



NetVanta Unified Communications Technical Note

Integrating IP Office

1 UC Server Overview

The NetVanta Unified Communications Server works with an integrated messaging client, Microsoft Exchange, Lotus Notes and other IMAP-compliant e-mail systems to provide users with a single storage and access point for voice, fax, and / or e-mail messages. The UC server provides full fax server capabilities, including managing incoming and outgoing faxes.

Users can retrieve and manage messages either over the telephone or directly from the desktop. The UC server is designed to allow users to access Personal Assistant and Personal Business Assistant mode. Clients will be able to route specific callers to one-time messages and to filter calls to their extensions by activating call transfer, active message delivery, and pager notification based on Caller ID, Outlook® Contact or Contact Group, and/or Time of Day.

In addition to unified communications features, the products provide seamless Active Directory (AD) integration for user management. The product users can be linked to AD users via the product administration user interface or via an MMC snap-in visible in the AD user dialog. User details – like first/last/display name and state (enabled/disabled) – are synchronized automatically with AD on a continual basis, and the plug-in also provides mechanisms for modifying product-specific details like extensions and message store. AD linked users are automatically authenticated when they log into the Server using the Client.

The UC server can also act as a centralized voicemail system within a networked IP Office environment. Remote IP Office installations can have calls redirected to a central IP Office location where the message store and voicemail system are centralized.

1.1 Integration Overview

The UC server interacts with IP Office via Analog integration (Tip and Ring) for the media and TAPI 3rd party control for the control. The analog integration provides media for both voice and fax messages. The UC server can also interact with IP Office via TAPI/WAVE integration (for call control and media).

1.1.1 IP Office Analog Integration

The 2-wire analog single-line circuits are connected to Intel Dialogic D/4PCIUF, D/120JCT-LS, D/41JCT-LS or VFX/PCI cards in the product server. Each Dialogic port simulates 2-wire analog lines. The caller information and call reason information is conveyed to the product through Avaya IP Office's 3rd party TAPI implementation (CTI Link Pro). The server then answers and plays the appropriate greeting. Message-Waiting indication is set and cancelled using the TAPI interface.

NOTE: If fax is not required, the product can also integrate with TAPI Wave.

1.1.2 IP Office TAPI CTI Link Overview

Avaya IP Office’s CTI Link Pro is used to gather caller and called telephone number information as well as call reason information. The call reason gives the product the ability to determine how it answers. For example, whether it acts as an Automated Attendant, prompts for a mailbox password or prompt the callers to leave a message in a mailbox.

A CTI Link Pro license **MUST** be installed on each IP Office that is integrated with the product. In addition, if TAPI/Wave is required then a *Wave User* license must be installed and configured.

1.2 System Requirements

The following table describes the minimum requirements for the different integration types of UC server.

	Corporate Office (Main)		Remote Office
	TAPI Analog ⁽¹⁾	TAPI/Wave ⁽¹⁾	Remote Agent
UC Server Hardware Requirements			
Dialogic Cards	D/4PCIUF, D/4JCT-LS, VFX/PCI, D/120JCT-LS	None Required	None Required
Platform Requirements	P4 – 3.0 GHz 1 GB RAM 80GB Hard Drive	P4 – 3.0 GHz 1 GB RAM 80GB Hard Drive	P3 – 600 MHz 512 MB RAM 20GB Hard Drive
UC Server Software Requirements			
Operating System	Windows XP, 2003* Server	Windows XP, 2003* Server	Windows 2000, Windows XP, Vista, 2003 Server
UC Server Release	UC Server Release 3.0 or higher	UC Server Release 4.0.2 or higher	UC Server Release 4.0.2 or higher
Dialogic Software	Intel Dialogic 6.0 SU22 or higher	None Required	None Required
IP Office User CD Software	• CTI Link Pro	• CTI Link Pro • Wave Driver	• CTI Link Pro • Wave (Optional)
IP Office PBX Software Requirements			
IP Office Software Release**	IP Office Release 2.1 or higher	IP Office Release 2.1 or higher	IP Office Release 3.2(17) or higher
CTI Link Pro License	Yes	Yes	Yes

	Corporate Office (Main)		Remote Office
	TAPI Analog ⁽¹⁾	TAPI/Wave ⁽¹⁾	Remote Agent
UC Server Hardware Requirements			
Wave Users Licenses	No	Yes, (available in 4 port increments)	Optional ⁽²⁾
IP Office PBX Hardware Requirements			
Analog Station Ports	Yes	No	Optional ⁽²⁾
Digital Station Ports	No	No	Optional ⁽²⁾ (also incl. telephone)

* Both Dialogic and Avaya TAPI-WAV software do not currently support Microsoft Windows Server 2008, SBS 2008, and EBS 2008.

** See [Appendix A - Recommended IP Office and UC Server Version Pairings Based on Integration Type](#) for more information about which version of IP Office to use with your version of the UC Server.

¹ The UC server can use a mixture of TAPI/Analog and TAPI/Wave ports to satisfy customer requirements.

² The remote IP Office integration requires “in service” devices. Choose one of:

- Analog station ports
- TAPI/Wave ports (Requires Wave User license)
- Digital Station Ports (With telephone plugged in so that it is “in service” on IP Office)

You must also assign at least one extension of the above types into the remote IP Office hunt group. ADTRAN recommends a minimum of two ports be assigned to this redirection hunt group to ensure that there is at least one idle port available at all times.

Depending on system configuration, additional ports may be required. The number of ports is based on the number of simultaneous calls that are expected to route to voicemail from the remote site within the busiest 2-second interval.

PBX Limitations and Considerations

- License Key server must be installed, configured and available.
- If a centralized UC server is required, IP Office must be networked together using IP or PRI trunks (using Small Community Networking) with unique dialing extension number on each IP Office. See sections 8 and 9 for more information.

1.2.1 Remote Access Considerations for WAVE Audio Devices

CAUTION: Mapping remote computer sound to local computer when using Windows Remote Desktop may cause WAVE audio devices to stop working.

Ensure that the remote audio mapping is disabled for a client computer that wishes to manage the UC server using a Windows Remote Desktop connection if you are integrating with IP Office using TAPI/Wave.

To configure Remote Desktop connections to leave sound at remote computer

1. Launch remote desktop connection using Start > All Programs > Accessories > Remote Desktop Connection.
2. Click Options.
3. Select the Local Resources tab.
4. Change the Remote computer sound configuration is set to Leave at remote computer.

2 Workarounds for Known Integration Issues

2.1 One-way audio issues for incoming PRI calls

Applies to IP Office version(s): 3.2(54) only

Integration type: Analog, TAPI-WAVE

Description: There is a condition where no audio can be heard on a PRI call on when the previous incoming PRI call was transferred through a UC server auto-attendant. Investigation into the issue revealed that if the server answers the PRI call too quickly then the IP Office PBX does not relay audio properly which results in silence on the external call. If the server answers the call more slowly after it is presented then the audio is relayed correctly.

Resolution: A configuration file has been provided to include an option for this particular case (see below). The option allows adjustment for the amount of time (in seconds) between when the server is notified about a new incoming call and when it answers that call. Modification of this option will require a server restart. The steps to modify this option are described below.

Note: This work-around was first applied to NetVanta UC Server version 4.0.12 and the configuration option was located in the following file:

.\ADTRAN\NetVanta CallAttendant Office Server\Data\System\TAPI2.cfg

This file has since been deprecated. Therefore, if you have upgraded to UC Server version 4.2 or later than the change must be propagated as per the instructions below.

1. Edit the IP Office configuration file:

.\ADTRAN\NetVanta UC Server\Data\System\Pbxs\00000000.xml

NOTE: If you have more than one PBX configured in the UC server then contact ADTRAN Technical Support.

- The **DELAY_BEFORE_ANSWER** value must be changed from **0** (default value) to at least **2** seconds. This means that the Server will wait 2 seconds before picking up every incoming call. See below for an example of how the change can be applied to the configuration file.

```
<?xml version="1.0" encoding="UTF-8"?>
<AVAYA_IP_OFFICE_PBX version="1.0.1.0">
  <REMOTE_AGENTS/>
    <REMOTE_CALL_CACHE>
      <EXPIRY>3</EXPIRY>
    </REMOTE_CALL_CACHE>
  <TAPI_OPTIONS>
    <DISCONNECT_DEFERAL_TIME>0</DISCONNECT_DEFERAL_TIME>
    <DELAY_BEFORE_ANSWER>2</DELAY_BEFORE_ANSWER>
  </TAPI_OPTIONS>
  <BLIND_TRANSFER_OPTIONS>
    <STYLE>consult</STYLE>
    <PRE_DIAL_DELAY>2</PRE_DIAL_DELAY>
  </BLIND_TRANSFER_OPTIONS>
</AVAYA_IP_OFFICE_PBX>
```

- Restart the UC server's Application Server service.

2.2 Shortcode "D" does not send first DTMF tone

Applies to IP Office version(s): All versions; fixed in 4.1(15).

Integration type: Analog, TAPI-WAVE

Avaya bug #: MRDB00061692

Description: If an IP Office shortcode contains a "D" character, then the first character after the "D" character is not sent to the answering device. This only affects shortcodes that redirect calls to the UC server application server (voicemail) port (i.e., shortcodes that allow direct transfer to voicemail). For example, let's say your shortcode is configured as follows:

Short code: #xxx
Telephone number: 500D#N (where '500' is the UC server voicemail hunt group pilot number)
Feature: DialExtn

If a user dials #203 (where is a user's extension) then the first DTMF digit will be ignored. The result is that the UC server receives the digits "203" instead of "#203".

Workaround: This issue can be circumvented by adding an extra "#" after the "D" character in the shortcode's "Telephone number" field. In keeping with the above example, the working shortcode would be configured as follows:

Short code: #xxx
Telephone number: 500D##N (where '500' is the UC server voicemail hunt group pilot number)
Feature: DialExtn

2.3 IP Office stops acknowledging DTMF tones

Applies to IP Office version(s): 4.0(7) and higher

Integration type: TAPI-WAVE only

Avaya bug #: MRDB00060958

Description: IP Office stops acknowledging DTMF key presses over an analog trunk after it receives a *lineGenerateTone* TAPI message. This standard TAPI message is called by the UC server when it requires an audible ‘beep’ be played for the caller, such as before a voice recording is to begin. After this ‘beep’ occurs, IP Office stops recognizing DTMF keys pressed by the caller. The likelihood of encountering this issue is small since callers typically hang up after leaving a voice message.

Workaround: This issue can be circumvented for PBA users (see below) but cannot be circumvented for PA users. This is because the ‘beep’ is automatically generated after a user’s greeting is played to the caller to indicate that the voice message recording is about to begin.

For PBA users: Replace every instance of the ‘Voicemail’ element with two elements: ‘Play Announcement’ and ‘Take Message’. For ‘Play Announcement’, select *Greetings > [Called Extension]*, and uncheck the “Beep before recording” checkbox for ‘Take Message’. You can optionally put an additional ‘Play Announcement’ element after the first one to play a “beep” announcement (thus emulating the regular system “beep”).



2.4 Blind transfers to DND extensions can cause IP Office to Restart

Applies to IP Office version(s): 4.1(9) up to (but not including) 4.2(17)

Integration type: Analog

Avaya bug #:

Description: If a call from an auto attendant service transfers a caller to an extension that is DND, then IP Office can restart if the majority of the voicemail ports are busy with other calls.

Resolution: Upgrade to IP Office version 4.2(17).

Workaround: If upgrading to 4.2(17) is not currently viable, then this issue can also be circumvented by changing the method that the UC server uses to transfer calls from ‘blind’ to ‘consultative’.

NOTE: In NetVanta UC Server version 4.0.12 the configuration option was located in the following file:

`.\ADTRAN\NetVanta CallAttendant Office Server\Data\System\TAPI2.cfg`

This file has since been deprecated. Therefore, if you have upgraded to UC Server version 4.2 or later than the change must be propagated as per the instructions below.

1. Edit the IP Office configuration file:

.\ADTRAN\NetVanta UC Server\Data\System\Pbxs\00000000.xml

Note: If you have more than one PBX configured in the UC server then contact ADTRAN Technical Support.

2. The **STYLE** value must be changed from **blind** (default value) to **consult**.
3. The **PRE_DIAL_DELAY** value must be changed from **0** (default value) to at least **2** seconds. This means that the Server will wait 2 seconds after putting the caller on hold before initiating the transfer.

The following is an example of how the change can be applied to the configuration file:

```
<?xml version="1.0" encoding="UTF-8"?>
<AVAYA_IP_OFFICE_PBX version="1.0.1.0">
  ...
    <BLIND_TRANSFER_OPTIONS>
      <STYLE>consult</STYLE>
      <PRE_DIAL_DELAY>2</PRE_DIAL_DELAY>
      <POST_DIAL_DELAY></POST_DIAL_DELAY>
    </BLIND_TRANSFER_OPTIONS>
  </AVAYA_IP_OFFICE_PBX>
```

4. Restart the UC server's Application Server service.

3 Supported Features

The following features are supported with this integration:

- Call coverage to personal greeting
 - Busy
 - Ring-no-answer
 - Unconditional
- Automated Attendant
- Inbound and outbound fax server
- Return-to-operator / "Find me – Follow me"
- Personal greeting of original-called party on double-call forward using call coverage
- Direct Call
- Message Waiting
- Caller ID
- Direct transfer to voicemail
- Centralized voicemail and application services

4 Programming IP Office

Programming on the IP Office is done using the IP Office Manager application. In a centralized voicemail scenario, the following instructions apply for both the central IP Office and remote IP Office configurations; they are configured identically. The only difference is whether the ports that are mentioned terminate calls or simply redirect calls.

Note: For more details, refer to the *Avaya IP Office Communications System Programming Manual*.

4.1 Assigning and Configuring UC Server Ports

The following are instructions about how to program the analog ports on the IP Office system for integration with the ports on the UC server.

Login to the IP Office Manager PC and go to **Start > Programs > IP Office > Manager** to launch the Manager application. Log in to the Manager application with the Administrator's username and password.

1. In the Manager window that appears, select **File > Open** to search for the IP Office system in the network.
2. Log in to the IP Office system using the appropriate password to receive its configuration.

4.1.1 Port Programming with Analog Media

The UC server connects to the IP Office via Analog Extensions. The tables below show the programming required for the ports used to physically connect the UC server to the IP Office. The table headings correspond to the different configuration options in IP Office Manager. If a property/value is not specified, leave it as the default value.

For each extension corresponding to a UC server voicemail port, configure the following attributes (the sections in which these configurations are performed are indicated in bold above each table):

Extension

Tab	Attribute	Value
Extn		
	Extension ID	(Automatically configured by the system)
	Base Extension	{Assign a unique extension number for each VM port}
	Caller Display Type	Off
Analogue		
	Equipment Classification	IVR Port
	Flash hook pulse width	Min: 20, Max: 500
	Message Waiting Lamp Indication Type	None
	Hook Persistency	100mx

Note: To ensure that the voicemail extension is listed through TAPI, disable the Ex Directory check box. This is the default.

User

Tab	Attribute	Value
User		
	Name	{Assign the name of Voicemail port}
	Password	Leave Blank (default)
	Confirm password	Leave Blank (default)
	Full name	Full name of the voicemail port
	Extension	{Assign to be the same as the Base Extension number defined in the previous <i>Extension</i> table}
	Ex Directory	Ensure that the Ex Directory is <i>Disabled</i>
Voicemail		
	[All settings and values]	Blank and unchecked
DND		
	Telephone Number (list)	Blank
ShortCodes		
	Codes (list)	Blank
Source Numbers		
	Source Numbers (list)	Blank
Telephony		
<i>Call Settings</i>	[All settings and values]	Default values
<i>Supervisor Settings</i>	Cannot be intruded	Enabled (checked)
	[All other settings and values]	Default values
<i>Multiline Options</i>	[All settings and values]	Default values

4.1.2 Port Programming with Wave Media

The following are instructions about how to configure the TAPI/Wave users on the IP Office system. Configure using this method if you plan to integrate with TAPI/Wave. Consult [Installing and Configuring TAPI-WAVE](#) for details on how to install Avaya’s Wave audio driver on the UC server.

The table below show the programming required for the UC server TAPI/Wave devices.

NOTE: IP Office differentiates a TAPI/Wave user from a regular user by the inclusion of the prefix “TAPI:” as part of the *Name* field.

NOTE: On IP Office release 3.1 and below, when you create an extension with no physical hardware a prompt will ask you if you want to “Add a VoIP Extension”. For a TAPI/Wave port select “No”.

NOTE: To ensure that the voicemail extension is listed by browsing the TAPI devices, disable the Ex Directory check box. This is the default.

NOTE: There is no physical extension corresponding to a TAPI/Wave user, so no configuration in the **Extension** section is required.

For each extension corresponding to a UC server voicemail port, configure the following attributes (the sections in which these configurations are performed are indicated in bold above each table):

User

Tab	Attribute	Value
User		
	Name	TAPI: { <i>Unique Extension Number</i> } e.g. TAPI: 600
	Password	Leave Blank (default)
	Confirm password	Leave Blank (default)
	Full name	Full name of the voicemail port
	Extension	{ <i>Assign a unique extension number</i> }
	Ex Directory	Ensure that the Ex Directory is <i>Disabled</i>
Voicemail		
	[All settings and values]	Blank and unchecked
DND		
	Telephone Number (list)	Blank
ShortCodes		
	Codes (list)	Blank
Source Numbers		
	Source Numbers (list)	Blank
Telephony		
<i>Call Settings</i>	[All settings and values]	Default values
<i>Supervisor Settings</i>	Cannot be intruded	Enabled (checked)
	[All other settings and values]	Default values
<i>Multiline Options</i>	[All settings and values]	Default values

4.2 Assigning UC Server Ports as Members of a Voicemail Hunt Group

Use the following to configure the UC server ports as a member of a voicemail hunt group.

4.2.1 Hunt Group

Here you will assign the user extensions (created to represent the UC server voicemail ports) to a hunt group. When calls are redirected to voicemail, the system will hunt through each of the extension in this hunt group until a free port is available.

Hunt Group

Tab	Attribute	Value
Hunt Group		
	Name	{Name of voicemail Hunt Group}
	Extension	{Unique extension number}
	Ring Mode	Sequential
	No Answer time (secs)	(default)
	Overflow time (secs)	Off
	Voicemail Answer time (secs)	45 (default)
	Extension list	{Add the voicemail port extension numbers – see 4.1 - Assigning and Configuring UC Server Ports }
	Overflow Group list	Blank (default)
[All other tabs]		[Default values]

4.3 UC Server as the ONLY System Defined Voicemail

Use the following instructions to configure the UC server as the only system-defined voicemail.

4.3.1 System Configuration

The UC server must be defined as the default voicemail system for IP Office. Under “System”, select the IP Office unit.

Tab	Attribute	Value
Voicemail		
	Voicemail Type	Group Voicemail
	Voicemail Destination	{Using the drop-down list, select the UC server voicemail Hunt Group created in 4.2.1 - Hunt Group}
	Voicemail IP Address	Not enabled (blank)
	[All other values]	[Default values]
[All other tabs]		[Default values]

4.3.2 End User Configuration

Use the Voicemail tab under each individual User’s configuration to enable users for the UC server voicemail support.

Tab	Attribute	Value
Voicemail		
	Voicemail On	Checked
	Voicemail Help	Unchecked (Default)
	Voicemail Ringback	Unchecked (Default)
	Voicemail Email Reading	Unchecked (Default)
	Voicemail Code	Blank (Default)
	Confirm Voicemail Code	Blank (Default)
	Voicemail Email	Blank (Default)
	Reception /Breakout (DTMF-0)	Blank (Default)
	Breakout (DTMF-2)	Blank (Default)
	Breakout (DTMF-3)	Blank (Default)
[All other tabs]		[Can be set as required by each user]

4.4 UC Server in Parallel with Voicemail Lite/Pro

The UC server can also be used when Voicemail Lite/Pro is installed and configured in a customer’s environment. This may be necessary when some users use Voicemail Lite/Pro or some features on

Voicemail Lite/Pro (for example, Call Recording) are required, while the UC server is used as the VM system.

4.4.1 System Configuration

Follow the instructions described in the Voicemail Lite/Pro installation manual to configure the Voicemail Lite/Pro users. Use the Voicemail Tab under System Configuration to define **Voicemail Pro** as the default voicemail system for IP Office.

Tab	Attribute	Value
Voicemail		
	Voicemail Type	Voicemail Lite/Pro
	Voicemail Destination	Blank
	Voicemail IP Address	Either broadcast address or specific address for Voicemail Lite/Pro.
	Voicemail Password	As defined by Voicemail Lite/Pro
	Confirm Password	As defined by Voicemail Lite/Pro

4.4.2 End User Configuration – User programming

Use the **Forwarding Tab** to define users of the UC server by setting the individual user’s Call forward on busy and no answer destinations to the voicemail Hunt Group.

Tab	Attribute	Value
Forwarding		
	Forward Unconditional	Enable if all calls are to be forwarded to the UC server.
	Forward Number	{UC server Hunt Group as defined in 4.2 - Assigning UC Server Ports as Members of a Voicemail Hunt Group }
	Forward On Busy	Enable
	Forward On No Answer	Enable
	Forward Number	{ UC server Hunt Group as defined in 4.2- Assigning UC Server Ports as Members of a Voicemail Hunt Group }

4.5 Configuring IP Office for Direct Answer by UC Server

The UC server can answer calls directly and play defined greetings/announcements, or route the calls to the defined destinations. Applications that can benefit from this ability are company auto-attendants and DID Fax Services.

4.5.1 Auto Attendant

To have the UC server answer Trunks/Lines directly as an auto-attendant, do the following on the IP Office.

1. Create a **Hunt Group** that will terminate the incoming trunks:

Tab	Attribute	Value
Hunt Group		
	Name	{Name of trunk group}
	Extension	{Unique extension number}
	Hunt type	Linear
	Overflow time (secs)	Blank (Default)
	No Answer Time (secs)	Blank (Default)
	Voicemail Answer Time (secs)	45 (Default)
	Extension List	(Empty)
	Overflow Group list	{UC Server Voicemail Hunt Group name}
[All other tabs]		[Default values]

2. Set up the **Line Configuration** as follows:

Tab	Attribute	Value
Line Settings		
	Incoming Group ID	(Ensure your incoming lines are assigned to a defined Group ID. This will be used in the Incoming call route configuration.)

Note: All other parameters are not required.

3. Set up the **Incoming Call Route** for the Lines as follows:

Tab	Attribute	Value
Standard		
	Line Group Id	Group ID in step #2
	Incoming Number	Incoming number to be answered by Auto Attendant.
	Destination	Set the destination as the Hunt Group created in Step #1 above

NOTE: All other parameters are not required.

4.5.2 DID fax services

To have users receive faxes directly to their UC server mailboxes via separate DID fax numbers, do the following:

1. Create a **User** for the each DID fax numbers and use the Voicemail tab under that user to enable voicemail for that number. Set this user's properties as shown in 4.3.2 - *End User Configuration*.
2. Set up the **Line Configuration** as follows:

Tab	Attribute	Value
Line Settings		
	Incoming Group ID	(Ensure the incoming number is assigned to a defined Group ID. This will be used in the Incoming call route configuration)

Note: All other parameters are not required.

3. Set up the **Incoming Call Route** for the Lines as follows:

Tab	Attribute	Value
Standard		
	Line Group Id	Group ID in step #2
	Incoming Number	Incoming number to be answered by the Fax service.
	Destination	Set the destination to be the DID fax user created in Step #1 above

Note: All other parameters are not required.

4.6 IP Office Short Codes for Direct Transfer to Voicemail

To directly transfer a user to a voicemail box without ringing the user's telephone, a short code can be created on IP Office to facilitate direct transfers into voicemail.

Create a short code as follows:

Short Code: #xxx

Telephone Number: <Pilot Number>D#N

Feature: DialExtn

Where the <Pilot Number> is the hunt group extension number that contains the UC server ports connected to IP Office.

To use direct transfer to voicemail, a user can simply place a caller on consultation hold, dial #<Extension number of voicemail>. When the call is answered by the UC server, release the call.

5 Installing and Configuring CTI Link

5.1 Overview

The UC server needs Avaya's TAPI Service Provider (CTI Link) in order to operate. Avaya IP Office's CTI Link Pro is used to gather caller and called telephone number information as well as call reason information. The call reason gives the UC server the ability to determine how it answers. For example, the call reason indicates whether the server should act as an automated attendant, prompt for a mailbox password, or prompt callers to leave a message in a mailbox.

The following are required for the UC server to answer calls properly:

- A valid CTI Link Pro license installed on the IP Office Key Server
- The TAPI2 Service Provider (from the **IP Office User CD**) installed on the UC server machine

5.2 Licensing the CTI TAPI Link Pro on the IP Office

You are required to license the TAPI driver to ensure correct operation in third-party mode.

To install the TAPI license

1. Run the IP Office Manager. This can be installed from the IP Office Admin CD.
2. Load the configuration file for your IP Office.
3. Select License on the tree in the left hand window.
4. Right-click in the right hand window and select New.
5. Type the 32-character license key.

The IP Office Manager indicates whether the license is valid or not.

Note: You might have to restart the IP Office to verify that the license shows as valid.

5.3 Installing and Configuring TAPI2 Service Provider

Avaya's TAPI2 Service Provider is installed from the **IP Office User CD**. Perform the following steps:

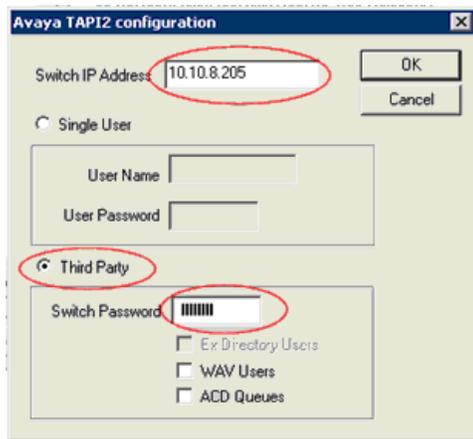
To install the TAPI2 Service Provider

1. Insert the IP Office User CD (self installing).
The Workstation Installation Wizard - Welcome screen is displayed.
2. Click **Next**, select your IP Office Unit, and then click **Next**.
3. Enter both your User Name (or select from existing) and User Password. Click **Next**.
The Choose Destination screen is displayed.
4. Accept the default location or click Browse and select your own destination folder. Click **Next**.
5. On the Select Components screen, **enable** the TAPI box. **Disable** all other boxes, and then click **Next**.

6. When the Select Program Folder screen is displayed, either accept the default or enter a new folder name and click **Next**.
7. A progress bar is displayed and on completion the Install Shield Wizard Complete screen is displayed.
8. Click OK and then click **Finish** to exit from install routine.
9. Reboot the UC server.

To configure the TAPI Service Providers on a Windows 2000 or Windows XP Platform

1. After the system reboots, log in to the system again as administrator and go to **Start > Settings > Control Panel**.
2. In the Control Panel window that appears, double-click **Phone and Modem Options**.
3. On the Advanced tab of the Phone and Modem Options window, double-click **Avaya IP Office TAPI2 Service Provider**.
4. In the Avaya TAPI2 configuration window, set *Switch IP Address* to the IP Address of the IP Office System, enable the *Third Party* button, set *Switch Password* to the IP Office System password (i.e. the password used to login to the IP Office Manager application), and click **OK**.



5. Reboot the UC server computer.

6 Installing and Configuring TAPI-WAVE

6.1 Overview

The UC server has the ability to stream media with IP Office in a purely digital format. This can eliminate (or complement) the traditional analog media integration with IP Office using Dialogic cards. The following are required for the UC server to use the TAPI-WAVE integration:

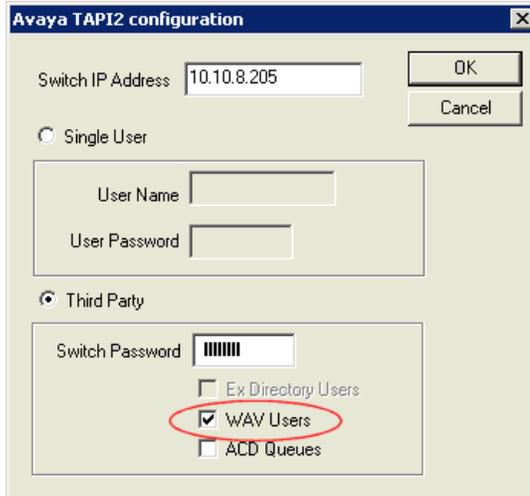
- The CTI License and TAPI2 Service Provider must be installed and configured (see [Installing and Configuring CTI Link](#)).
 - TAPI2 Service Provider must be configured to allow for WAV users.

- A valid Wave User license installed on the IP Office Key Server
- The TAPI-WAVE audio driver is installed on the UC server machine

6.2 Configuring TAPI2 Service Provider

The TAPI2 Service Provider configuration is exactly the same as outlined in [5.3 Installing and Configuring TAPI2 Service Provider](#), with one additional step:

1. In [5.3 - Installing and Configuring TAPI2 Service Provider](#), after performing step 3 (and before clicking OK to close the dialog box) check the “WAV Users” check box.



2. Click OK and reboot the UC server.

6.3 Licensing the Wave User on the IP Office

You are required to license the TAPI-WAVE audio driver to ensure correct operation in third-party mode.

To install the Wave User license

1. Run the IP Office Manager. This can be installed from the IP Office Admin CD.
2. Load the configuration file for your IP Office.
3. Select License on the tree in the left hand window.
4. Right-click in the right hand window and select New.
5. Type the 32-character license key.

The IP Office Manager indicates whether the license is valid or not.

Note: You might have to restart the IP Office to verify that the license shows as valid.

6.4 Installing and Configuring TAPI-WAVE Audio Driver

6.4.1 Installing the TAPI-WAVE Audio Driver

The TAPI-WAVE driver is a 32-bit WAVE driver, and therefore only works on Windows Server 2003 and Windows XP. It is not plug-and-play so you must install it manually. It is included on the UC server installation CD.

Windows XP and Windows Server 2003

Perform the following on the UC server machine:

1. Insert the UC server installation CD.
2. From the Control Panel, select Add Hardware. You will have to wait for your PC to do a search for new Devices which takes about 30 seconds.
3. Select “Yes, I have already connected the hardware”.
4. Select “Add a new hardware device”.
5. Select “Install the hardware that I manually select from a list (Advanced)”.
6. Select “Sound, video and game controllers”.
7. Press the “Have Disk” button.
8. Navigate to the “Redistrib\AvayaIPOfficeWaveDriver” directory on the installation media (either CD or download). Select the oemsetup.inf file.

Once the wave driver is installed, you must ensure that it is **only used** by TAPI. Otherwise, the system uses the driver inappropriately, which causes problems. From the Control Panel, select “Sounds and Audio Devices”. Ensure that no preferred devices use the WIDWOD32 driver.

You also need to prevent its use explicitly by performing the following:

1. From the Control Panel, open Sounds and Audio Devices.
2. Select the Hardware tab.
3. From the list, select “Avaya IP400 32 bit WIDWODDriver” and click the Properties button.
4. Click the Properties tab.
5. Expand the “Audio Devices” list item, select “Avaya IP400 WIDWOD driver”, and click the Properties button.
6. Enable the box labeled “Do not map through this device”.

7 Configuring UC Server for Direct Answering

The UC server can be configured to answer calls directly and play a defined greeting/announcement or route them to the defined destinations. Applications that can benefit from this ability are auto-attendants and DID fax services.

7.1 Company Auto Attendants

To have the UC server answer trunks/lines directly as an auto-attendant, you must first create an attendant service and link it to an attendant identity (aka extension) or DID number.

To create an Attendant Service

1. Launch UC Client and log in as *admin* (or using an authentication with administrative privileges).
2. Select the **Services** tab.
3. Right-click in the content view and select **New > Service**.
4. Type an appropriate name for the attendant service.

For Example: Main Auto Attendant

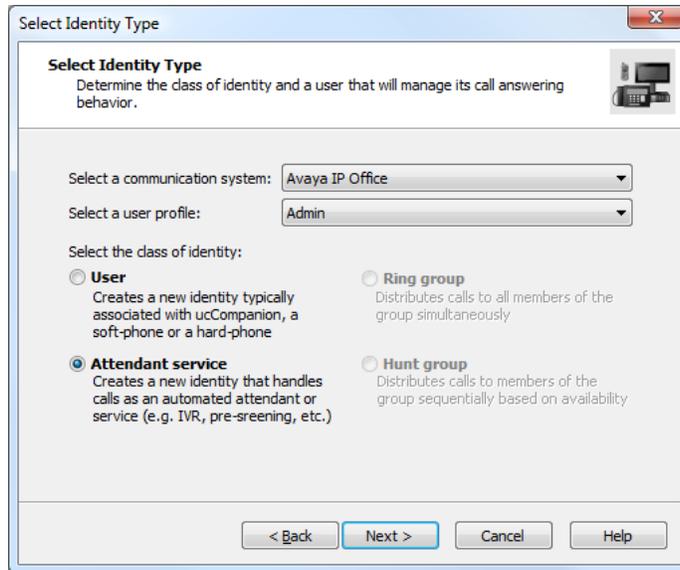
5. Double-click the new service that you created in step 3. This launches the ‘Service Editor’. Build the attendant service as per instructions in the Server Administration Guide.

To create an Attendant Identity

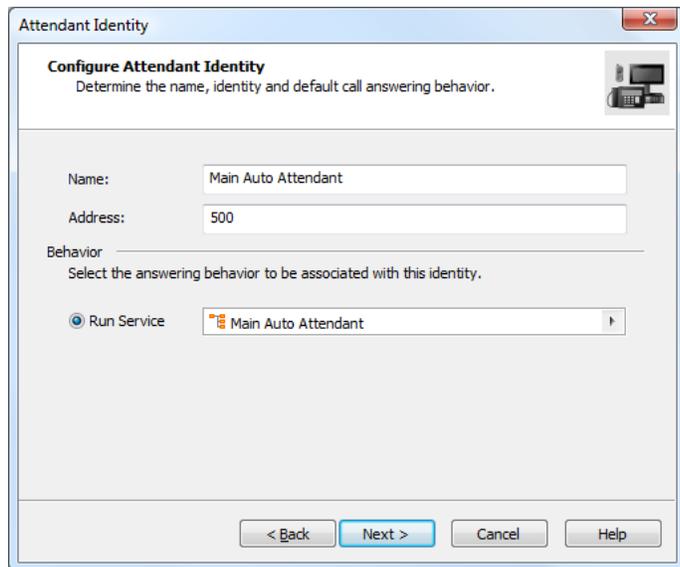
1. Launch UC Client and log in as *admin* (or using an authentication with administrative privileges).
2. Locate the Identities view from the Administration tab.
3. Create a new dialed number/ DID trunk by right-clicking in the Identities contents view (right hand pane) and select **New Identity**.
4. For the **Select Identity Type** page:
 - a. For **communication system**, select *Avaya IP Office*.
 - b. For **user profile**, select *Admin*.

Note: Auto Attendants are typically associated with the Admin user profile unless you want specific service execution based on a user’s profile and/or mailbox.

- c. For **class of identity**, select *Attendant service*.



5. On the **Attendant Identity** page:
 - a. For **Name**, type a name for the auto-attendant (e.g. *Main Auto Attendant*).
 - b. For **Address**, type the extension of the Hunt Group created in [4.5.1- Auto Attendant](#).
 - c. For **Behavior**, select the service that you created in section [7.1 - Company Auto Attendants](#).



NOTE: If the associated user for this new identity is in *Personal Assistant* mode then no service selection is possible. The behavior section instead presents two options: “Voicemail” and “Receive Fax” behavior.

6. Click **Next**, and then **Finish** on the following page.

7.2 DID Fax Services

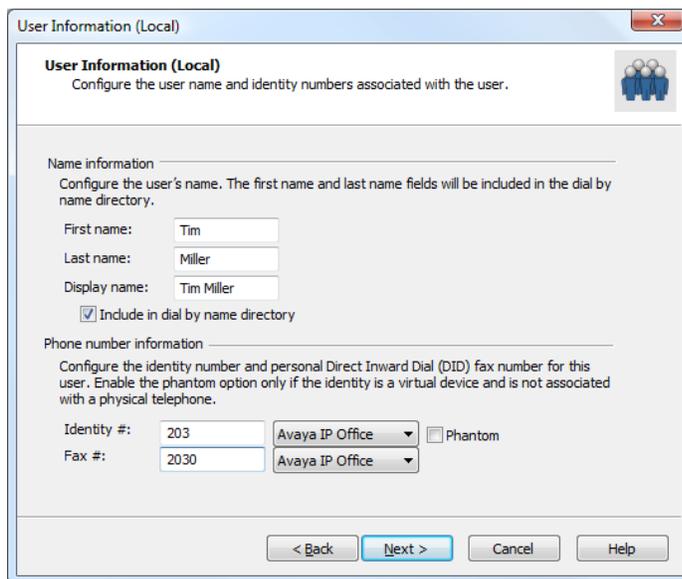
Implementing DID fax services for the UC server can be accomplished in one of two ways:

1. Assign a fax number when creating a new user with the New User Wizard.
- OR
2. Create an identity that represents the destination for the DID Fax number that is configured to receive a fax.

The following sections describe both methods in detail.

7.2.1 Assigning a DID Fax Number Using the New User Wizard

In the “Phone number information” section of the “User Information page” (third page in the wizard), the bottom of the page allows you to specify a fax number. In the diagram below, a user named Tim Miller is being created, with a regular identity (extension number) at 203, and a fax number at identity 2030.



Follow through the rest of the wizard and specify details pertaining to the user you are creating. Once the wizard is complete, Tim Miller has two identities: a regular telephone extension, and a DID fax number that can immediately start to receive faxes.

7.2.2 Creating an identity to receive a fax

In this section you will create a new identity which, when dialed, will automatically receive a fax.

1. Launch UC Client and log in as *admin* (or using an authentication with administrative privileges).
2. Under **Administration**, select **Identities**.
3. Create a new dialed number/ DID trunk by right-clicking in the Identities contents view (right hand pane) and select **New Identity**.
4. On the **Select Identity Type** page:

- For **Communication System**, select *Avaya IP Office*
- For user profile, select the user to associate with the new identity
- For class of identity, select **User**

5. On the **Configure User Identity** page:

- For **Name**, give an appropriate name for the identity (e.g. *Tim's Fax Identity*)
- For **Address**, enter the extension of the DID fax user created in section [4.5.2 DID fax services](#).
- For **Behavior**, select *Receive Fax*

6. Click **Next** and then click **Finish**.

8 Centralized Voicemail for IP Office Versions Pre-4.2

This chapter provides instructions for configuring the UC server as a centralized voicemail solution for IP Office units running versions up to 4.1. In this configuration, each IP Office unit in the solution must be running versions up to 4.1.

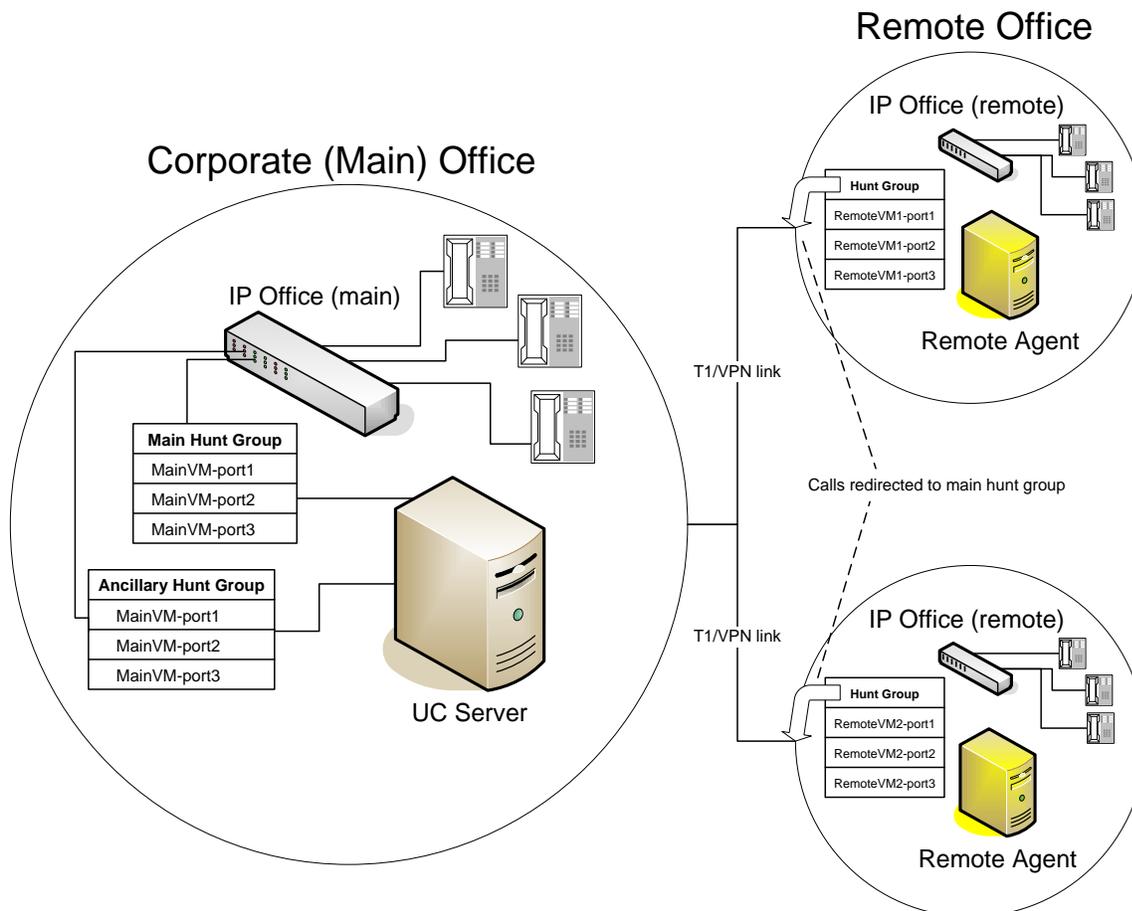
Note: If you are running IP Office version 4.2 (inclusive) or higher, please see [9 – Centralized Voicemail for IP Office Versions 4.2 \(and Higher\)](#).

8.1 Overview

If your company requires that the UC server operates as the voicemail service for a main office and one or more remote IP Office sites (up to 16 sites total), then this section describes how to configure both the IP Office PBX and the UC server to work in this environment.

8.2 Network Topology

Below is a diagram that depicts the typical UC server centralized voicemail scenario:



The UC server can serve as a centralized voicemail service in a distributed IP Office environment with the help of a Remote Agent application. This application is installed on a machine at each remote IP Office site requiring centralized voicemail capability, and the Remote Agent is configured remotely by

the UC server. The Remote Agent is responsible for redirecting incoming voicemail calls to the UC server at the corporate IP Office site and for toggling message waiting lights on telephones at the remote IP Office sites.

The Remote Agent operates as follows:

1. Listens for calls forwarded to the remote site's voicemail hunt-group extensions via TAPI messages
2. Once a call is forwarded to one of these extensions, the Remote Agent then does two things:
 - Sends the call party information along with a unique call identifier to the UC server running at the corporate site via TCP/IP
 - Redirects the call to the corporate site IP Office at a special voicemail hunt-group
3. The corporate site IP Office then redirects the call to the UC server, which then handles the call as if it were placed to an extension at the corporate office site.

8.3 Small Community Networking

Small Community Networking (SCN) – aka “Voice Networking” – is the only supported networked IP Office configuration for this solution. Consult your IP Office administration manuals for instructions on how to configure this correctly.

8.4 Configuration Procedure Overview

The following is an overview of a typical configuration procedure for a centralized voicemail solution:

- Configure corporate IP Office
 - Configure main voicemail hunt group containing extensions that correspond to the UC server voicemail ports
 - Configure ancillary voicemail hunt group(s) – for calls redirected from remote IP Office sites – containing extension(s) that correspond to the UC server voicemail ports
- Configure the UC server Remote Agent and remote IP Office
 - Install Remote Agent application and configure firewall
 - Configure the remote IP Office with a voicemail hunt group containing extensions to be monitored by the Remote Agent
- Configure the UC server
- Configure the UC server to become aware of the each of the Remote Agents and the extensions they are monitoring

8.5 Configuring the Corporate IP Office

The configuration of the corporate IP Office is almost the same as if you were integrating the UC server with IP Office for a single site (that is, as if there were no remote office locations). This means that the IP Office must be configured with a main voicemail hunt group that contains extensions that correspond to

the UC server voicemail ports (see [4.1 -Assigning and Configuring UC Server Ports](#) for details). The difference between a single-site IP Office configuration and a multi-site centralized voicemail solution is the configuration of ancillary voicemail hunt group(s) for calls redirected from the remote IP Office sites.

8.5.1 Ancillary Voicemail Hunt Group(s)

The additional configuration step for the corporate IP Office is the creation of other voicemail hunt groups that are used for calls redirected from the remote IP Office sites.

The recommended (basic) configuration is to use a single voicemail hunt group for all calls redirected from all remote IP Office sites. An optional (advanced) configuration is to use different voicemail hunt groups for different remote IP Office sites.

NOTE: Calls from a remote IP Office site should only be redirected to the ancillary voicemail hunt group(s) at the corporate IP Office.

Basic Configuration

Create a voicemail hunt group by following the instructions in [4.2.1 - Hunt Group](#). The extension list for this new voicemail hunt group contains exactly the same extensions as the corporate IP Office The UC server voicemail hunt group (that is, contains all UC server ports as extension members). All remote IP Office sites will have calls redirected to this ancillary voicemail hunt group. For example, in a 4-port UC server analog integration:

Main UC server voicemail hunt group

(For calls originating from the corporate IP Office)

Name: UCServerHuntGroup

Extension: 400

Members: 100, 101, 102, 103

Ancillary UC server voicemail hunt group

(For all calls originating at all remote IP Office sites)

Name: UCServerAncillaryHuntGroup

Extension: 500

Members: 100, 101, 102, 103

Advanced Configuration

If desired, different remote IP Office sites can have their calls redirected to different voicemail hunt groups at the corporate IP Office, which in turn can have different UC server port extension members. The number of UC server port extensions for each voicemail hunt group depends on the requirements for the individual remote IP Office sites.

For example, one remote IP Office site requires more bandwidth than all other remote sites because it has more employees, and hence more extensions and more call traffic. In this case, you might want to dedicate more UC server port extensions for this large remote site. To accomplish this, you create two ancillary voicemail hunt groups: one ancillary hunt group for the large remote IP Office site with many UC server port extensions, and another ancillary voicemail hunt group that serves the rest of the remote IP Offices with a subset of – or the remaining – UC server port extensions. For example, in an 8-port UC server analog integration:

Main UC server voicemail hunt group

(For calls originating from the corporate IP Office)

Name: UCServerHuntGroup

Extension: 400

Members: 100, 101, 102, 103

Ancillary UC server voicemail hunt group 1

(For call originating at the large remote IP Office site)

Name: UCServerAncillaryHuntGroup1

Extension: 500

Members: 104, 105, 106, 107

Ancillary UC server voicemail hunt group 2

(For all calls originating at the remaining remote IP Office sites)

Name: UCServerAncillaryHuntGroup2

Extension: 600

Members: 104, 105

8.6 Configuring a Remote IP Office

8.6.1 Agent Installation

Each remote office site requires an installation of the Remote Agent on a machine in the LAN.

Limitations and Restrictions

- The computer that hosts the Remote Agent must have a static IP address.
- The UC server (corporate/main site) and the remote IP Office sites must be connected via a VPN or T1/FR.
- Each IP Office location must include a CTI Link Pro license.

Pre-Agent Installation

Prior to installing the Remote Agent, the host computer must have Avaya's TAPI driver installed. The driver must be configured to point to the remote IP Office unit – you must therefore know in advance the IP address for the remote IP Office unit. See [5 – Installing and Configuring CTI Link](#) for instructions about configuring the TAPI driver; disregard any literal references to the UC server (that is, skip step #5).

Installing the Agent

1. Run the Remote Agent installer application located on the installation CD.
2. When prompted, choose an installation directory.
3. When prompted, choose a password that the UC server will use to authenticate with the Remote Agent.

4. When prompted, choose a TCP port to communicate with the UC server.

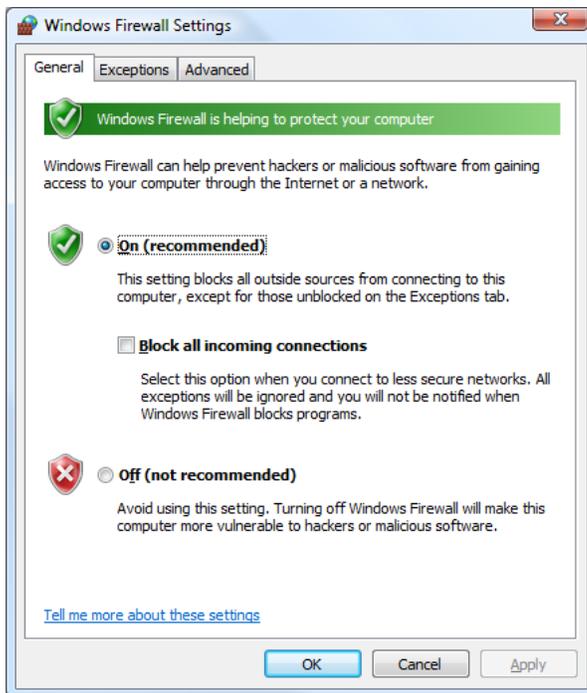
NOTE: Be sure that the chosen TCP port is not being used by another application.

8.6.2 Firewall Configuration

After the Remote Agent application is installed, you must ensure that the UC server can communicate with the Remote Agent using the chosen port. If the built-in Windows Firewall is enabled, it must be configured for proper UC Server operation. Failure to configure the Windows Firewall correctly will likely prevent calls from being redirected to the central IP Office voicemail hunt group.

To verify your Windows Firewall settings (for Windows XP and Vista):

1. Click **Start > Control Panel**.
2. Double-click **Windows Firewall**. The following dialog appears:



3. Verify that the **General** tab has one of the following options selected:
 - a)
 - [Windows XP] The Windows Firewall is **On**; and **Don't allow exceptions** is disabled
 - [Windows Vista] The Windows Firewall is **On**; and no exceptions exist in the Exceptions tab
 - OR
 - b) The Windows Firewall is **Off**.

4. If condition 3(a) is satisfied then a new exception must be added in order to allow traffic to the Remote Agent port:
 - a) Click the **Exceptions** tab, and click **Add Port**.
 - b) Give the port exception a name like “UC Server Remote Agent” (the name is arbitrary and is for your reference).
 - c) Enter the port number that was entered during the Remote Agent installation and the same value used when configuring the Remote Agent parameters in the administration user interface.
 - d) Select **TCP**, and then click **OK**.

8.6.3 Remote IP Office Configuration

When installing and configuring the remote IP Office, follow the same steps as the installation of the corporate IP Office.

Note: The instructions defined in [4.5 - Configuring IP Office for Direct Answer by UC Server](#) can be used to create auto-attendants and DID fax services for the remote IP Office sites.

The remote IP Office unit requires the following to enable centralized voicemail capability:

- CTI Link license
- Unique dialing plan and display names
- Voicemail hunt-group,
- Modified Default No Answer Time
- Short code for redirecting calls

CTI Link License

Each remote IP Office must have a valid and correctly configured CTI Link Pro license (see [5.2 - Licensing the CTI TAPI Link Pro on the IP Office](#)).

Unique dialing plan and display names

To ensure that the UC server can correctly identify the associated mailbox for each forwarded call and that proper message waiting light toggling takes place, all extensions in the corporate and remote offices must be unique. In other words, once an extension number is used at any site (either at the corporate or a remote office) it must not be used again anywhere else.

As mentioned earlier, when calls are redirected by the Remote Agent at the remote office, the Remote Agent first sends the call-party information along with a unique identifier. This unique identifier is derived from the user name associated with the extension (as defined in the IP Office Manager application). The display names for each user extension must therefore be unique (for the first 12 characters) to ensure that messages are deposited in the correct mailbox and for message-waiting light toggling to operate correctly.

Remote UC Server Voicemail Hunt Group

The remote IP Office must have its own voicemail hunt group where unanswered calls at the remote site are forwarded. This hunt group consists of ‘special’ extensions that are monitored by the Remote Agent. These extensions must be real extensions and must be able to receive incoming calls, but must not be in use. When calls are forwarded to this voicemail hunt group the Remote Agent intercepts the calls and redirects them to the corporate site ancillary The UC server voicemail hunt group (*not the corporate site main UC server voicemail hunt group*; see [8.5.1 - Ancillary Voicemail Hunt Group\(s\)](#) for clarification) to ensure proper port provisioning. The extensions must be one of the following types:

- TAPI/Wave
 - This requires a TAPI/Wave license for the remote IP Office and that TAPI/Wave is correctly configured on the Remote Agent host machine.
- Analog
 - A physical analog telephone need not be plugged into the corresponding port.
- Digital
 - A physical digital telephone must be plugged into the corresponding digital port.

Keep the following items in mind when creating this hunt group:

- The extensions in this remote site voicemail hunt group are not the same extensions as those in the main site UC server voicemail hunt group.
- Like all other extensions at all sites, the remote site voicemail hunt group must have a unique extension number.
- If the UC server is the only system defined voicemail (that is, “Group Voicemail”) at the remote site, follow the instructions in [4.3 - UC Server as the ONLY System Defined Voicemail](#) and use the extensions described above.
 - Note: The “Default No Answer Time” value (under the System “Telephony” tab) **must** be less than the corresponding setting at the corporate IP Office site. For example:
 - Corporate site IP Office “Default No Answer Time”: 20 seconds
 - Remote site IP Office “Default No Answer Time”: 15 seconds
- If the UC server is used with Voicemail Pro at the remote site, then follow instructions in [4.4 - UC Server in Parallel with Voicemail](#) and use the extensions described above.

Example:

Remote UC server voicemail hunt group

Name: UCServerRemoteHuntGroup

Extension: 600

Members: 397, 398, 399

Shorter No-Answer Time

The remote site IP Office unit must be configured with a shorter “default no-answer time” value (compared to the main site IP Office). This is to ensure that the main site IP Office doesn’t pull back the call before the Remote Agent can properly redirect it. This value must be at least 3 seconds lower than the corresponding main site IP Office value. The “default no-answer time” value can be configured using the IP Office Manager, in the System category under the Telephony tab.

Short code

A short code for the remote IP Office can be used to create transparent dialing plans across all IP Office sites, and can also be used to redirect calls to the ancillary voicemail hunt group at the corporate IP Office site. Using the figures in the example in [8.5.1 - Ancillary Voicemail Hunt Group\(s\)](#), we have two hunt groups at the corporate site:

Main UC server voicemail hunt group

(For calls originating from the corporate IP Office)

Name: UCServerHuntGroup

Extension: 400

Members: 100, 101, 102, 103

Ancillary UC server voicemail hunt group

(For all calls originating at all remote IP Office sites)

Name: UCServerAncillaryHuntGroup

Extension: 500

Members: 100, 101, 102, 103

We will create a short code that, when dialed, will redirect calls to the corporate site IP Office. Let’s suppose that the IP Trunk (line) connecting the corporate and remote IP Office units has an outgoing group ID of 71. Let’s create a short code so that when a 6 followed by any number of digits is dialed, the digits (proceeding 6) will be passed through to the corporate site IP Office. In this case the following short code parameters would be used:

Short Code	
Code	6N
Feature	Dial
Telephone Number	N
Line Group Id	71
Locale	
Force Account Code	<input type="checkbox"/>

This is a generic configuration for routing calls from the remote to the corporate site. We can also use this shortcode for configuring the Remote Agents to redirect calls to the ancillary The UC server voicemail hunt group (see [8.5.1 - Ancillary Voicemail Hunt Group\(s\)](#) for details on how this shortcode is used).

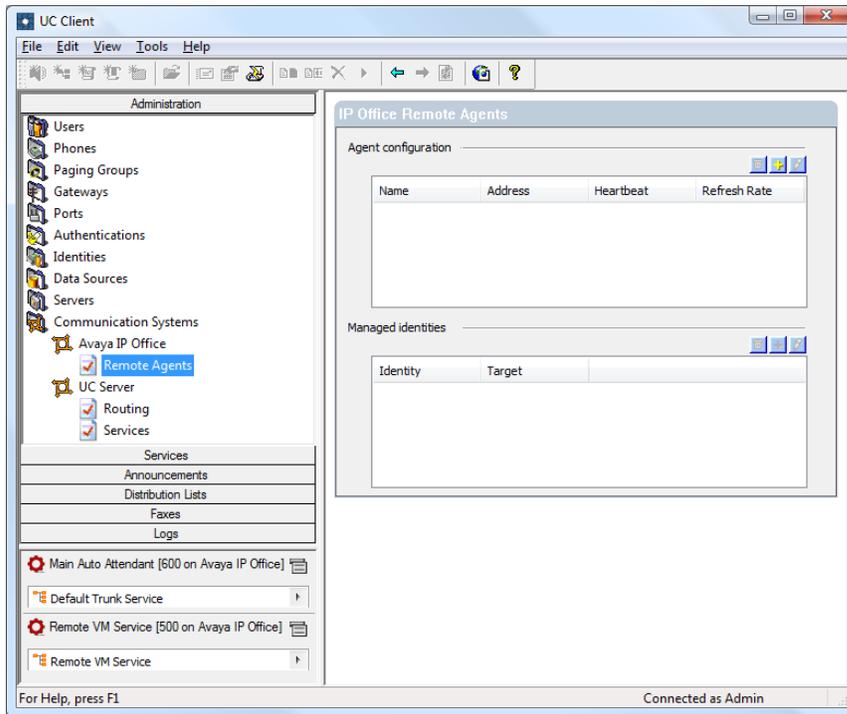
8.7 Configuring the UC Server

The remaining Remote Agent configuration is performed through the UC Client administration user interface.

8.7.1 To create the Remote Agent

1. Launch UC Client and log in as *admin* (or using an authentication with administrative privileges).

2. Locate the Communication Systems view from the Administration tab. If you cannot see any items under Communication Systems, then double-click Communication Systems. Select Remote Agents under the Avaya IP Office item (see the image below).



3. Create a Remote Agent for the remote IP Office location that is to use the UC server as the centralized voicemail by clicking the yellow plus-sign button  above the Remote Agent list. This opens a dialog that allows you to specify details about a remote IP Office:

Unique Name: Give the Remote Agent an appropriate display name.

Network address: Specify the IP address for the Remote Agent machine.

Password: Enter the password to connect to the Remote Agent. This password must be the same as the value provided during the Remote Agent installation (see section 8.6.1 Agent Installation).

Heartbeat: enter a value (in seconds) to specify the time period which the UC server will verify that communication with this Remote Agent is possible. Default value is 30 seconds.

Refresh: enter a value (in seconds) to specify the time period which the UC server will check for changes in the list of extensions on this remote site (so MWI can be set correctly). Default value is 60 seconds.

4. Click OK to save the changes.

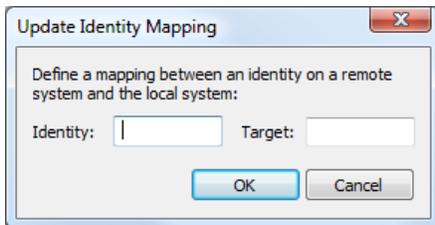
5. Repeat Steps 1-4 for every remote IP Office site that will have (or has) a Remote Agent installed.

NOTE: If the Remote Agent is not installed prior to this configuration, you receive a warning dialog indicating that the UC server was unable to connect to the Remote Agent. The UC server continues to attempt to connect to the Remote Agent until a connection can be made.

8.7.2 Configure the Identities to Monitor

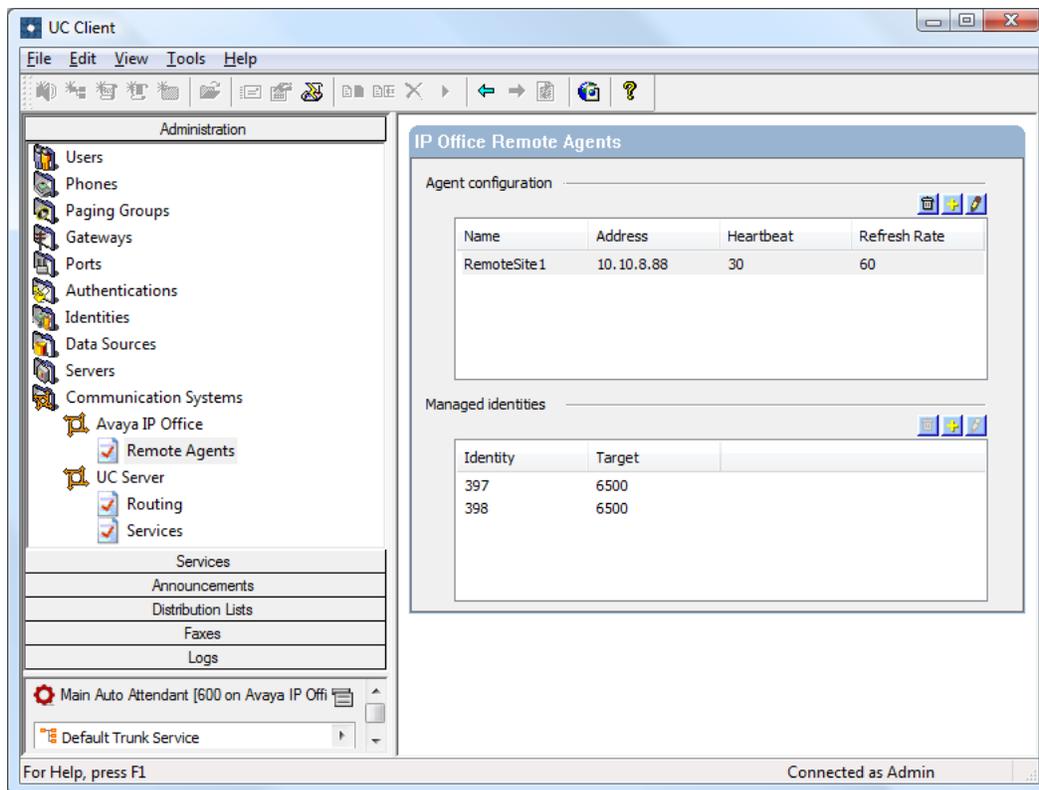
For each Remote Agent you need to specify the identities (aka *extensions*) to monitor that are part of the remote IP Office's voicemail hunt group.

1. Select the newly created Remote Agent in the list.
2. Click the yellow plus-sign button  above the managed identities list. The following dialog appears:



3. For 'Identity', enter the extension number to monitor at the remote IP office site. The extension number will be one of the extensions present in the remote site UC server voicemail hunt group. See [4 - Programming IP Office](#) for more information.
4. Enter the target ancillary UC server voicemail hunt group number. This is the number you would dial from the remote site to reach the ancillary UC server voicemail hunt group at the corporate IP Office site (see the example below that puts it all together).
5. Click OK.
6. Repeat Steps 1-5 for every extension to monitor at the remote IP Office site.

In the image below there is one remote IP Office site configured. The name of the machine where the Remote Agent is installed is called "RemoteSite1". As in the previous example, the remote IP Office site has three extensions in the remote UC server voicemail hunt group: 397, and 398. These extensions are those that are being monitored by the Remote Agent. The target number has been defined as '6500'. This is because the short code to reach the corporate IP Office site from this remote site is '6N', and '500' is the ancillary UC server voicemail hunt group extension number. This means when calls arrive at 397, or 398, the call will be redirected to the corporate IP Office site at extension 500.



8.8 Centralized Voicemail Worksheet

Corporate IP Office

UC Server VM Ports	
Name	Extension

Main UC Server VM Hunt Group
Name:
Extension:
Members:

Ancillary UC Server VM Hunt Group
Name:
Extension:

Remote IP Office Site 1

Remote UC Server VM Hunt Group
Name:
Extension:
Members:

Remote IP Office Site 2

Remote UC Server VM Hunt Group
Name:
Extension:
Members:

Members:

Remote IP Office Site 3

Remote UC Server VM Hunt Group
Name:
Extension:
Members:

9 Centralized Voicemail for IP Office Versions 4.2 (and Higher)

This chapter provides instructions for configuring the UC server as a centralized voicemail solution for IP Office units running firmware versions 4.2 and higher. In this configuration, each IP Office unit in the solution must be running version 4.2 or higher.

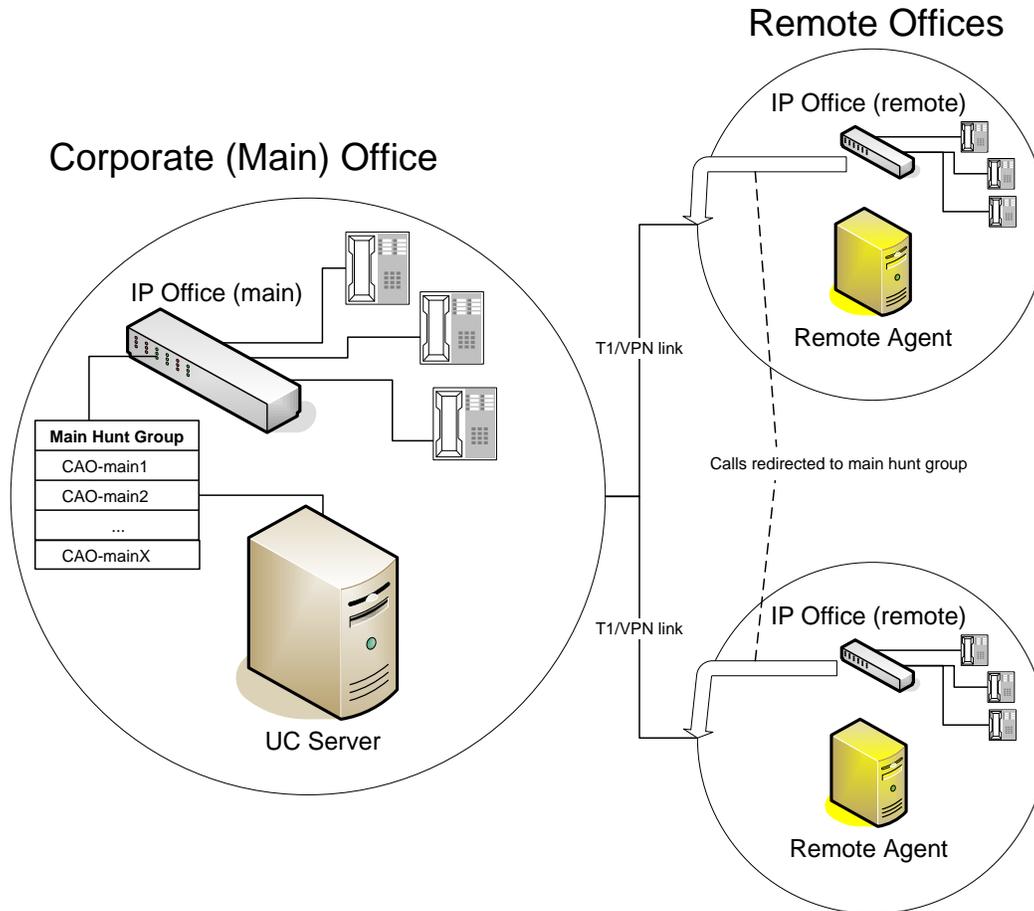
Note: If you are running IP Office version pre-4.2 (non inclusive), please see [8 - Centralized Voicemail for IP Office Versions Pre-4.2](#).

9.1 Overview

If your company requires that the UC server operates as the voicemail service for a main office and one or more remote IP Office sites (up to 16 sites total), then this section describes how to configure both the IP Office PBX and the UC server to work in this environment.

9.2 Network Topology

Below is a diagram that depicts the typical UC server centralized voicemail scenario:



The UC server can serve as a centralized voicemail service in a distributed IP Office environment with the help of a Remote Agent application. This application is installed on a machine at each remote IP Office site requiring centralized voicemail capability. The Remote Agent is responsible for toggling message waiting lights on telephones at the remote IP Office sites.

9.3 Small Community Networking

Small Community Networking (SCN) – aka “Voice Networking” – is the only supported networked IP Office configuration for this solution. Consult your IP Office administration manuals for instructions on how to configure this correctly.

9.4 Configuration Procedure Overview

The following is an overview of a typical configuration procedure for a centralized voicemail solution:

- Configure corporate IP Office
 - Configure main voicemail hunt group containing extensions that correspond to the UC server voicemail ports
- Install and configure UC server remote agent
 - Install Remote Agent application and configure firewall

- Configure Remote IP Office(s)
 - Apply configuration changes to the remote IP Office(s) to support centralized voicemail
- Configure the UC server
 - Add remote agents and configure remote manage mailbox service

9.5 Configuring the Corporate IP Office

The configuration of the corporate IP Office is the same as if you were integrating the UC server with IP Office for a single site (that is, as if there were no remote office locations). This means that the IP Office must be configured with a main voicemail hunt group that contains extensions that correspond to the UC server voicemail ports (see [4.1 - Assigning and Configuring UC Server Ports](#) for details).

9.6 Configuring the Remote IP Office(s)

9.6.1 Agent Installation

Each remote office site requires an installation of the Remote Agent on a machine in the LAN.

Limitations and Restrictions

- The computer that hosts the Remote Agent must have a static IP address.
- The UC server (corporate/main site) and the remote IP Office sites must be connected via a VPN or T1/FR.
- Each IP Office location must include a CTI Link Pro license.

Pre-Agent Installation

Prior to installing the Remote Agent, the host computer must have Avaya's TAPI driver installed. The driver must be configured to point to the remote IP Office unit – you must therefore know in advance the IP address for the remote IP Office unit. See [5 – Installing and Configuring CTI Link](#) for instructions about configuring the TAPI driver; disregard any literal references to UC server (that is, skip step #5).

Installing the Remote Agent

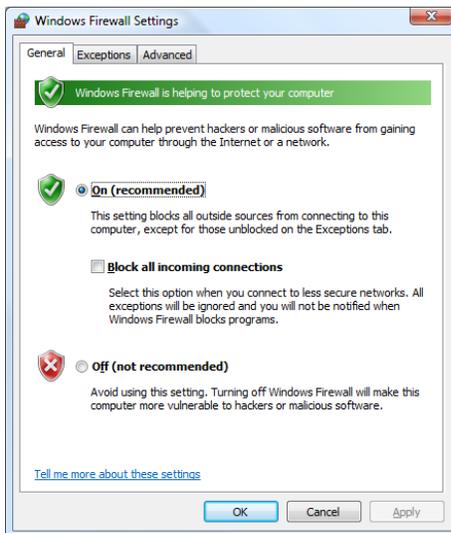
1. Run the Remote Agent installer application located on the installation CD.
2. When prompted, choose an installation directory.
3. When prompted, choose a password that the UC server will use to authenticate with the Remote Agent.
4. When prompted, choose a TCP port to communicate with the UC server. ***Ensure that the chosen TCP port is not being used by another application.***

9.6.2 Firewall Configuration

After the Remote Agent application is installed, you must ensure that the UC server can communicate with the Remote Agent using the chosen port. If the built-in Windows Firewall is enabled, it must be configured for proper UC server operation. Failure to configure the Windows Firewall correctly will likely prevent calls from being redirected to the central IP Office voicemail hunt group.

To verify your Windows Firewall settings (Windows XP and Vista):

1. Click **Start > Control Panel**.
2. Double-click **Windows Firewall**. The following dialog appears:



4. Verify that the **General** tab has one of the following options selected:
 - a)
 - [Windows XP] The Windows Firewall is **On**; and **Don't allow exceptions** is disabled
 - [Windows Vista] The Windows Firewall is **On**; and no exceptions exist in the Exceptions tab
 - OR
 - b) The Windows Firewall is **Off**.
5. If condition 3(a) is satisfied then a new exception must be added in order to allow traffic to the Remote Agent port:
 - e) Click the **Exceptions** tab, and click **Add Port**.
 - f) Give the port exception a name like "UC Server Remote Agent" (the name is arbitrary and is for your reference).

- g) Enter the port number that was entered during the Remote Agent installation and the same value used when configuring the Remote Agent parameters in the administration user interface.
- h) Select **TCP**, and then click **OK**.

9.6.3 Remote IP Office Configuration

The remote IP Office unit requires the following to enable centralized voicemail capability:

- Valid CTI Link license
- Unique dialing plan and display names
- System voicemail set to “Centralized Voicemail”
- Short code for redirecting voicemail calls to the corporate IP Office site
- (optional) Incoming Call Route to ensure that PSTN calls at the remote site are redirected to a UC server auto attendant.

CTI Link License

Each remote IP Office must have a valid and correctly configured CTI Link Pro license (see [5.2 - Licensing the CTI TAPI Link Pro on the IP Office](#)).

Unique dialing plan and display names

To ensure that the UC server can correctly identify the associated mailbox for each forwarded call and that proper message waiting light toggling takes place, all extensions in the corporate and remote offices must be unique. In other words, once an extension number is used at any site (either at the corporate or a remote office) it must not be used again anywhere else.

As mentioned earlier, when calls are redirected by the Remote Agent at the remote office, the Remote Agent first sends the call-party information along with a unique identifier. This unique identifier is derived from the user name associated with the extension (as defined in the IP Office Manager application). The display names for each user extension must therefore be unique (for the first 12 characters) to ensure that messages are deposited in the correct mailbox and for message-waiting light toggling to operate correctly.

System Voicemail

The remote site IP Office must have its System Voicemail Type set to “Centralized Voicemail.” The Voicemail Destination must correspond to the group Id for the IP Line connecting the remote site IP Office to the corporate IP Office. In the following example, the IP Line (connecting this remote site IP Office and the corporate IP Office) has a Line Group Id of 72.

System	LAN1	DNS	Voicemail	Telephony	LDAP	System Events	SMTP	CDR/SMDR	Twinning	VCM
Voicemail Type	Centralized Voicemail									
Voicemail Destination	72									
Voicemail IP Address	10 . 10 . 8 . 205									
Voicemail Channel Reservation										
Unreserved Channels	4									
Auto-Attendant	0	Voice Recording	0	Mandatory Voice Recording	0					
Announcements	0	Mailbox Access	0							

Short code (for voicemail access)

A short code at the remote IP Office can be used to simulate the main site voicemail pilot number so that all users at all sites can use the same number to access their voicemail mailbox using the telephone. This voicemail pilot number corresponds to the number assigned to the main voicemail hunt group number at the corporate site.

In the following example image, the corporate IP Office voicemail hunt group number is 500, and the IP Line (connecting this remote site IP Office and the corporate IP Office) has a Line Group Id of 72. This short code will allow users at this remote site to dial 500 to access their voicemail mailbox.

Short Code	
Code	500
Feature	Dial
Telephone Number	500
Line Group Id	72
Locale	
Force Account Code	<input type="checkbox"/>

Incoming Call Route (for common auto-attendants)

If the remote site IP Office has PSTN connectivity, and if you expect that external call traffic arriving at the remote site IP Office will be answered by the same auto-attendant running at the corporate site IP Office, then you will need to configure an incoming call route to do so. In the following example, external calls arrive at the remote site IP Office via an analog trunk with Line Group Id 0, and are routed to the corporate site IP Office's main auto attendant hunt group at 600 via the IP Line with Group Id 72:

Standard Tab

Standard	Voice Recording	Destinations
Bearer Capability	Any Voice	
Line Group Id	0	
Incoming Number		
Incoming Sub Address		
Incoming CLI		
Locale		
Priority	1 - Low	
Tag	b	

Destinations Tab

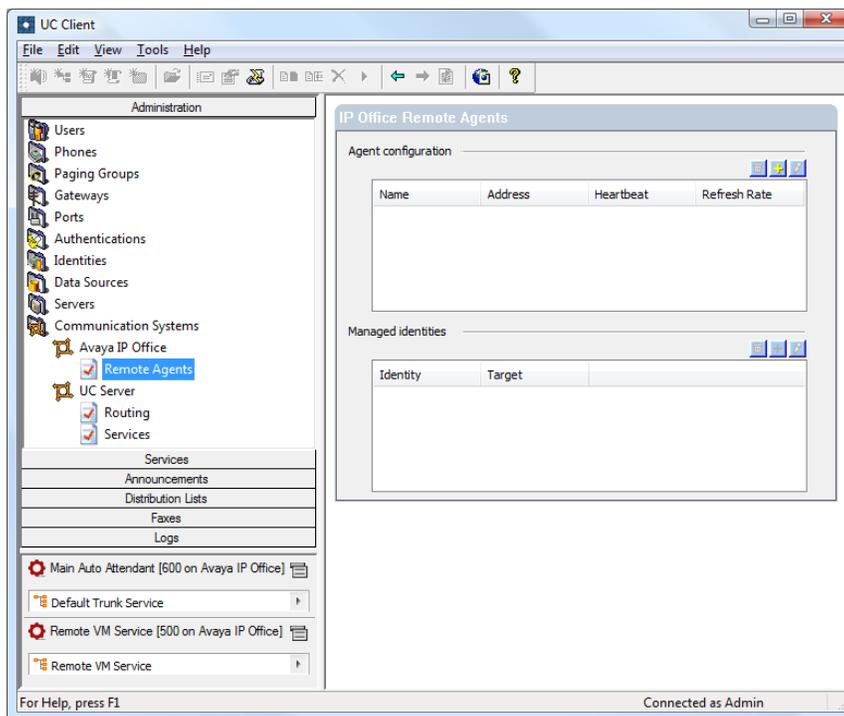
Standard	Voice Recording	Destinations	
	TimeProfile	Destination	Fallback Extension
	Default Value	72600	

9.7 Configuring the UC Server

The remaining Remote Agent configuration is performed through the UC Client administration user interface.

9.7.1 Remote Agent Configuration

1. Launch UC Client and log in as *admin* (or using an authentication with administrative privileges).
2. Locate the Communication Systems view from the Administration tab. If you cannot see any items under Communication Systems, then double-click Communication Systems. Select Remote Agents under the Avaya IP Office item (see the image below).



3. Create a Remote Agent for the remote IP Office location that is to use the UC server as the centralized voicemail by clicking the yellow plus-sign button above the Remote Agent list. This opens a dialog that allows you to specify details about a remote IP Office.

Unique Name: Give the Remote Agent an appropriate display name.

Network address: Specify the IP address for the Remote Agent machine.

Password: Enter the password to connect to the Remote Agent. This password must be the same as the value provided during the Remote Agent installation (see section 8.6.1 Agent Installation).

Heartbeat: Enter a value (in seconds) to specify the time period which the UC server will verify that communication with this

Remote Agent is possible. The default value is 30 seconds.

Refresh: Enter a value (in seconds) to specify the time period which the UC server will check for changes in the list of extensions on this remote site (so MWI can be set correctly). The default value is 60 seconds.

4. Click **OK** to save the changes.
5. Repeat Steps 1-4 for every remote IP Office site that will have (or has) a Remote Agent installed.

Note: If the Remote Agent is not installed prior to this configuration, you receive a warning dialog indicating that the UC server was unable to connect to the Remote Agent. The UC server continues to attempt to connect to the Remote Agent until a connection can be made.

Note: in these versions of IP Office, it is not necessary to add any “Managed Identities”.

9.7.2 Remote Voicemail Service

An attendant identity with a specific service must be created in order to field voicemail calls from remote locations. This service is pre-built and is located in the accompanying zip file entitled “TN012 – IP Office Integration.zip”. The service must be copied to the UC server program directory and associated with an identity.

To import the service

1. Open the accompanying zip file entitled “TN012 – IP Office Integration.zip”, and extract the only file “Manage_Mailbox.srv” to the following location:

.\Program Files\ADTRAN\NetVanta UC Server\Data\Users\00000000\Services

To create the attendant identity

1. Launch UC Client and log in as *admin* (or using an authentication with administrative privileges).

2. Under Administration, select **Identities**.
3. Right-click under the existing identities and select **New Identity**.
4. For the **Select Identity Type** page:
 - a. For **Communication System**, select *Avaya IP Office*
 - b. For user profile, select **Admin**
 - c. For class of identity, select **Attendant service**

Select Identity Type
Determine the class of identity and a user that will manage its call answering behavior.

Select a communication system: Avaya IP Office

Select a user profile: Admin

Select the class of identity:

User
Creates a new identity typically associated with ucCompanion, a soft-phone or a hard-phone

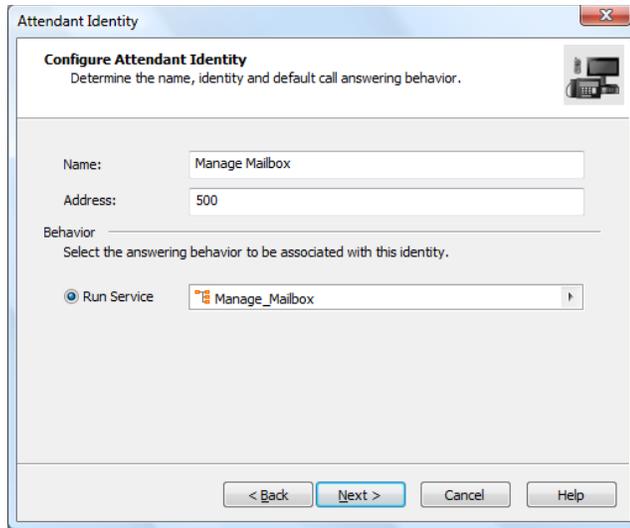
Ring group
Distributes calls to all members of the group simultaneously

Attendant service
Creates a new identity that handles calls as an automated attendant or service (e.g. IVR, pre-screening, etc.)

Hunt group
Distributes calls to members of the group sequentially based on availability

< Back Next > Cancel Help

5. For the **Configure Attendant Identity** page:
 - a. For **Name**, type *Manage Mailbox*
 - b. For **Address**, enter the IP Office voicemail hunt group number. In the previous example, this was *500*.
 - c. For **Run Service**, click the value selector  button, and select **Services > Manage_Mailbox**



6. Finish the Wizard.

10 Upgrading IP Office Considerations

When upgrading IP Office there are some considerations that must be taken into account. Please read the following sections carefully before upgrading IP Office.

10.1 Upgrading the IP Office Units

Before you upgrade the IP Office units, make sure that the version you wish to upgrade is supported with the version of UC server that you are running. This information can be found in [Appendix A - Recommended IP Office and UC Server Version Pairings Based on Integration Type](#).

10.2 Upgrading Additional Components

Avaya updates other IP Office components from time to time that are not part of the Admin CD installation. These components include (but are not necessarily limited to) the TAPI driver and the TAPI-WAVE driver. In order to ensure that these components are kept up to date with the Admin CD installation and IP Office binary version it is imperative that you also upgrade the TAPI components. The TAPI components should be upgraded after IP Office has been upgraded.

10.2.1 Upgrading the TAPI Driver

Follow the instructions outlined in [5.3 - Installing and Configuring TAPI2 Service Provider](#).

10.2.2 Upgrading the TAPI-WAVE Driver

This step is only required if you're using TAPI-WAVE ports. To upgrade the TAPI-WAVE driver, follow the instructions outlined in [6.4 - Installing and Configuring TAPI-WAVE Audio Driver](#).

Appendix A Recommended IP Office and UC Server Version Pairings Based on Integration Type

Integration Type	IP Office Version	UC Server	Caveat(s)
Analog	4.1(12)	4.0.12 and above	
	4.2(17)	4.4.0 and above	
TAPI-WAVE	3.2(54), 3.2(55)	4.0.12 and above	
	4.0(5)	4.0.12 and above	To be used only if shortcodes and direct transfer to voicemail features are not necessary (see Appendix B for more details)
Centralized Voicemail	4.2(11)	4.4.0 and above	
	4.1(12)	4.0.12 and above	
	4.2(17)	4.4.0 and above	

Appendix B Summary: Known Issues with Specific IP Office Versions and Resolutions/Workarounds

IP Office Version	Known Issues	Avaya Bug #	Integration Type	Resolution/Workaround
3.2(54)	4959 - One way audio with incoming PRI and quick answer	MRDB0003871 3	Analog	Workaround: see section 2 - Known Integration Issues Avaya has indicated that this issue is targeted for GA 3.2 2Q/2008. Maintenance releases of versions 4.0 and 4.1 should also include this fix.
	5416 - TAPI RedirectionID missing in transfers to call-forwarded extensions	MRDB0003871 5	Centralized voicemail	Resolution: upgrade to IP Office version 4.1(12). <i>This issue may have been fixed in the interim but this has not been verified.</i>
3.2(55)	5404 - Handset Playback Fails because of wrong TAPI message (Offering instead of RINGBACK)	MRDB0005105 0	Analog	Resolution: upgrade to IP Office version 4.1(12). <i>This issue may have been fixed in the interim but this has not been verified.</i>
4.0(5)	4617 - TAPI/Wave devices do not receive DTMF tones when using shortcodes	MRDB0006169 2	TAPI-WAVE	Workaround: see section 2 – Known Integration issues. Resolution: upgrade to IP Office version 4.1(12).
	4981 - No DTMF tones after direct transfer to voicemail	n/a – found in beta trials	TAPI-WAVE	Resolution: upgrade to IP Office version 4.1(12).
	4982 - Calls transferred blindly across IP trunk not redirected to voicemail hunt group	MRDB0005194 3	Centralized voicemail	Resolution: upgrade to IP Office version 4.1(12)
	5404 - Handset Playback Fails because of wrong TAPI message (Offering instead of RINGBACK)	MRDB0005105 0	Analog	Resolution: upgrade to IP Office version 4.1(12). <i>This issue may have been fixed in the interim but this has not been verified.</i>
	5411 - IP Office Restarts when sent a ‘lineUnhold’ TAPI message	MRDB0003895 6	Analog	Resolution: upgrade to IP Office version 4.0(14).

	5416 - TAPI RedirectionID missing in transfers to call-forwarded extensions	MRDB0003871 5	Centralized voicemail	Resolution: upgrade to IP Office version 4.1(12). <i>This issue may have been fixed in the interim but this has not been verified.</i>
4.0(7)	5416 - TAPI RedirectionID missing in transfers to call-forwarded extensions	MRDB0003871 5	Centralized voicemail	Resolution: upgrade to IP Office version 4.1(12). <i>This issue may have been fixed in the interim but this has not been verified.</i>
	6146 - Calls to DND extensions are not redirected to voicemail	Unavailable – bug reported by customer	All	Resolution: upgrade to IP Office version 4.1(12). <i>This issue may have been fixed in the interim but this has not been verified.</i>
	6757 - IP Office stops acknowledging DTMF tones after lineGenerateTone	MRDB0006095 8	TAPI-WAVE	Workaround: see section 2 - Known Integration Issues. Resolution: upgrade to IP Office version 4.2(11). <i>This issue may have been fixed in the interim but this has not been verified.</i>
4.1(12)	6972 - Blind transfers to DND extensions can cause IP Office to restart	MRDB0000389 56	Analog	Workaround: see section 2- Known Integration Issues. Resolution: upgrade to IP Office version 4.2(17).