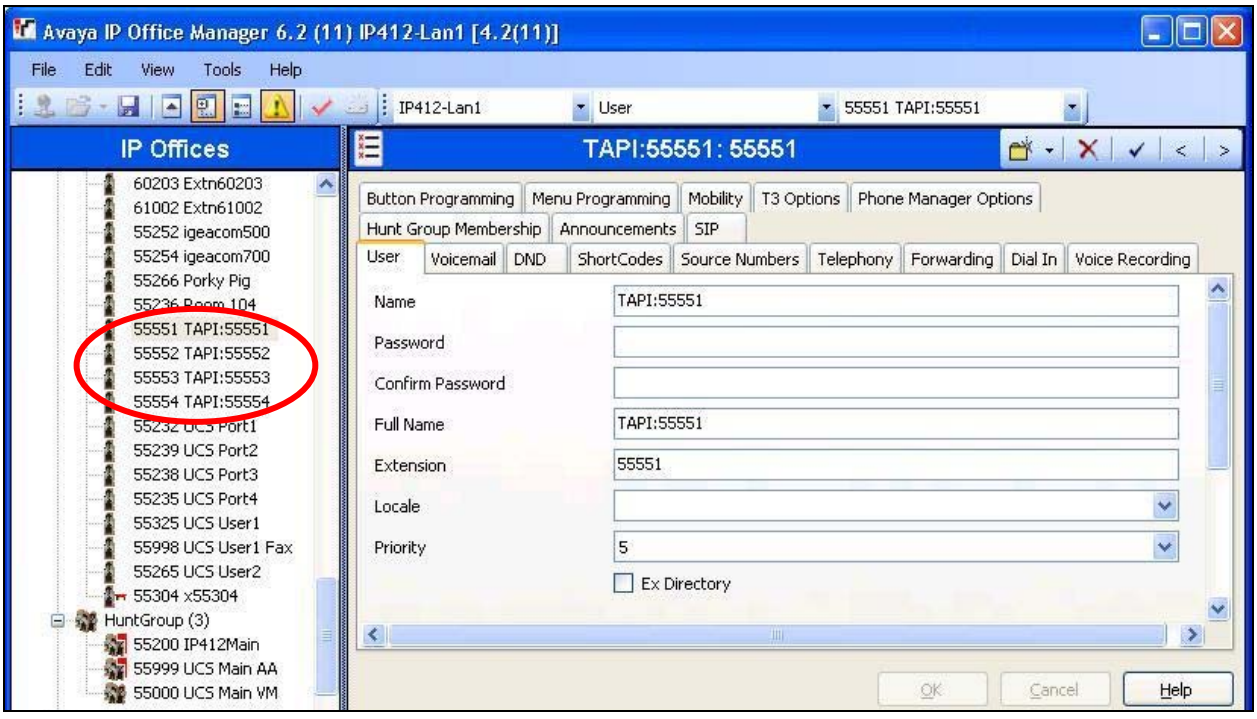
Scroll down the configuration tree in the left pane, and select **License > Wave User** to display the **Wave User** screen in the right pane. Verify that the **License Status** is "Valid".



4.2. Administer TAPI Wave Users

From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list to create a new user. In the **User** tab, enter "TAPI:x" for **Name** and **Full Name**, where "x" is an available extension. For **Extension**, enter the same extension number "x".

Repeat this section to administer the remaining TAPI Wave users. In the compliance testing, four TAPI Wave users with extensions 55551-55554 were administered, as shown below.



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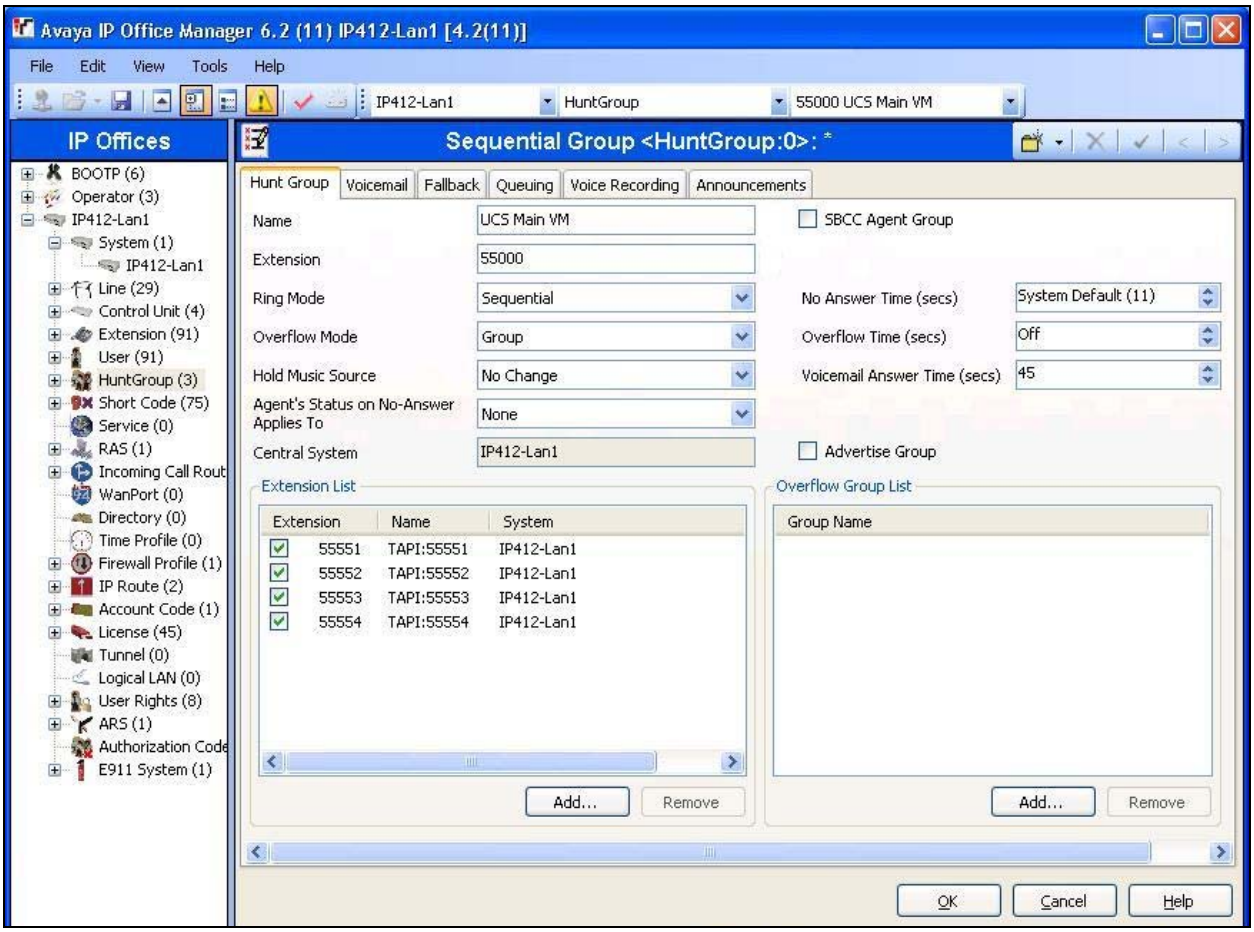
4.3. Administer Hunt Groups

4.3.1. Administer Voicemail 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 for the Objectworld voicemail service. For **Name**, enter a descriptive name. For **Extension**, enter an available extension number. Click **Add** under the **Extension List** section, and add the TAPI Wave users from **Section 4.2**, as shown below.



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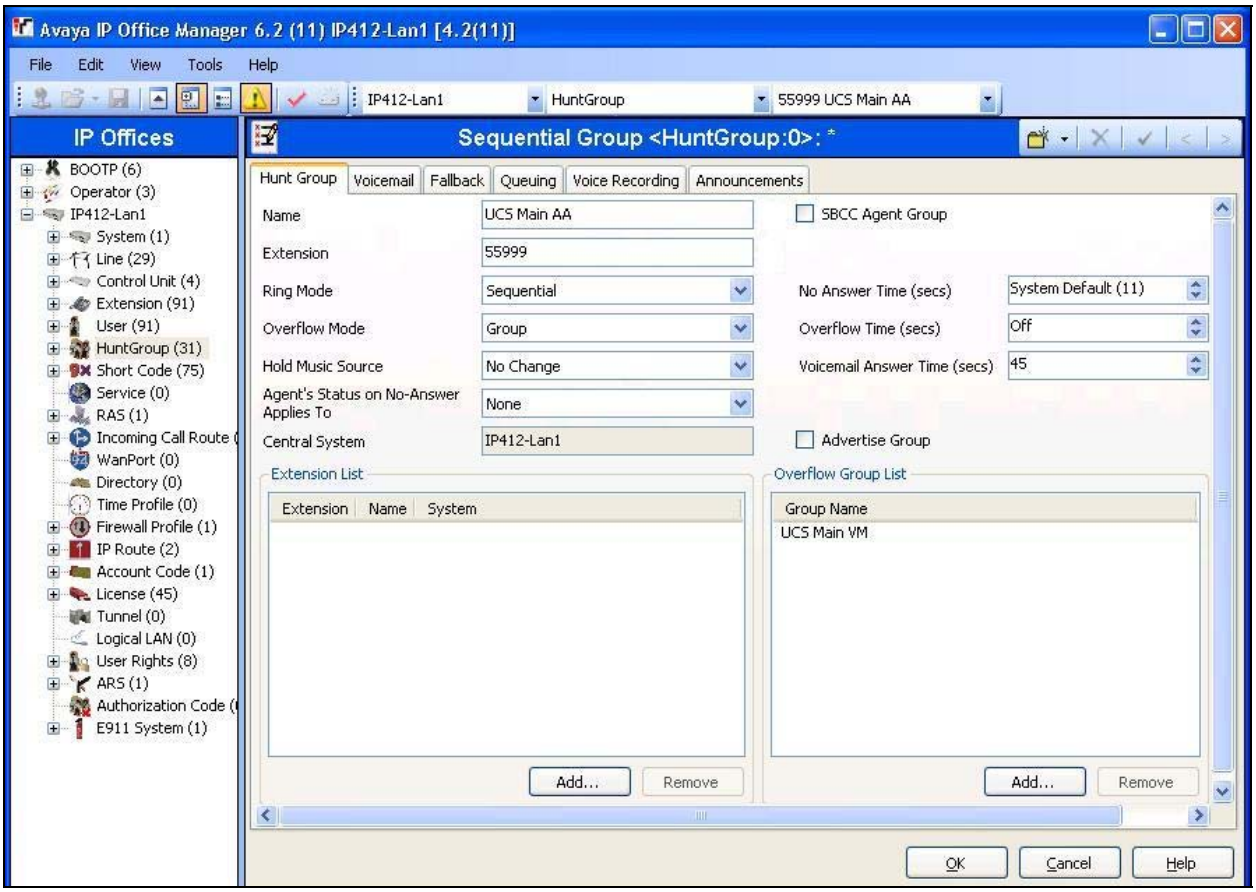
4.3.2. Administer Auto Attendant Hunt Group

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 for the Objectworld auto attendant service. For **Name**, enter a descriptive name. For **Extension**, enter an available extension number. Click **Add** under the **Overflow Group List** section, and add the voicemail hunt group from **Section 4.3.1**, as shown below.



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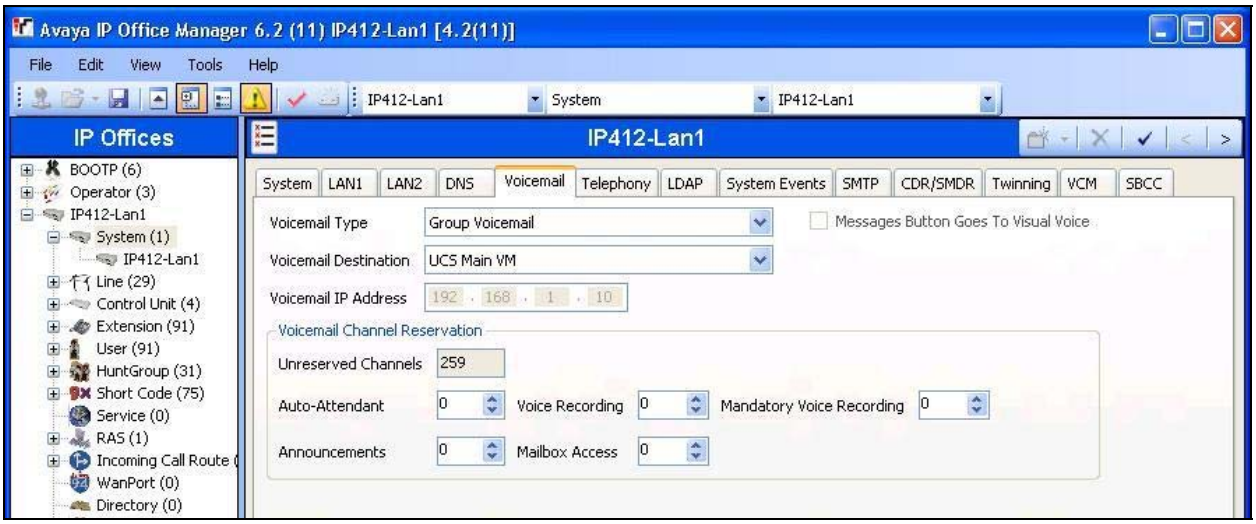
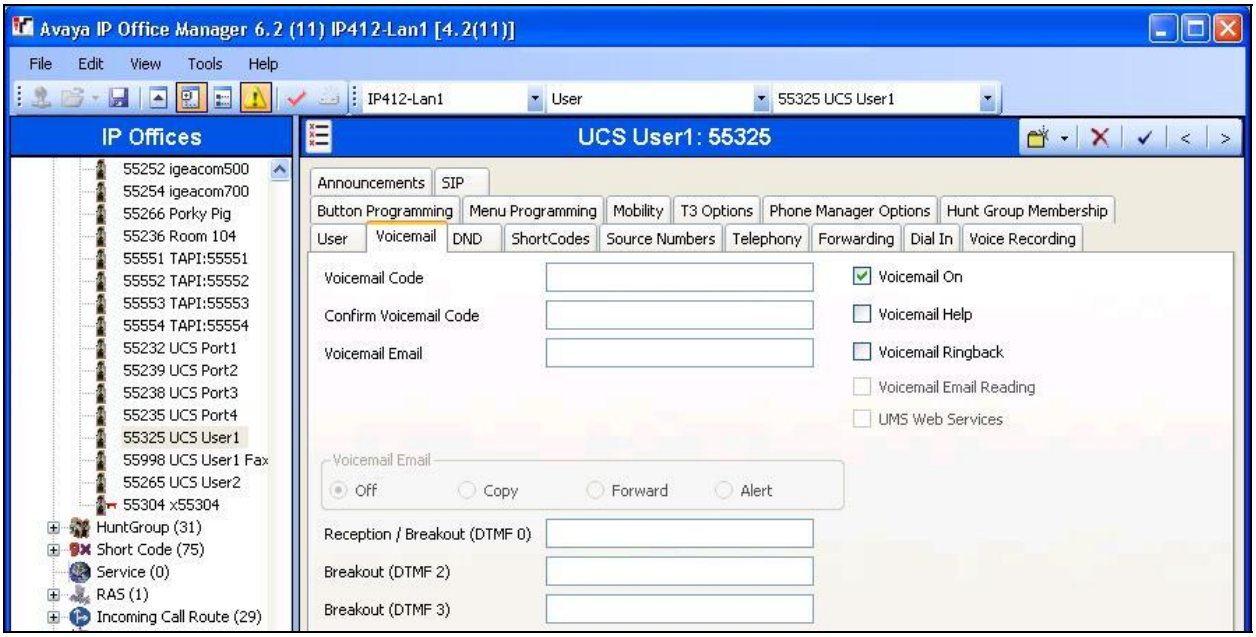
4.4. Administer System Voicemail

From the configuration tree in the left pane, select **System** to display the **IP412-Lan1** screen in the right pane. Select the **Voicemail** tab. For **Voicemail Type**, select "Group Voicemail" from the drop-down list. For **Voicemail Destination**, select the voicemail hunt group from **Section 4.3.1**.



4.5. Administer Voicemail Users

From the configuration tree in the left pane, select **User** followed by the first voicemail user, in this case "55325". In the **Voicemail** tab, check **Voicemail On**, as shown below. Repeat this procedure for all voicemail users. In the compliance testing, two voicemail users were configured in the Central site with extensions "55325" and "55265".



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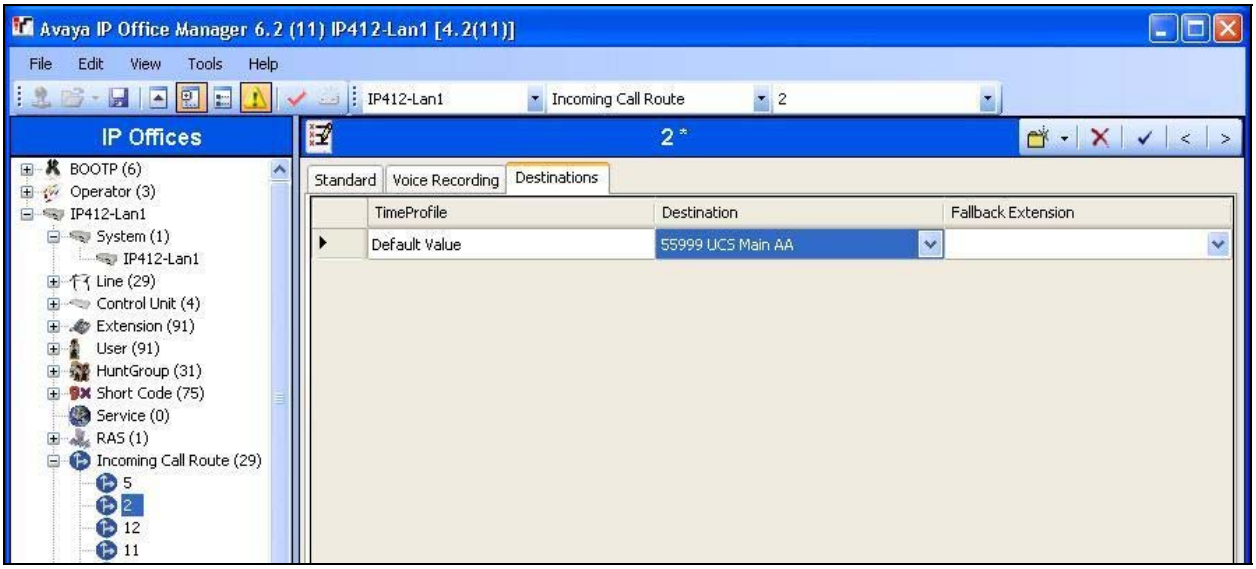
4.6. Administer Incoming Call Route

From the configuration tree in the left pane, select **Incoming Call Route** followed by the first call route to be answered by the Objectworld auto attendant service, in this case "2". In the **Destinations** tab, select the auto attendant hunt group from **Section 4.3.2**, as shown below.

Repeat this procedure for all incoming call routes to be answered by the Objectworld auto attendant service.



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5. Configure Avaya IP Office in Remote Site

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

- Verify IP Office license
- Administer system voicemail
- Administer voicemail users
- Administer short codes

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 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 > CTI Link Pro** to display the **CTI Link Pro** screen in the right pane. Verify that the **License Status** is "Valid".

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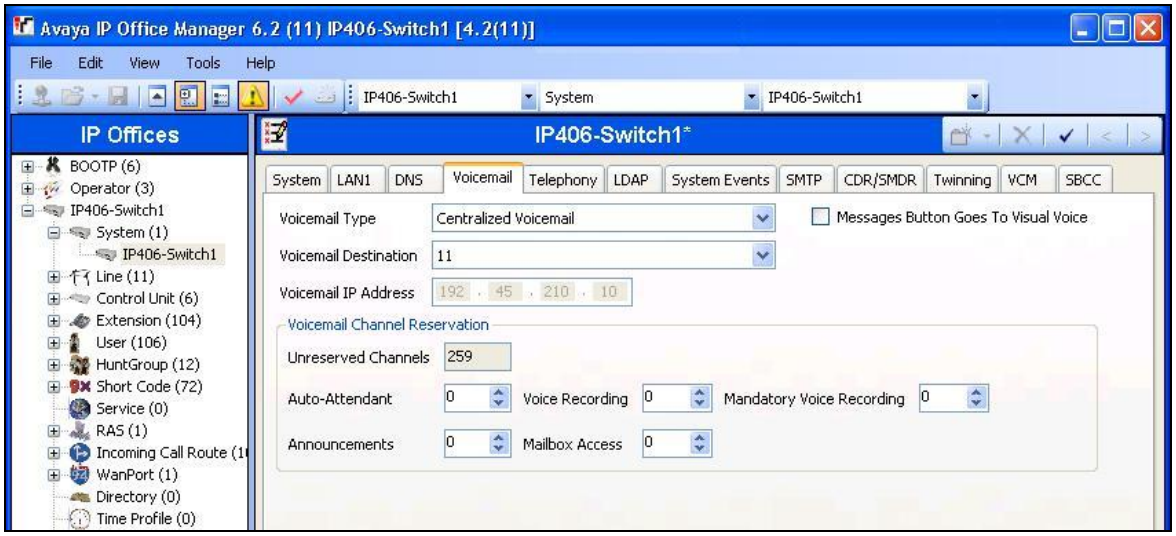
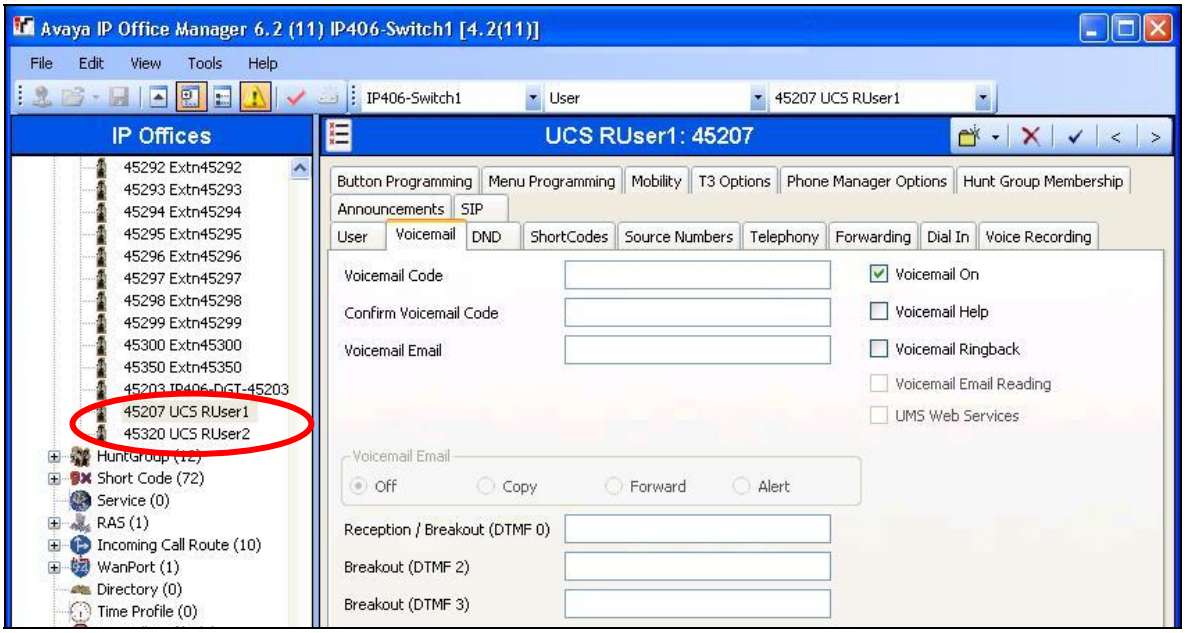
5.2. Administer System Voicemail

From the configuration tree in the left pane, select **System** to display the **IP406-Switch1** screen in the right pane. Select the **Voicemail** tab. For **Voicemail Type**, select "Centralized Voicemail" from the drop-down list. For **Voicemail Destination**, select the outgoing line group for connection to the Avaya IP Office in the Central site, in this case "11".



5.3. Administer Voicemail Users

From the configuration tree in the left pane, select **User** followed by the first voicemail user, in this case "45207". In the **Voicemail** tab, check **Voicemail On**, as shown below. Repeat this procedure for all voicemail users. In the compliance testing, two voicemail users were configured in the Remote site with extensions "45207" and "45320", as shown below.



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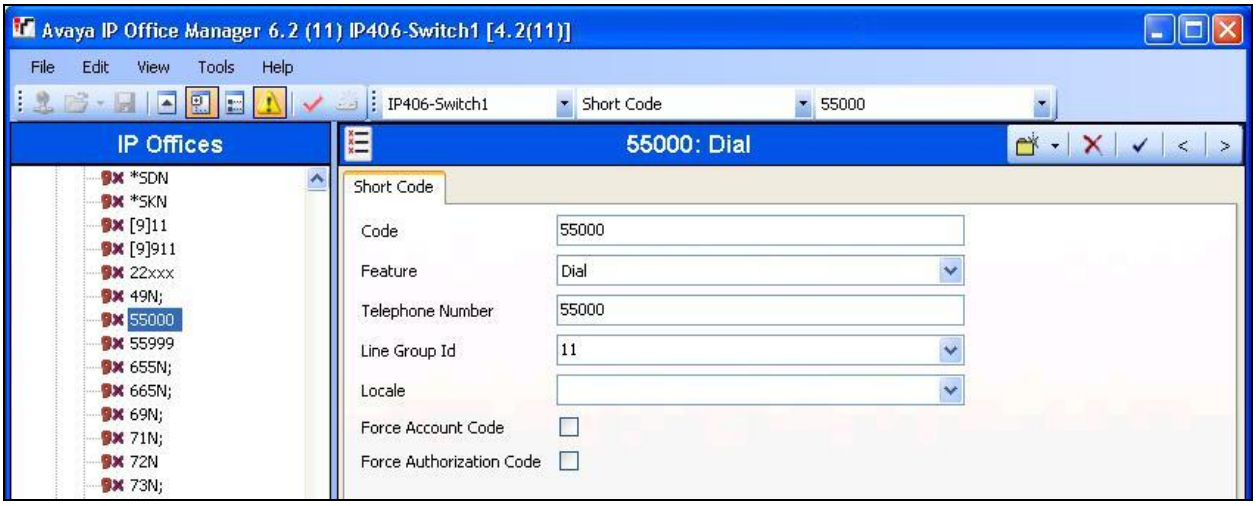
5.4. Administer Short Codes

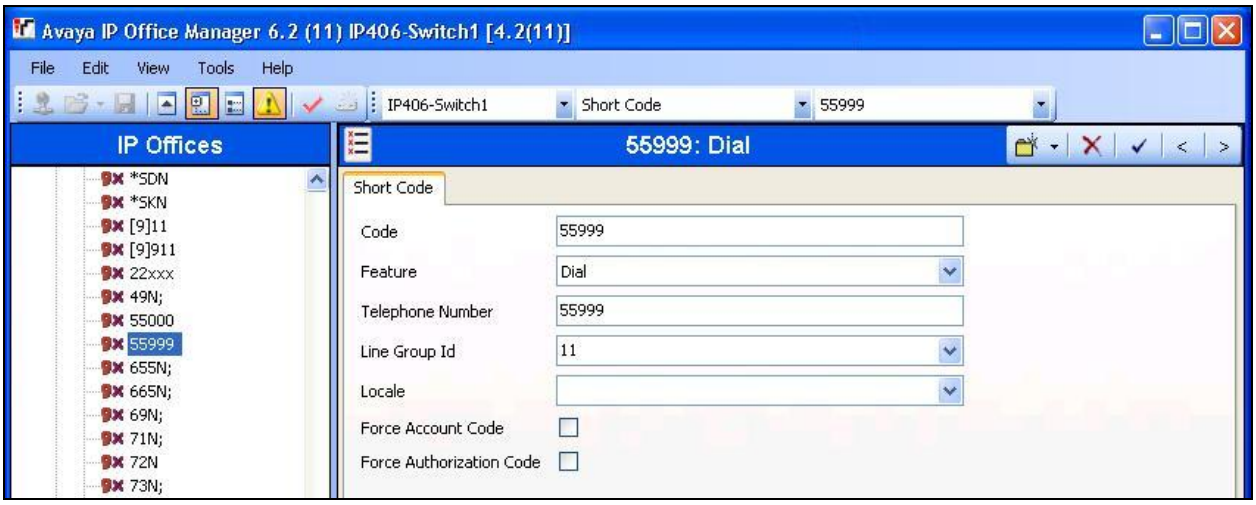
5.4.1. Administer Voicemail Short Code

From the configuration tree in the left pane, right-click on **Short Code** and select **New** from the pop-up list to add a new short code to reach the Objectworld voicemail hunt group at the Central site. For **Code** and **Telephone Number**, enter the voicemail hunt group extension from **Section 4.3.1**. For **Feature**, select "Dial" from the drop-down list. For **Line Group Id**, select the outgoing line group for connection to the Avaya IP Office in the Central site, in this case "11".



5.4.2. Administer Auto Attendant Short Code

Repeat the procedures in **Section 5.4.1**, and create a new short code to reach the Objectworld auto attendant hunt group at the Central site. For **Code** and **Telephone Number**, enter the auto attendant hunt group extension from **Section 4.3.2**.



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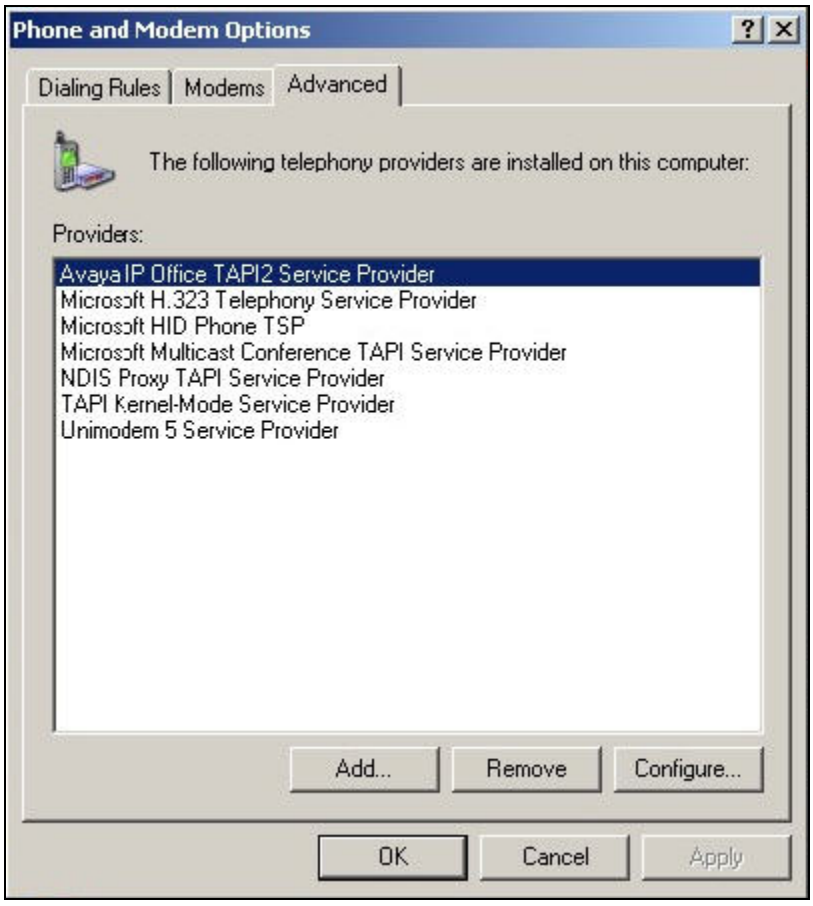
6. Configure Objectworld UC Server in Central Site

This section provides the procedures for configuring the Objectworld UC Server in the Central site. The procedures include the following areas:

- Administer TAPI driver
- Administer users
- Launch UC client
- Administer ports
- Administer remote agent
- Administer identities

6.1. Administer TAPI Driver

From the UC Server, select **Start > Settings > Control Panel**, and double-click on the **Phone and Modem Options** icon (not shown). In the **Phone and Modem Options** screen, select the **Avaya IP Office TAPI2 Service Provider** entry under the **Advanced** tab. Click **Configure**.



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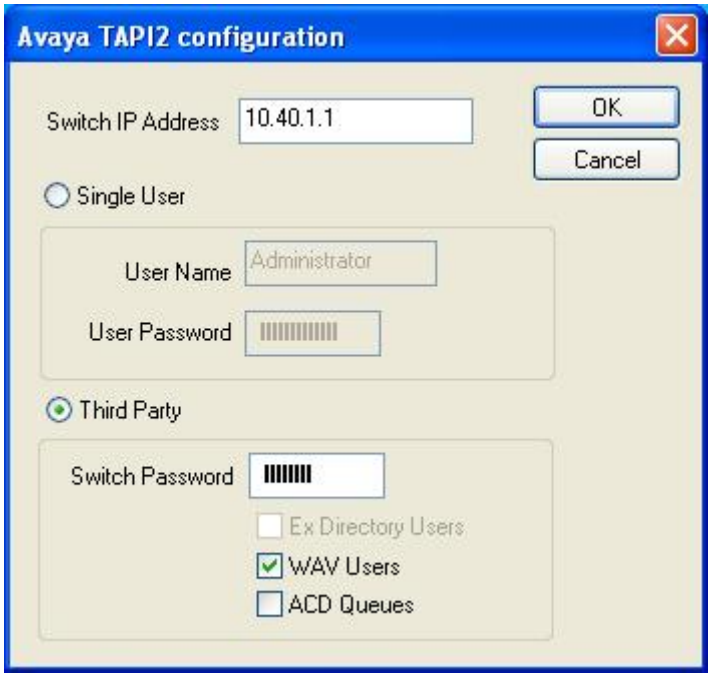
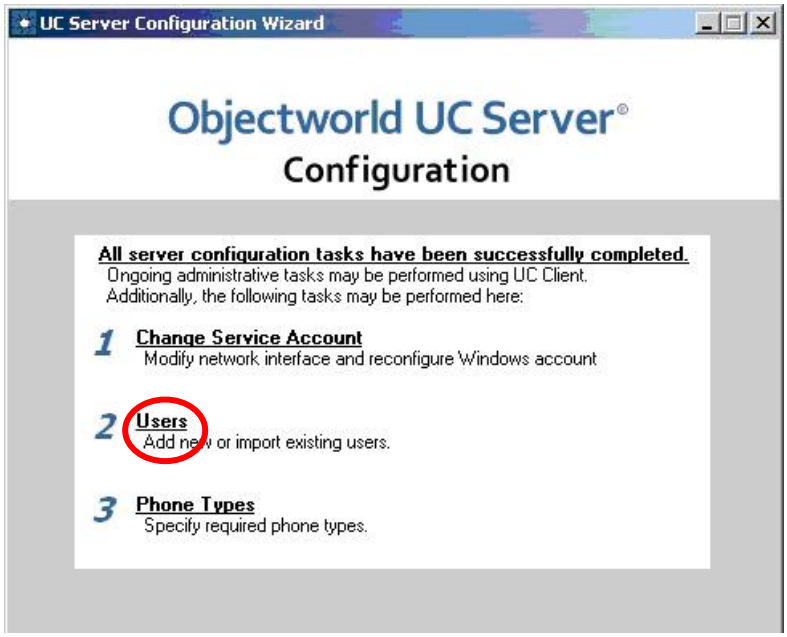
The **Avaya TAPI2 configuration** screen is displayed. For **Switch IP Address**, enter the IP address of the Avaya IP Office in the Central site. Select the radio button for **Third Party**, enter the IP Office password into the **Switch Password** field, and check **WAV Users**. Click **OK**, and reboot the UC Server.



6.2. Administer Users

From the UC Server, select **Programs > Objectworld UC Server > Server Configuration Wizard** to launch the UC Server Configuration Wizard. Select **Users**.



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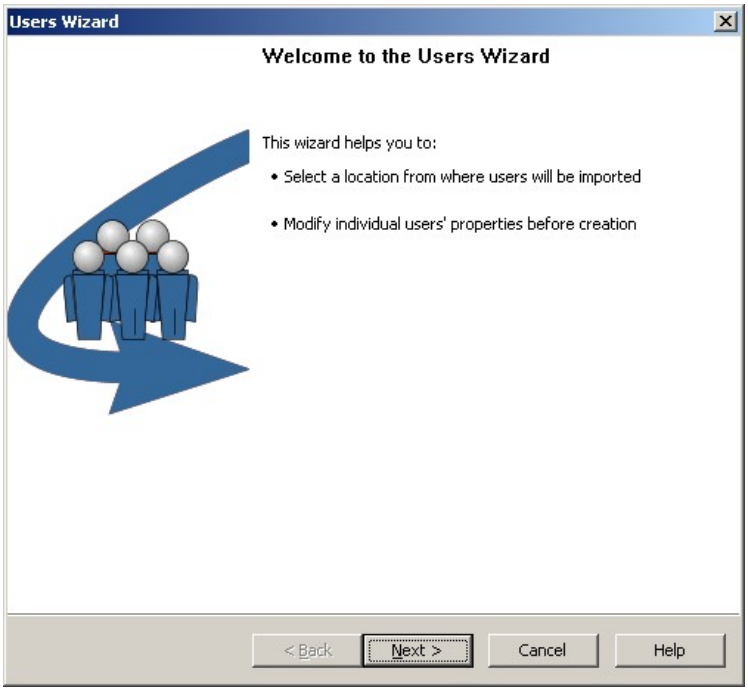
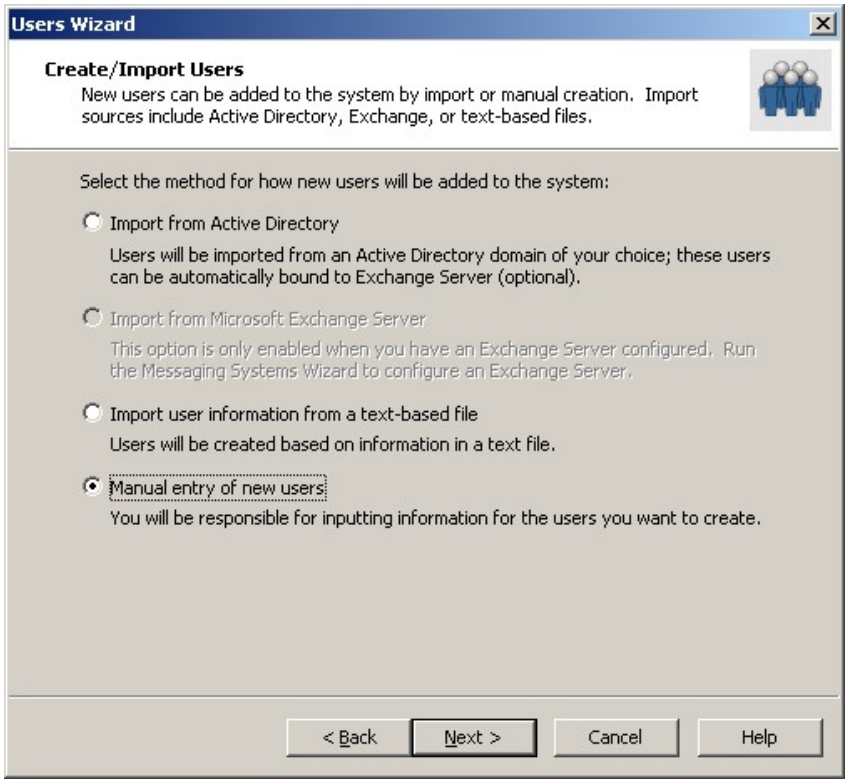
The **Welcome to the Users Wizard** screen is displayed. Select **Next**.



The **Create/Import Users** screen is displayed next. Select the radio button for **Manual entry of new users**, and click **Next**.



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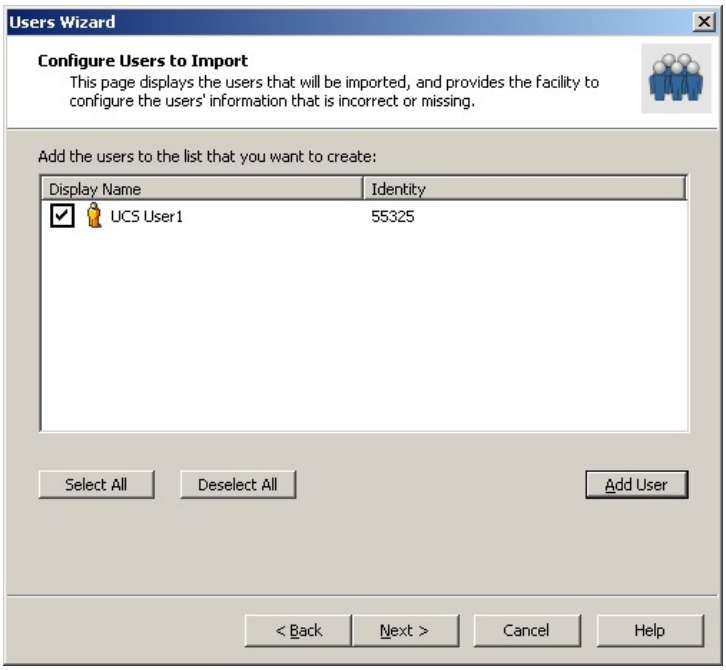
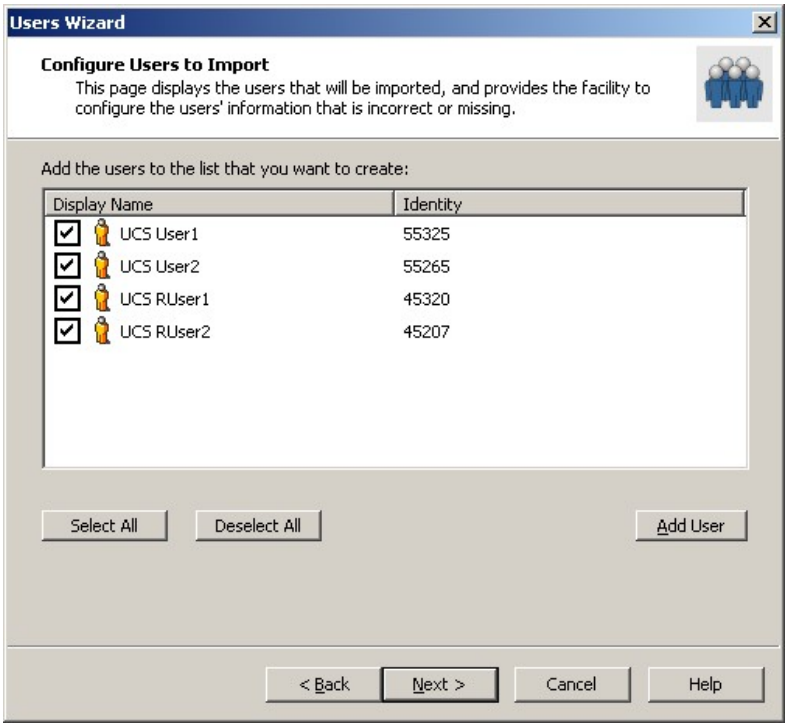
In the subsequent screen, click **Add User** to add a new user. In the new entry line, enter the name and extension of the first voicemail user from **Section 4.5**, as shown below.



Repeat the procedures to create all voicemail users in the Central site from **Section 4.5**, and all voicemail users in the Remote site from **Section 5.3**, as shown below. Click on the appropriate buttons in the subsequent screens to complete the wizard.



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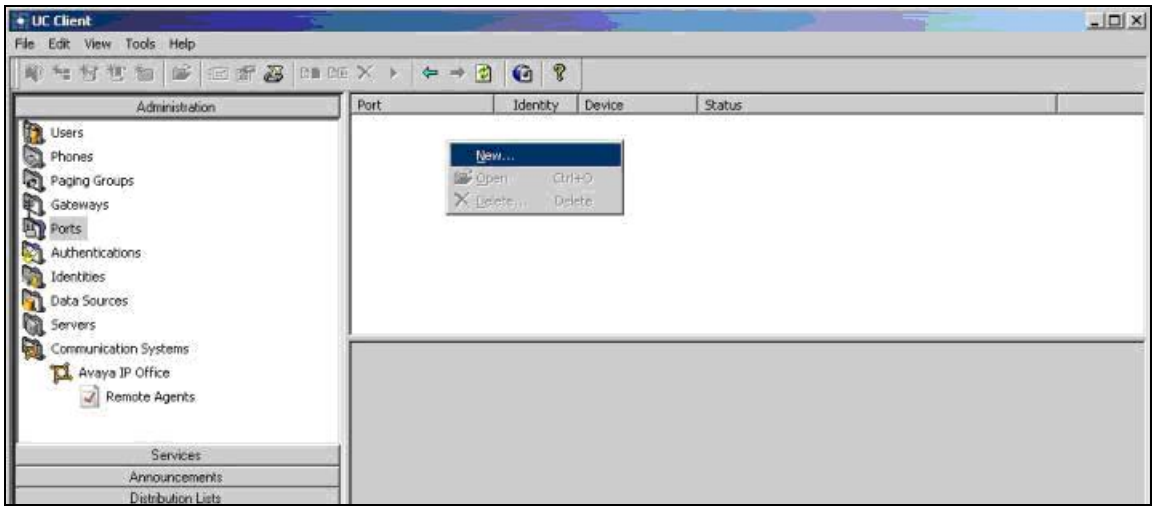
6.3. Launch UC Client

From the UC Server, select **Programs > Objectworld UC Server > UC Client**. In the login screen that is displayed, enter the appropriate credentials for system administration.

6.4. Administer Ports

The **UC Client** screen is displayed. Select **Administration > Ports** in the left pane, and right-click anywhere in the upper right pane to display the pop-up box. Select **New** to create a new port.



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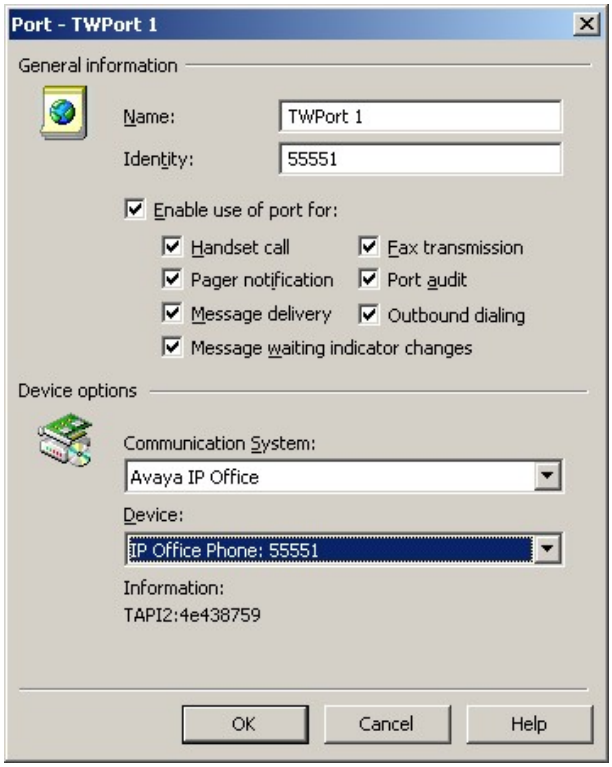
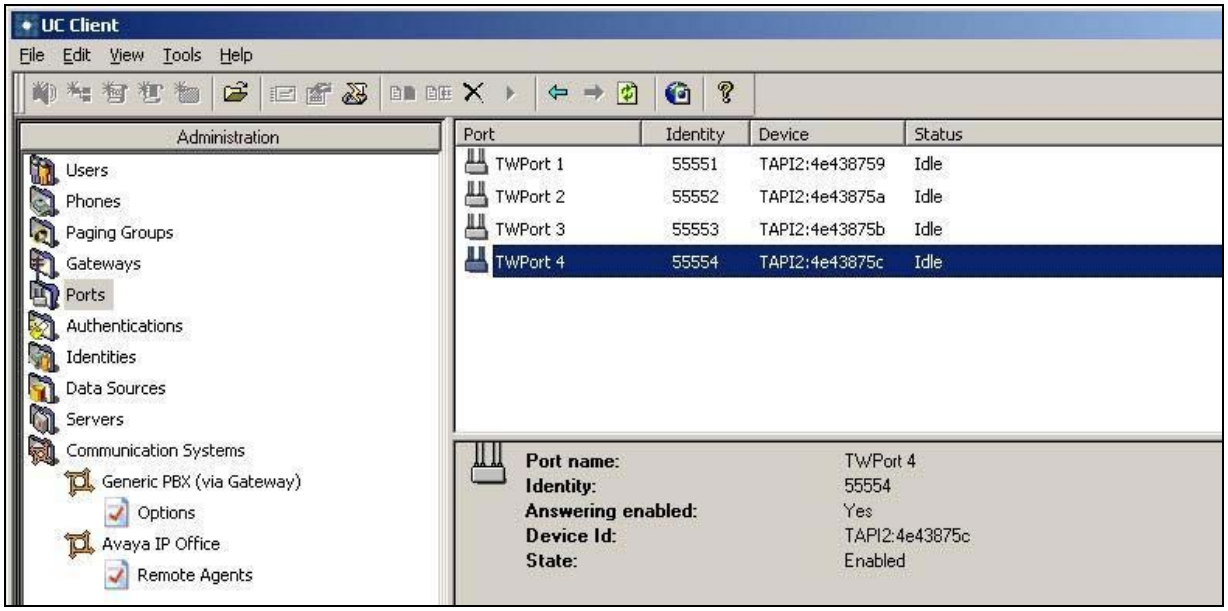
The **Port** screen is displayed. In the **Device** field, select the first TAPI Wave user from **Section 4.2**, in this case "IP Office Phone: 55551". Enter a descriptive **Name**, and the corresponding TAPI Wave user extension. Check the **Enable use of port for** field, and retain the default values in the remaining fields.



Repeat the procedures to create the remaining connected ports. In the compliance testing, four ports were configured, as shown below.



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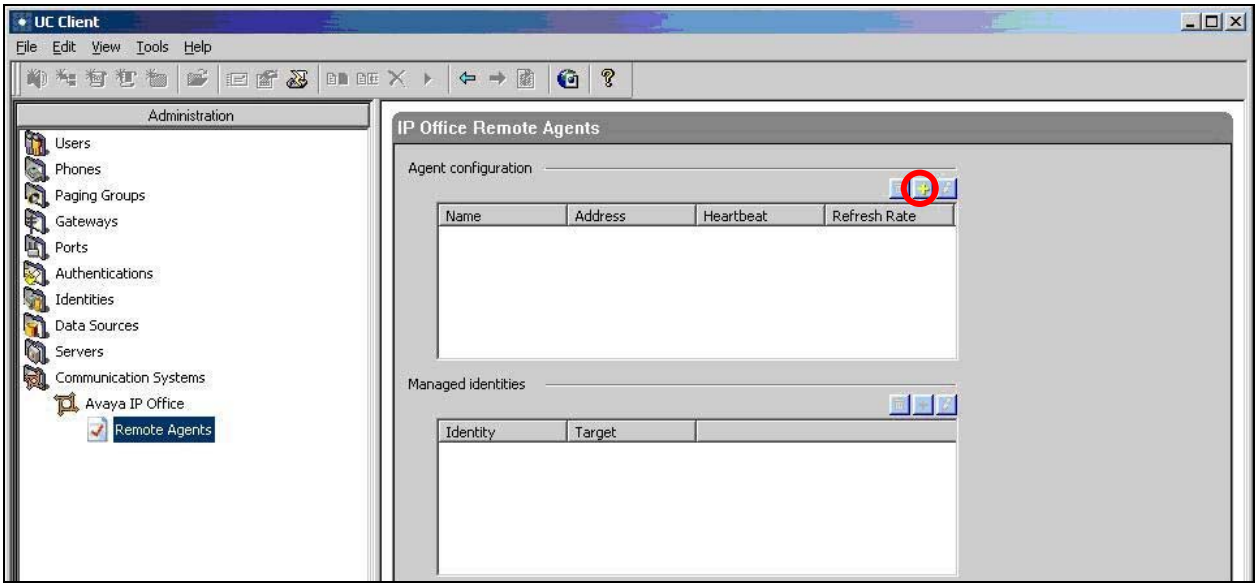
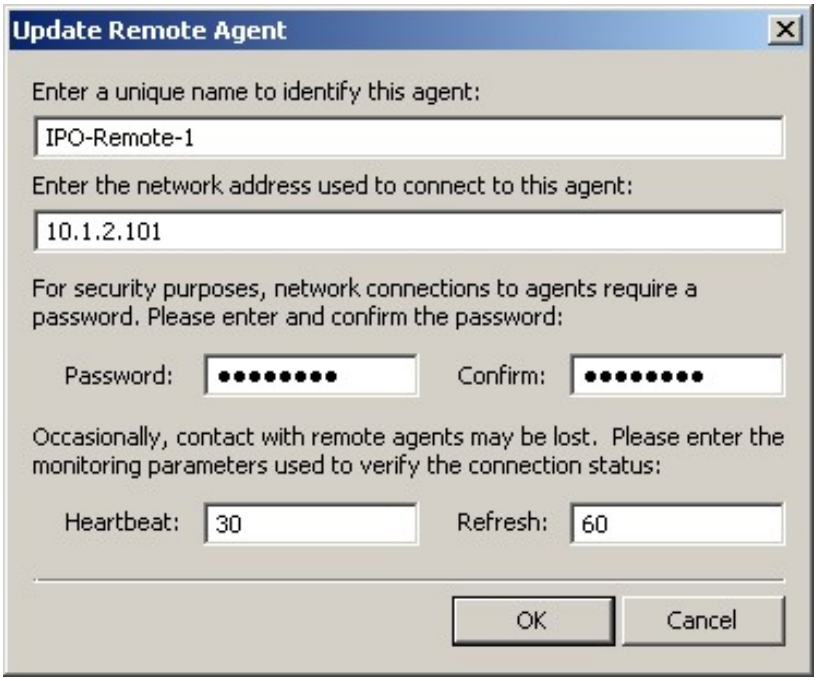
6.5. Administer Remote Agent

Select **Administration > Communication Systems > Avaya IP Office > Remote Agents** in the left pane, to display **IP Office Remote Agents** in the right pane. Click on the add icon circled below to add a remote agent.



The **Update Remote Agent** screen is displayed. Enter a descriptive name and the IP address of the Objectworld Remote Agent, as shown below. For the **Password** and **Confirm** fields, enter the password of the Objectworld Remote Agent, which was created as part of the Objectworld Remote Agent installation.



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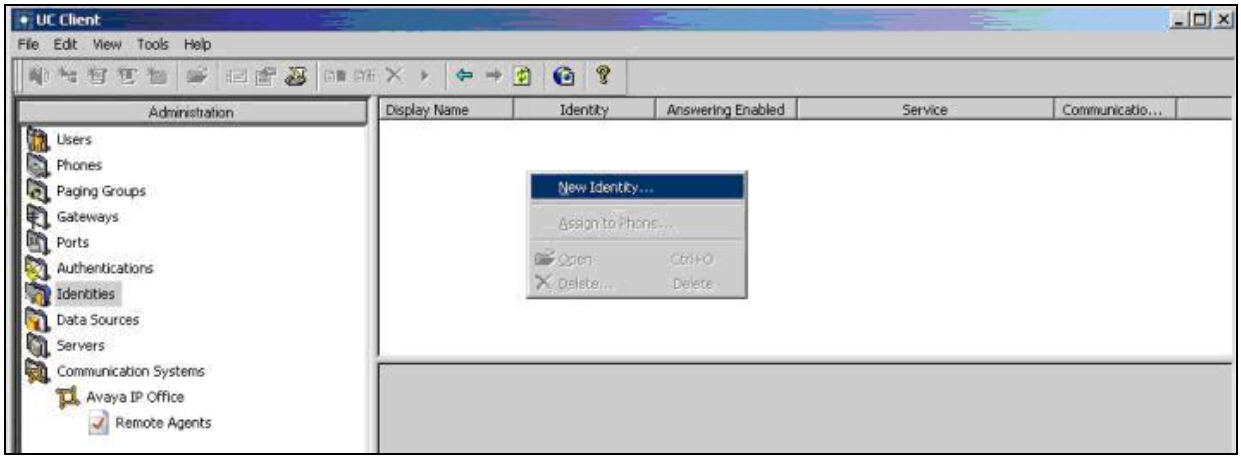
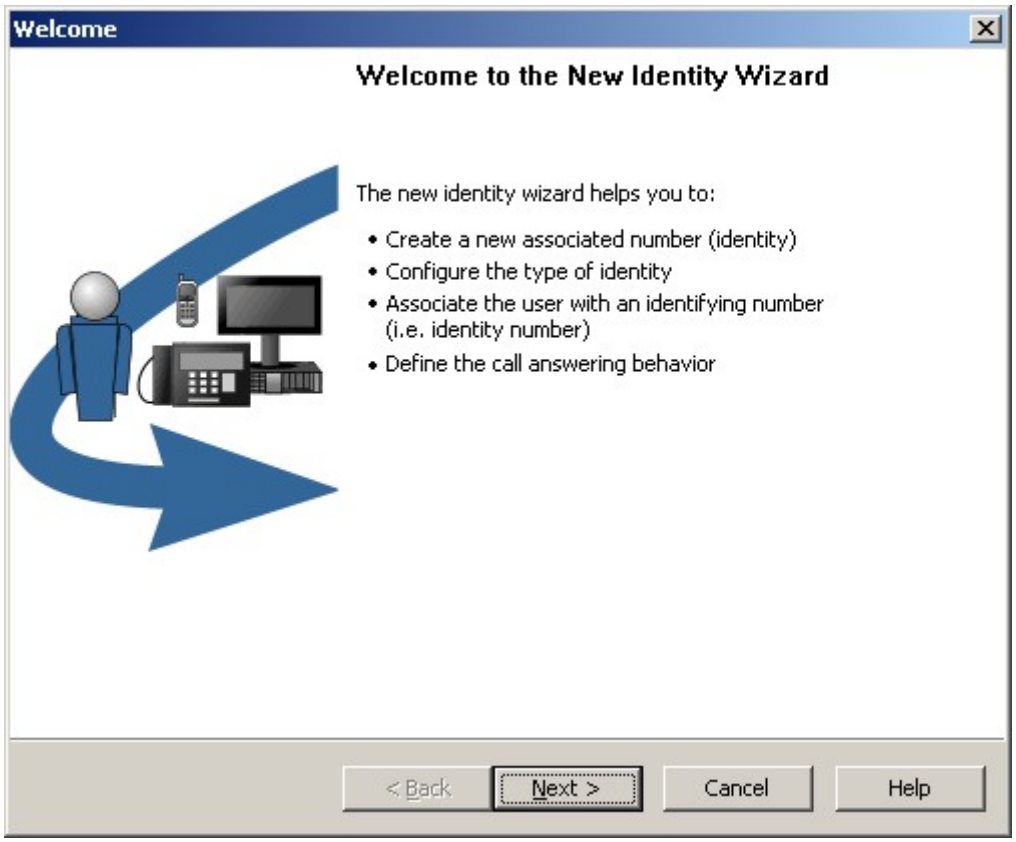
6.6. Administer Identities

6.6.1. Administer Auto Attendant Identity

From the **UC Client** screen, select **Administration > Identities** in the left pane, and right-click anywhere in the upper right pane to display the pop-up box. Select **New Identity**.



The **Welcome to the New Identity Wizard** screen is displayed. Click **Next**.



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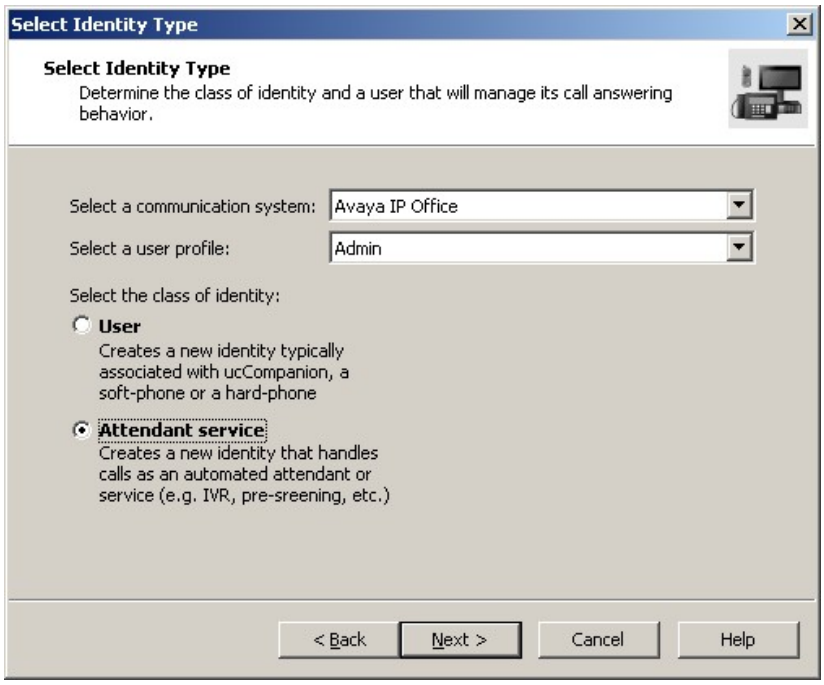
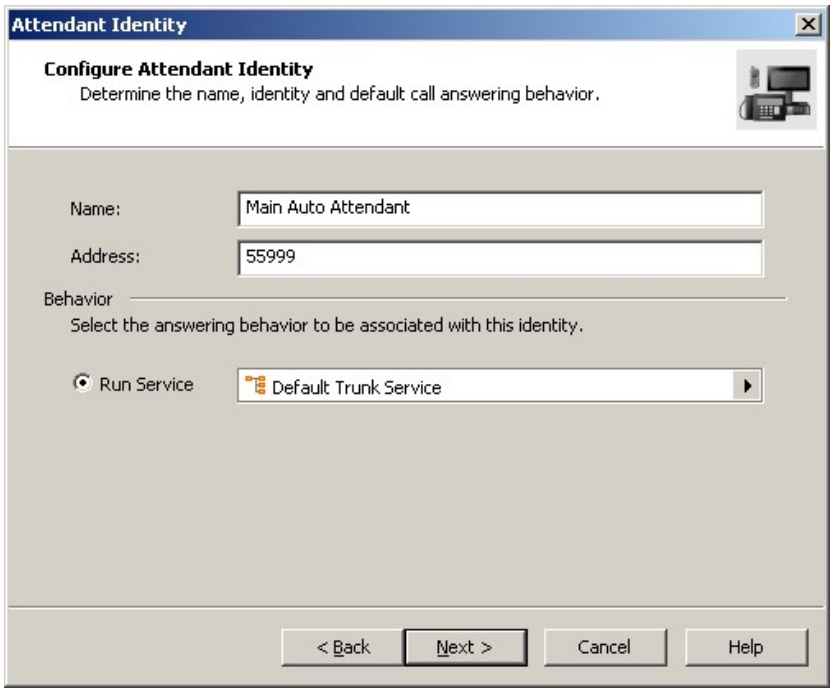
The **Select Identity Type** screen is displayed. Click the radio button for **Attendant service**, and retain the default values in the remaining fields. Click **Next**.



The **Configure Attendant Identity** screen is displayed next. Enter the name and extension of the auto attendant hunt group from **Section 4.3.2**, as shown below. Retain the default values in the remaining fields. Click **Next**, followed by **Finish** in the subsequent screen to complete the wizard.



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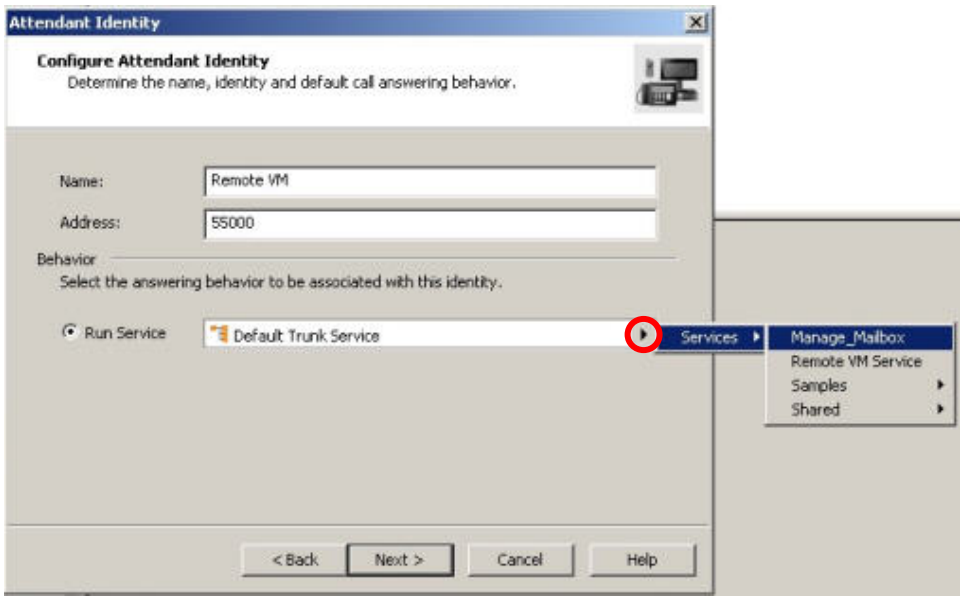
6.6.2. Administer Voicemail Identity

Follow the procedures in **Section 6.6.1** to create a new attendant identity. In the **Configure Attendant Identity** screen, enter the name and extension of the voicemail hunt group from **Section 4.3.1**. Retain the **Run Service** radio button selection, and click on the arrow to the right of the field to select **Services > Manage_Mailbox**, as shown below. Click **Next**, followed by **Finish** in the subsequent screen to complete the wizard.

Note that selecting the **Manage_Mailbox** service is only necessary when deploying the UC Server for a centralized voicemail environment. In addition, the Manage Mailbox service is not included in the default installation of the UC Server, and must be installed manually by following the instructions in [3].



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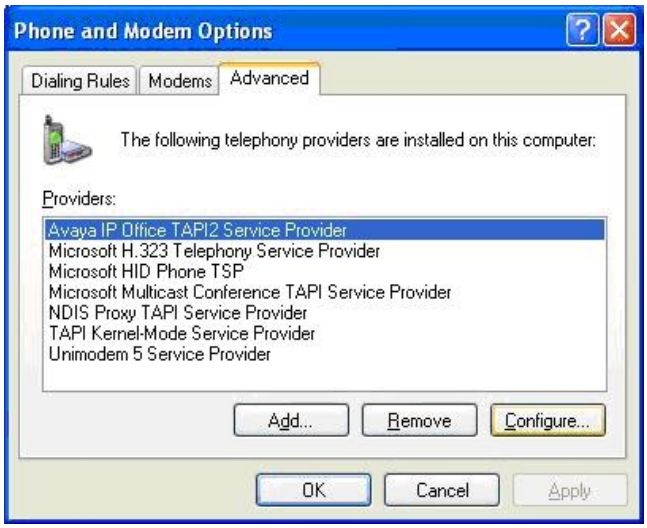
7. Configure Objectworld Remote Agent in Remote Site

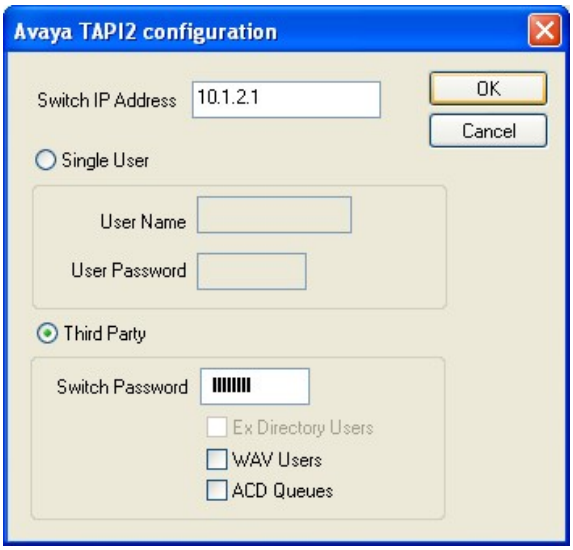
This section provides the procedures for configuring the Objectworld Remote Agent in the Remote site.

7.1. Administer TAPI Driver

From the Objectworld Remote Agent PC, select **Start > Settings > Control Panel**, and double-click on the **Phone and Modem Options** icon (not shown). In the **Phone and Modem Options** screen, select the **Avaya IP Office TAPI2 Service Provider** entry under the **Advanced** tab. Click **Configure**.



The **Avaya TAPI2 configuration** screen is displayed. For **Switch IP Address**, enter the IP address of the Avaya IP Office in the Remote site. Select the radio button for **Third Party**, and enter the IP Office password into the **Switch Password** field. Click **OK**, and reboot the Remote Agent PC.



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8. General Test Approach and Test Results

The feature test cases were performed manually. Incoming trunk calls were made from the PSTN to the Avaya IP Office systems in the Remote and Central sites, and routed over to the Objectworld UC Server for the auto attendant service.

The voicemail scenarios included endpoints in the PSTN, in the Central site, and in the Remote site. As an example, the call forwarding scenario included the following variations, and note that the called party for all variations had the Do Not Disturb feature activated so that calls are redirected immediately to the Objectworld UC Server:

- Calls from the PSTN to voicemail users in the Central and Remote sites.
- Calls from the voicemail users in the Central site to voicemail users in the Central and Remote sites.
- Calls from the voicemail users in the Remote site to voicemail users in the Central and Remote sites.

The serviceability test cases were performed manually by disconnecting/reconnecting Ethernet cable to the Objectworld UC Server, and disconnecting/reconnecting the Ethernet cable to the Objectworld Remote Agent.

The verification of tests included manually checking the MWI for the voicemail users.

All test cases were executed and passed.

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9. Verification Steps

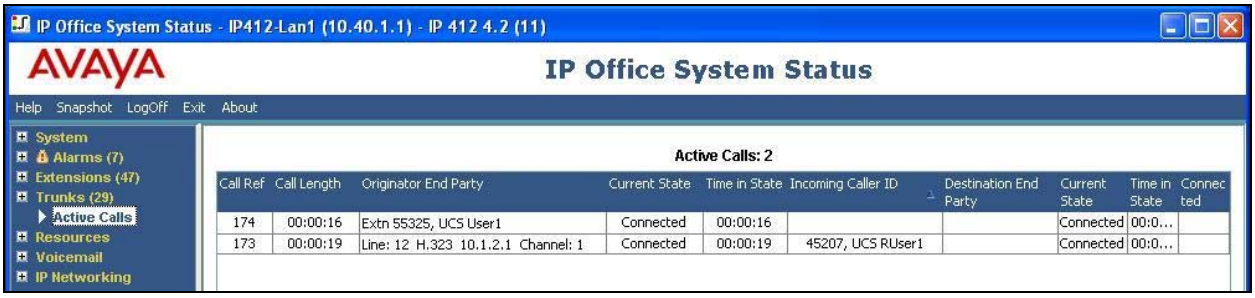
This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and Objectworld UC Server.

Make a call from a voicemail user at the Central site to the voicemail hunt group, and a call from a voicemail user at the Remote site to the voicemail short code. Verify that both calls are answered by the Objectworld UC Server, and that both calling parties are recognized by the Objectworld UC Server as subscribers.

9.1. Verify Avaya IP Office

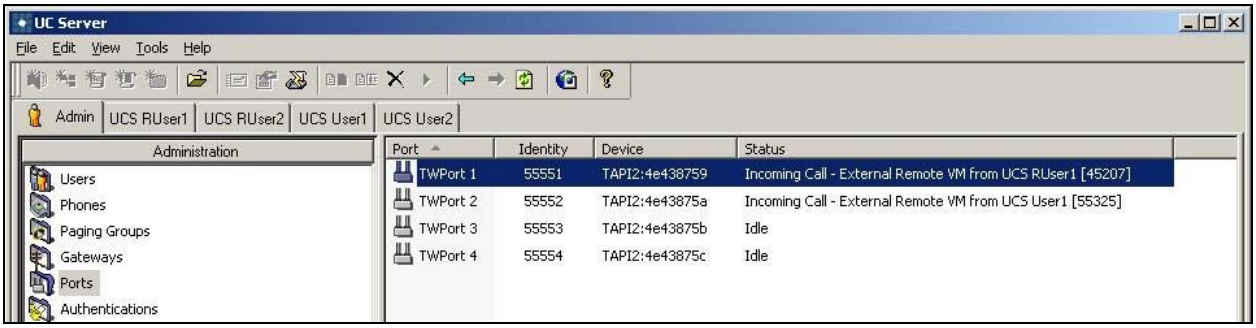
From a PC running the Avaya IP Office System Status application, select **Start > Programs > IP Office > System Status** to launch the application. Select the IP Office system in the Central site, and log in with the appropriate credentials.

In the subsequent **IP Office System Status** screen, select **Trunks > Active Calls** from the left pane, to display a list of active calls. Verify that there are two entries reflecting the two active calls, as shown below.



9.2. Verify Objectworld UC Server

From the Objectworld UC Server, follow the procedures in **Section 6.3** to launch the UC Client. From the **UC Client** screen, select **Administration > Ports** in the left pane. Verify that there are two active ports reflecting the two active calls, as shown below.



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10. Conclusion

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

11. Additional References

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

1. *IP Office 4.2 Documentation CD*, August 2008, available at http://support.avaya.com.

2. *Objectworld UC Server Administration Guide*, Version 4.4, available at http://www.objectworld.com/support/documentation.aspx.

3. *TN012 IP Office Integration Guide*, December 2008, available at http://www.objectworld.com/support/documentation.aspx.

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