



Avaya Solution & Interoperability Test Lab

Application Notes for Computer Instruments e-IVR with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the steps required to integrate the Computer Instruments e-IVR with Avaya IP Office. Computer Instruments e-IVR is an extensible IVR development platform that includes a number of self-service IVR and Web applications, but also allows the development for additional applications. In this compliance test, Computer Instruments e-IVR was installed on a PC with a Dialogic card that provided SIP connectivity to Avaya IP Office using SIP extensions/registration.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the steps required to integrate the Computer Instruments e-IVR with Avaya IP Office. Computer Instruments e-IVR is an extensible IVR development platform that includes a number of self-service IVR and Web applications, but also allows the development for additional applications. In this compliance test, Computer Instruments e-IVR was installed on a PC with a Dialogic card that provided SIP connectivity to Avaya IP Office using SIP extensions/registration.

2. General Test Approach and Test Results

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

The interoperability compliance test included feature and serviceability testing. The feature testing focused on placing calls to Computer Instruments e-IVR, which in turn routed the call to the appropriate IVR application. The IVR application played a greeting using Text-to-Speech and allowed calls to be transferred to local stations or to the PSTN. Calls were routed to e-IVR by dialing the SIP extension directly or by dial a hunt group extension with the SIP users as members. In addition, a "Call Me Back Now" Web application allowed e-IVR to place outgoing calls and run an IVR application when the call was answered.

The serviceability testing focused on verifying that e-IVR comes back into service after re-connecting the Ethernet connection or rebooting the PC on which e-IVR is running.

2.1. Interoperability Compliance Testing

Interoperability compliance testing covered the following features and functionality:

- SIP registration of e-IVR to IP Office
- Placing inbound calls to e-IVR that runs the appropriate IVR application based on the dialed number.
- Placing outgoing calls from the e-IVR using a Web application.
- Performing a blind transfer from e-IVR to a local station or PSTN, including trunk-to-trunk blind transfer.
- Verifying that a caller can place an e-IVR on Hold, and then Resume the call.
- Verifying that an e-IVR call can be terminated by either the caller or e-IVR.
- Verifying DTMF by navigating through the e-IVR application menu.

2.2. Test Results

All test cases passed. Inbound and outbound calls to/from e-IVR, call transfer from e-IVR, and call termination were all successful.

2.3. Support

For technical support on e-IVR, contact Computer Instruments Technical Support via phone, email, or website.

- **Phone:** (888) 451-0851
- **Email:** support@instruments.com
- **Web:** http://instruments.com/support/email_form.html

3. Reference Configuration

Figure 1 illustrates a sample configuration with Avaya IP Office and Computer Instruments e-IVR. e-IVR registered with IP Office via SIP using a Dialogic card. IP Office received incoming calls and then routed them to e-IVR ports. e-IVR then terminated the call to the appropriate IVR application. IP Office was also connected to a simulated PSTN, which was used to simulate customer calls.

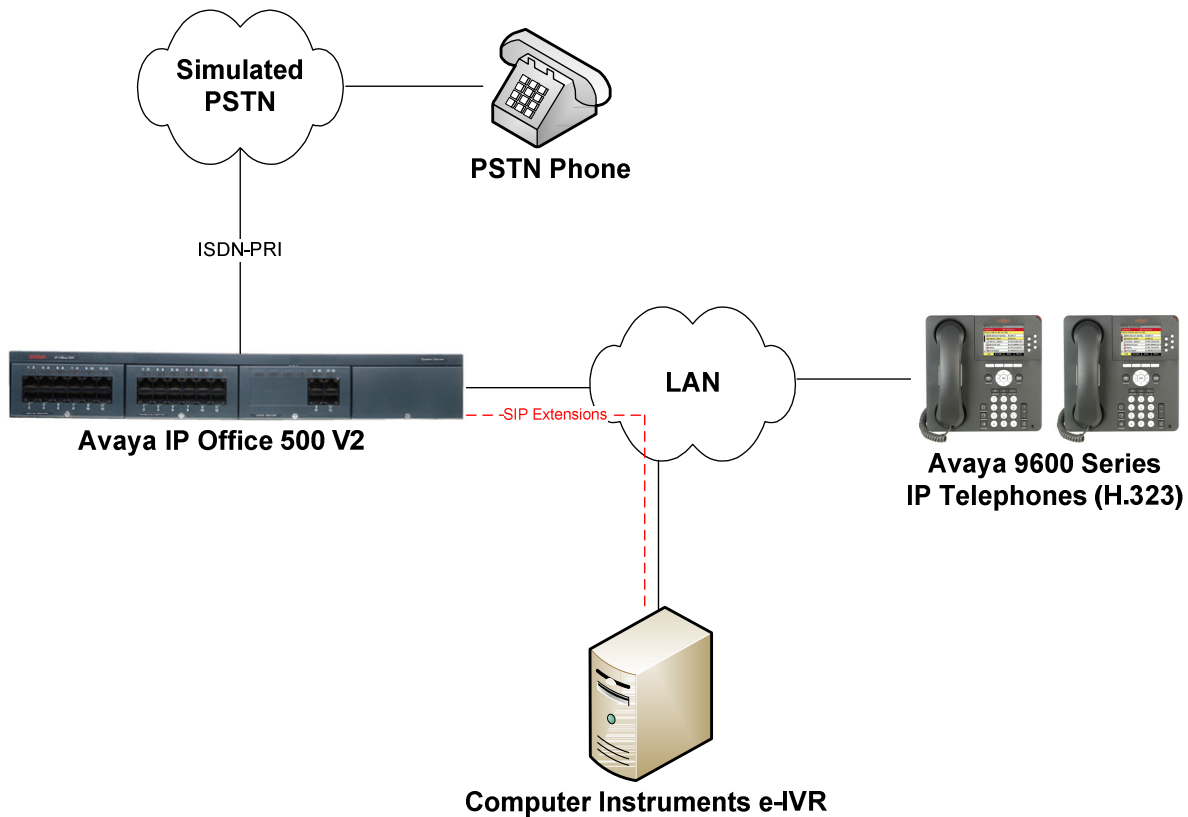


Figure 1: Avaya IP Office with Computer Instruments e-IVR

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office 500 V2	9.0 (829)
Avaya 9600 Series IP Telephones	3.1 SP 2 (H.323)
Computer Instruments e-IVR	5.0.0

Note: Testing was performed with IP Office 500 v2 R9.0, but it also applies to IP Office Server Edition R9.0. Note that IP Office Server Edition requires an Expansion IP Office 500 v2 R9.0 to support analog or digital endpoints or trunks. IP Office Server Edition does not support TAPI Wave or Group Voicemail.

5. Configure Avaya IP Office

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

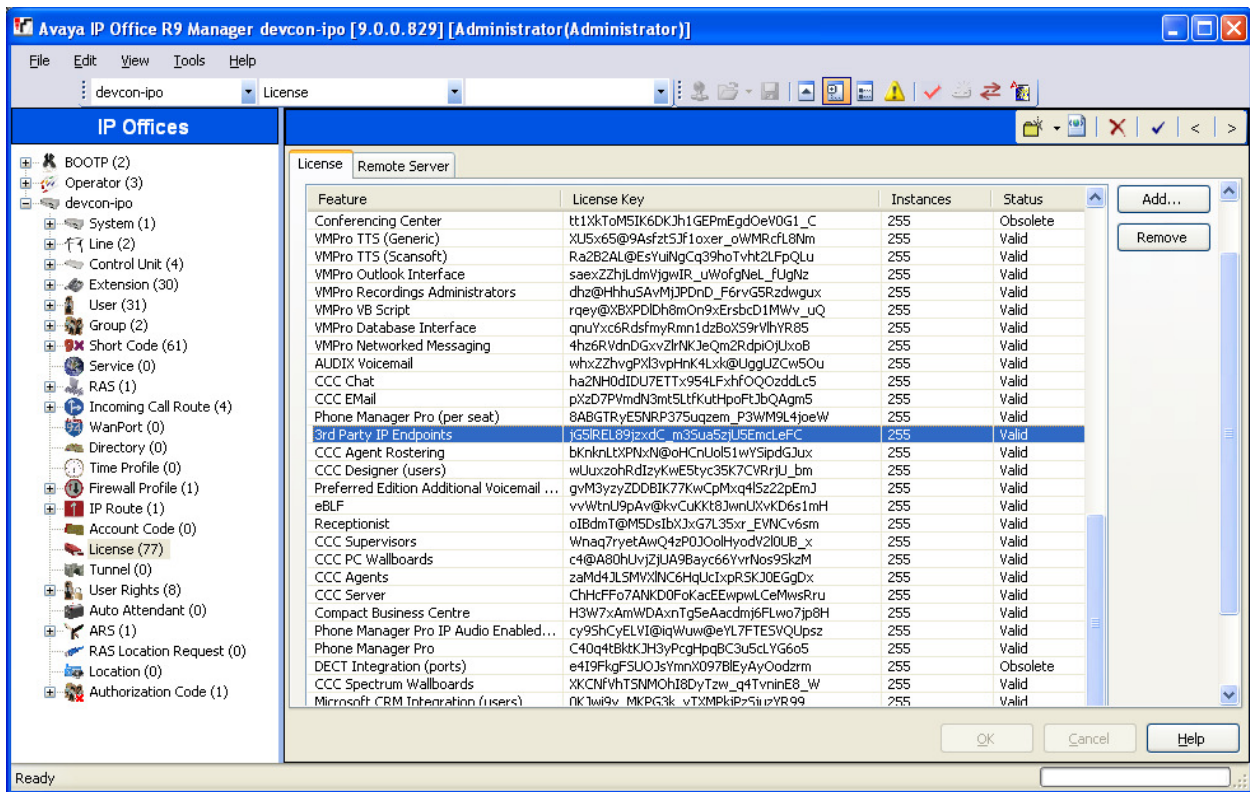
- Verify IP Office license
- Obtain LAN IP address
- Administer SIP registrar
- Administer SIP extension for e-IVR
- Administer SIP user for e-IVR
- Administer hunt group with e-IVR extensions

Note: Call routing to the PSTN is outside the scope of these Application Notes.

5.1. Verify IP Office License

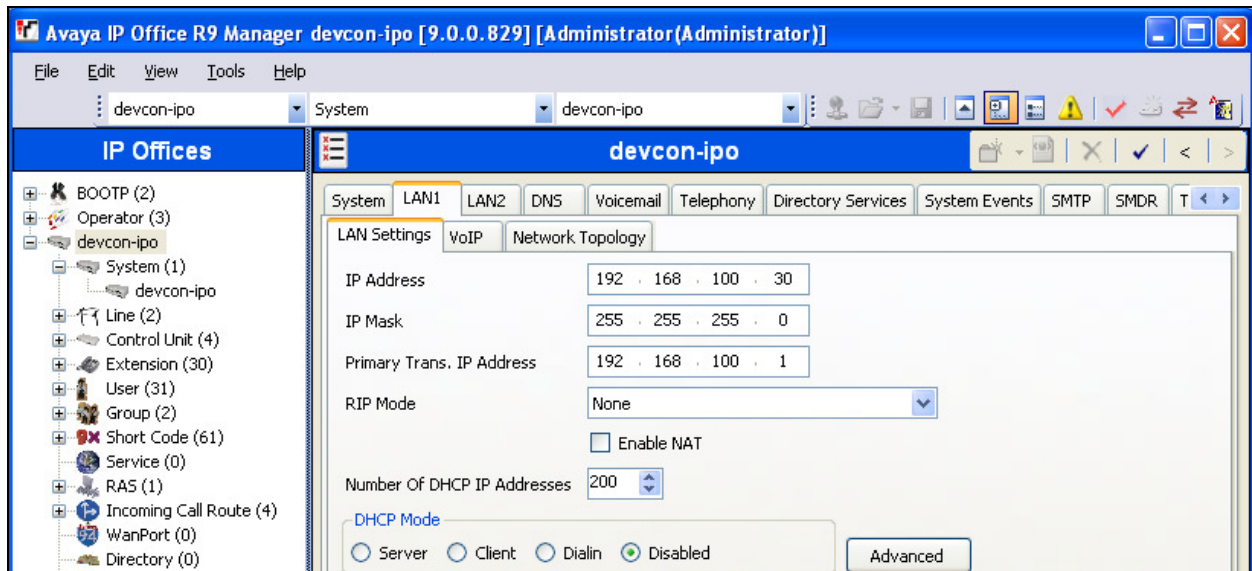
From a PC running the Avaya IP Office Manager application, select **Start → Programs → IP Office → Manager** to launch the Manager application. Select the proper IP Office system and log in with the appropriate credentials.

The **Avaya IP Office R9 Manager** screen is displayed. From the configuration tree in the left pane, select **Licence** to display the license screen in the right pane. Verify that the **Licence Status** for **3rd Party IP Endpoints** is “Valid”.



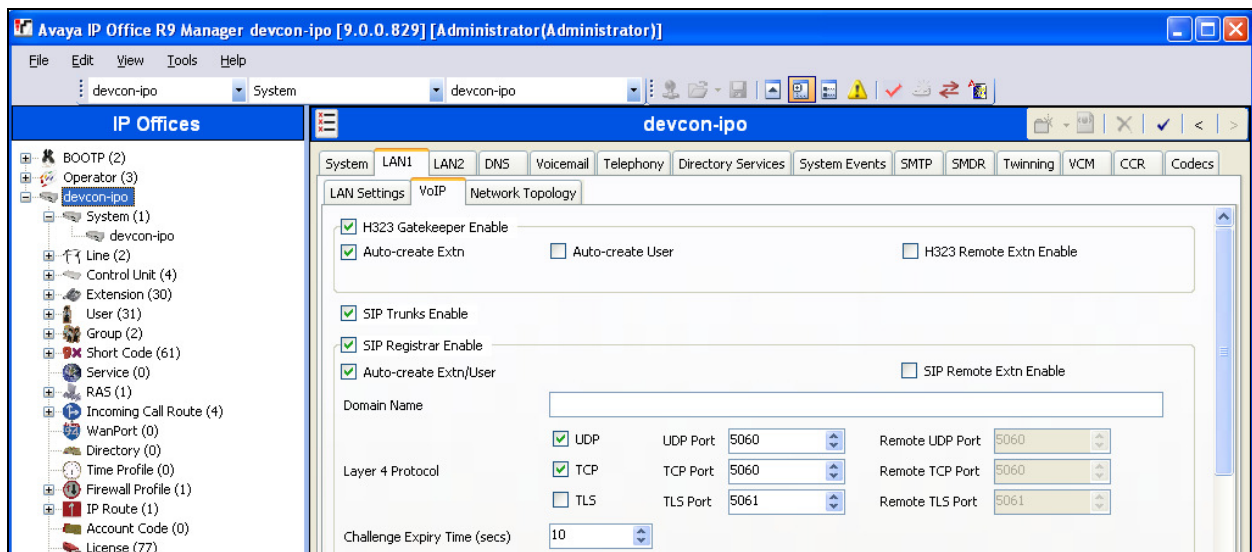
5.2. Obtain LAN IP Address

From the configuration tree in the left pane, select **System** to display the **System** screen for the IP Office 500 V2 in the right pane. Select the **LAN1** tab, followed by the **LAN Settings** sub-tab in the right pane. Make a note of the **IP Address**, which will be used later to configure the Computer Instruments e-IVR SIP interface.



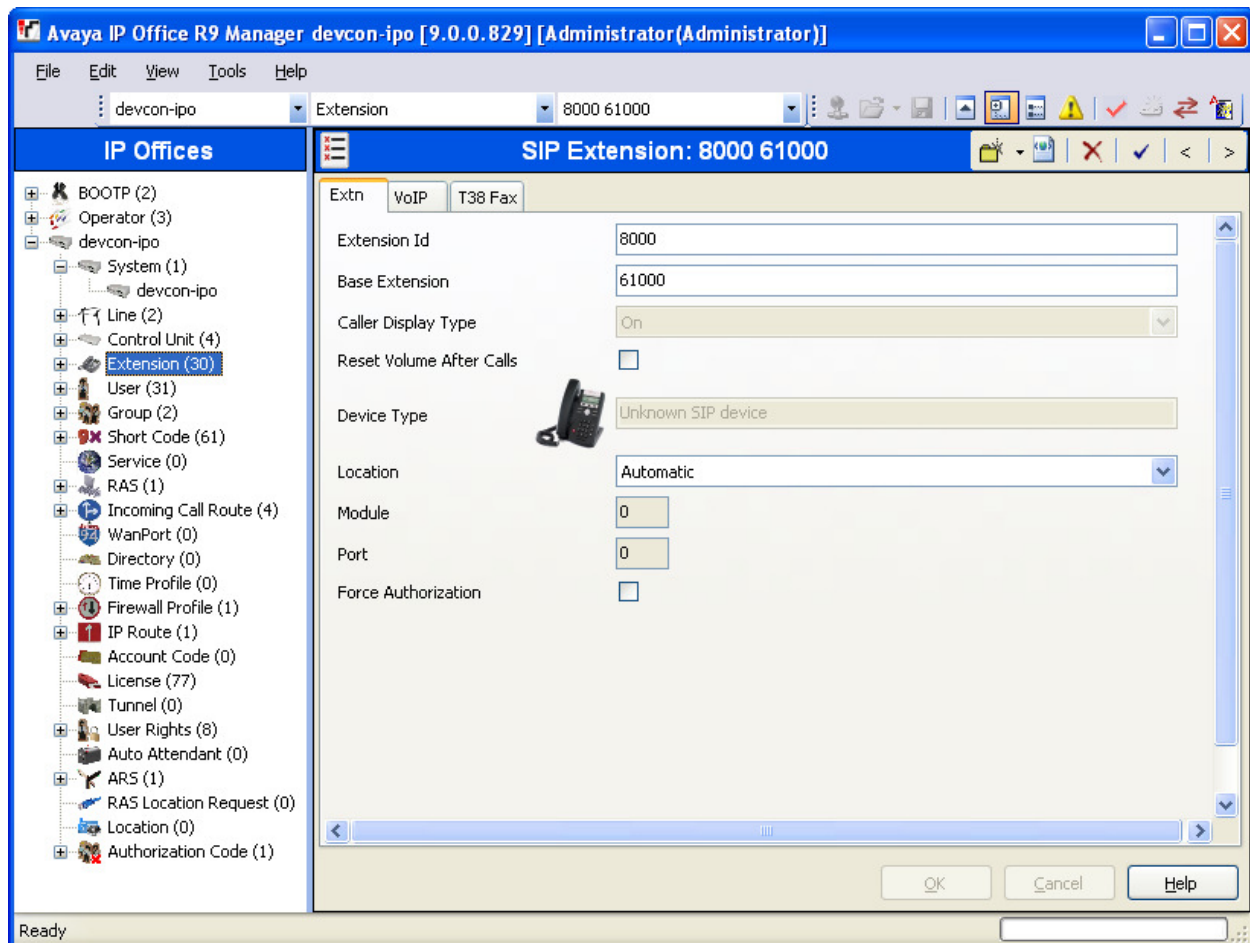
5.3. Administer SIP Registrar

Select the **VoIP** sub-tab. Ensure that **SIP Registrar Enable** is checked and enter a valid **Domain Name**. In the compliance testing, the **Domain Name** field was left blank so the LAN IP address was used.

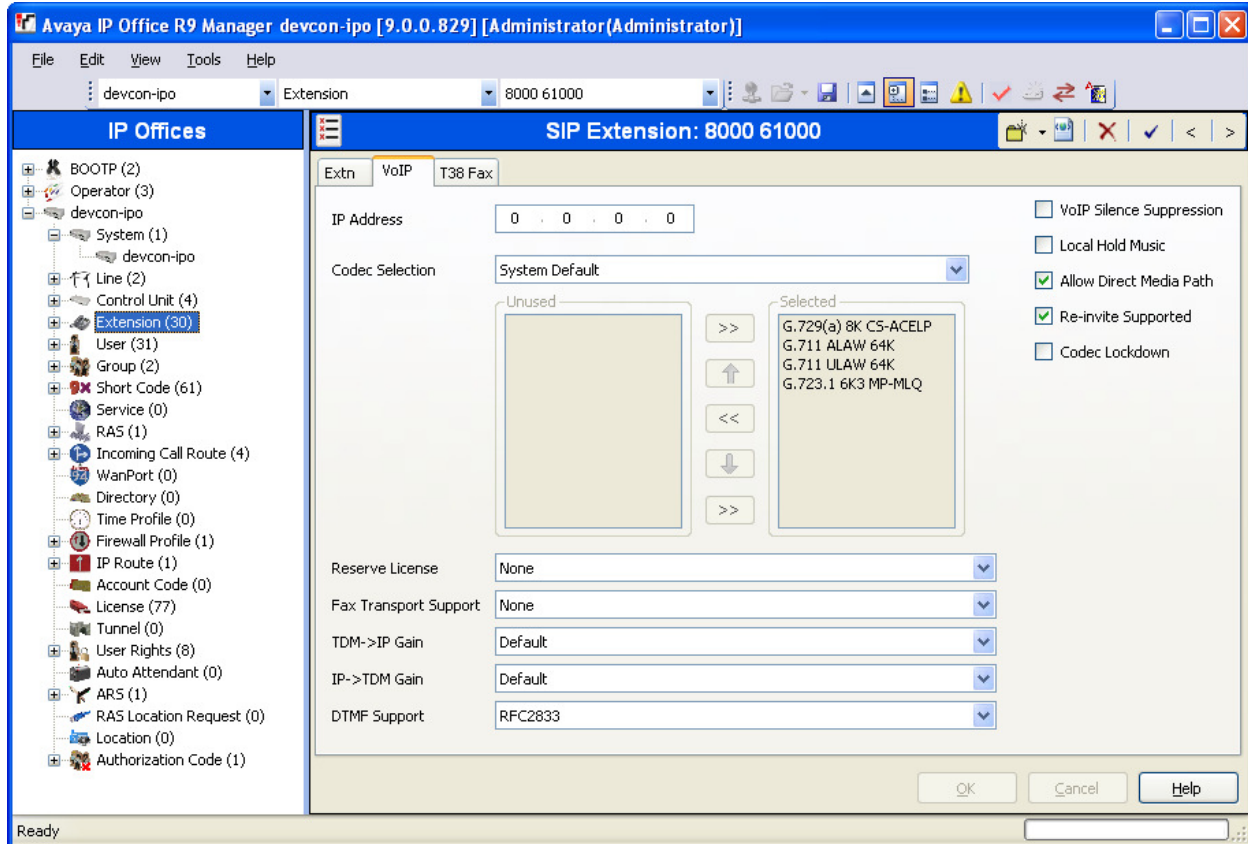


5.4. Administer SIP Extension for Computer Instruments e-IVR

From the configuration tree in the left pane, right-click on **Extension** and select **New → SIP** from the pop-up list to add a new SIP extension. Enter the desired extension for the **Base Extension** field as shown below. In this example, e-IVR was assigned extension **61000**. This is the extension that e-IVR will use to register with IP Office.



Select the **VoIP** tab and retain the default values in all fields. e-IVR supports G.711 codec.



Repeat these steps for each extension required. During the compliance test, users 61000 and 61001 were used.

5.5. Administer SIP User for Computer Instruments e-IVR

From the configuration tree in the left pane, right-click on **User** and select **New** from the pop-up list. Enter desired values for the **Name** and **Full Name** fields. For the **Extension** field, enter the SIP extension created above.

The screenshot shows the Avaya IP Office R9 Manager configuration window for a SIP user. The left pane displays a configuration tree with 'User (31)' selected. The right pane shows the configuration for 'sip61000: 61000'.

Avaya IP Office R9 Manager devcon-ipo [9.0.0.829] [Administrator/Administrator]]

File Edit View Tools Help

devcon-ipo User 61000 sip61000

IP Offices

- BOOTP (2)
- Operator (3)
- devcon-ipo
 - System (1)
 - devcon-ipo
 - Line (2)
 - Control Unit (4)
 - Extension (30)
 - User (31)**
 - Group (2)
 - Short Code (61)
 - Service (0)
 - RAS (1)
 - Incoming Call Route (4)
 - WanPort (0)
 - Directory (0)
 - Time Profile (0)
 - Firewall Profile (1)
 - IP Route (1)
 - Account Code (0)
 - License (77)
 - Tunnel (0)
 - User Rights (8)
 - Auto Attendant (0)
 - ARS (1)
 - RAS Location Request (0)
 - Location (0)
 - Authorization Code (1)

sip61000: 61000

User Voicemail DND Short Codes Source Numbers Telephony Forwarding Dial In Voice Recording E

Name sip61000

Password

Confirm Password

Account Status Enabled

Full Name CI e-IVR 1

Extension 61000

Email Address

Locale

Priority 5

System Phone Rights None

Profile Basic User

☐ Receptionist

☐ Enable Softphone

☐ Enable one-X Portal Services

☐ Enable one-X TeleCommuter


☐ Enable Remote Worker

☐ Enable Flare

☐ Enable Mobile VoIP Client

☐ Send Mobility Email

☐ Ex Directory

Device Type  Unknown SIP device

User Rights

User Rights view User data

Working hours time profile <None>

Working hours User Rights

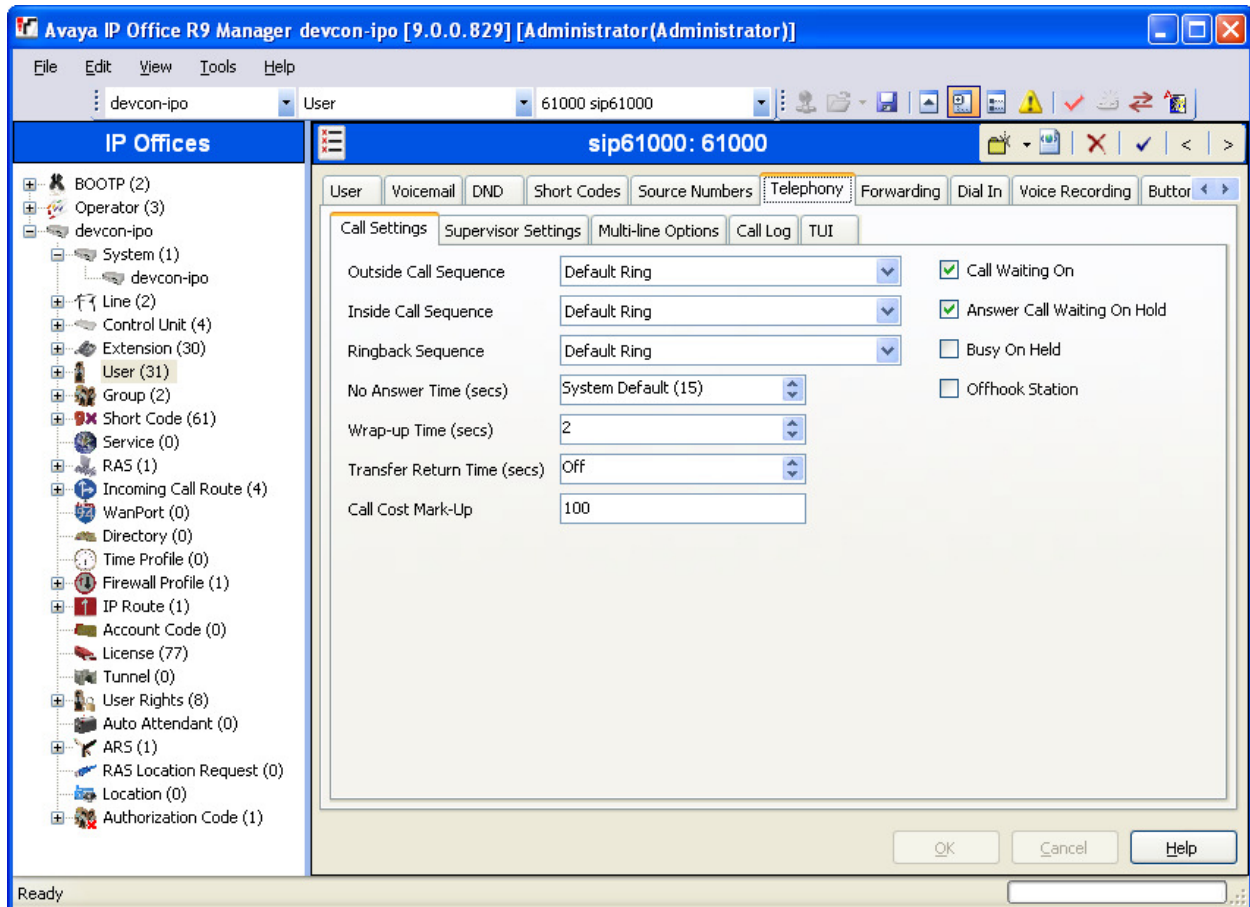
Out of hours User Rights

OK Cancel Help

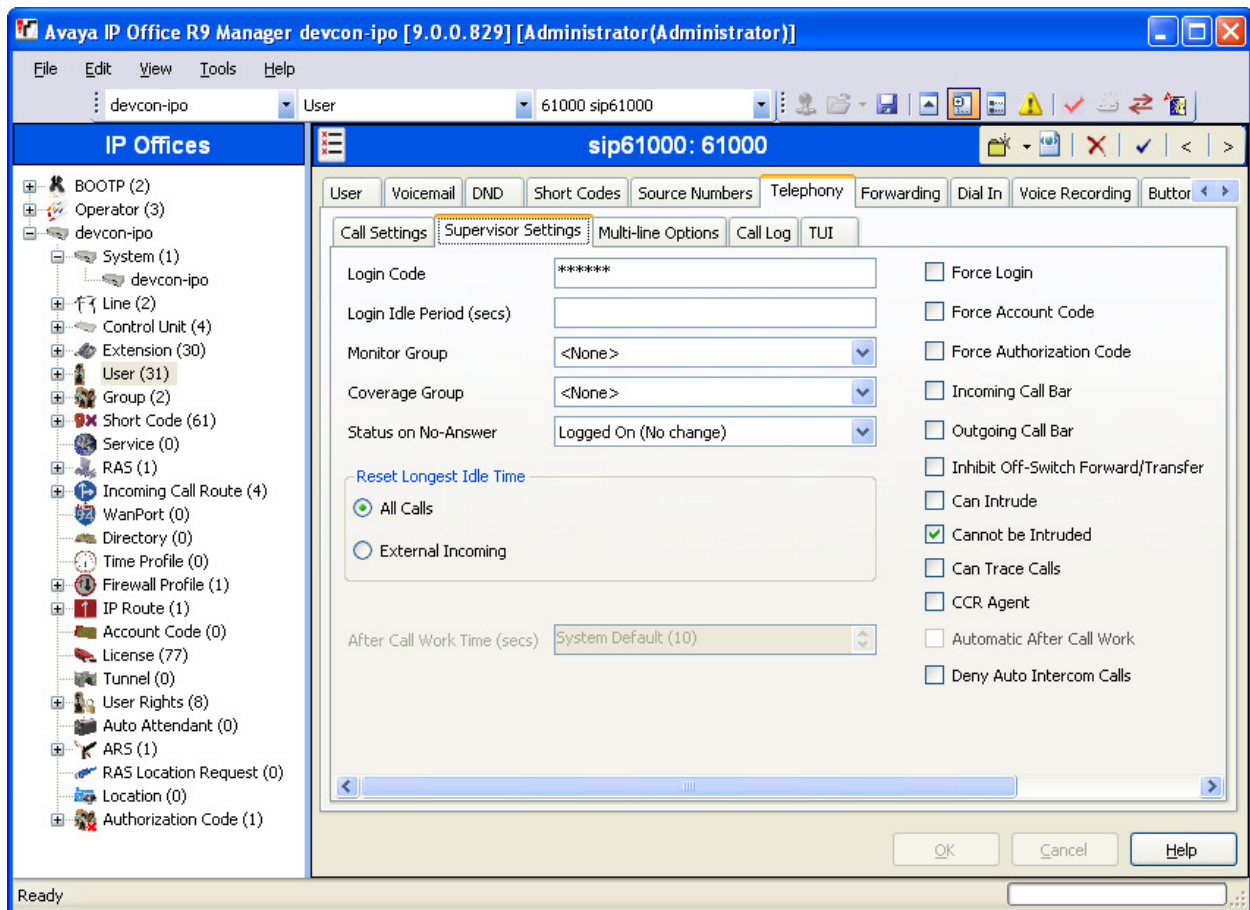
Ready

Select the **Telephony** tab followed by the **Call Settings** sub-tab. Note the settings below for the user.

Note: Call Waiting is required for transfer functionality for SIP extensions in Avaya IP Office.



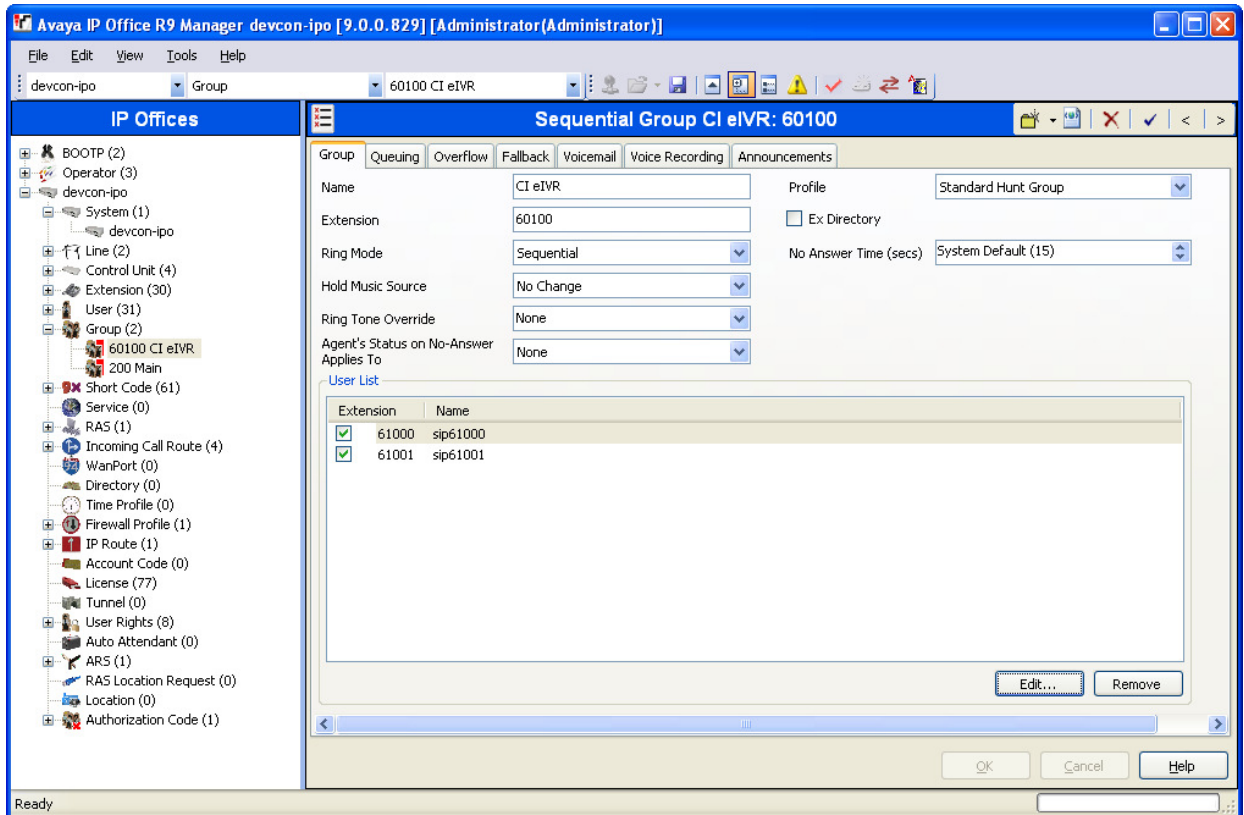
Select the **Supervisor Settings** tab and enter a desired **Login Code**. The Login Code is the password that will be used by e-IVR to register with IP Office. The **Login Code** must be the same for all e-IVR SIP users.



Repeat these steps for each user required. During the compliance test, users 61000 and 61001 were used.

5.6. Configure Hunt Group for Computer Instruments e-IVR Extensions

From the configuration tree in the navigation pane, right-click on **Group** and select **New** from the pop-up list. Enter desired value for the **Name** field. For the **Extension** field, enter a number for the Hunt Group. Click on the **Edit** button to select the extensions to be added to the group. Once completed select the **OK** button to return to the previous page. Click on the **OK** button again.



6. Configure the Computer Instruments e-IVR

Computer Instruments personnel will install, configure, and customize the e-IVR application for their customers. Therefore, this section only describes the configuration of the SIP interface and how to associate an IVR application with an extension.

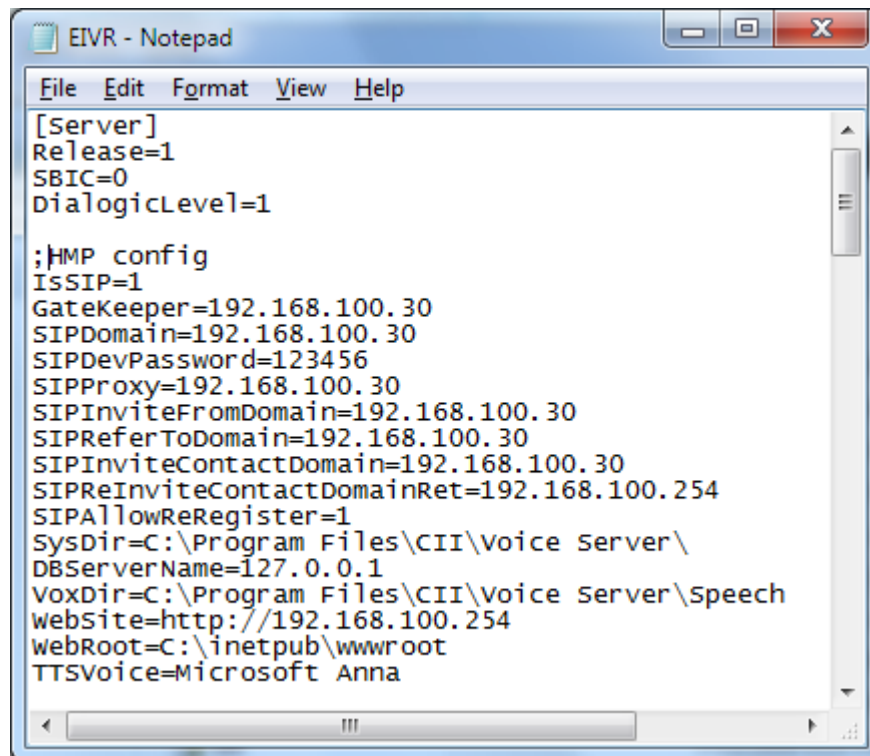
The Computer Instruments e-IVR configuration includes following sections:

- Configure EIVR.ini file
- Modify the Base System Configuration
- Verify that the e-IVR services are running

6.1. Configure EIVR.ini file

To configure the SIP interface on the e-IVR server, the EIVR.ini file needs to be modified to include the IP Office IP address, the PC running the e-IVR applications, and the SIP password for all the SIP extensions. Modify all the parameters where the IP addresses of the IP Office and e-IVR appear. The file is located in the C:\Windows directory and should be configured as displayed below.

- Avaya IP Office = 192.168.100.30
- PC Running e-IVR Applications = 192.168.100.254
- SIP Password = 123456



6.2. Modify Base System Configuration

To modify the system configuration, navigate to **Start→All Programs→Voice Server→Voice Administrator**. From the e-IVR Administrator main screen, select **System Config** from the left pane.

The following **System Config** screen shows the **Base System Configuration**. In the **Defaults** tab, set the **PBX Integration** field to *Avaya IP Office* and set the **Dial Plan Digits** field to 5, the extension length used in the IP Office dial plan.

e-IVR 5.0.0 Administration (12 Port License)

File Windows Help

Voice Apps

- System Config
- CallMeBackNow!
- Menu Manager
- Extension Manager
- Locator Manager
- Import Config
- Voice Reports
- Base Web Manager

System Config

Base System Configuration

System Defaults

PBX Integration: Avaya IP Office

Default Application: 1000 - Default Application

Default Operator: 100 - OPERATOR, DEFAULT

Default Language: English

Default Gender: ☒ Male ☐ Female

Default TTS Voice: Microsoft Anna

Dial Plan Digits: 5 Max Mode Digits: 15

Transfer Prefix: Transfer Suffix:

Outside Line Access Prefix: 9

Toll Call Suffix/Code:

Local Call Suffix/Code:

Expect DNIS Digits: ☐

Advanced TTS Save Settings

Outcalling Groups

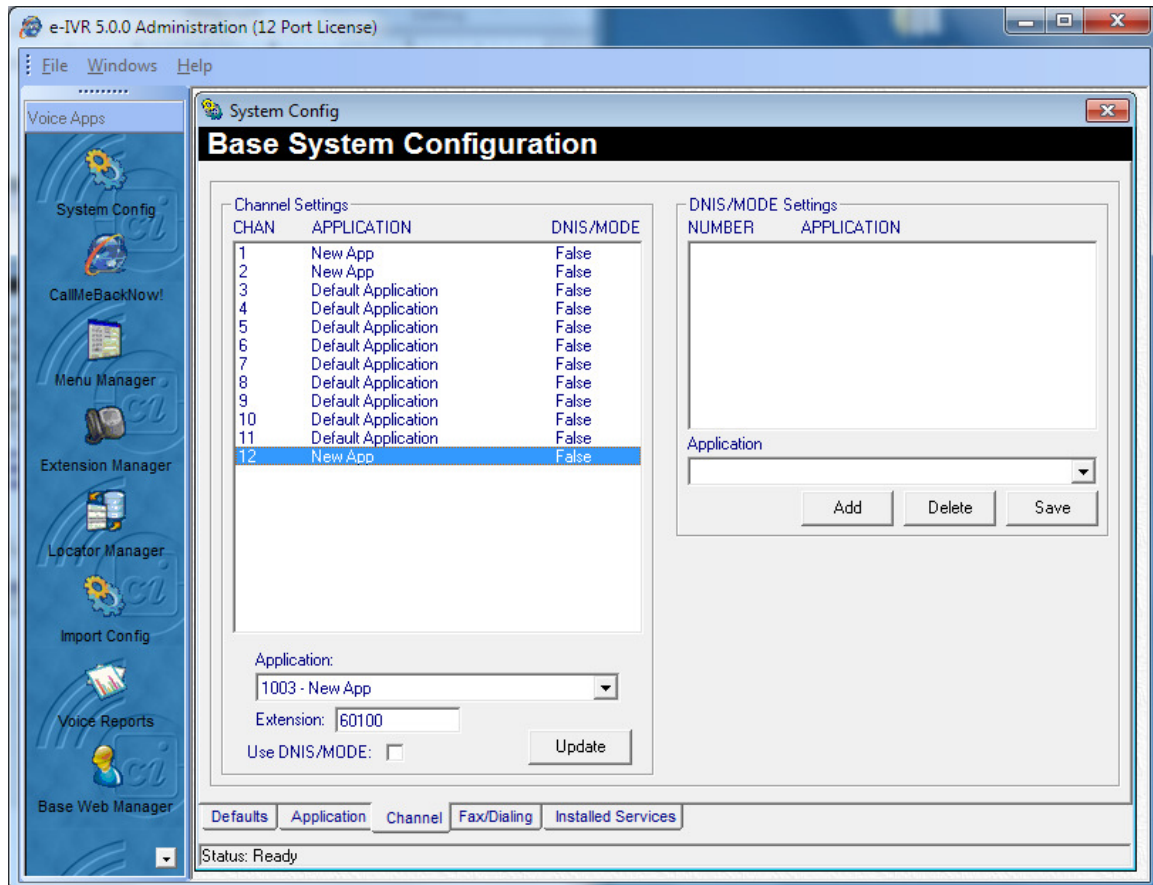
Outcall Group	Start	End	Order
Message Lamp	1	1	S-E
Notification Outcall	1	1	S-E
Call Me Back Now!	1	4	S-E

Save New Delete

Defaults Application Channel Fax/Dialing Installed Services

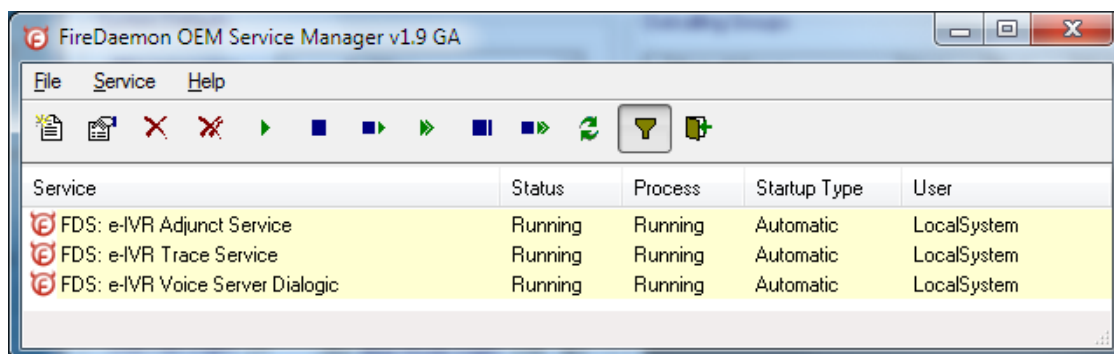
Status: Ready

In the **Channel** tab at the bottom of the screen, map channels to an extension and IVR application. In the example below, channel 12 is mapped to extension 60100, the hunt group extension, and to IVR application 1003 - New App. Therefore, when extension 60100 is dialed, IP Office routes the call to e-IVR and e-IVR runs the 1003 – New App application. In addition, channel 1 was associated with SIP extension 61000 and the same IVR application. This gives users the option to dial the SIP extension directly. Click the **Update** button when finished.



6.3. Verify e-IVR Services

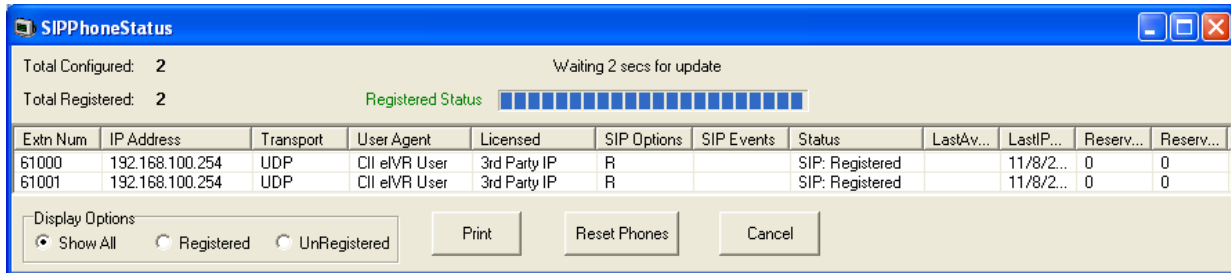
To verify that the e-IVR services are running, navigate to **Start→All Programs→Voice Server→Service Manager** and check that the **Status** is *Running* as shown below.



7. Verification Steps

This section provides the steps that may be used to verify proper configuration of Avaya IP Office and Computer Instruments e-IVR.

Launch the **Avaya IP Office Monitor** application. From the **Avaya IP Office R9 SysMonitor** screen navigate to **Status → SIP Phone Status** from the menu. Verify that the Status of each SIP extension is in *SIP: Registered* as shown below.



The screenshot shows the SIPPhoneStatus application window. At the top, it indicates 'Total Configured: 2' and 'Total Registered: 2'. A progress bar shows 'Registered Status' with 2 bars filled. Below this is a table with columns: Extn Num, IP Address, Transport, User Agent, Licensed, SIP Options, SIP Events, Status, LastAv..., LastIP..., Reserv..., and Reserv... The table contains two rows of data, both showing 'SIP: Registered' status. At the bottom, there are 'Display Options' (Show All, Registered, UnRegistered), and buttons for 'Print', 'Reset Phones', and 'Cancel'.

Extn Num	IP Address	Transport	User Agent	Licensed	SIP Options	SIP Events	Status	LastAv...	LastIP...	Reserv...	Reserv...
61000	192.168.100.254	UDP	CI eIVR User	3rd Party IP	R		SIP: Registered		11/8/2...	0	0
61001	192.168.100.254	UDP	CI eIVR User	3rd Party IP	R		SIP: Registered		11/8/2...	0	0

8. Conclusion

These Application Notes have described the administration steps required to integrate the Computer Instruments e-IVR with Avaya IP Office. E-IVR successfully registered with IP Office via SIP. Incoming calls to e-IVR were routed to the appropriate IVR application, outbound calls from e-IVR were successfully established, and e-IVR successfully transferred calls. All test cases passed.

9. References

This section references the Avaya documentation relevant to these Application Notes. The following Avaya product documentation is available at <http://support.avaya.com>.

- [1] *Avaya IP Office Manager*, Release 9.0, Issue 9.01, September 2013, Document Number 15-601011.
- [2] *Computer Instruments e-IVR Installation Guide*, Version 5, Revised 10-30-2013.

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