



Avaya Solution & Interoperability Test Lab

Application Notes for Zeacom Contact Center with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring Zeacom Contact Center to interoperate with Avaya IP Office. Contact Center is a multi-channel and multi-contact management solution. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the *DeveloperConnection* Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the configuration steps required for Zeacom Contact Center to interoperate with Avaya IP Office. Contact Center is multi-channel and multi-contact management solution.

Contact Center makes decisions about when, and to whom, calls should be delivered to based upon caller profile, agent skills, time of day, number dialed and wait times. Contact Center also provides real-time and historical statistics, advises callers of their place in queue and offers Interactive Voice Response (IVR) functions. It also includes voicemail and auto attendant capabilities.

Contact Center interfaces with Avaya IP Office via TAPI 3rd party call control as well as analog tip-ring ports using a Dialogic card. The Avaya IP Office TAPI driver must be installed on the Contact Center server to establish the TAPI 3rd party call-control connection to Avaya IP Office. Contact Center requires the creation of hunt groups named for their function, e.g., Hold, Voicemail, and Operator. These hunt groups contain no members. When Avaya IP Office routes an incoming call to one of the hunt groups monitored by Contact Center, Contact Center issues a *lineRedirect* via TAPI 3rd party call control to the appropriate destination, whether the destination is the next available agent extension, an announcement played through one of the extensions connected to a Contact Center Dialogic port, or Contact Center's voicemail. The Avaya statement on the supported uses of the TAPI *lineRedirect* function is covered in Avaya IP Office Technical Tip 116 in reference [1].

For easier configuration, Contact Center requires the creation of a short code '*99424299*N#', which the Contact Center Dialogic ports use to determine their extension number. The Avaya IP Office administrator must still define these analog station ports connected to the Zeacom Contact Center as IVR ports on Avaya IP Office.

The configuration in **Figure 1** shows a network consisting of an Avaya IP Office 406v2 with Avaya IP400 Phone and Digital Modules, Avaya IP Office Manager PC, Zeacom Contact Center server and client desktops, Avaya 6400 series digital telephones, Avaya 4600 series IP telephones and analog telephones.

The Avaya IP Office 406v2 has T1/PRI and analog trunks to the central office. Analog and digital extensions are connected to Avaya IP Office as well.

The tested configuration is shown in **Figure 1**.

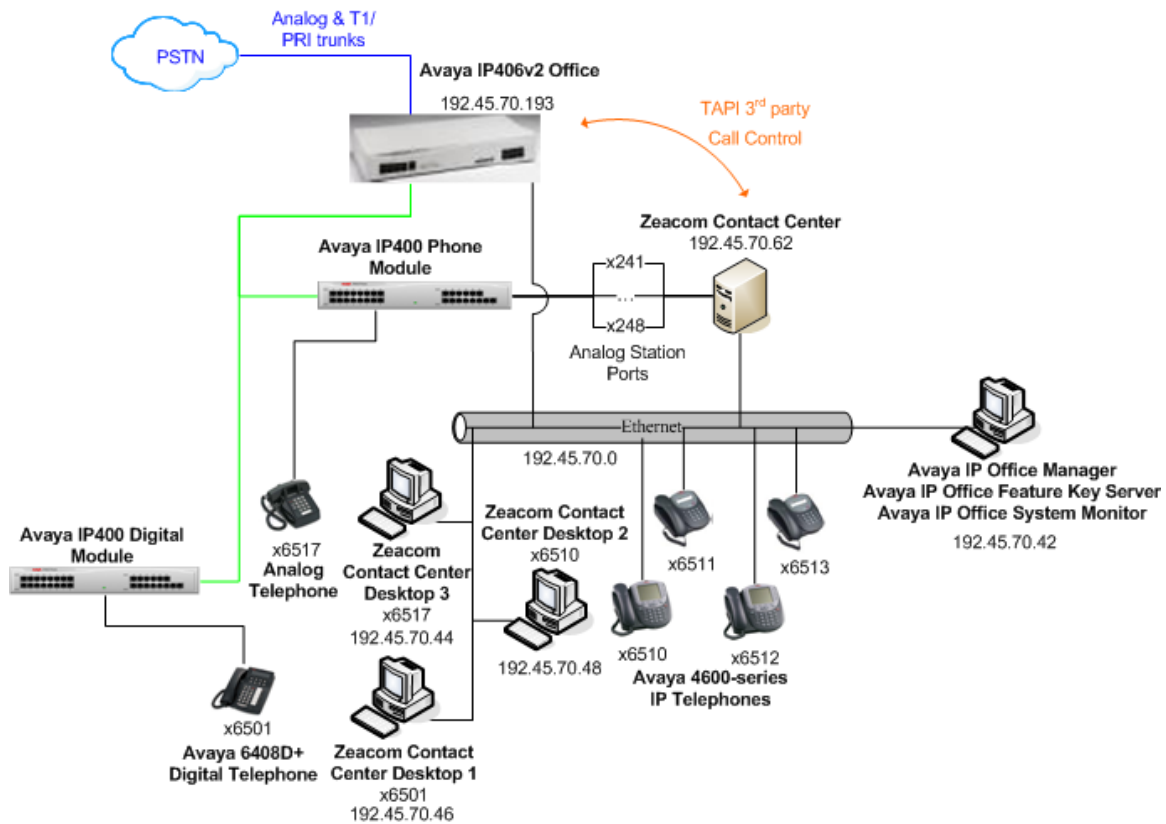


Figure 1 – Sample Test Configuration

Name	Extension	Note
Hold Hunt Group	6570	required by Zeacom Contact Center
Voicemail Hunt Group	6571	required by Zeacom Contact Center
Operator Hunt Group	6572	required by Zeacom Contact Center
<i>unused</i> Hunt Group	6573	
<i>unused</i> Hunt Group	6574	
sales Hunt Group	6575	
techsupport Hunt Group	6576	

Table 1 – Hunt Group to Extension Listing

Ext.	User Type	IP Office User Settings	Contact Center User Settings
6501	Agent	Name: Extn6501 Forward: On Busy, No Answer Forward Number: 6571	First name: Agent Last name: 6501 User ID: 6501 Security Class: Agent: Zeacom IPO Login Class: Sales & Tech Class Mailbox Class: System
6510	Supervisor	Name: Extn6510 Forward: On Busy, No Answer Forward Number: 6571	First name: Supervisor Last name: 6510 User ID: 6510 Security Class: Supervisor: Zeacom IPO Login Class: Sales & Tech Class Mailbox Class: System
6517	Agent	Name: Extn6517 Forward: On Busy, No Answer Forward Number: 6571	First name: Agent Last name: 6517 User ID: 6517 Security Class: Agent: Zeacom IPO Login Class: Sales & Tech Class Mailbox Class: System
6511	Voicemail User	Name: Extn6511 Forward: On Busy, No Answer Forward Number: 6571	First name: VMUser Last name: 6511 User ID: 6511 Mailbox Class: System
6512	Voicemail User	Name: Extn6512 Forward: On Busy, No Answer Forward Number: 6571	First name: VMUser Last name: 6512 User ID: 6512 Mailbox Class: System
6513	Voicemail User	Name: Extn6513 Forward: On Busy, No Answer Forward Number: 6571	First name: VMUser Last name: 6513 User ID: 6513 Mailbox Class: System

Table 2 – IP Office and Zeacom Agent and User Extension Listing

The following Contact Center functionality was addressed in this compliance test:

Intelligent Call Routing

For Intelligent Call Routing, Avaya IP Office is configured to route calls to different hunt groups or *queues* based on the incoming DNIS in the Incoming Call Route section of Avaya IP Office Manager. Once a call arrives at a Contact Center monitored *queue*, Contact Center controls the progress of the call via TAPI 3rd party call control. For example, Avaya IP Office routes an incoming trunk call based on DNIS to *sales queue*. Once the call arrives at *sales queue*, Contact Center controls the progress of the call via TAPI. Contact Center determines which agent is free to take the call and performs a TAPI *lineRedirect** to redirect the call from the *sales queue* to the free agent's extension.

Contact Center maintains an internal recall time so if there is no answer at the agent's extension, it performs a *lineRedirect** back to the *sales queue* so that the call can be directed to the next agent extension or to one of its analog station port extensions to play an announcement. After any announcement is played, *TAPI music on hold* is used to transfer the call back to the *sales queue*. Contact Center can also be configured to automatically log off any agent who does not answer an incoming call to prevent subsequent calls from going back to that agent.

Voicemail

When Contact Center Voicemail is used as the voicemail on IP Office, user settings must be configured with forwarding of busy/no answer calls to the Contact Center *Voicemail queue*. When a message is left for a user with the Contact Center Voicemail, the Contact Center Voicemail lights the user's message waiting indicator (MWI) on the user's telephone via TAPI and also provides message-waiting indication to the user's Contact Center Desktop, if being used. **Note:** The current implementation does not support dialing the default Voicemail Collect shortcode (*17) to retrieve voicemail, so the *Voicemail queue* (hunt group) extension must be called instead. Once a voicemail message is retrieved, Contact Center Voicemail turns off the MWI on the user's telephone extension via TAPI.

Screenpop

Contact Center has a client application called Contact Center Desktop. This client application interfaces with the Contact Center server via TCP/IP and UDP multicast. There is no direct interface between the Contact Center Desktop and Avaya IP Office; all communication to the Avaya IP Office is through the Contact Center server as described above. The Contact Center Desktop supports placing, receiving, transferring and conferencing calls, speed dial, busy lamp field (BLF) of other Desktop users, login/logout queue status of other Desktop users, etc. The Desktop client does not work with the Avaya IP Office Park function but uses its own implementation whereby a caller parked from the Desktop client is placed in the Contact Center hold *queue*. During an incoming call to the Desktop client's extension, a popup appears on the Desktop with the incoming call information.

* The Avaya statement on the supported uses of the TAPI *lineRedirect* function is covered in Avaya IP Office Technical Tip 116 in reference [1].

Callback

This feature is not supported due to issues encountered during compliance testing.

Please refer to Section 6.2 for details.

A caller may elect to leave a message rather than wait on *queue* (as described above) for an agent to free up. Upon leaving a message, the caller is disconnected and Contact Center retains the call in *queue*. When the next available agent is freed up, the caller's message, if any, is played to the agent. When the agent elects to respond to the caller, Contact Center initiates a callback to the caller and a *TAPI supervised transfer* is used to connect the agent to the caller.

2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya IP Office 406v2	3.1(56)
Avaya IP400 Office Digital Station Module	5.1(56)
Avaya IP400 Office Phone Module	5.1(56)
Avaya IP Office Manager	5.1(56)
Avaya IP Office TAPI Driver	1.0.0.26
Avaya 4600-series IP Telephones (4610SW, 4620SW, and 4621SW)	2.3
Avaya 6408D+ Digital Telephone	-
Zeacom Contact Center	4.0.400
Zeacom Contact Center Desktop	4.0.400

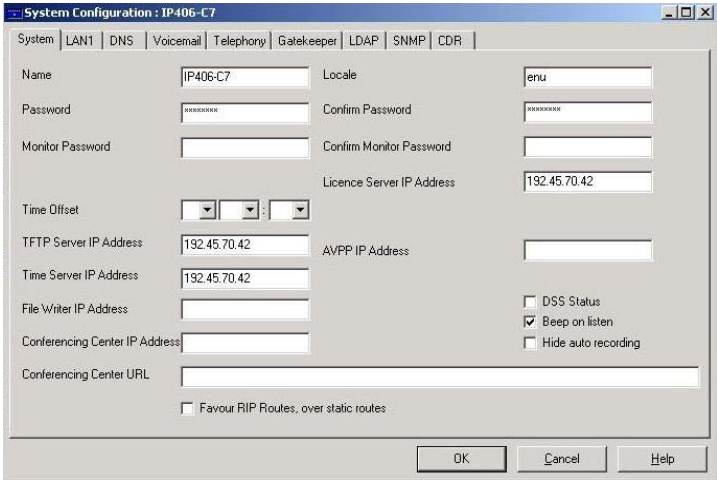
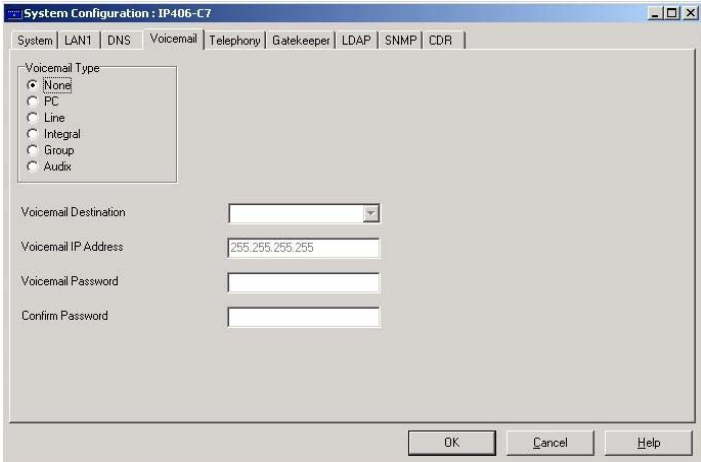
Table 2: Equipment and Software Validated

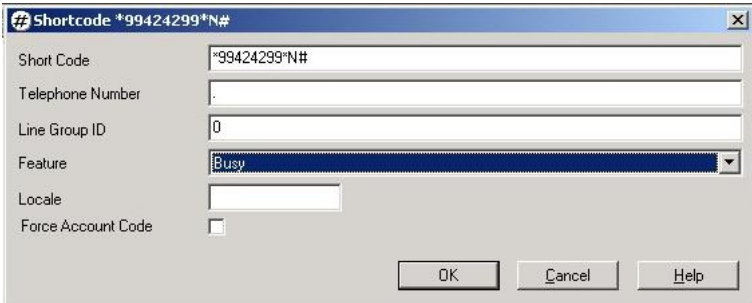
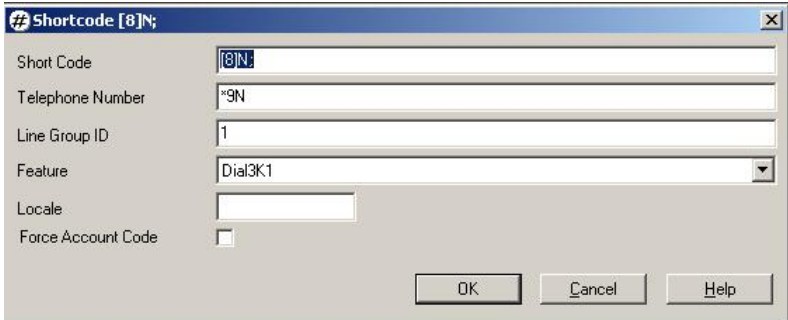
3. Configure Avaya IP Office

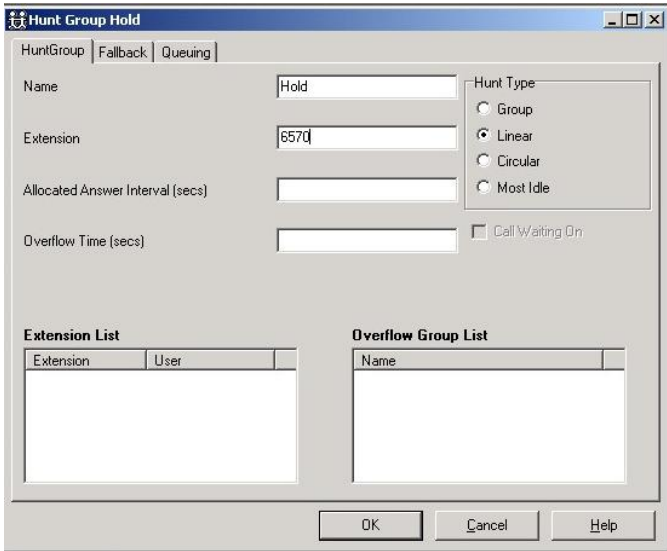
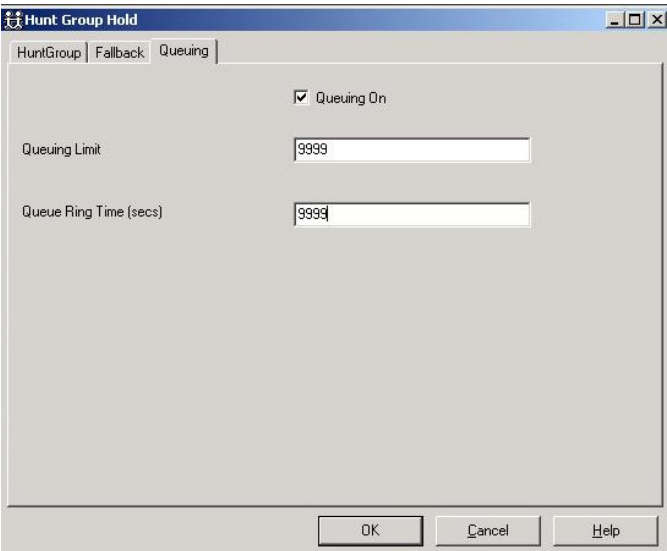
The configuration information provided in this section describes the steps required to set up Avaya IP Office for this solution.

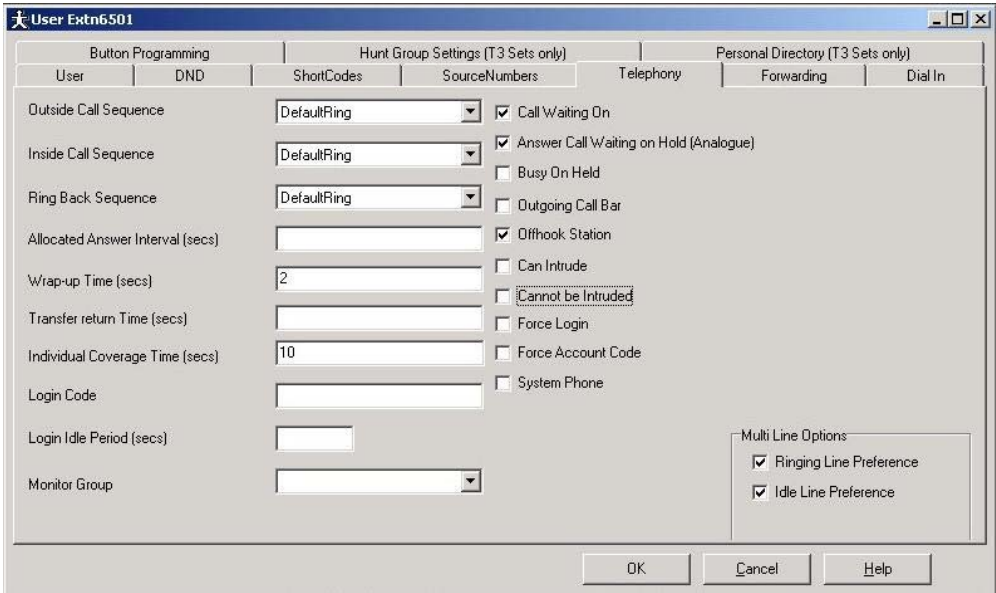
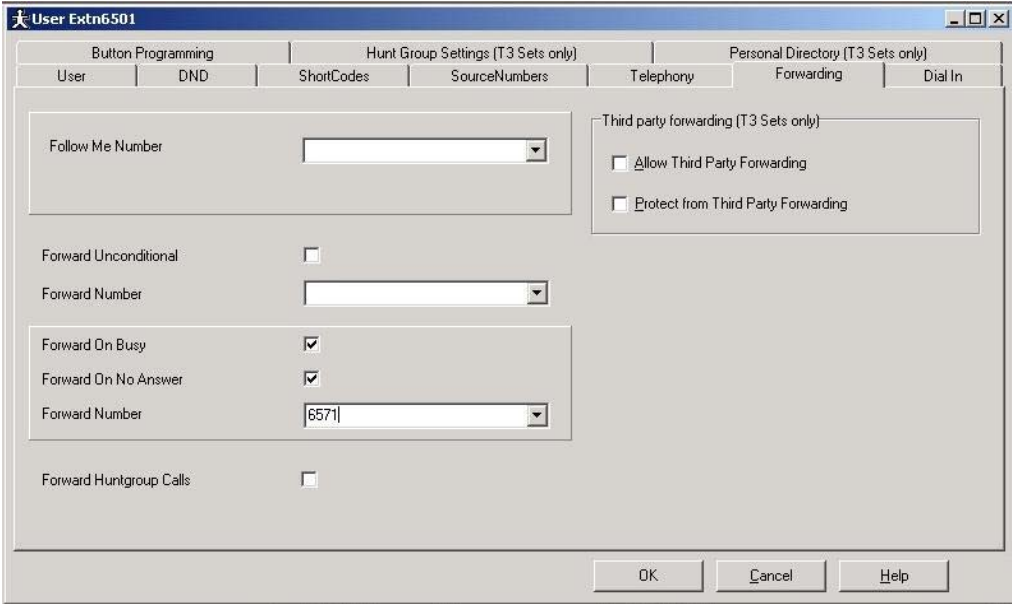
For all other provisioning information, such as Avaya IP Office installation and configuration, etc., please refer to Avaya IP Office product documentation in reference [2].

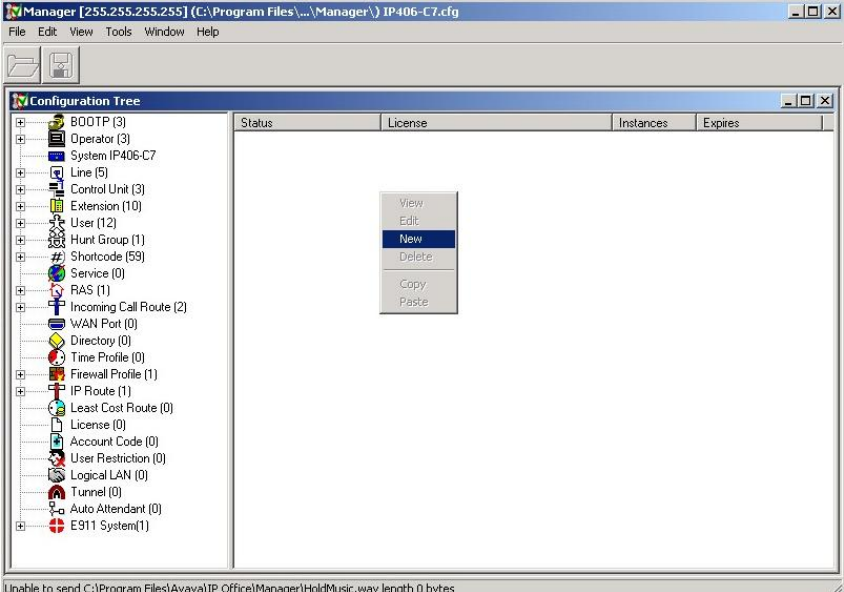
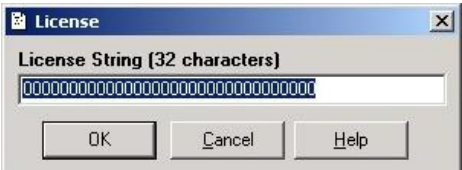
Step	Description
1.	Log into the IP Office Manager PC and go to Start → Programs → IP Office → Manager to launch the Manager application. Log into the Manager application using the appropriate credentials.
2.	In the Manager window that appears, select File → Open to search for IP Office in the network.
3.	Log into IP Office using the appropriate login credentials to receive its configuration.

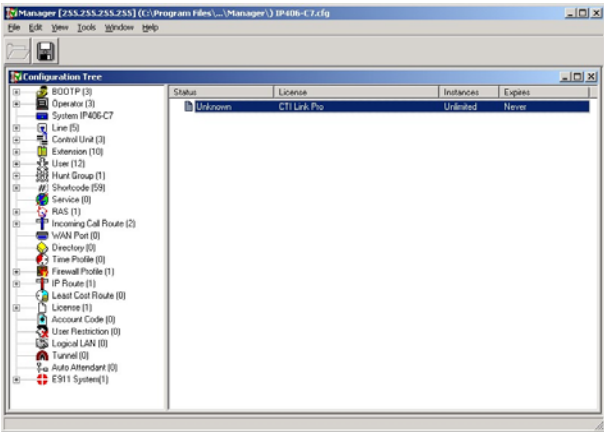
Step	Description
4.	In the Manager window, go to the Configuration Tree and double-click System. In the System Configuration window that appears, set License Server IP Address to the IP address of the PC where the Feature Key Dongle is connected. Select the Voicemail tab.  Note: Changing the Password and Confirm Password fields above can modify the default Avaya IP Office password. For the purposes of these Application Notes, the default Avaya IP Office password was used.
5.	In the Voicemail tab that appears, select None for Voicemail Type and click OK.  Note: Voicemail Type was set to None at the system level in lieu of disabling voicemail at each user extension. All users must have forwarding configured as described in Step 15 below in order to use Contact Center Voicemail.
	Configure Shortcodes
6.	In the Manager window, go to the Configuration Tree and double-click Shortcode. In the right-hand pane, right-click Add to add a shortcode.

Step	Description
7.	In the Shortcode window that appears, set Short Code to *99424299*N#, Telephone Number to “.” (dot), Feature to Busy and click OK. Contact Center uses this code to automatically learn the extension numbers of the Dialogic ports. 
8.	In the right-hand pane of the Shortcode window, right-click Add to add a shortcode for PRI trunk outbound calls. In the Shortcode window that appears, set Short Code to [8]N;, Telephone Number to *9N, Line Group ID to 1, Feature to Dial3K1 and click OK. Contact Center uses this code to define dialing rules in Phone and Modem Options (Section 4.1 Step 6). Note 1: This step was not necessary for the Zeacom solution, but it was necessary for the compliance test configuration used in the lab because more than one outbound shortcode was being used. If the default outbound shortcode ‘9’ is used, ignore this step.  Note 2: Configuration of the PRI trunk’s outgoing calling group is not shown in these Application Notes. For information on how to define outgoing calling groups, please refer to the IP Office documentation in [2].
	Configure Hunt Groups or <i>queues</i>
9.	In the Manager window, go to the Configuration Tree and double-click Hunt Group. In the right-hand pane, right-click Add to add a hunt group.

Step	Description
10.	In the Hunt Group window that appears, set Name to Hold and Extension to 6570. Select the Queuing tab. 
11.	In the Queuing tab that appears, check Queuing On, set Queuing Limit to 9999 and Queue Ring Time (seconds) to 9999. Click OK. 
12.	Repeat Steps 9 – 11 for each hunt group listed in Table 1 .
	Configure Users / Agents
13.	In the Manager window, go to the Configuration Tree and double-click User . In the right-hand pane, double-click the first user extension listed in Table 2 .
14.	In the User window that appears, select the Telephony tab.

Step	Description
15.	In the Telephony tab that appears, check Offhook Station and uncheck Cannot be Intruded. Select the Forwarding tab. 
16.	In the Forwarding tab that appears, check Forward on Busy, check Forward on No Answer, and set Forward Number to the Voicemail hunt group extension 6571. Click OK. 
17.	Repeat Steps 13 – 16 for each extension listed in Table 2 .

Step	Description
	Configure CTI Link Pro License
18.	In the Manager window, go to the Configuration Tree and double-click License. In the right-hand pane, right-click Add to add a new license.  The screenshot shows the 'Manager' application window. On the left is the 'Configuration Tree' with various system components listed. 'License' is selected. On the right is a table with columns 'Status', 'License', 'Instances', and 'Expires'. A context menu is open over the table with the 'New' option highlighted. At the bottom of the window, a status bar message reads: 'Unable to send C:\Program Files\Avaya\IP Office\Manager\HoldMusic.wav length 0 bytes'.
19.	In the License popup that appears, enter the license string for the CTI Link Pro license (default string of zeroes shown only) and click OK.  The screenshot shows a 'License' dialog box. It has a title bar 'License' and a close button. Inside, it says 'License String (32 characters)' above a text input field. The field contains 32 zeros. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

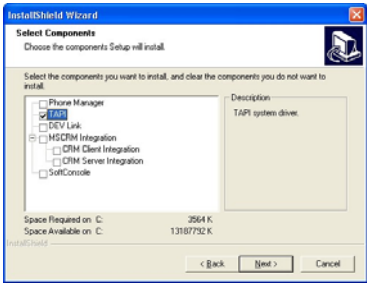
Step	Description
20.	In the Manager window, select File → Save to push the configuration to IP Office and wait for the system to update. This completes configuration of Avaya IP Office. 

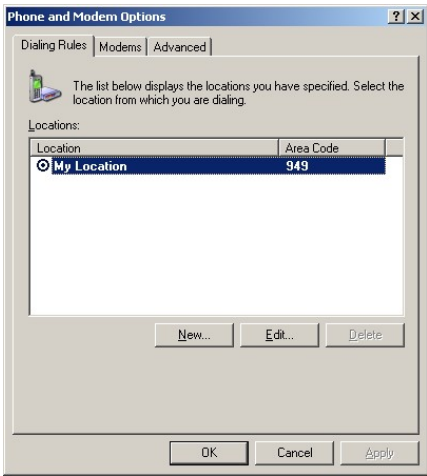
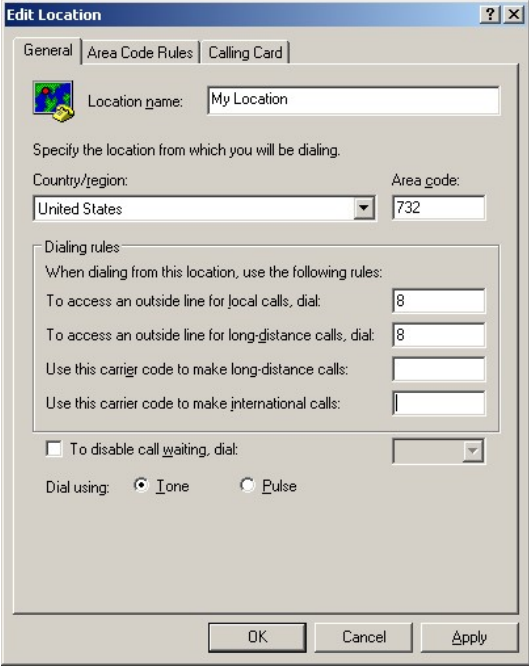
4. Configure Zeacom Contact Center

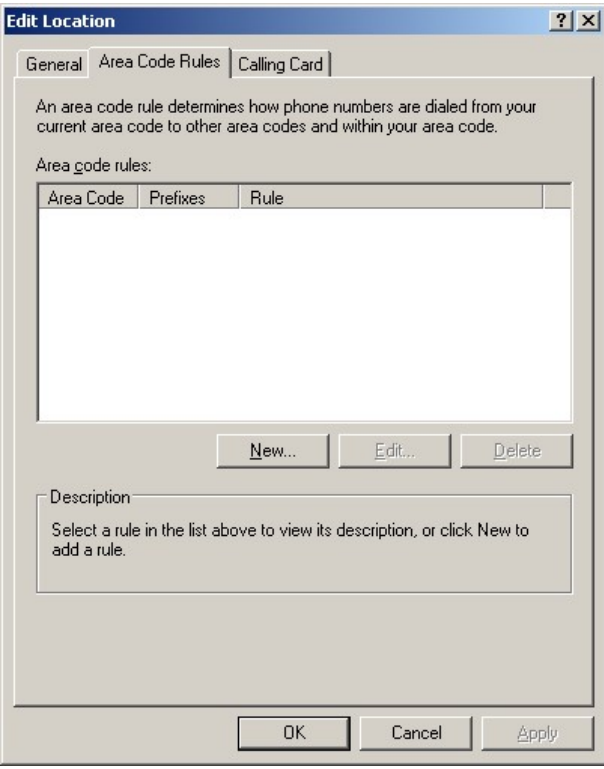
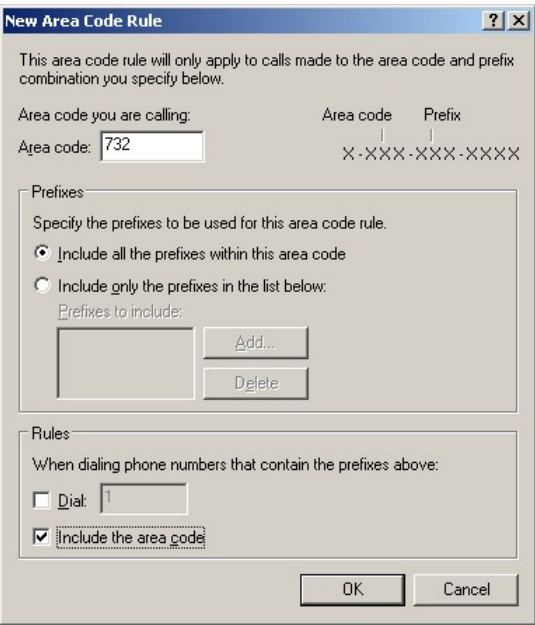
The configuration information provided in this section describes the steps required to configure Contact Center to interoperate with Avaya IP Office.

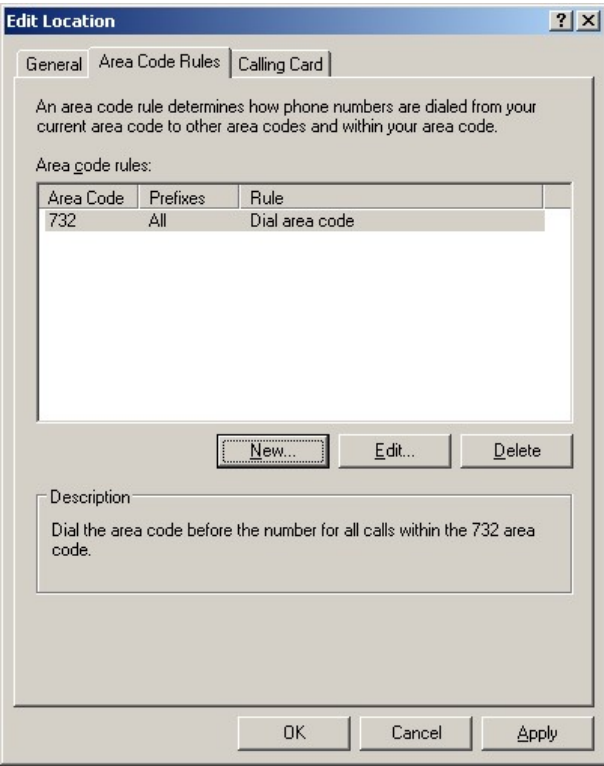
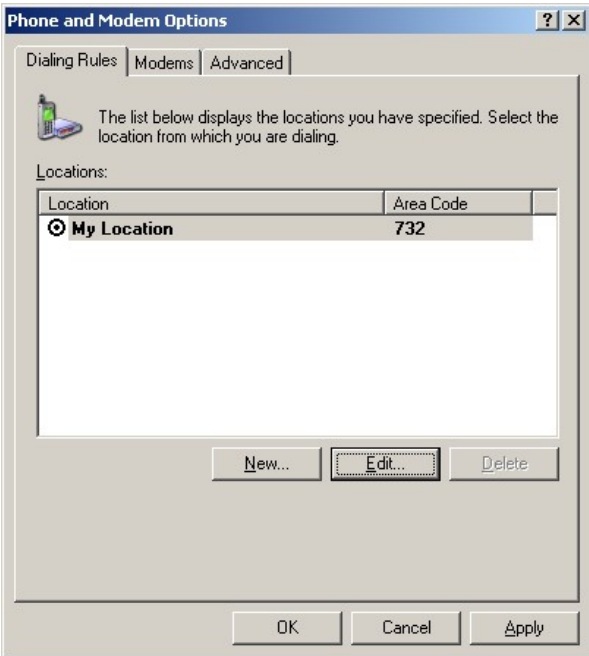
For all other provisioning information, such as software installation, installation of optional components, basic configuration of Contact Center, etc., please refer to the Zeacom Contact Center product documentation in reference [3].

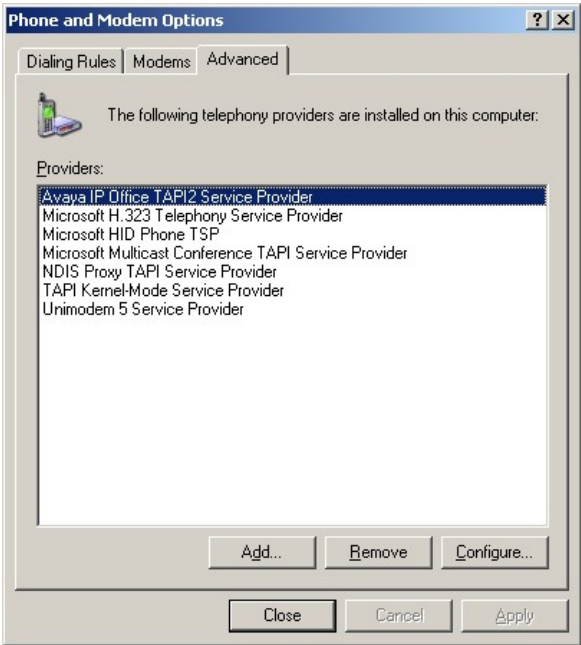
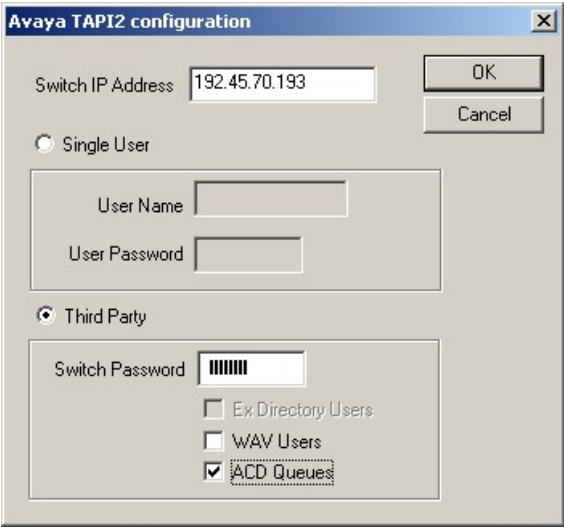
4.1. Install and Configure Avaya TAPI Driver and Dialing Rules

Step	Description
1.	Log into the Contact Center server with administrative privileges and launch the Avaya IP Office User Suite setup.exe in the CDROM drive.
2.	Click Next in the InstallShield wizard until the Select Components window appears. Check TAPI to install the IP Office TAPI driver on the server. 
3.	Click Next to complete the installation of the Avaya IP Office User Suite. At the InstallShield Wizard Complete window, click Finish .
4.	Go to Start → Control Panel and double-click the Phone and Modem Options icon in the Control Panel window that appears.

Step	Description
	Configure Dialing Rules
5.	In the Phone and Modem Options window that appears, highlight My Location in the Location pane and click Edit... 
6.	In the Edit Location window that appears, set Area code to the area code (732), set Dialing rules to the local dialing rules, set To access an outside line for local calls, dial to the PRI trunk outbound short code defined in Section 3 Step 8, and set To access an outside line for long-distance calls, dial to the PRI trunk outbound short code defined in Section 3 Step 8. Click Apply. Note: This step was not necessary for the Zeacom solution, but it was necessary for the compliance test configuration used in the lab because more than one outbound shortcode was being used. If the default outbound shortcode '9' were being used, ignore this step. 

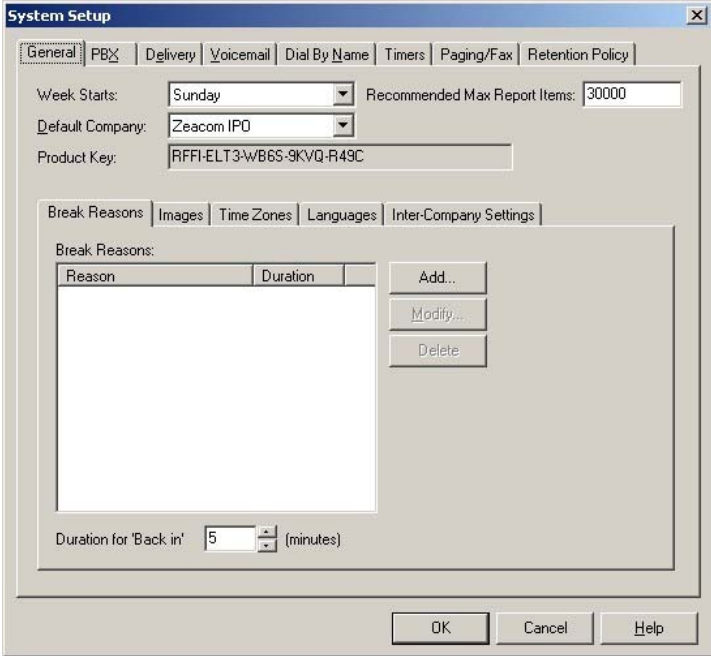
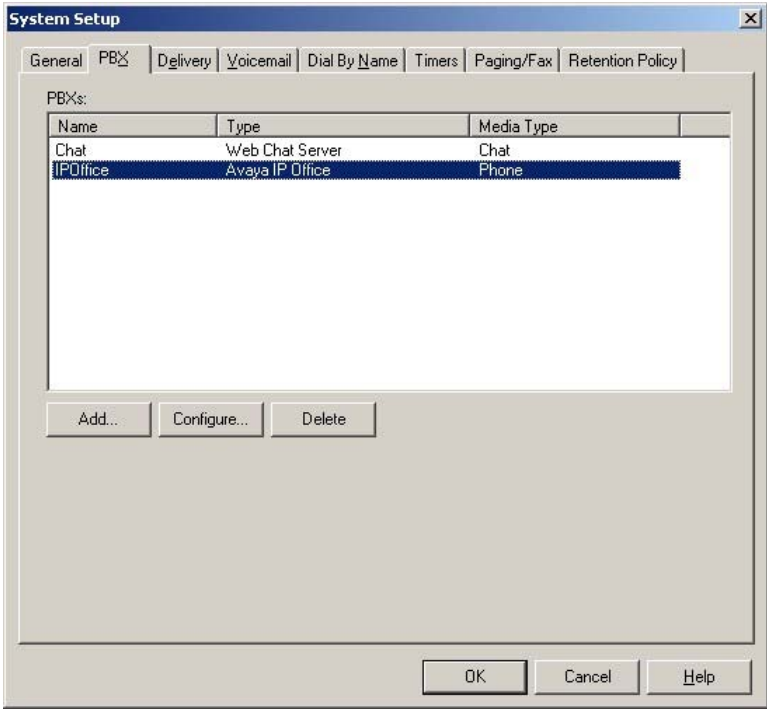
Step	Description
7.	In the Edit Location window, select the Area Code Rules tab and click New... 
8.	In the New Area Code Rule window that appears, set Area code to 732, check Include the area code and click OK.  Note: This step is only necessary if 10-digit dialing is in use for the specified area code. If 10-digit dialing is not used, ignore this step.

Step	Description
9.	In the Edit Location window, click OK. 
	Configure TAPI Driver
10.	In the Phone and Modem Options window, select the Advanced tab. 

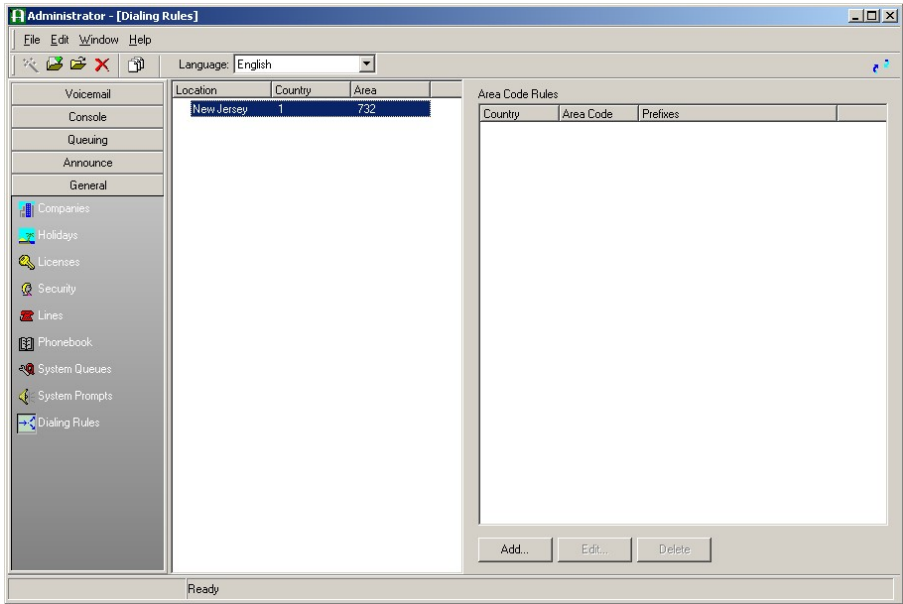
Step	Description
11.	In the Advanced tab window that appears, highlight Avaya IP Office TAPI2 Service Provider and click Configure... 
12.	In the Avaya TAPI2 configuration window that appears, set Switch IP Address to the IP address of Avaya IP Office, select Third Party, set Switch Password to the IP Office password as defined in Section 3 Step 4, and check ACD Queues. Click OK. 
13.	In the Phone and Modem Options window, click OK .
14.	Reboot the server for the new changes to take effect. This completes configuration of the Avaya TAPI Driver on the Contact Center server.

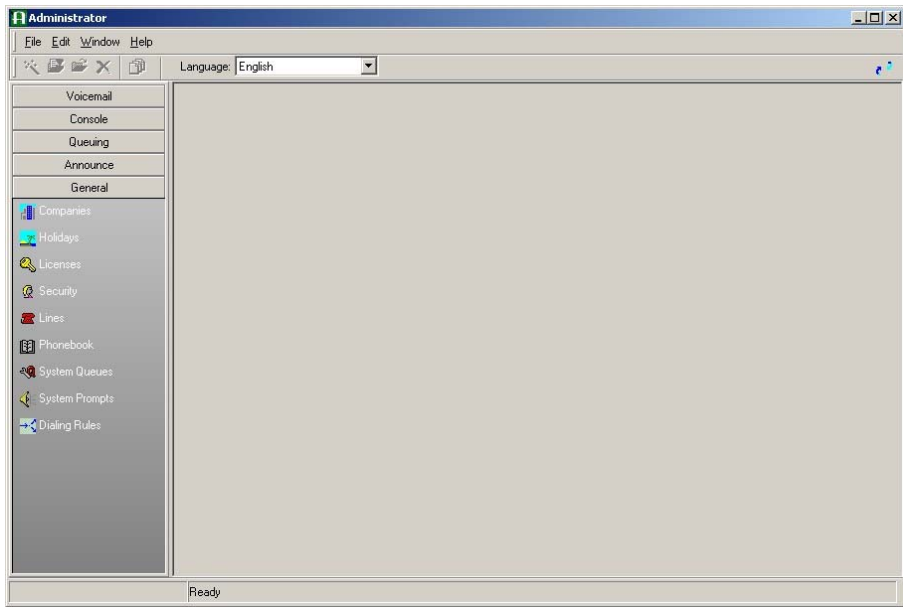
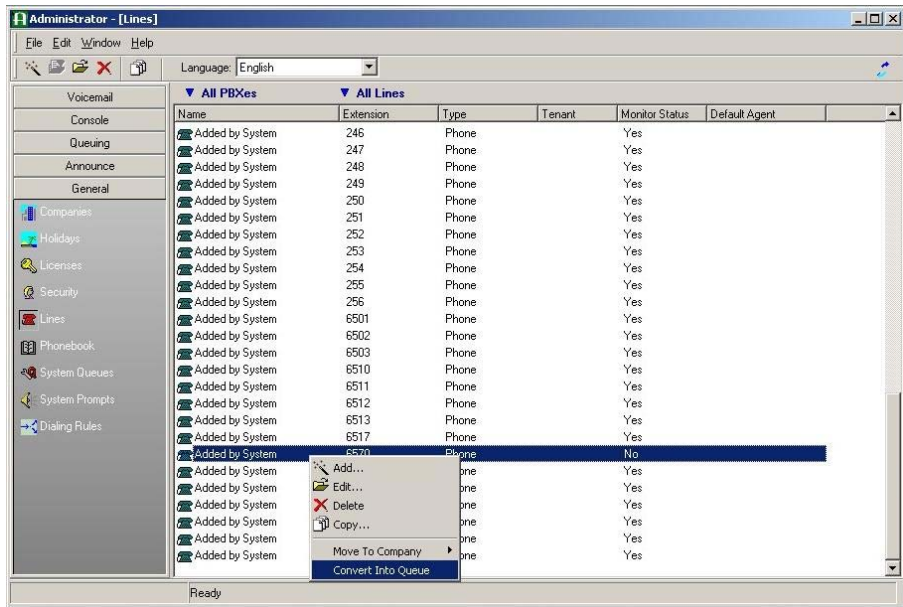
4.2. Configure Contact Center

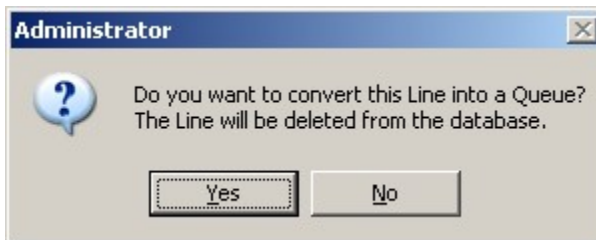
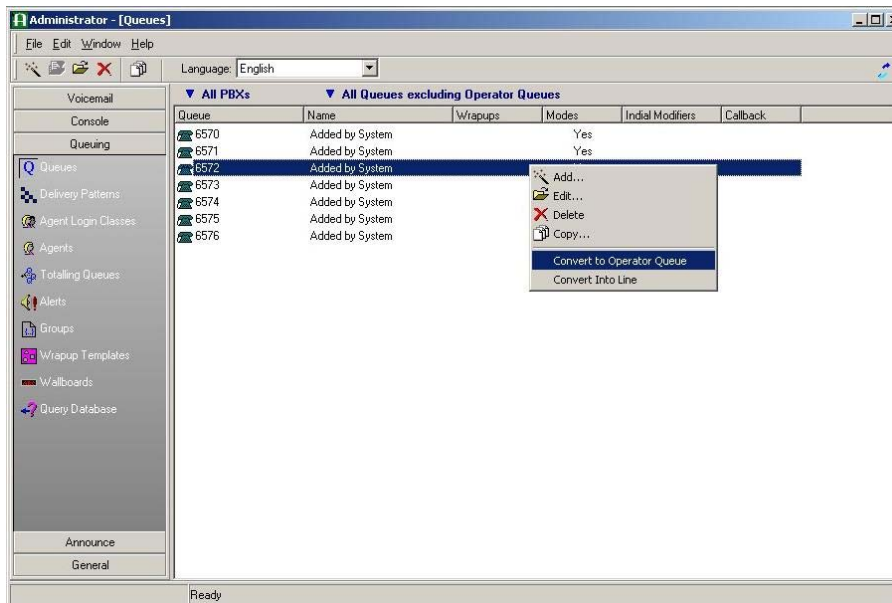
Step	Description
1.	Log into the Contact Center server with administrative privileges and launch the Zeacom Administrator application by double-clicking the  icon on the desktop (the icon is placed on the desktop during installation). 
2.	In the Administrator popup that appears, enter the appropriate login credentials, check Remember me next time and click OK. 
Verify System Setup	
3.	In the Administrator window, select File → System Setup... 

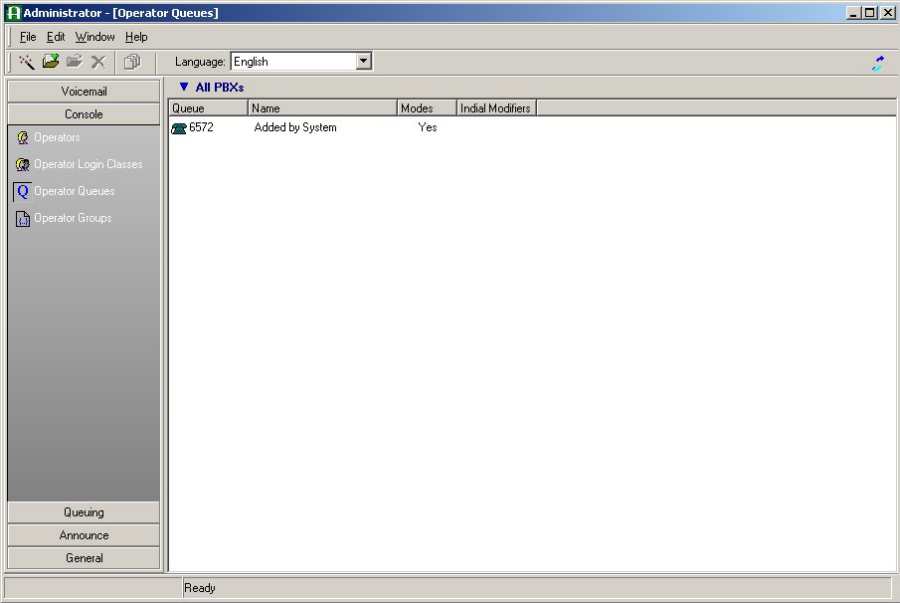
Step	Description
4.	In the System Setup window that appears, select the PBX tab. 
5.	In the list of PBXs that appears in the PBX tab, select IPOffice and click Configure... 

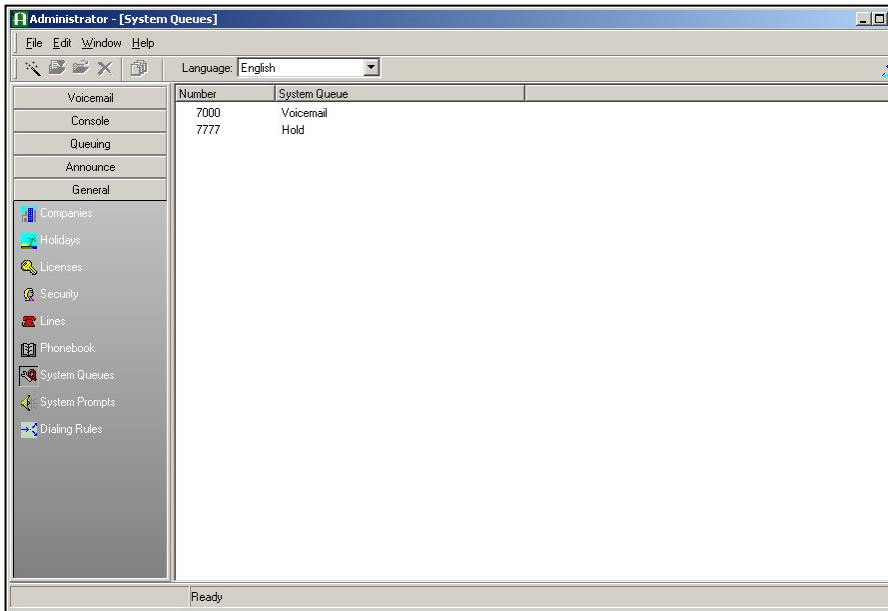
Step	Description
6.	In the IP Office PBX Setup window that appears, verify that PBX Name is set to IPOffice and Voicemail port auto learn code is set to *99424299 as configured in Section 3, Step 7. Click OK. Note 1: Ignore Park retrieve code because Zeacom does not support the Call Park feature of Avaya IP Office. Note 2: Ignore CallListen access code because Contact Center Supervisor Monitor and Supervisor Assist features do not support Avaya IP Office and were not compliance tested.
7.	In the System Setup window, click OK .
Configure Dialing Rules	
8.	In the Administrator window, click General → Dialing Rules in the left hand menu pane. Right-click the middle pane and select Add....

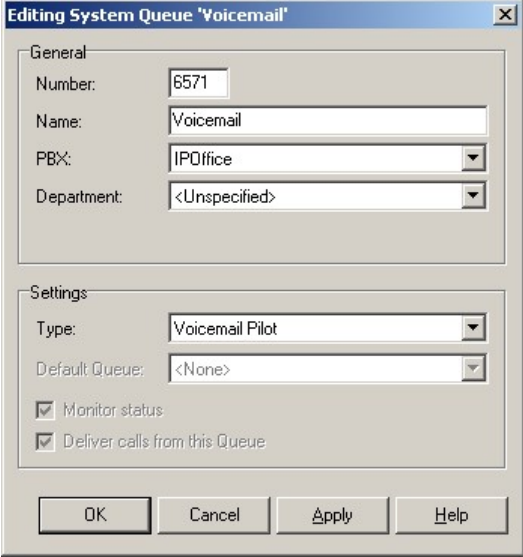
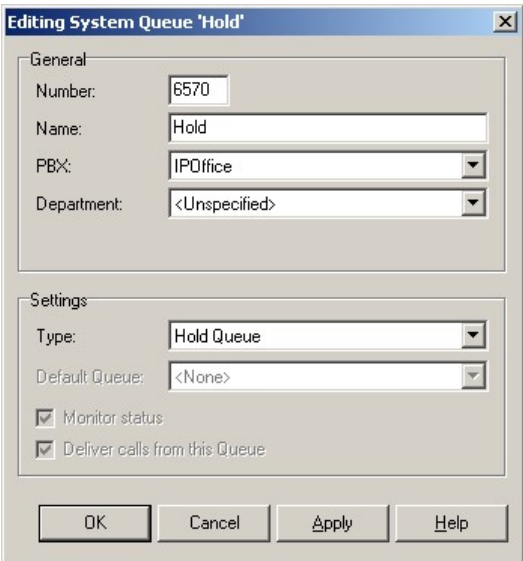
Step	Description
9.	In the Edit Dial Rule window that appears, set Location to <i>New Jersey</i>, Country Code to <i>United States (1)</i> and Area Code to <i>732</i>. Click OK. 
10.	In the Administrator window, the newly added Dialing Rule appears in the middle pane.  Note: Steps 8 – 10 are only necessary if 10-digit dialing is in use for the specified area code. If 10-digit dialing is not used, ignore these steps.
11.	This completes configuration of Zeacom Contact Center. The information in the remainder of this section is provided for informational purposes.

Step	Description
	Define Queues
12.	In the Administrator window that appears, click General → Lines in the left hand menu pane. 
13.	In the list of lines that appears in the right hand pane of the Administrator window, right-click extension 6570 and select Convert into Queue in the menu that appears. 

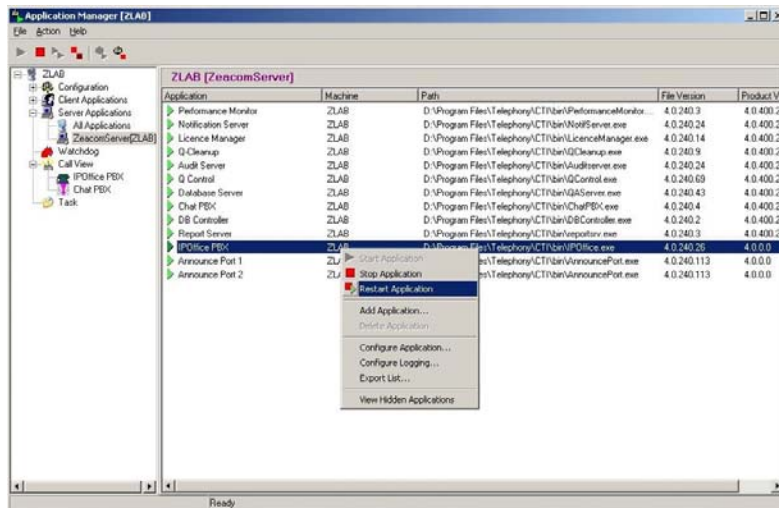
Step	Description
14.	In the Administrator popup that appears, click Yes. 
15.	Repeat steps 13 – 14 for each hunt group extension listed in Table 1.
	Configure Operator Queue
16.	In the Administrator window, click Queuing → Queues in the left hand menu pane.
17.	In the list of Queues that appear in the right hand pane, right-click 6572 and select Convert to Operator Queue in the popup that appears. 6572 will be removed from the list. 

Step	Description
18.	In the Administrator window, click Console → Operator Queues in the left hand menu pane. 6572 should be listed in the right hand pane. 
	Configure Voicemail and Hold Queues
19.	In the Administrator window, click Queuing → Queues in the left hand menu pane. In the list of queues that appears in the right hand pane, right-click 6570 and select Delete in the popup that appears (not shown).
20.	In the Administrator popup that appears, click Yes. 6570 will be removed from the list. 

Step	Description
21.	In the Administrator window, click Queuing → Queues in the left hand menu pane. In the list of queues that appears in the right hand pane, right-click 6571 and select Delete in the popup that appears. 
22.	In the Administrator popup that appears, click Yes. 6571 will be removed from the list. 
23.	In the Administrator window, click General → System Queues in the left hand menu pane. Right-click Voicemail in the right hand pane and select Edit in the popup that appears (not shown). 

Step	Description
24.	In the Editing System Queue “Voicemail” window that appears, set Number to the Voicemail Hunt Group extension defined in Table1 and click OK. 
25.	In the Administrator window, click General → System Queues in the left hand menu pane. Right-click Hold in the right hand pane and select Edit in the popup that appears (not shown).
26.	In the Editing System Queue “Hold” window that appears, set Number to the Hold Hunt Group extension defined in Table1 and click OK. 
27.	Launch the Zeacom Application Manager by double-clicking the  icon on the desktop – the icon is placed on the desktop during installation (not shown).

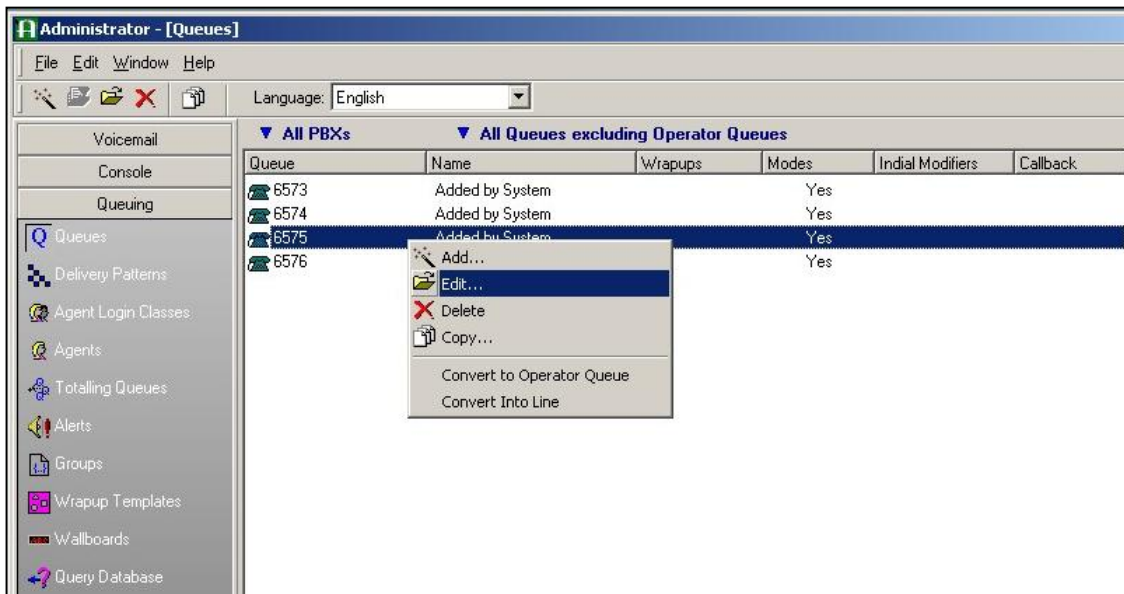
Step	Description
28.	In the Application Manager window that appears, click Server Applications → ZeacomServer[ZLAB] in the left hand pane (not shown).
29.	In the list of applications that appears in the right hand pane of the Application Manager, right-click IPOffice PBX and select Restart Application . Select File → Exit to close the Application Manager.



The screenshot shows the 'Application Manager [ZLAB]' window. On the left, a tree view shows 'ZeacomServer[ZLAB]' expanded. On the right, a table lists applications. 'IPOffice PBX' is selected, and a right-click context menu is open, showing options like 'Start Application', 'Stop Application', 'Restart Application', 'Add Application...', 'Delete Application...', 'Configure Application...', 'Configure Logging...', 'Export List...', and 'View Hidden Applications'.

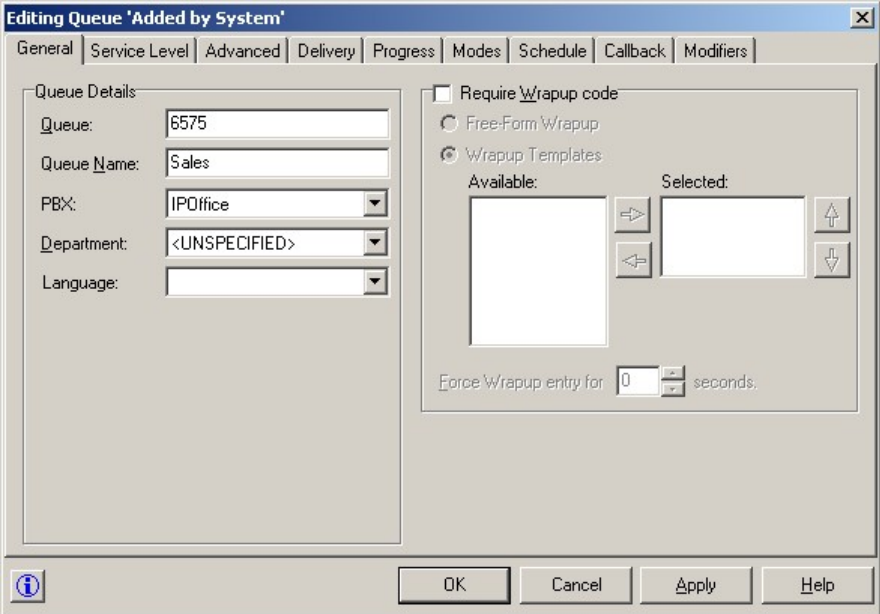
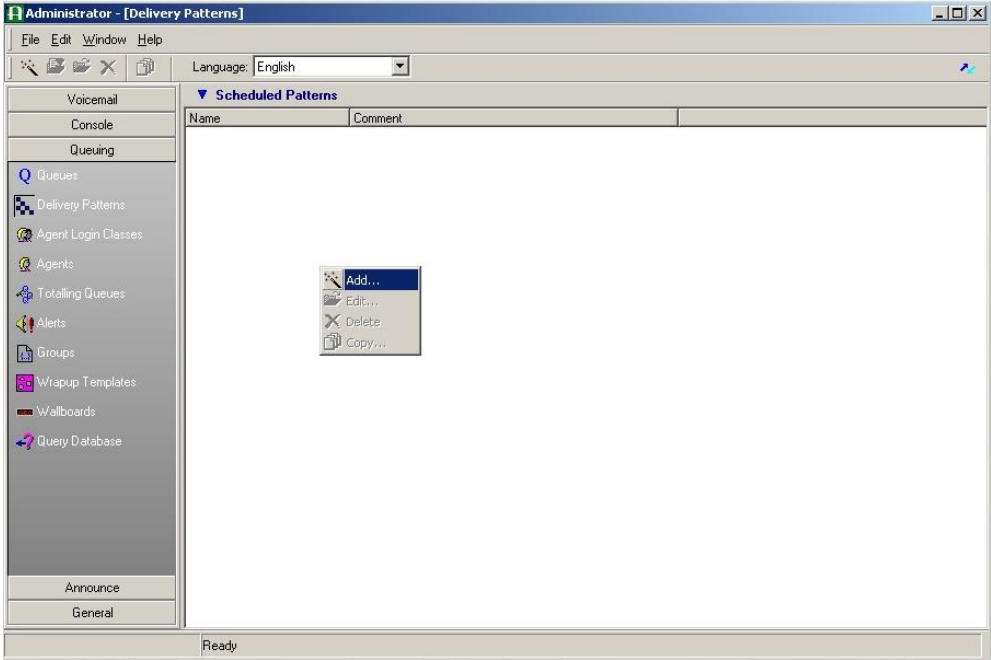
Application	Machine	Path	File Version	Product Version
Performance Monitor	ZLAB	D:\Program Files\Telephony\CTI\bin\PerformanceMonitor.exe	4.0.240.3	4.0.400.24
Notification Server	ZLAB	D:\Program Files\Telephony\CTI\bin\NotificationServer.exe	4.0.240.24	4.0.400.24
Licence Manager	ZLAB	D:\Program Files\Telephony\CTI\bin\LicenceManager.exe	4.0.240.14	4.0.400.24
Q Cleanup	ZLAB	D:\Program Files\Telephony\CTI\bin\QCleanup.exe	4.0.240.9	4.0.400.24
Audit Server	ZLAB	D:\Program Files\Telephony\CTI\bin\AuditServer.exe	4.0.240.24	4.0.400.24
Q Control	ZLAB	D:\Program Files\Telephony\CTI\bin\QControl.exe	4.0.240.69	4.0.400.24
Database Server	ZLAB	D:\Program Files\Telephony\CTI\bin\QDatabase.exe	4.0.240.43	4.0.400.24
Chat PBX	ZLAB	D:\Program Files\Telephony\CTI\bin\ChatPBX.exe	4.0.240.4	4.0.400.24
DB Controller	ZLAB	D:\Program Files\Telephony\CTI\bin\QDBController.exe	4.0.240.2	4.0.400.24
Report Server	ZLAB	D:\Program Files\Telephony\CTI\bin\ReportServer.exe	4.0.240.3	4.0.400.24
IPOffice PBX	ZLAB	D:\Program Files\Telephony\CTI\bin\IPOffice.exe	4.0.240.26	4.0.0.0
Announce Port 1	ZLAB	D:\Program Files\Telephony\CTI\bin\AnnouncePort.exe	4.0.240.113	4.0.0.0
Announce Port 2	ZLAB	D:\Program Files\Telephony\CTI\bin\AnnouncePort.exe	4.0.240.113	4.0.0.0

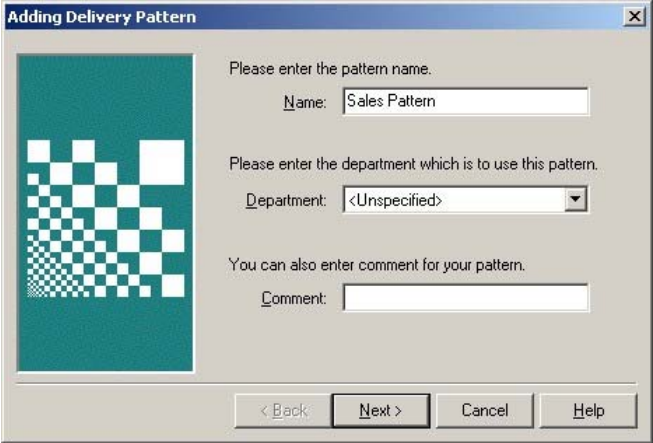
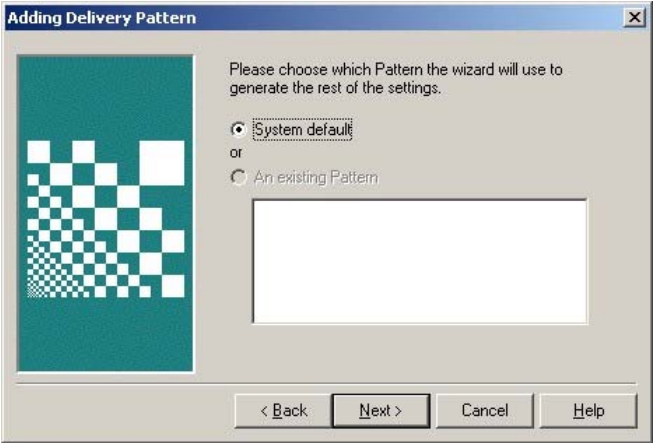
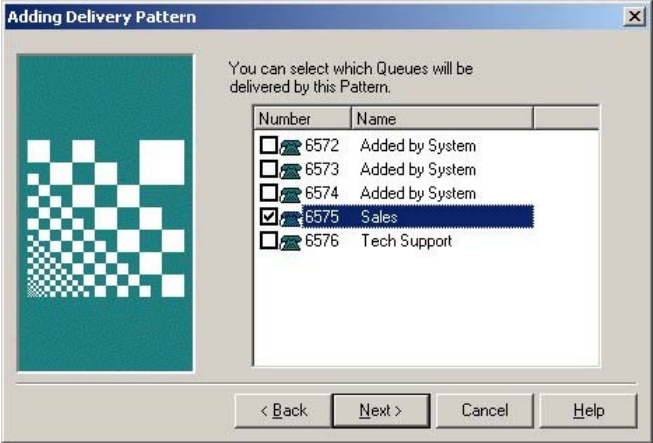
Configure Sales and Tech Support Queues	
30.	In the Administrator window, click Queuing → Queues in the left hand menu pane. In the list of queues that appears in the right hand pane, right-click 6575 and select Edit in the popup that appears.

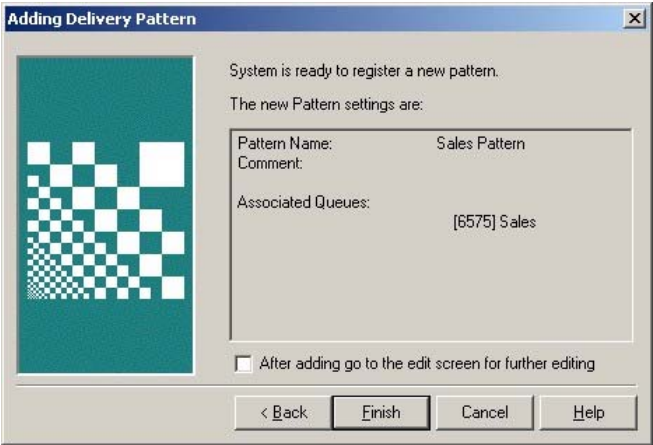
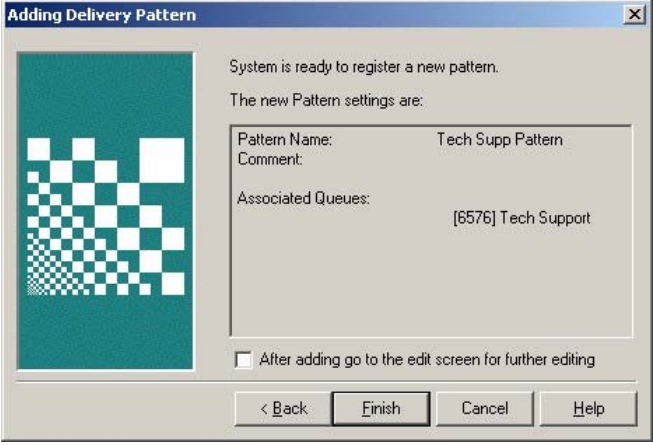


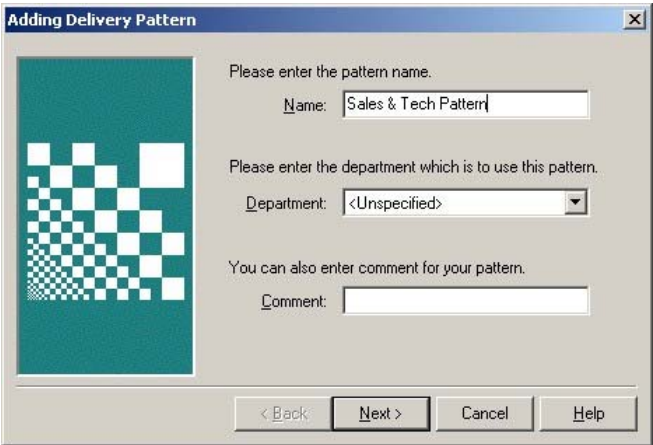
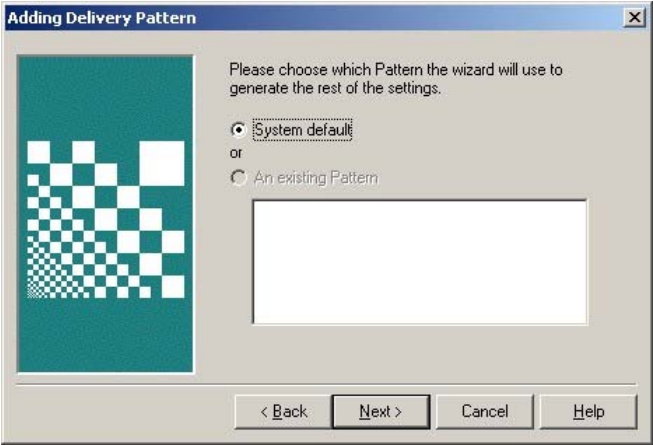
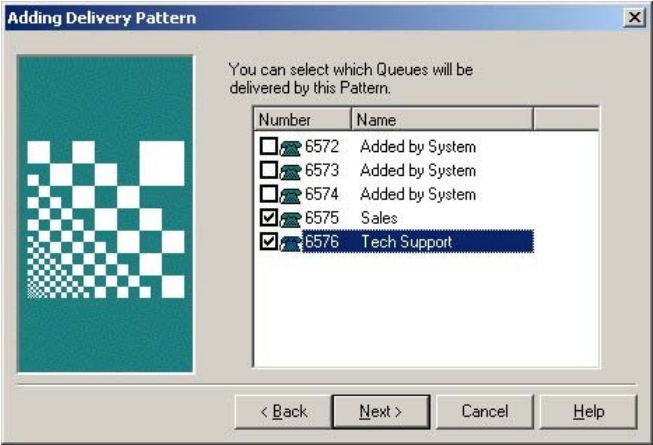
The screenshot shows the 'Administrator - [Queues]' window. On the left, a tree view shows 'Queues' selected. On the right, a table lists queues. '6575' is selected, and a right-click context menu is open, showing options like 'Add...', 'Edit...', 'Delete', 'Copy...', 'Convert to Operator Queue', and 'Convert Into Line'.

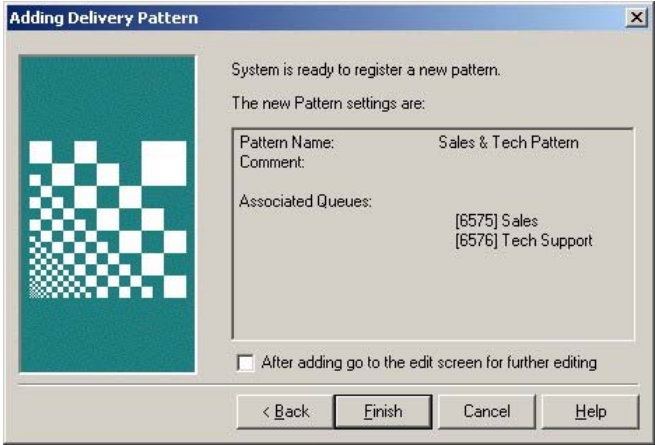
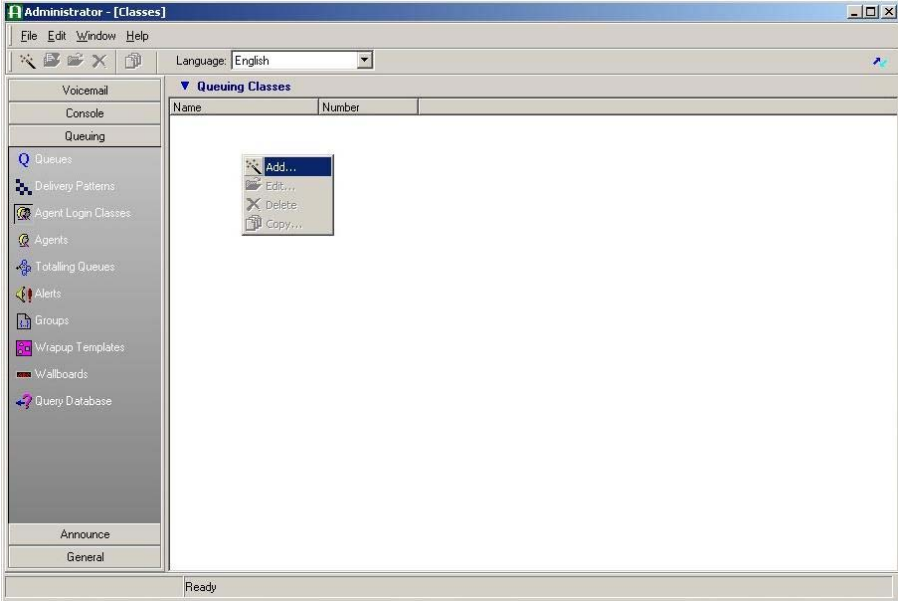
Queue	Name	Wrapups	Modes	Initial Modifiers	Callback
6573	Added by System		Yes		
6574	Added by System		Yes		
6575	Added by System		Yes		
6576	Added by System		Yes		

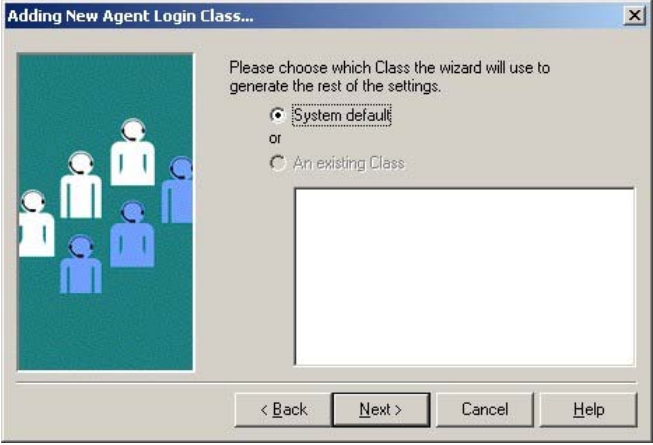
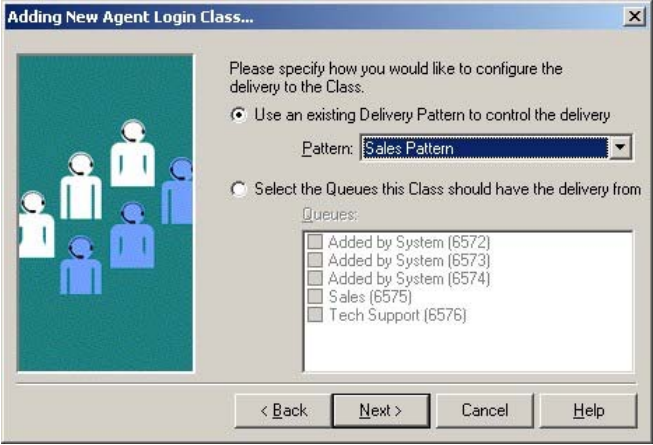
Step	Description
31.	In the Editing Queue 'Added by System' window that appears, set Queue Name to <i>Sales</i> and click OK. 
32.	Repeat steps 30 – 31 for 6576, setting Queue Name to <i>Tech Support</i>.
	Configure Delivery Patterns
33.	In the Administrator window, click Queuing → Delivery Patterns in the left hand menu pane. Right-click the right hand pane and select Add... 

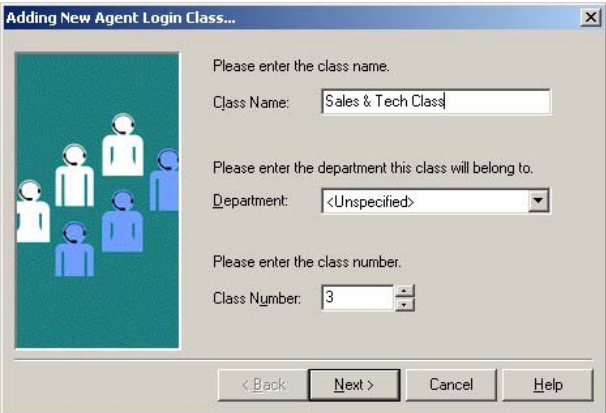
Step	Description
34.	In the Adding Delivery Pattern window that appears, set Name to Sales Pattern and click Next. 
35.	In the next window that appears, select System default and click Next. 
36.	In the next window that appears, check 6575 Sales and click Next. 

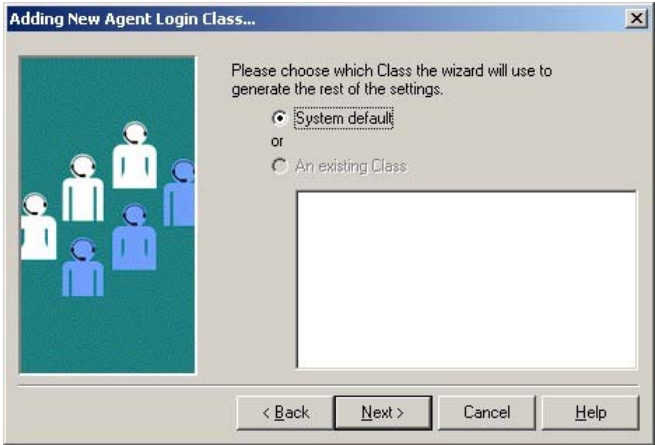
Step	Description
37.	In the next window that appears, click Finish. 
38.	Repeat steps 33 – 37 to create Pattern Name Tech Support Pattern associated to 6576 Tech Support queue. 
39.	In the Administrator window, click Queuing → Delivery Patterns in the left hand menu pane. Right-click the right hand pane and select Add... (not shown).

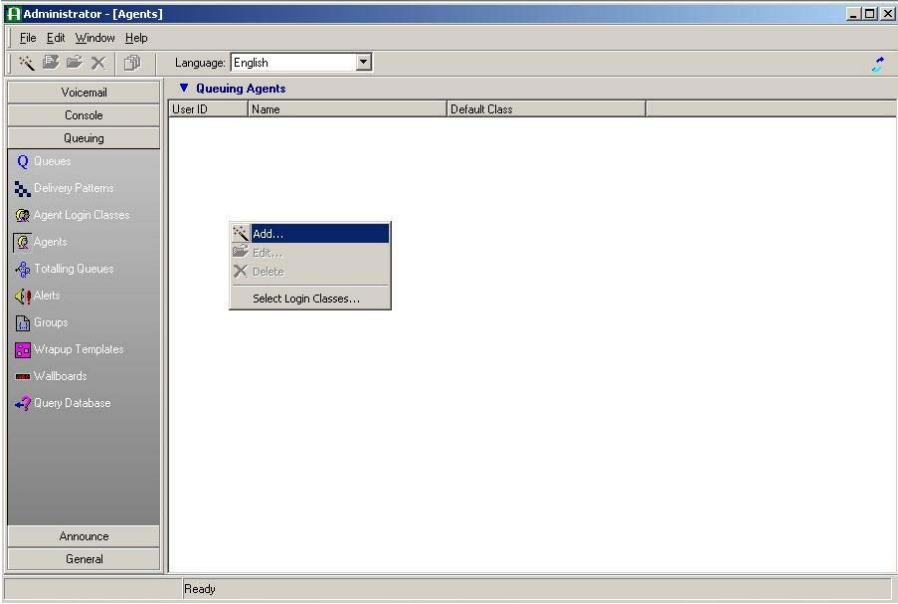
Step	Description
40.	In the Adding Delivery Pattern window that appears, set Name to <i>Sales & Tech Pattern</i> and click Next. 
41.	In the next window that appears, select System default and click Next. 
42.	In the next window that appears, check 6575 Sales and 6576 Tech Support and click Next. 

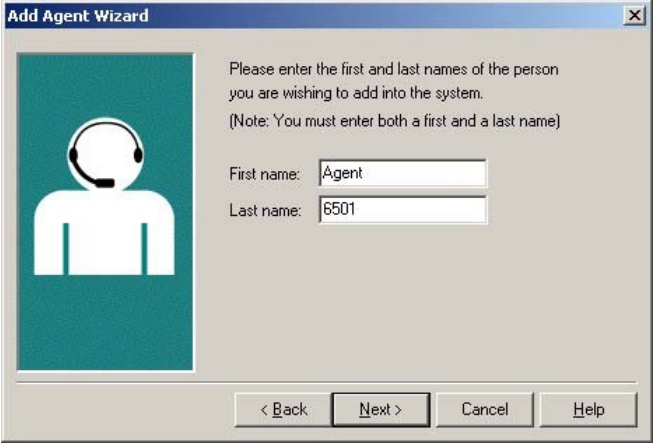
Step	Description
43.	In the next window that appears, click Finish. 
	Configure Agent Login Classes
44.	In the Administrator window, click Queuing → Agent Login Classes in the left hand menu pane. Right-click the right hand pane and select Add... 

Step	Description
45.	In the Adding New Agent Login Class... window that appears, set Class Name to Sales Class and click Next. 
46.	In the next window that appears, select System default and click Next. 
47.	In the next window that appears, select Use an existing Delivery Pattern to control the delivery, set Pattern to Sales Pattern from the pull down list and click Next. 

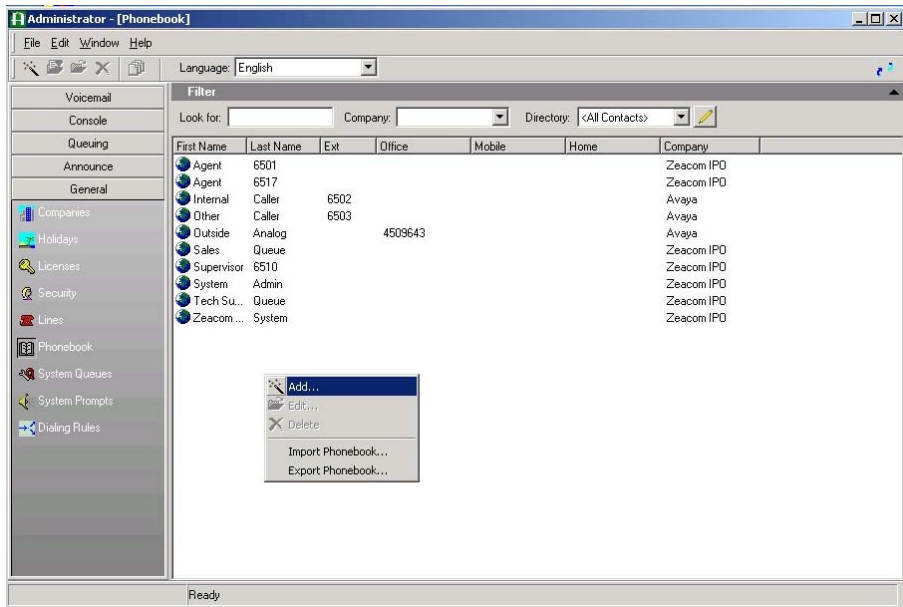
Step	Description
48.	In the next window that appears, click Finish. 
49.	Repeat steps 44 – 48 to add a Tech Class Login Class using Tech Support Pattern. 
50.	In the Administrator window, click Queuing → Agent Login Classes in the left hand menu pane. Right-click the right hand pane and select Add... (not shown).
51.	In the Adding New Agent Login Class... window that appears, set Class Name to Sales & Tech Class and click Next. 

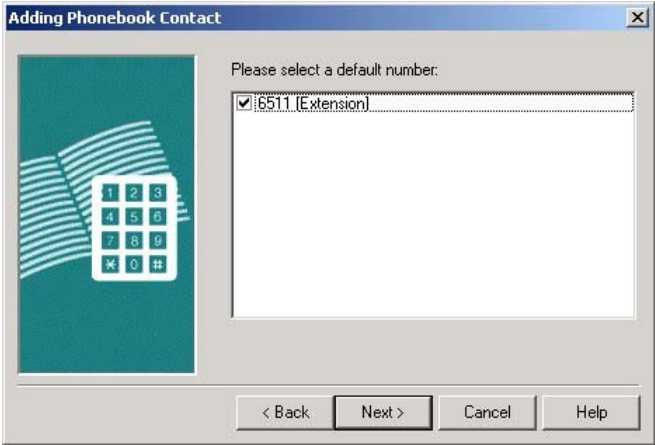
Step	Description
52.	In the next window that appears, select System default and click Next. 
53.	In the next window that appears, select Use an existing Delivery Pattern to control the delivery, set Pattern to Sales & Tech Pattern from the pull down list and click OK. 
54.	In the next window that appears, click Finish. 
	Configure Agents

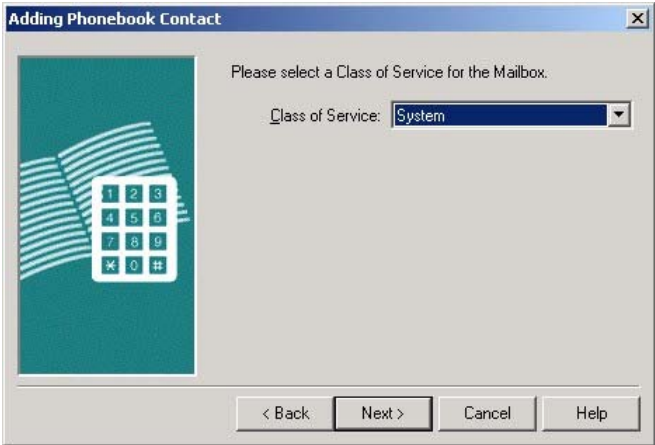
Step	Description
55.	In the Administrator window, click Queuing → Agents in the left hand menu pane. Right-click the right hand pane and select Add.... 
56.	In the Add Agent Wizard window that appears, select Create new Phonebook entry and click Next. 

Step	Description
57.	In the next window that appears, add the first agent listed in Table 2 and click Next. 
58.	In the next window that appears, set User ID to the one listed for this agent in Table 2. 
59.	In the next window that appears, set Security Class to the one listed for this agent in Table 2. 

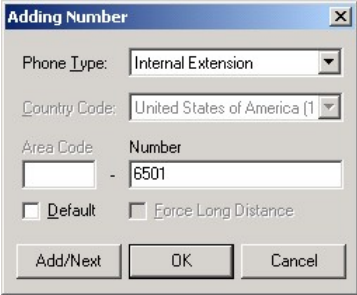
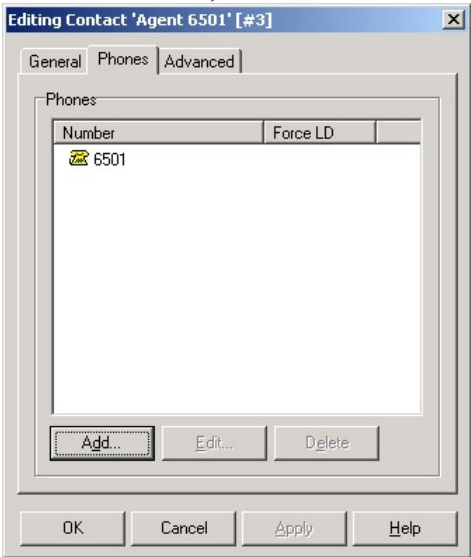
Step	Description
60.	In the next window that appears, set Use Existing Class to the Login Class defined for this agent in Table 2. 
61.	In the next window that appears, click Finish. 
62.	Repeat steps 55 – 61 for Supervisor 6510 and Agent 6517 listed in Table 2 .

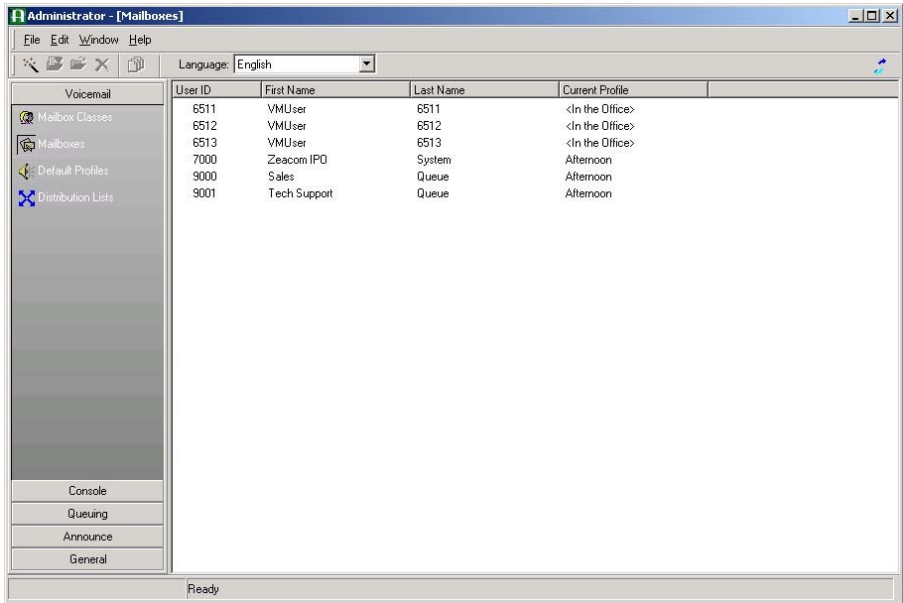
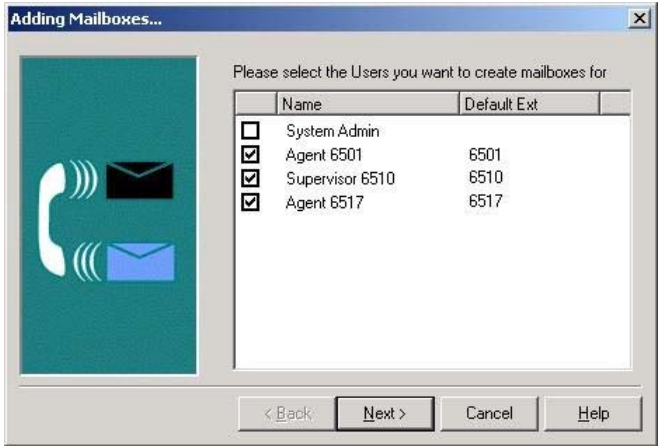
Step	Description
	Configure Voicemail for Voicemail Users
63.	In the Administrator window, click General → Phonebook. Right-click the right hand pane and select Add....  The screenshot shows the 'Administrator - [Phonebook]' window. The left sidebar has a tree view with 'Phonebook' selected. The main pane shows a table of contacts with columns: First Name, Last Name, Ext, Office, Mobile, Home, and Company. A context menu is open over the table with the following options: Add..., Edit..., Delete..., Import Phonebook..., and Export Phonebook... The 'Add...' option is highlighted.
64.	In the Adding Phonebook Contact window that appears, add the first voicemail user listed in Table 2. Click Next.  The screenshot shows the 'Adding Phonebook Contact' dialog box. It has a title bar with a close button. The main area contains a text box for 'First Name' with 'VMUser' entered, a text box for 'Last Name' with '6511' entered, and a 'Quick Search' text box. There are buttons for '< Back', 'Next >', 'Cancel', and 'Help' at the bottom.

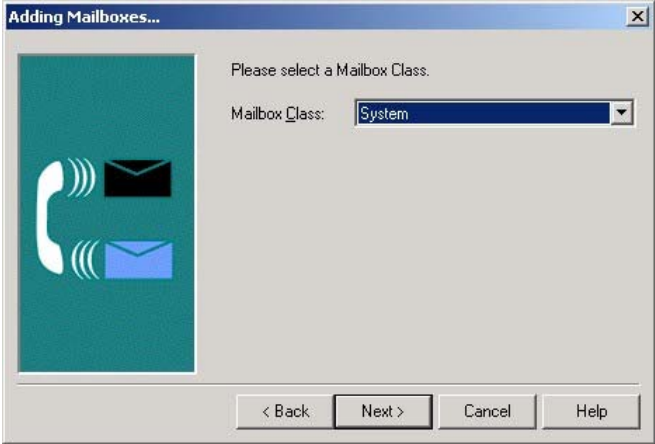
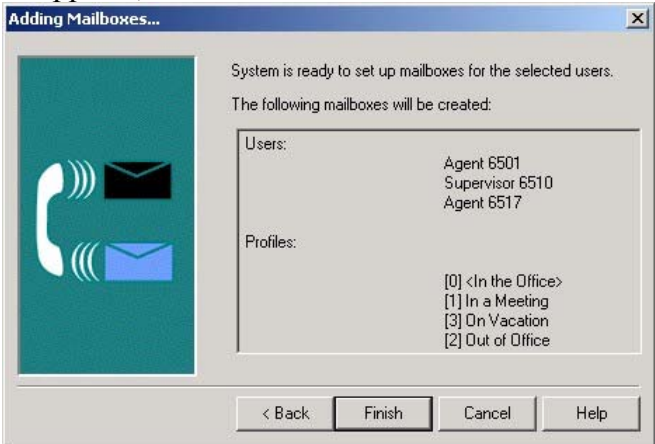
Step	Description
65.	In the next window that appears, set Company to <i>Zeacom IPO</i> and click Next. 
66.	In the next window that appears, set Extension to the extension defined for this user in Table 2 and click Next. 
67.	In the next window that appears, check the Extension listed as the default number for the user and click Next. 

Step	Description
68.	In the next window that appears, check Yes, create the Mailbox and click Next. 
69.	In the next window that appears, set Class of Service to the class defined for the user in Table 2. Click Next. 
70.	In the windows that follow, click Next until the final window windows. In the final window that appears, click Finish. 

Step	Description
	Configure Default Extension for Agents
71.	In the Administrator window, click General → Phonebook . Right-click Agent 6501 and select Edit (not shown).
72.	In the Editing Contact 'Agent 6501' window that appears, select the Phones tab.
73.	In the Phones tab window that appears, click Add... .

Step	Description
74.	In the Adding Number window that appears, set Phone Type to <i>Internal Extension</i>, Number to 6501 and click OK. 
75.	In the Editing Contact 'Agent 6501' window, click OK. 
76.	Repeat steps 71 – 75 for Supervisor 6510 and Agent 6517.

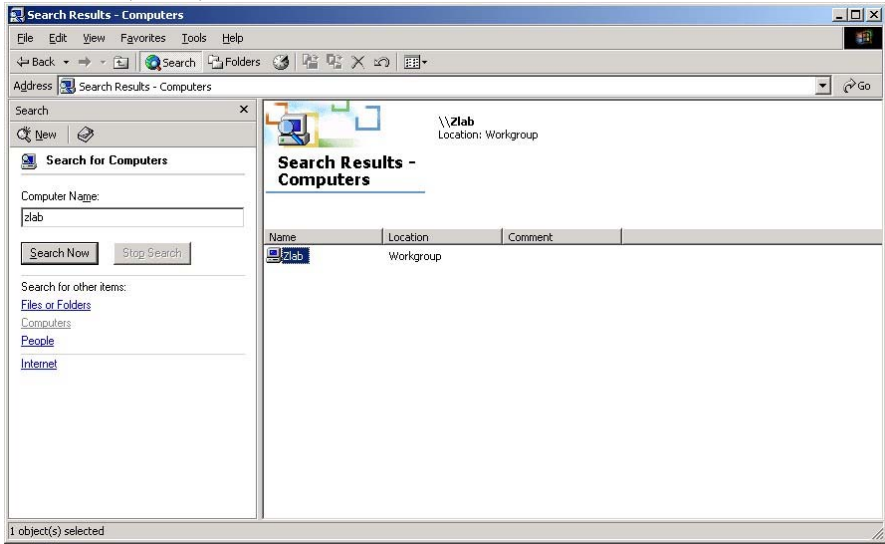
Step	Description
	Configure Voicemail for Agents
77.	In the Administrator window, click Voicemail → Mailboxes. Right-click the right hand pane and select Add.... 
78.	In the Adding Mailboxes... window that appears, check Agent 6501, Supervisor 6510 and Agent 6517. Click Next. 

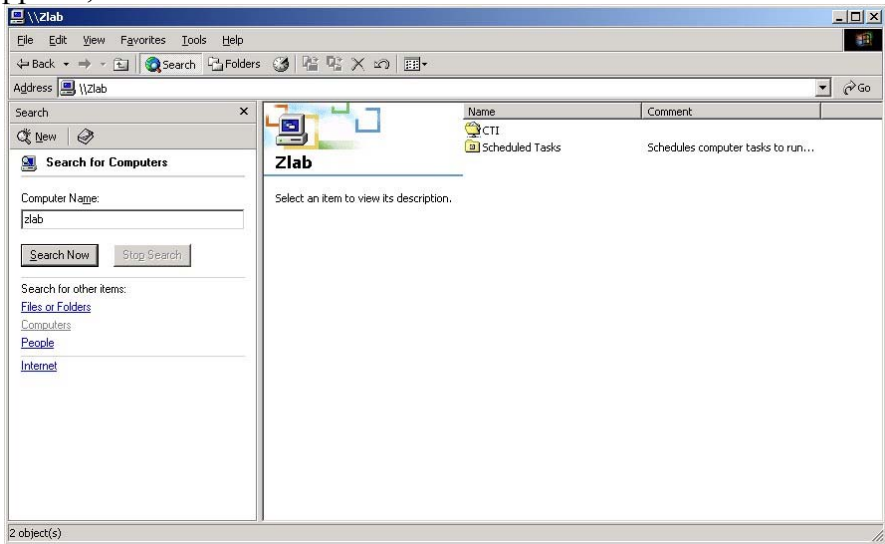
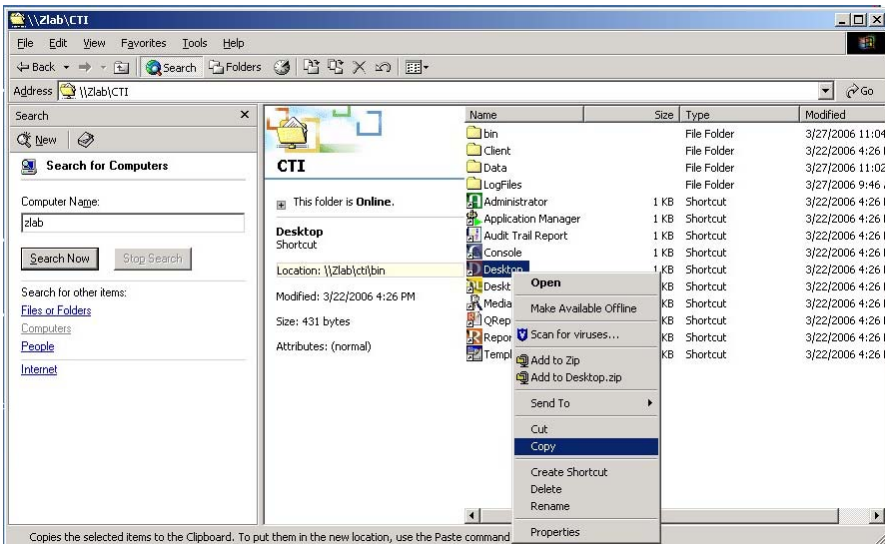
Step	Description
79.	In the next window that appears, select User Mailboxes and click Next. 
80.	In the next window that appears, set Mailbox Class to System and click Next. 
81.	In the next window that appears, click Finish. 
82.	This completes configuration of Zeacom Contact Center.

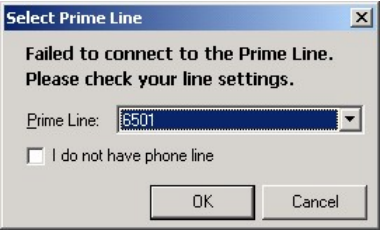
5. Configure Zeacom Contact Center Desktop

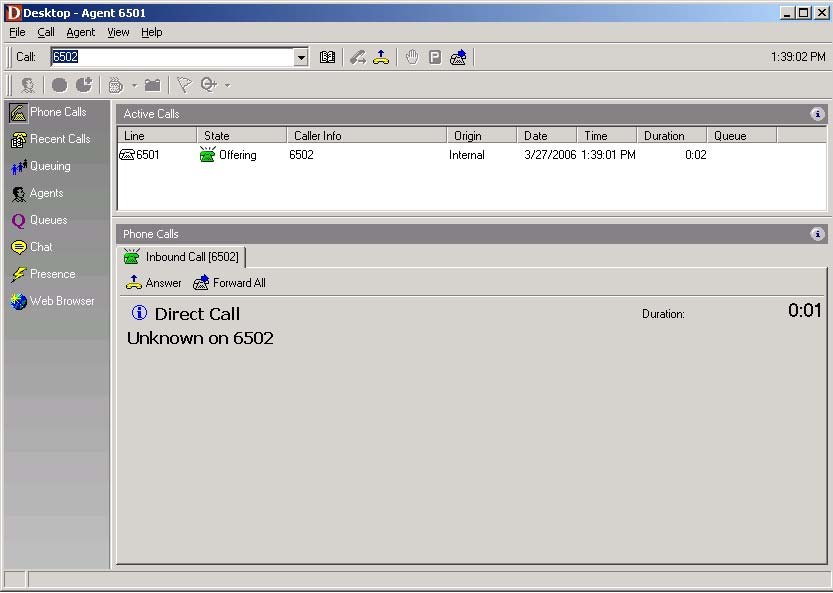
The configuration information provided in this section describes the steps required to configure Contact Center Desktop and is provided for informational purposes only.

For all other provisioning information, such as software installation, installation of optional components, configuration of Contact Center Desktop, etc., please refer to the Zeacom Contact Center product documentation in reference [3].

Step	Description
1.	Log into the client PC for Agent 6501 with administrative privileges.
2.	Go to Start → Search → For Files or Folders.... In the Search Results window that appears, click Computers in the Search for other items listed on the left hand pane (not shown).
3.	In the Search for Computers window that appears, set Computer Name to the name of the Contact Center Server, zlab , and click Search Now . 

Step	Description
4.	Double click the zlab icon that appears on the right hand pane. In the list of zlab network shares that appears, click CTI. 
5.	In the list of files that appear for the CTI network share, right-click the  Desktop shortcut and select Copy in the menu that appears. 
6.	Right-click the Agent 6501 PC desktop and select Paste Shortcut (not shown).

Step	Description
7.	Double click the  Desktop icon to launch the Desktop application. 
8.	In the Desktop login window that appears, set Login Name to 6501 Agent, PIN to the login credentials for the agent (please refer to Zeacom documentation for instruction on how to configure login credentials for agents), check Remember me next time and click OK. 
9.	In the Select Prime Line window that appears, set Prime Line to 6501 and click OK. 
10.	Repeat steps 1 – 9 for Supervisor 6510 and Agent 6517 on their respective client PCs.
11.	This completes configuration of Zeacom Contact Center Desktop client.

Step	Description
12.	The window displayed below shows a call from internal extension 6502 to Agent extension 6501. 

6. Interoperability Compliance Testing

The interoperability compliance testing included feature functionality and serviceability testing. The feature functionality testing focused on verifying that Zeacom Contact Center features such as intelligent call routing and voicemail interoperates with Avaya IP Office. Zeacom Contact Center Desktop features including screen pop were also tested with Avaya IP Office. The serviceability testing focused on verifying the ability of Zeacom Contact Center to recover from adverse conditions such as disconnecting the Ethernet cable for the TAPI link and from loss of power at Avaya IP Office or Zeacom Contact Center server.

6.1. General Test Approach

Feature functionality testing was performed manually. Inbound calls were made to Avaya IP Office through analog and T1/PRI trunks, as well as from internal extensions (analog, digital, and IP Telephone). IP Office was configured to route inbound trunk calls to either a hunt group or a specific extension based on the test case. Calls to specific Avaya IP Office hunt groups that were identified as Contact Center queues, i.e., sales or tech support, were redirected to the next available agent extension as determined by Contact Center. Calls to specific Avaya IP Office user extensions that were not answered were forwarded to the Contact Center voicemail queue. Once callers left messages, Contact Center would light the user extension's message waiting lamp and the messages were available for later review and retrieval. Additionally, Contact Center Desktop clients that were associated to user extensions were used to place and receive calls. Contact Center Desktop generated the equivalent of screen pops for incoming or internal calls. The caller's CallerID number information was provided in these screen pops. The

serviceability test cases were performed manually by disconnecting and reconnecting the LAN and power cables connected to Avaya IP Office and the Zeacom Contact Center server.

Load tests were accomplished using a call generator to generate inbound calls over the PRI trunk to Avaya IP Office and play a couple of recorded messages. Automated test tools were written to drive Contact Center Desktop clients to answer and hang up incoming calls.

A load test was accomplished using a call generator to generate inbound calls over the PRI trunk to Avaya IP Office and play a couple of recorded messages. Five Windows PC clients were configured with Avaya IP Office Phone Manager PC Softphone. Each Phone Manager PC Softphone was associated to an Avaya IP Telephone extension. Automated test tools were written to drive Avaya IP Office Phone Manager PC Softphone clients to automatically answer incoming calls and hang up after a few seconds. The call generator placed inbound PRI trunk calls to Avaya IP Office. Depending on the load test, the calls were routed to a Contact Center queue and answered by the next available agent, routed to a user's extension and answered by Contact Center Desktop clients driven by the automated test tool, or forwarded to a user's voicemail and messages were left and later retrieved and deleted.

6.2. Test Results

Except for the Callback and Music on Hold buffer issues documented below, all remaining test cases executed successfully. Observations made during testing are noted below.

Three one-hour load tests were run. The first load test involved placing multiple inbound PRI trunk calls to Avaya IP Office. The calls were routed to a Contact Center queue and one agent was used to answer the calls with the remaining calls waiting on the queue and listening to Music on Hold periodically. The load test failed due to the Music on Hold buffer issue described below.

The second load test involved placing calls over 23 PRI channels with no more than 8 calls occurring at a time to 8 agents in order to verify that Contact Center Desktop clients successfully generated screen pops. Each call was answered, then hung up after a few seconds through the agent's Contact Center Desktop client, which was driven by an automated test tool. Early in the load test, 7 PRI channels on the call generator got hung up in a 'Waiting to Disconnect' state (attributed to difficulty in synchronizing call generator and automated test tool on the client PC) so the remainder of the one-hour test was performed using 16 PRI channels. According to the call generator, 1590 calls were attempted during the test run, 1583 were passed and 7 failed. In other words, all calls besides the 7 faulty PRI channel calls were successful. All eight Contact Center Desktop clients were still functioning properly at the end of the test.

The third load test involved placing repeated calls over 8 PRI channels to 8 user extensions with calls being routed to voicemail if not answered. The first set of calls was to leave voicemail and the second set of calls was to retrieve the voicemail and delete it. According to the call generator, 890 calls were made with 866 succeeding and 24 failing. However, at the end of the test, not a single telephone involved in the load test had a message-waiting lamp left on. Due to time constraints, this load test could not be repeated.

The following observations, and/or issues were noted during testing:

- **CallBack issue** – During a Contact Center callback, an agent listens to a caller's message and presses a button on the Contact Center Desktop to initiate a callback to the caller. Contact Center accomplishes the callback by invoking a TAPI lineSetupTransfer on its Dialogic port, which places the agent's extension on hold. Contact Center next invokes a TAPI *lineDial* to dial the outside caller's number. While the call is proceeding, Contact Center directs its Dialogic port to hang up to complete the transfer. The issue is that in some instances, Avaya IP Office does not recognize that the Dialogic port hung up the call.
Status: Upon review and discussion between Zeacom and Avaya, it appears that Contact Center causes the Dialogic port to hang up the call too soon. This matter is currently under investigation by Zeacom. Due to this issue, CallBack feature is not supported for this solution.
- **Music on Hold Buffer issue** – An issue exists that when music on hold is used, a buffer is not being released causing Avaya IP Office to lock up after a period of time.
Status: A trouble ticket BugDB00026291 was filed with Avaya IP Office regarding this issue. A private build has been verified by Zeacom to fix the issue. A fix for this issue will be generally available later this year.
- **Contact Center does not support Avaya IP Office Do Not Disturb feature** – Contact Center does not support the Do Not Disturb feature on Avaya IP Office. Zeacom recommends against using this feature with Contact Center. If this feature is used, Contact Center begins to exhibit unusual behavior and a restart of Contact Center server is the only way to recover.
Status: Zeacom has been asked to investigate modifying Contact Center so it won't be negatively affected if Do Not Disturb is used.
- **Contact Center overrides Avaya IP Office Call Forwarding feature in some scenarios** – If A has calls forwarded to B, calls to A are properly forwarded to B. However, phone calls to any queue to which A belongs and is logged into will continue to ring at A, even if 'forward unconditional' or 'forward hunt group calls' features are enabled on Avaya IP Office. In other words, Contact Center overrides expected behavior of forwarding to other extensions if the agent is logged in.
Status: Zeacom has been asked to investigate modifying Contact Center's behavior in this scenario.
- **Contact Center does not support Avaya IP Office Park feature** – Contact Center does not support the Park or Call Park features on Avaya IP Office. Zeacom recommends using Contact Center Park rather than IP Office Park feature so that it can properly maintain call tracking. Due to time constraints, Avaya IP Office Park feature was not tested since Contact Center does not support it.

- **Contact Center does not support conference calls** – An agent can proceed and perform a conference call; however, Contact Center Desktop does not reflect the call as a conference call in progress. The client application instead shows the agent involved in a couple of different calls without an indication that the calls are the conference. However, once the call is complete, the calls clear out of the Desktop application properly. The agent does not have to restart Desktop or anything similarly drastic.
- **Zeacom recommends Contact Center Desktop client software reside on Contact Center server** – Zeacom recommends Contact Center Desktop client software reside on Contact Center server and shortcuts to the Desktop executable be created on agent PCs.

7. Verification Steps

The following steps may be used to verify the configuration:

- To verify network connectivity, ping all the devices depicted in **Figure 1** from the Zeacom Contact Center server.
- To verify TAPI is enabled on Avaya IP Office, confirm the **CTI Link Pro** license is installed and valid via Avaya IP Office Manager (Section 3, Step 18).
- To verify Contact Center is TAPI enabled, confirm the Avaya TAPI Driver is installed and configured on the Contact Center server (Section 4.1).
- To verify Contact Center is properly performing place an internal call to a Contact Center Desktop agent and verify incoming call (Section 5, Step 12).

8. Support

For technical support on Zeacom products, consult the support pages at <http://www.zeacom.com>, email Zeacom at usasupport@zeacom.com, or contact the Zeacom at 800-513-2810.

9. Conclusion

These Application Notes describe the steps for configuring Zeacom Contact Center to interoperate with Avaya IP Office. Except for the CallBack and Music on Hold Buffer issues noted in Section 6.2, all remaining test cases executed successfully.

10. Additional References

Product documentation and Technical Tips for Avaya IP Office may be found at <http://support.avaya.com>.

[1] “Avaya IP Office Technical Tip 116”, 20 January 2006

[2] “Avaya IP Office Manager, Issue 170“, 1st February 2006

Product documentation for Zeacom Contact Center is provided in the Installation CD.

[3] “Zecom Contact Center Administrator Manual for IP Office“

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