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Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Computer Instruments Enhanced Interactive Voice Response (eIVR) Screen Pop and Record-A-Call with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the procedure for configuring Computer Instruments Enhanced Interactive Voice Response (eIVR) Screen Pop and Record-A-Call applications to work with Avaya IP Office. Information in these Application Notes has been obtained through compliance testing and additional technical discussions. Testing was conducted via the Developer*Connection* Program at the Avaya Solution and Interoperability Test Lab.

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1 of 24
ipo-eivr-pop.doc

1. Introduction

These Application Notes focus on the steps required for configuring Computer Instruments Enhanced Interactive Voice Response (eIVR) Screen Pop and Record-A-Call applications to work with Avaya IP Office.

Computer Instruments eIVR is a customer premise multi-application e-business and Customer Relationship Management (CRM) solution. eIVR is a suite of Windows applications that contain all of the necessary functionality to act as a Web server, an electronic commerce storefront server, a value-added interactive voice response (IVR) platform, a fax response platform and a messaging server.

The configuration information provided in these Application Notes assumes the prior successful configuration of the eIVR with IP Office as instructed in reference [3].

The configuration in **Figure 1** shows a network consisting of an Avaya IP Office 406v2 with Avaya IP400 Phone Module, Avaya IP Office Manager PC, Computer Instruments eIVR server, Computer Instruments eIVR clients, Avaya 6408D+ digital telephones, Avaya 4600-series IP telephones and analog telephones. Avaya IP Office has T1/PRI and analog trunks to the central office. Analog and digital extensions are connected to Avaya IP Office as well.

eIVR interfaces with Avaya IP Office via TAPI 3rd party call control as well as analog station ports. The Avaya IP Office TAPI driver must be installed on the eIVR server to establish the TAPI 3rd party call control connection to Avaya IP Office. The analog tip-ring ports connected to the eIVR are configured on Avaya IP Office to belong to the same hunt group. eIVR is also configured as the voicemail system for Avaya IP Office.

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

The following eIVR functionality was addressed in this compliance test:
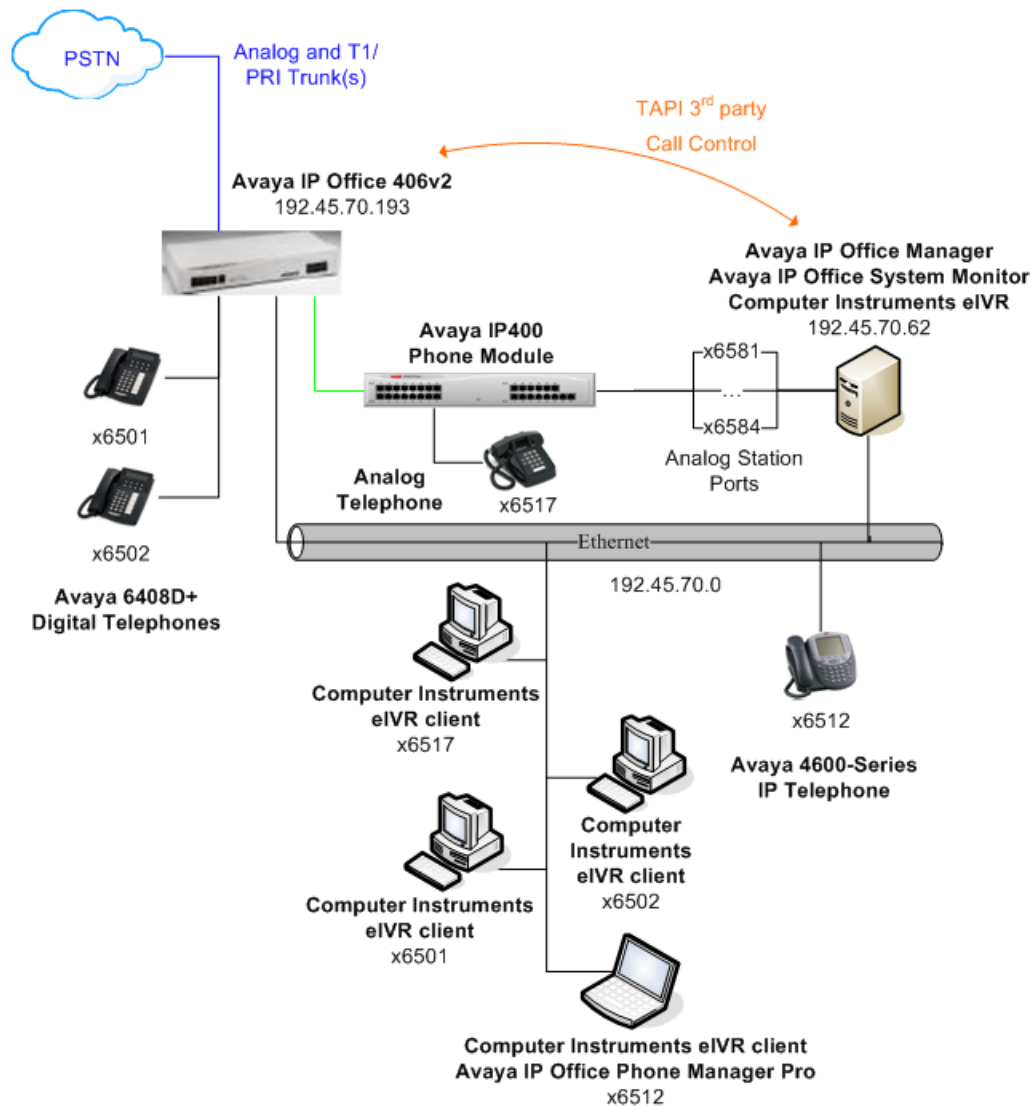
Screen Pop
The eIVR client is used to generate a screen pop of an incoming call's CallerID number. Communication between the eIVR server and eIVR client is via a proprietary protocol. The eIVR client does not directly interface with the Avaya IP Office; it interfaces with the eIVR server that, in turn, interfaces with the Avaya IP Office as already described above. The eIVR client screen pop is customizable; it also has standardized interfaces such as in MS Outlook. With MS Outlook, the eIVR client pulls up the caller's record from the eIVR client user's Outlook Contacts. If the caller is unknown, eIVR makes Outlook pull up a new contact with the incoming caller's phone number filled in.

Record-A-Call
The eIVR client may also be used to record calls occurring on the associated extension. When a user is on a call that requires recording, the user clicks a button on the eIVR client signaling to

the eIVR server to start recording. The eIVR server initiates *CallListen* by generating DTMF with the *CallListen* short code from an available eIVR port to the agent's extension. Once *CallListen* is initiated on the user's extension, eIVR starts recording the call and stops when the user clicks a button to stop recording or when the call ends. The eIVR server can also be setup to automatically record calls: all inbound, outbound, or both for a given extension or group of extensions. All call recordings are stored on the eIVR server for later retrieval and playback. Recordings are accessible through a browser interface to users with appropriate permissions.

Figure 1 – Network Configuration Diagram

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SPOC 12/18/2006

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3 of 24
ipo-eivr-pop.doc

Table 1 lists users and their associated extension number for **Figure 1**.

User Name	Extension
Operator	6501
Kit Tankhiwale	6502
John Finnegan	6512
Returns	6517
eIVR Ports (Extensions)	
eIVR1	6581
eIVR2	6582
eIVR3	6583
eIVR4	6584
eIVR huntgroup	6599
eIVR recordgroup hunt group	6560

Table 1 – User to Extension Mapping

2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya IP Office 406v2	3.1(5602)
Avaya IP400 Office Phone Module	5.1(5602)
Avaya IP Office Manager	5.1(56)
Avaya IP Office TAPI Driver	1.0.0.26
Avaya IP Office Phone Manager Pro	3.1(15)
Avaya 4600-Series IP Telephones (4602SW, 4610SW, 4620SW)	2.3
Avaya 6408D+ Digital Telephones	-
Computer Instruments eIVR	4.0.0
Computer Instruments eIVR client	4.0.0

Table 2 – Equipment and Software / Firmware Versions Validated

3. Configure Avaya IP Office

The configuration information provided in this section describes the steps required to set up Avaya IP Office to work with eIVR Screen Pop and Record-A-Call and assumes the IP Office configuration described in reference [3] has already been carried out. In particular,

- The eIVR port extensions (6581 – 6584) were created and configured.

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SPOC 12/18/2006
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4 of 24
ipo-eivr-pop.doc

- The eIVR hunt group (6599) was created and configured.
- The eIVR hunt group was configured as the IP Office system voicemail.
- End-user extensions (6501, 6502, 6512, and 6517) were created.
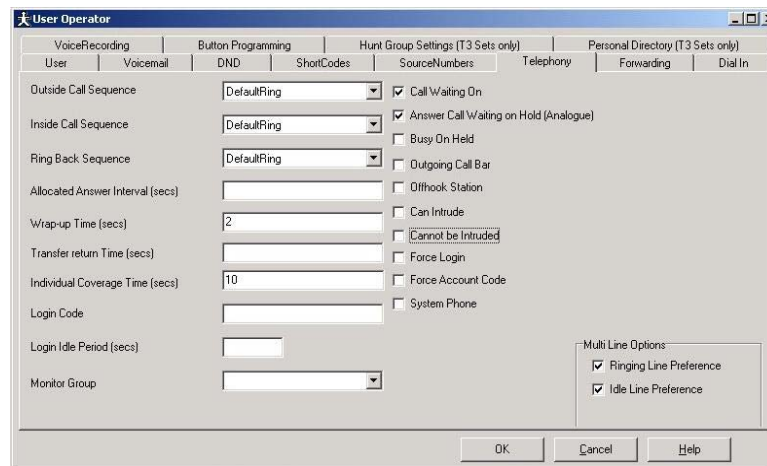- The CTI Link Pro license was installed.

For all other provisioning information, such as Avaya IP Office installation, please refer to Avaya IP Office product documentation in reference [1].
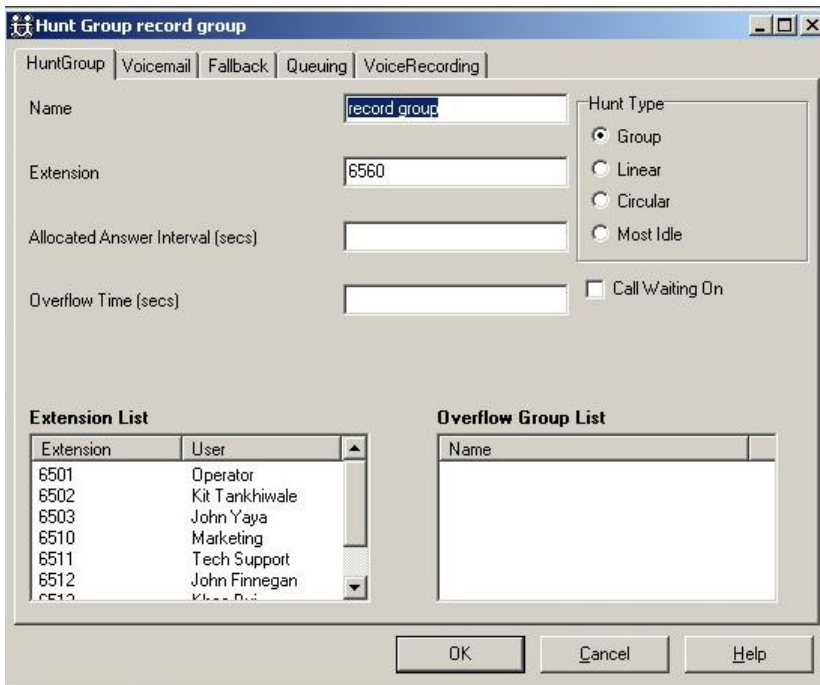
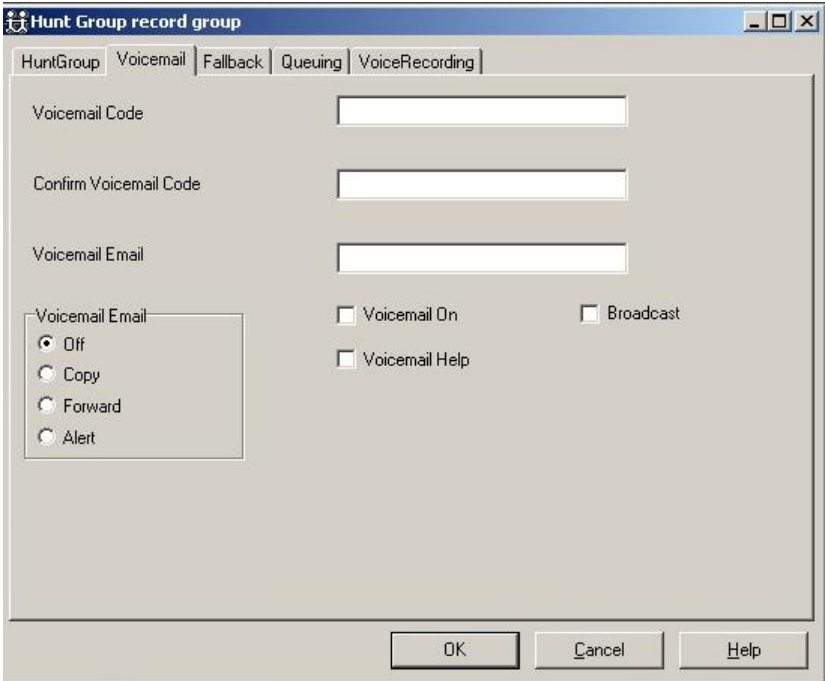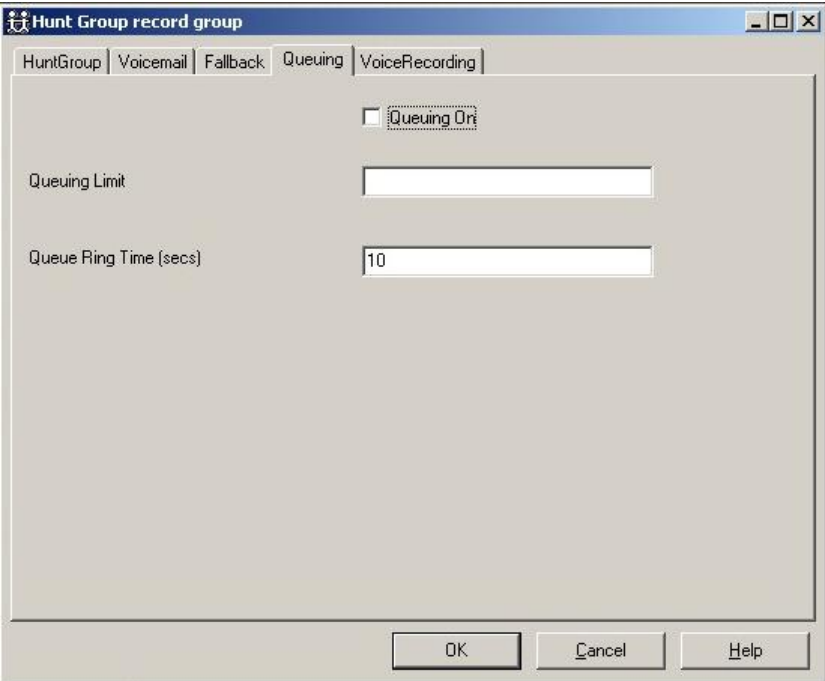## 3.1. Configure IP Office for eIVR Screen Pop

The configuration required on Avaya IP Office for eIVR Screen Pop is the creation of end user accounts for each user listed in **Table 1**. This was completed as outlined in reference [3] when voicemail accounts were created.

3.2. Configure IP Office for eIVR Record-A-Call

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.
	Modify Call Intrude settings on user extensions
4.	In the Manager window, go to the Configuration Tree and double-click **User**. In the right pane, double-click the first user name listed in **Table 1**.
5.	In the User window that appears (not shown), select the **Telephony** tab.
6.	In the Telephony tab, uncheck **Cannot be Intruded** and click **OK**.

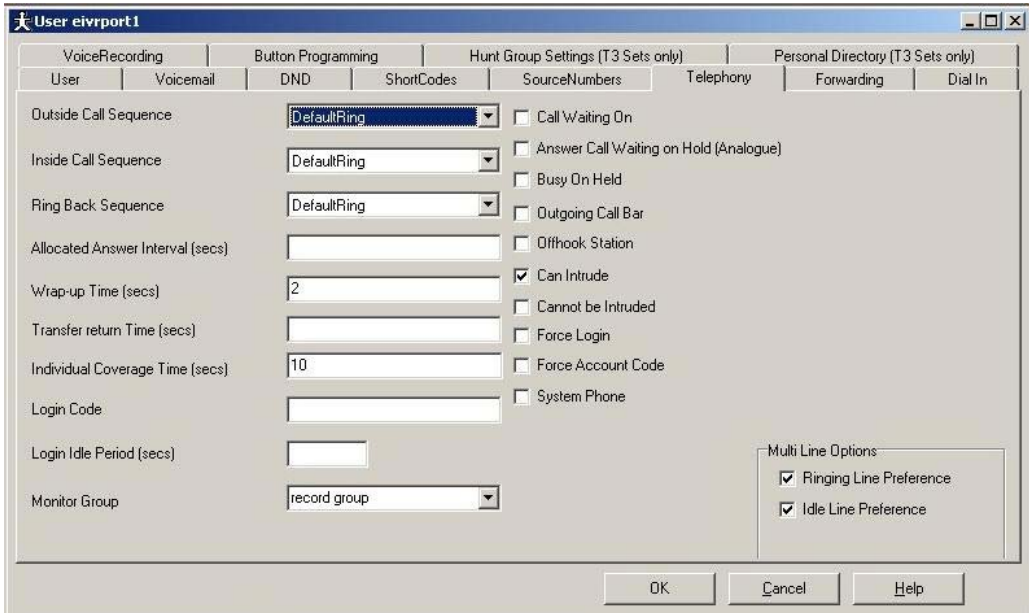| Step	Description
7.	Repeat Steps 4 – 6 for each user extension listed in **Table 1**. More user extensions were modified for the purposes of load testing during the compliance test. However, for the purposes of these Application Notes, user extensions 6501, 6502, 6512 and 6517 were modified.
	Create Record-A-Call hunt group
8.	In the Manager window, go to the Configuration Tree and double-click **Hunt Group**. In the right pane, right-click **New** to add a hunt group.
9.	In the hunt group window that appears, set **Name** to the name of the eIVR Record-A-Call hunt group listed in **Table 1**, set **Extension** to the extension number listed for the hunt group in **Table 1**, add user extensions **6501**, **6502**, **6512** and **6517** to the **Extension List**, and select *Group* for **Hunt Type**. Select the **Voicemail** tab. **Note**: More user extensions were configured for load testing during the compliance test. However, for the purposes of these Application Notes, user extensions 6501, 6502, 6512 and 6517 were added.

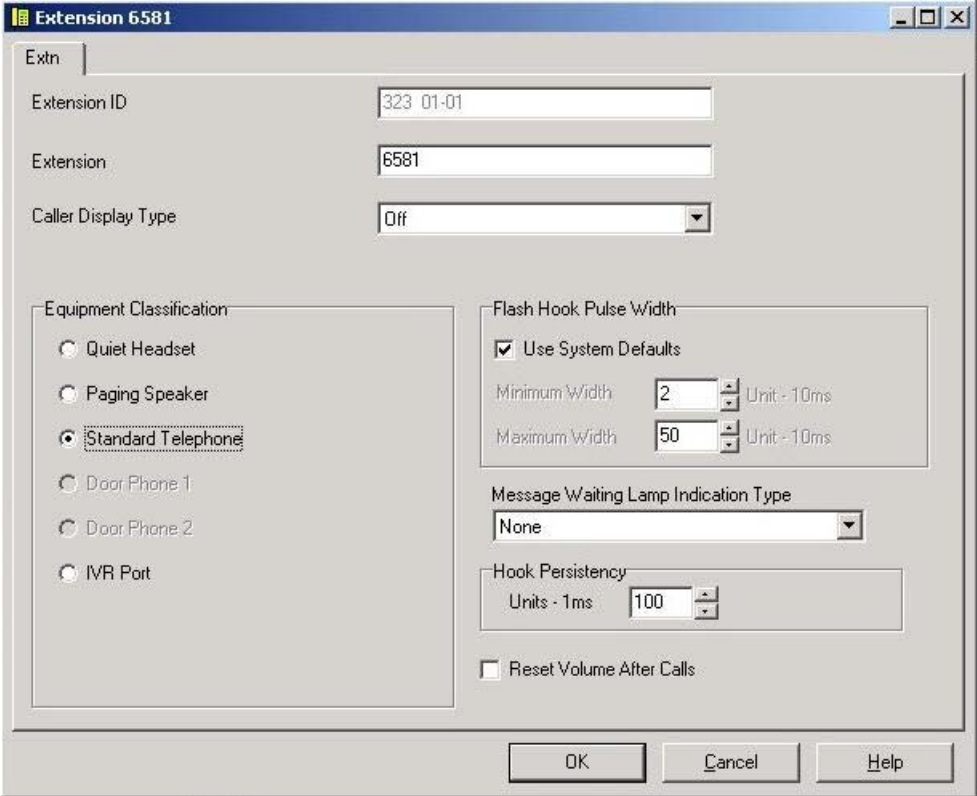| Step	Description
10.	In the Voicemail tab, uncheck **Voicemail On**. Select the **Queuing** tab.
11.	In the Queuing tab, uncheck **Queuing On** and click **OK**.

Step	Description
	Grant eIVR ports permissions to record calls for any extension in the Record-A-Call group
12.	In the Manager window, go to the Configuration Tree and double-click **User**. In the right pane, double-click the first eIVR port extension listed in **Table 1**.
13.	In the User window that appears, select the **Telephony** tab.

Step	Description
14.	In the Telephony tab, set **Wrap-up Time** to *2*, check **Can Intrude**, uncheck **Cannot be Intruded**, and select the Record-a-Call hunt group from Step 9 for **Monitor Group**. Click **OK**.
15.	Repeat Steps 12 – 14 for each eIVR port extension listed in **Table 1**. For the purposes of these Application Notes, eIVR port extensions 6581 – 6584 were modified.
	Modify eIVR port extensions
16.	In the Manager window, go to the Configuration Tree and double-click **Extension**. In the right pane, double-click the first eIVR port extension listed in **Table 1**.

Step	Description
17.	In the Extension window that appears, set **Equipment Classification** to *Standard Telephone* and click **OK**. **Note**: eIVR ports used for voicemail and automated attendant in reference [3] were configured as IVR ports for tighter integration with Avaya IP Office. In a real world scenario, eIVR ports used for automated attendant and voicemail would differ from the eIVR ports used for screen pop and record-a-call.
18.	Repeat Steps 16 – 17 for each eIVR port extension listed in **Table 1**. For the purposes of these Application Notes, eIVR port extensions 6581 – 6584 were modified.
	Define *CallListen* shortcode
19.	In the Manager window, go to the Configuration Tree and double-click **Shortcode**. In the right pane, right-click **New** to add a short code.

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SPOC 12/18/2006

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10 of 24
ipo-eivr-pop.doc

Step	Description
20.	In the Shortcode window that appears, set **Short Code** to *99*N#*, **Telephone Number** to *N*, **Line Group ID** to the line Group ID used for outbound calls, and **Feature** to *CallListen*. Click **OK**.
21.	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 Computer Instruments eIVR

The configuration information provided in this section describes the steps required to set up Computer Instruments eIVR Screen Pop and Record-A-Call for this solution. It is assumed the eIVR configuration described in reference [3] has already been carried out. In particular,

- The Avaya TAPI Driver was installed and configured.
- The eIVR server was configured to work with Avaya IP Office.
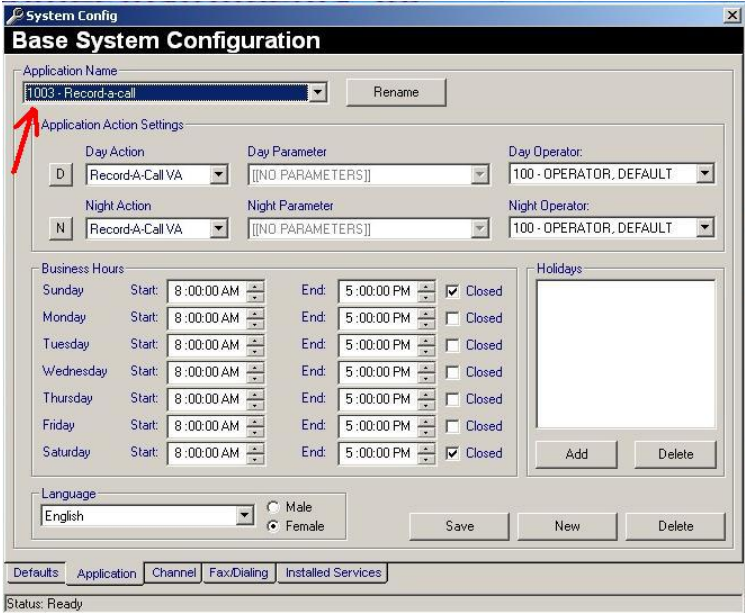- End-user extensions (6501, 6502, 6512, and 6517) voicemail accounts were created.

For all other provisioning information, such as software installation, installation of optional components, and/or the configuration of eIVR, please refer to the Computer Instruments eIVR product documentation in reference [4].
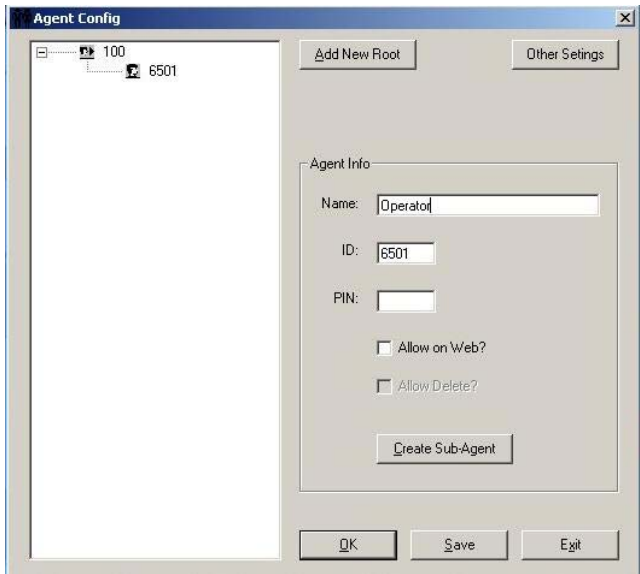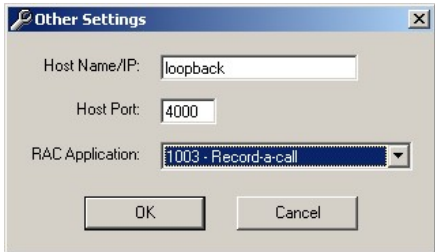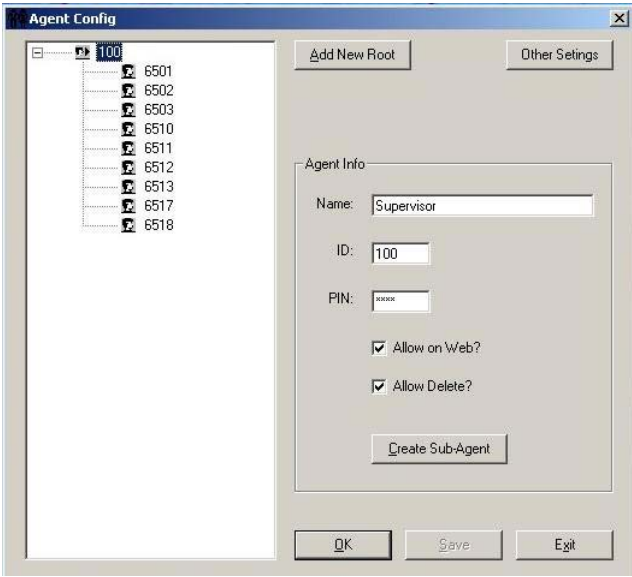
4.1. Configure eIVR for Screen Pop

The configuration required on eIVR for screen pop is done in the registry automatically by Computer Instruments. All that remains would be the creation of voicemail accounts for each user listed in **Table 1**. This was completed according to the procedures outlined in reference [4].
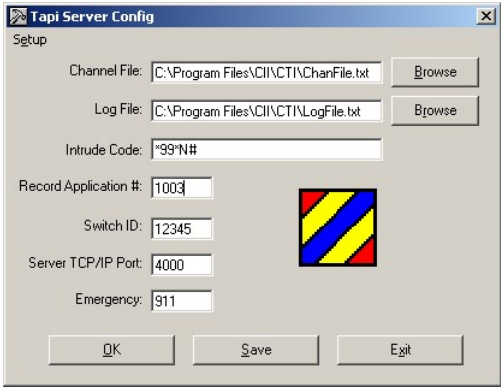
4.2. Configure eIVR for Record-A-Call

Step	Description
1.	Log into the eIVR PC with administrative privileges. Go to **Start → Programs → Voice Server → Voice Administrator** to launch the eIVR Administrator application.
2.	In the e-IVR Administration window, select **Voice Apps → System Config** () on the left menu pane.

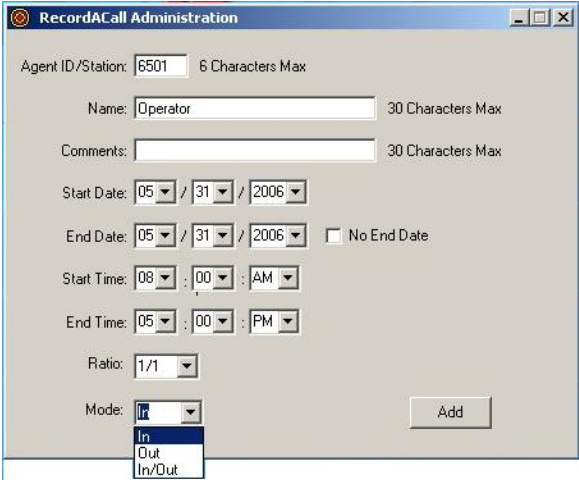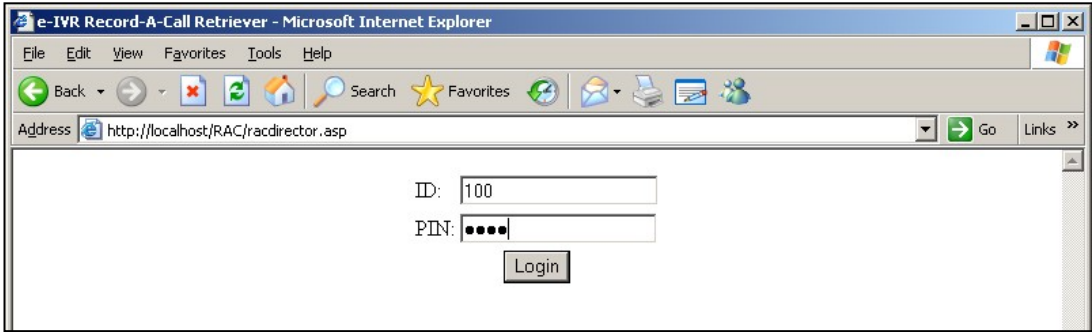| Step	Description
3.	In the System Config window that appears, select the **Application** tab. In the Application tab that appears, look for the *Record-a-call* application in the **Application Name** pull-down list. Make a note of the application number, as this information will be required in Steps 9 and 13. Close the System Config window.
4.	In the e-IVR Administration window, select **Voice Apps → RecordACallGUI Application** (👫) on the left menu pane.

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SPOC 12/18/2006

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13 of 24
ipo-eivr-pop.doc

Step	Description
5.	In the Agent Config window that appears, set **Name** to *Operator*, **ID** to *6501* and click **Create Sub-Agent**.
6.	In the Save successful popup that appears, click **OK**.
7.	Repeat Steps 4 – 6 for each end-user extension listed in **Table 1**. More user extensions were configured for load testing during the compliance test. However, for the purposes of these Application Notes, user extensions 6501, 6502, 6512 and 6517 were added.
8.	In the Agent Config window, click **Other Settings**.
9.	In the Other Settings popup that appears, set **RAC Application** to the Record-A-Call application number identified in Step 3 and click **OK**.

Step	Description
10.	In the Agent Config window, select the root of the tree (**100**), set **Name** to *Supervisor*, **PIN** to the desired PIN, check **Allow on Web?**, check **Allow Delete?** and click **OK**. Click **Exit**. **Note**: Make a note of the **ID** and **PIN,** as this information will be required in Step 18.
11.	In the e-IVR Administration window, select **File → Exit Administrator**.
12.	On the eIVR PC, go to **Start → Programs → Voice Server → eIVR Tapi Server Config**.

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15 of 24
ipo-eivr-pop.doc

Step	Description
13.	In the Tapi Server Config window that appears, set **Intrude Code** to *99*N#*, set **Record Application #** to the Record-A-Call application number identified in Step 3, and click **OK**. This completes configuration of eIVR Record-A-Call for this solution.
	How to configure automatic call recording for an extension through the e-IVR Administration window
14.	Go to **Start → Programs → Voice Server → Voice Administrator** to launch the eIVR Administrator application.
15.	In the e-IVR Administration window, select **Voice Apps → Programmed RAC** ( ) on the left menu pane.

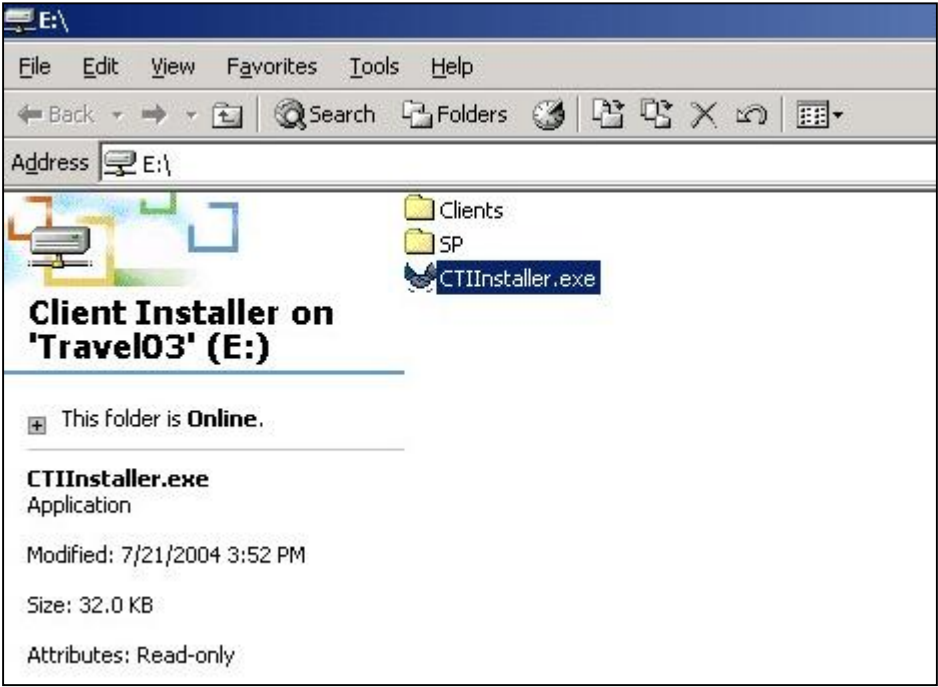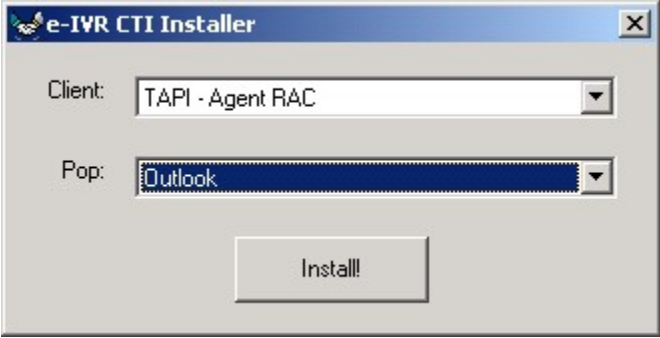| Step	Description
16.	In the RecordACall Administration window that appears, set **Agent ID/Station** to the extension number being configured for automatic recording. Set **Name** to the name associated with the extension. Set **Start Date**, **End Date**, **Start Time** and **End Time** to the desired date and time range for automatic recording to take place at the extension. Set **Mode** to the call mode that will trigger call recording: In for inbound calls, Out for Outbound calls, or In/Out for either inbound or outbound calls. Click **Add**.
17.	In the Database Entry popup that appears, click **OK**.
	How to configure automatic call recording for an extension through the e-IVR browser interface
18.	Browse to the Record-A-Call configuration URL, the default URL is http://localhost/RAC/Redirector.asp, and log into the site using the login credentials defined in Step 10.

Step	Description
19.	In the e-IVR Record-A-Call web page that appears, all extensions configured with automatic call recording in the e-IVR administration window will also appear on this page. Any configuration changes performed through the browser interface and saved will take effect as if the user performed the same administration task from the e-IVR administration window. **Note**: The configuration information that appears in the browser based interface is dependent on the same configuration being performed first via e-IVR administration window.

5. Configure Computer Instruments eIVR client

The configuration information provided in this section describes the steps required to set up Computer Instruments the eIVR client for this solution. It is assumed the eIVR configuration described in reference [3] has already been carried out. In particular,

- The Avaya TAPI Driver was installed and configured.
- The eIVR server was configured to work with Avaya IP Office.
- End-user extensions (6501, 6502, 6512 and 6517) voicemail accounts were created.

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Step	Description
1.	Log into the eIVR client PC with administrative privileges. Browse to the **Client Installer** share on the eIVR server and launch **CTIInstaller.exe** to install the eIVR client.
1.	In the e-IVR CTI Installer popup that appears, set **Client** to *TAPI – Agent RAC*, **Pop** to *Outlook* and click **Install!**

Step	Description
2.	In the Done popup that appears, click **OK**.
3.	Go to **Start → Programs → eIVR Client → AgentOutlookConfig**.
4.	In the OL Setup popup that appears, set **Outlook Executable** to the location where Outlook.exe is installed on the local computer and click **OK**.
5.	Go to **Start → Programs → eIVR Client → eIVR Client**.
6.	In the eIVR Tapi Agent Login window that appears, perform a right click on the window and select **Setup** in the menu that appears.

Step	Description
7.	In the Configure Client window that appears, set **Associated Extension** to the extension number associated with the eIVR client PC, set **Host IP/Name** to the IP address of the eIVR server, set **Host Port** to *4000* and click **Save**.
8.	In the Save Complete popup that appears, click **OK**.
9.	In the Configure Client window, click **Exit**.
10.	Repeat Steps 1 – 10 for each end user extension requiring Screen Pop and Record-A-Call capabilities. For the purposes of these Application Notes, eIVR clients were setup for user extensions 6501, 6502, 6512 and 6517. **Note**: Additional eIVR clients were configured for the purposes of load testing during the compliance test. This completes configuration of the eIVR client.

6. Interoperability Compliance Testing

Interoperability compliance testing examined the ability of Computer Instruments eIVR to work with Avaya IP Office. The following eIVR features were verified: Screen Pop and Record-A-Call.

6.1. General Test Approach

Feature functionality testing was performed manually. Inbound calls were sent to Avaya IP Office through analog and T1/PRI trunks. For Screen pop calls, calls were directed to end user extensions. The eIVR client performed a database lookup of the Outlook Contacts on the user's computer. If a match was found, the eIVR client would pop the caller's contact record. If no match was found, the eIVR client would pop a new Outlook Contact record populated with the unknown caller's CallerID number. For Record-A-Call calls, while a call was in progress, the call was recorded by clicking the Record button on the eIVR client. Upon completion of the call, verification of the call recording was performed to confirm the call was properly recorded. For

automatic Record-A-Call recordings, after automatic recording was configured for an extension, calls were made to/from the extension and the call recordings were verified. All call recordings were verified by browsing to the Call Recording page on the eIVR web server and logging in using the appropriate login credentials.

A Screen Pop load test was performed using a call generator to generate inbound calls over the PRI trunk to Avaya IP Office. The call generator script was written to navigate the eIVR automated attendant and transfer to a destination extension. Upon being routed to the destination extension, automated tools installed on the eIVR client PC were used to close the eIVR generated Outlook popup and cause Avaya IP Office Phone Manager Pro to answer the incoming call, pause a few seconds then hang up.

A Record-A-Call load test was performed by configuring all eIVR client extensions for automatic call recording and using the same test setup used for the screen pop load test. The call generator script was also configured to play a number of wave files once the call was answered so that recordings could take place.

6.2. Test Results

All executed test cases were completed successfully except for the issues discussed below.

- **Record-A-Call not supported on Avaya IP Telephones** – When the eIVR client was associated to an IP Telephone extension, we were unable to obtain a successful call recording manually or automatically. IP Office *CallListen* is not supported on IP Telephones when Direct Media Path is enabled. However, this issue was discovered when Direct Media Path was disabled. Trouble ticket #BugDB00025814 was submitted regarding this issue. Until this issue is resolved, the Record-A-Call solution is not recommended for use with Avaya IP Telephones.
- **Record-A-Call load test failed** – When the load test configuration was setup as described earlier in these Application Notes, automatic call recordings on extensions where Phone Manager Pro controlling a digital extension did not appear to work. Due to time constraints, further investigation was not possible.
  Status: Computer Instruments is investigating why automatic call recording was affected in the load test. Until this issue is resolved, the eIVR Record-A-Call solution is not recommended for use on extensions controlled by Avaya IP Office Phone Manager Pro.
- **Record-A-Call not supported on Avaya IP Office Phone Manager Pro IP enabled Softphones** - When the eIVR client was associated to a Phone Manager Pro IP enabled softphone extension, we were unable to obtain a successful call recording manually or automatically. Since IP Office *CallListen* is not supported on IP Telephones when Direct Media Path is enabled, it is suspected the same restriction applies for the softphone application. However, this issue was discovered when Direct Media Path was disabled. Until trouble ticket #BugDB00025814 is resolved, the Record-A-Call solution is not recommended for use with Avaya Phone Manager Pro IP enabled softphone extensions. **Note**: Analog or Digital extensions controlled by Phone Manager Pro are not similarly affected during feature testing.

Other Observations:

- **Recordings begin about 3 – 4 seconds after recording initiated** – When either a manual or automatic call recording is initiated, there is about a 3 – 4 second delay before the recording begins.

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 Computer Instruments eIVR PC.

- To verify the eIVR client is properly generating screen pops, place a call to an eIVR client extension. Verify an Outlook screen pop is generated for the call.

- To verify the eIVR client is properly recording calls, place a call to or from an eIVR client extension, while the call is in progress, click the Record button on the eIVR client. After completing the call, play back the recording through the eIVR browser interface.

8. Support

For technical support on eIVR, consult Computer Instruments at http://www.instruments.com or contact Computer Instruments Technical Support at:

- Phone: 1-888-451-0851
- E-mail: support@instruments.com

9. Conclusion

These Application Notes describe the steps for configuring Computer Instruments eIVR Screen Pop and Record-A-Call to work with Avaya IP Office.

10. Additional References

Product documentation for Avaya products may be found at http://support.avaya.com.

[1] "Avaya IP Office Manager, Issue 17o", 1st February 2006

[2] "Avaya IP Office CTI Link Installation Manual", 40DHB0002UKCC – Issue 4, 05/08/2002

[3] "Application Notes for Configuring Computer Instruments Enhanced Interactive Voice Response (eIVR) Voicemail, Automated Attendant, and Speech Enabled Automated Attendant with Avaya IP Office", Issue 1.0, August 2006

Product documentation for Computer Instruments eIVR is provided in the Installation CD.
[4] "Installing eIVR on IP Office"