



## Avaya Solution & Interoperability Test Lab

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# Application Notes for Computer Instruments eONE with Avaya IP Office IP500V2 - Issue 1.1

### Abstract

These Application Notes describe the configuration steps required for Computer Instruments eONE to interoperate with Avaya IP Office IP500V2, firmware 9.1.4 using SIP trunks. Computer Instruments eONE is an IVR development platform that includes a number of self-service IVR and Web applications. In this compliance test, Computer Instruments eONE was installed on a PC with a Dialogic card that provided SIP connectivity to Avaya IP Office using SIP extensions/registration.

In the compliance testing, Computer Instruments eONE used SIP trunks to Avaya IP Office to support inbound and outbound IVR applications.

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 configuration steps required for Computer Instruments eONE to interoperate with Avaya IP Office IP500V2 using SIP trunks. Computer Instruments eONE is an IVR development platform that includes a number of self-service IVR and Web applications.

In the compliance testing, Computer Instruments eONE used SIP trunks to Avaya IP Office IP500V2 to support inbound and outbound IVR applications.

The Computer Instruments eONE (heron refers to as eONE) server used in the testing included the Dialogic Host Media Processing Software for support of the SIP protocol.

## 2. General Test Approach and Test Results

The feature test cases were performed manually. The eONE inbound application was tested by manually placing calls from users on IP Office to the eONE inbound application. The associated eONE inbound application played greeting announcements and collected DTMF input from the caller to decide on the feature to provide, such as a transfer to internal or external destinations. eONE outbound application to PSTN and Communication Manager were also tested.

The serviceability test cases were performed manually by disconnecting and reconnecting the Ethernet connection to eONE.

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.

## 2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing.

The feature testing included inbound/outbound calls, G.711MU, inbound DTMF, invalid number, and busy destination.

The serviceability testing focused on verifying the ability of eONE to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet connection to eONE.

## 2.2. Test Results

All test cases passed. Inbound and outbound calls to/from eONE, inbound DTMF, call Supervised Transfer from eONE, and call termination were all successful.

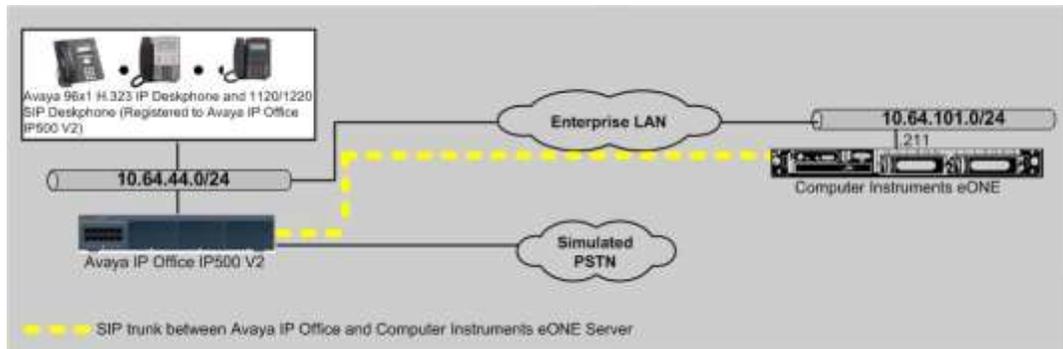
## 2.3. Support

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

- **Phone:** (888) 451-0851
- **Email:** [support@instruments.com](mailto:support@instruments.com)
- **Web:** [http://instruments.com/support/email\\_form.html](http://instruments.com/support/email_form.html)

### 3. Reference Configuration

**Figure 1** illustrates a sample configuration with Avaya IP Office and Computer Instruments eONE. eONE registered with IP Office via SIP using a Dialogic card. IP Office received incoming calls and then routed them to eONE ports. eONE 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: Computer Instruments eONE with Avaya IP Office**

## 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	9.1.4 (137)
Avaya IP Office Manager	9.1.400 (137)
Avaya 96x1 Series IP Deskphone	6.6 (H.323)
Avaya 1120/1220 IP Deskphone	4.4.18(SIP)
Computer Instruments eONE on Windows Server 2008 R2	6.1.1
• Service Manager	3.7 GA
• Dialogic Host Media Processing Manager	3.0 Service Update 357

**Note:** Testing was performed with IP Office IP500V2 R9.1.4, but it also applies to IP Office Server Edition R9.1.4.

## 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
- Configuration System
- Configure SIP Line

### 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 **License** to display the license screen in the right pane. Verify that the **License Status** for **SIP Trunk Channels** is “Valid” and has enough instances.

The screenshot shows the Avaya IP Office Manager interface. On the left is a configuration tree with 'License' selected. The main area displays the following information:

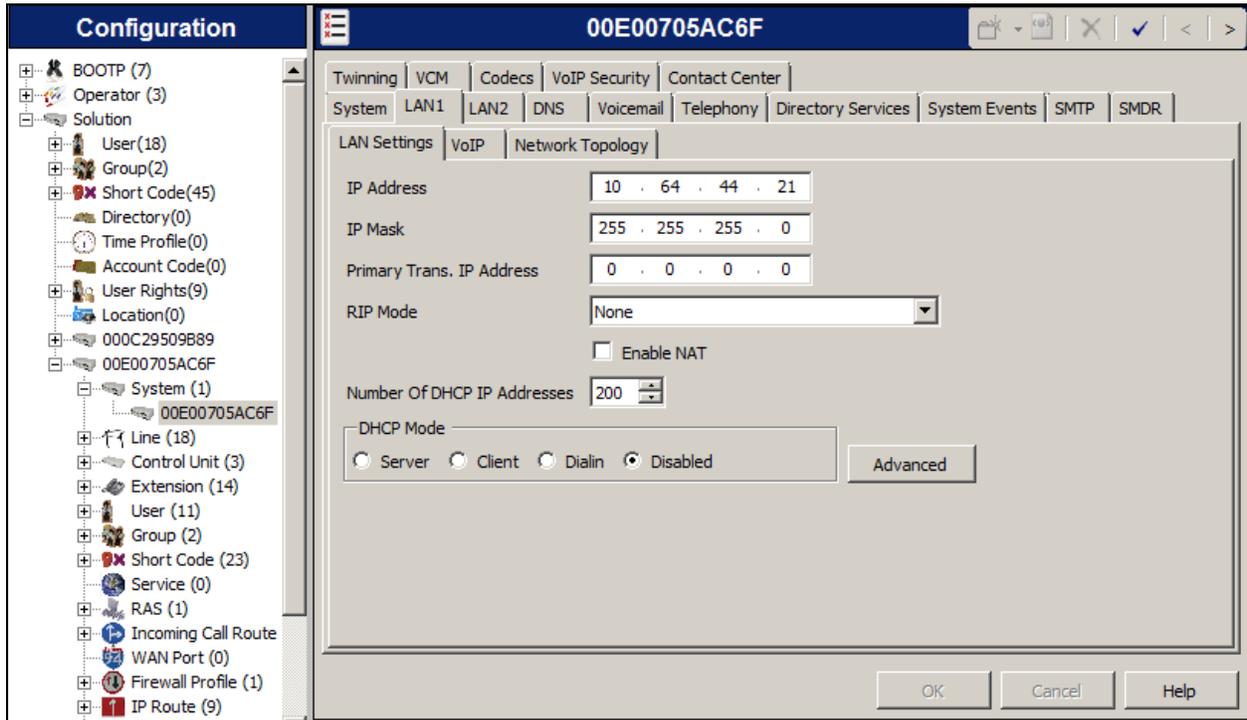
- License Mode: License Normal
- Licensed Version: 9.1
- Serial Number (ADI): 1314589623
- PLDS Host ID: 111314589623
- PLDS File Status: Not Present / Invalid

Below this information is a table listing various features and their license status:

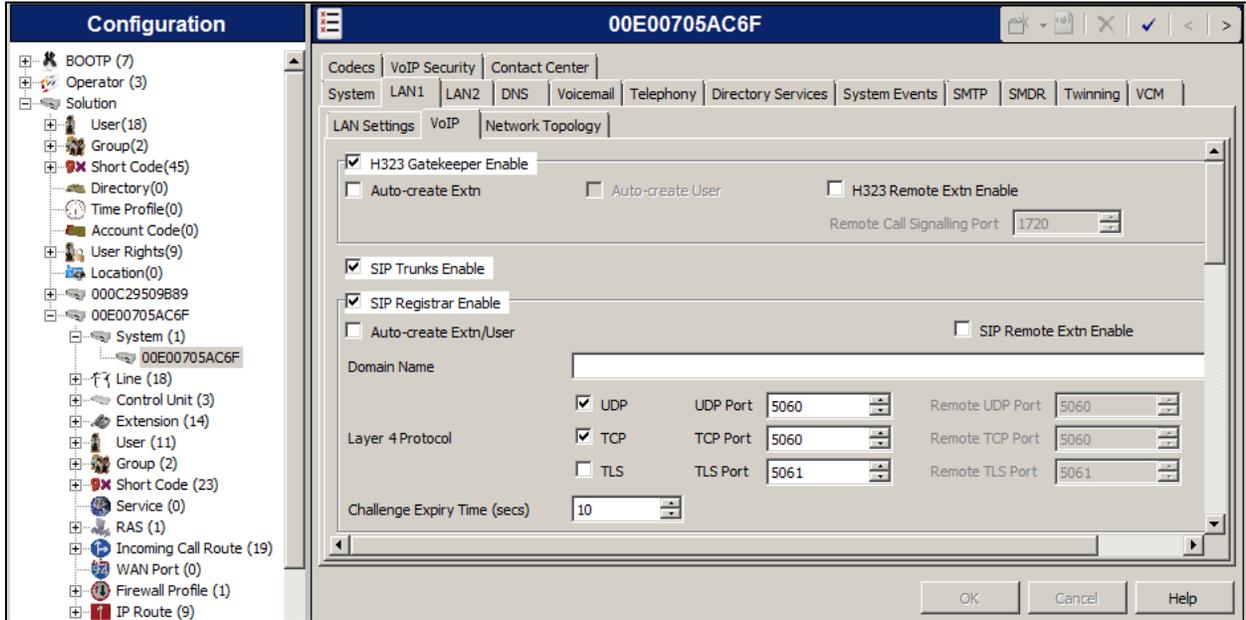
Feature	License Key	Instances	Status	Expiry Date
Small Office Edition VCM (channels)	eA8k4y@yM9k457RwA4d3k88Q2nbqP879	255	Obsolete	Never
Small Office Edition WiFi	9A9NzSb3VnZwsD7_yo8fkgfhIPj4pMWB	255	Obsolete	Never
IPSec Tunneling	50mD7ybr9kK5v2zvThc2BqIMNeSvwiLu	255	Valid	Never
Proactive Reporting	XI@n2Fd3EdGwNxx4feSewshdDrULP5J	255	Obsolete	Never
Report Viewer	ekDxal6aL03AtM34Evk3Y0XruUurx	255	Obsolete	Never
Mobility Features	zX9HyJoaLVBfZ9FWB8brfbjcekp89x	255	Obsolete	Never
Advanced Small Community Networking	laelmAyMDJUVyZPAQc4h4cYwDlv9dz	255	Obsolete	Never
IP500 Voice Networking Channels	WhBQhKdIdvX0ZckU56pgojWstZWd5mz	255	Obsolete	Never
IP500 Upgrade Standard to Professional	04yFNVUADY8y06kQT4B9bf2PY@jAeuc	255	Obsolete	Never
IP500 Voice Networking Channels	5hTLh_08QF_n03ALchH8dpsVcaj8DM	4	Obsolete	Never
VCM Channel Migration	IqJg87gJvN5arbo3mmhxgb4LH4kGMFB	255	Obsolete	Never
SIP Trunk Channels	Wn00C0RqtmFE8ggmDu7oLsoQgoIdBLu	255	Valid	Never
VPN IP Extensions	W4QL@u@H0Q@F_gbR0hNvrpepAcTUM@Q	255	Obsolete	Never
IP500 Universal PRI (Additional chan...	lh0CjodVGSWdNshFuagzLW1YEMSHox	255	Valid	Never
RAS LRQ Support (Rapid Response)	6Ax5H6oEAnODPgAn73oQssPYmodH_B	255	Obsolete	Never
IP Office Dealer Support - Standard F...	hP9v33h8v3Tf5C61te_ell_99R1ex7r	255	Obsolete	Never

## 5.2. System Configuration

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 eONE SIP interface.



Select the **VoIP** sub-tab. Ensure that **SIP Trunks Enable** is checked.



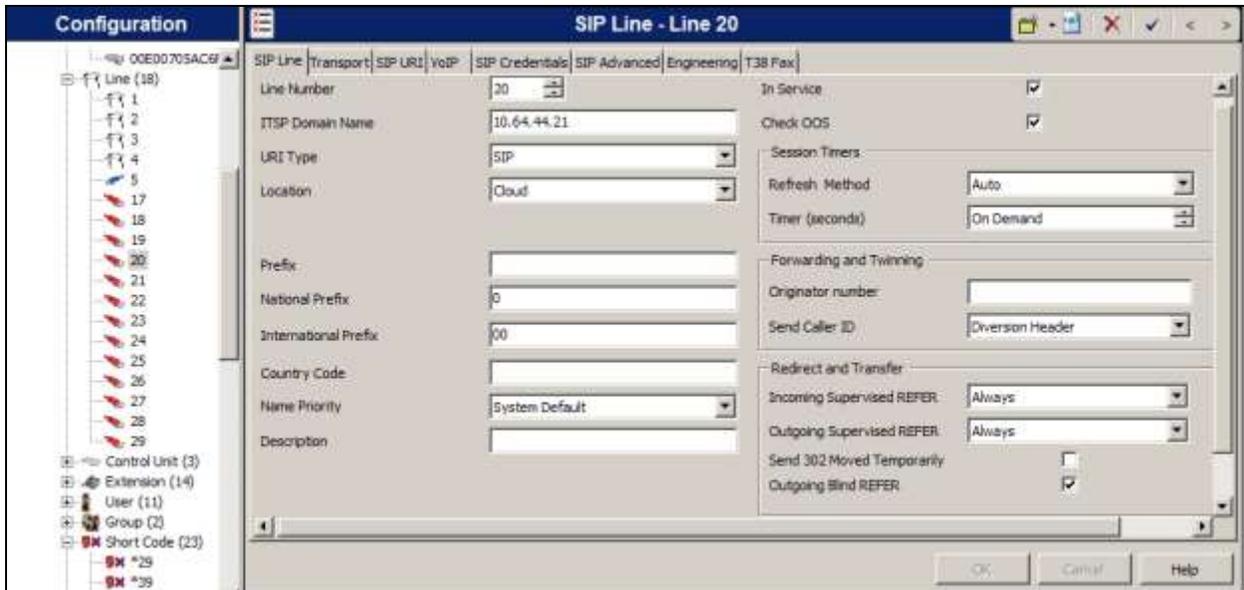
### 5.3. Configure SIP Line

A SIP line is needed to establish the SIP connection between Avaya IP Office and CI eONE. From the configuration tree in the left pane, right-click on **Line** and select **New** → **SIP Line** from the pop-up list to add a new SIP line (not shown). The **SIP Line** tab is displayed.

#### 5.3.1 SIP Line – SIP Line Tab

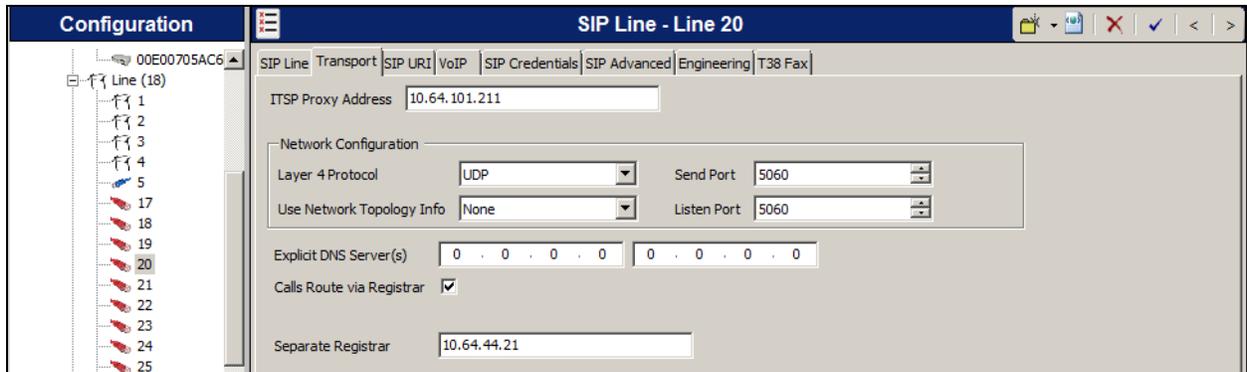
For **ITSP Domain Name**, enter the applicable domain name for the network configuration. During the test, the IP address was used. That means the IP address is used instead of a domain name. Set both **Incoming Supervised REFER** and **Outgoing Supervised REFER** to “Always”. The **Outgoing Blind REFER** field was checked.

Retain the default values in the remaining fields.



### 5.3.2 SIP Line – Transport Tab

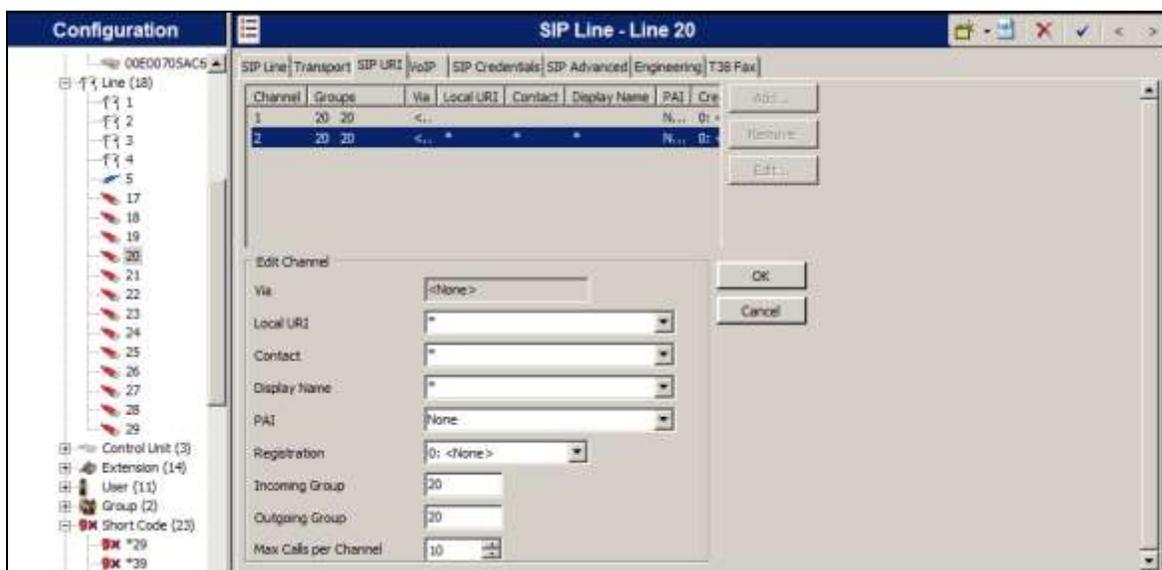
Select the **Transport** tab in the right pane. For **ITSP Proxy Address**, enter the IP address of the CI eONE server ip address. For **Layer 4 Protocol**, select “UDP”, and **Send Port** to “5060”.



### 5.3.1 SIP Line – SIP-URI Tab

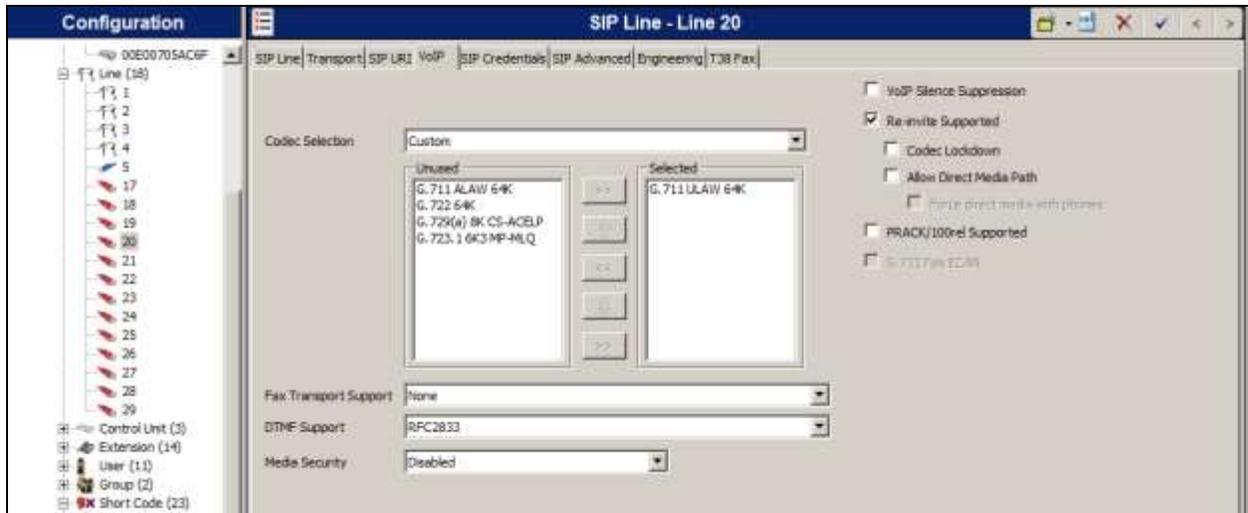
Select the **SIP URI** tab, and click **Add** to display the **New Channel** section. Enter the following values for the specified fields, and retain the default values for the remaining fields.

- **Local URI:** Enter the wildcard character “\*”.
- **Contact:** Enter the wildcard character “\*”.
- **Display Name:** Enter the wildcard character “\*”.
- **PAI:** “None”
- **Incoming Group:** Enter a trunk group that will be used.
- **Outgoing Group:** Enter a trunk group that will be used.
- **Max Calls per Channel:** The desired maximum number of simultaneous calls.
- Click **OK**.



### 5.3.2 SIP Line – VoIP Tab

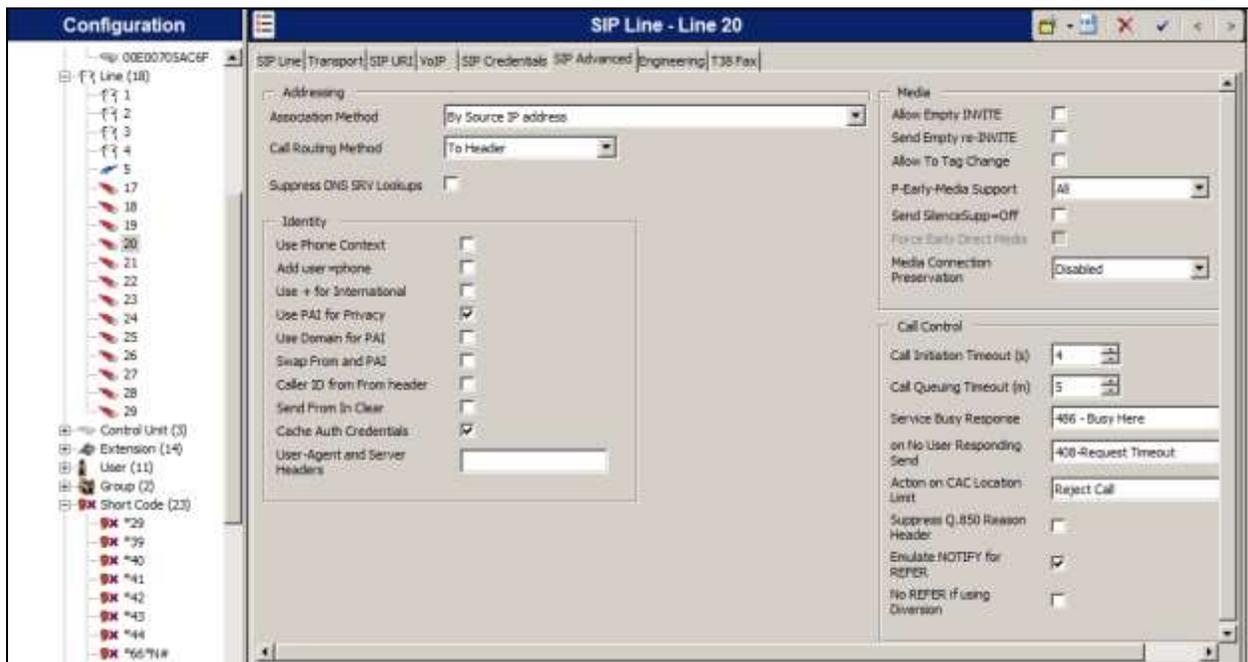
Select the **VoIP** tab, and check **Re-invite Supported**. During the compliance test, the selected codec was G.711Mu. Retain the default values for the remaining fields.



### 5.3.3 SIP Line – SIP Advance

Select the **Use PAI for Privacy** field was checked. Select “All” for the **P-Early-Media Support** field, and check **Emulate Notify for REFER**.

Retain the default values for the remaining fields.



## 6. Configure Computer Instruments eONE

This section provides the procedures for configuring eONE. The procedures include the following areas:

- Administer system config
- Administer EIVR.ini
- Restart service

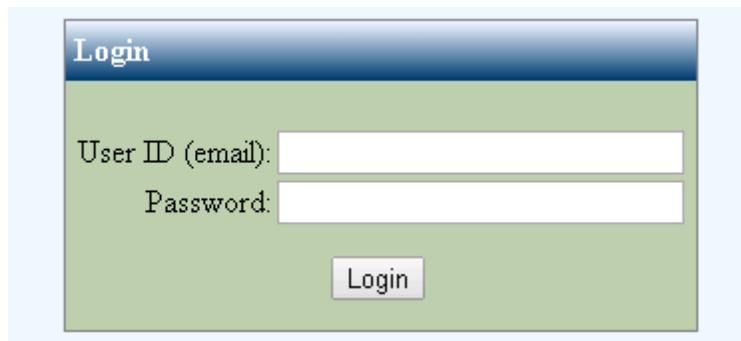
### 6.1. Administer System Config

Note: Prior to the actual test, a Computer Instruments engineer came in remotely to the server and installed/licensed/configured. This section shows what was configured by the Computer Instruments engineer. For more information, please contact the Computer Instruments support, mentioned in **Section 2.3**.

To access the System Config page, <http://localhost/eCI/VoiceAdmin/Default.aspx> or click the

shortcut icon created, .

Provide appropriate credentials in the Login page.



The screenshot shows a web-based login form. At the top, there is a blue header with the word "Login" in white. Below the header, the form has a light green background. It contains two input fields: "User ID (email):" followed by a white text box, and "Password:" followed by a white text box. Below these fields is a "Login" button with a light gray background and black text.

In the **CII-Voice Administrator** page, select **Voice Administrator** → **System Config** in the left pane to display the **Base System Configuration** screen.



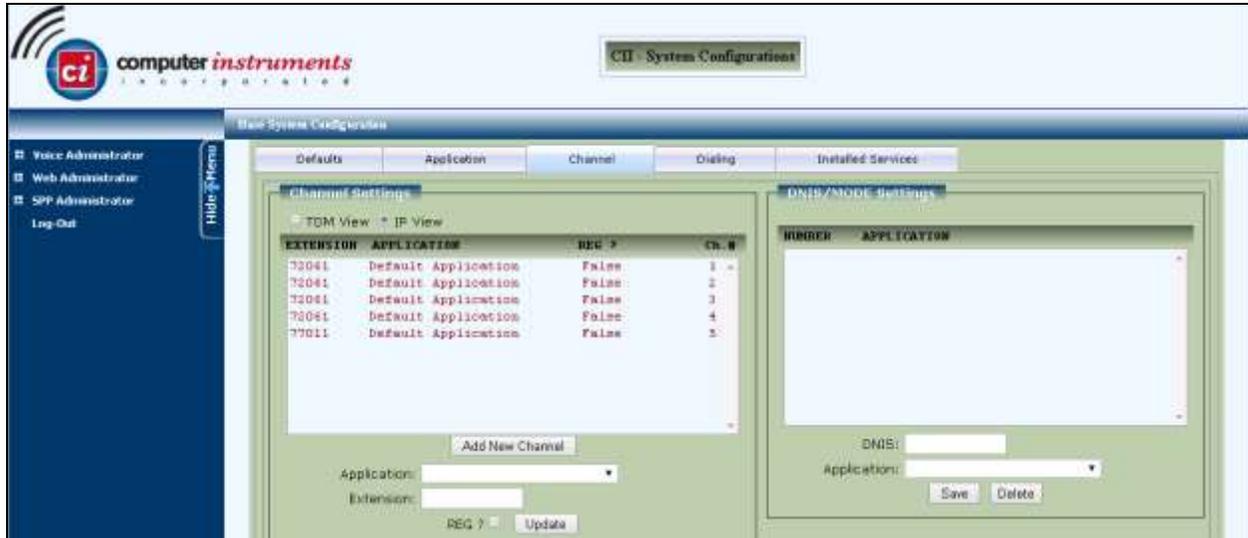
Select the Defaults tab from the top of the **Base System Configuration** pop-up screen. Select “Avaya Definity” for **PBX Integration**. For **Dial Plan Digits**, enter the maximum length of internal extensions on Communication Manager. For **Outside Line Access Prefix**, enter the applicable prefix for calls to the PSTN via by Communication Manager. For outbound calls to the PSTN, based on INI setting eONE will prepend the **Outside Line Access Prefix** value defined below, plus the digit “1” (as per setup).



Select the **Channel** tab from the top of the **Base System Configuration** pop-up screen.

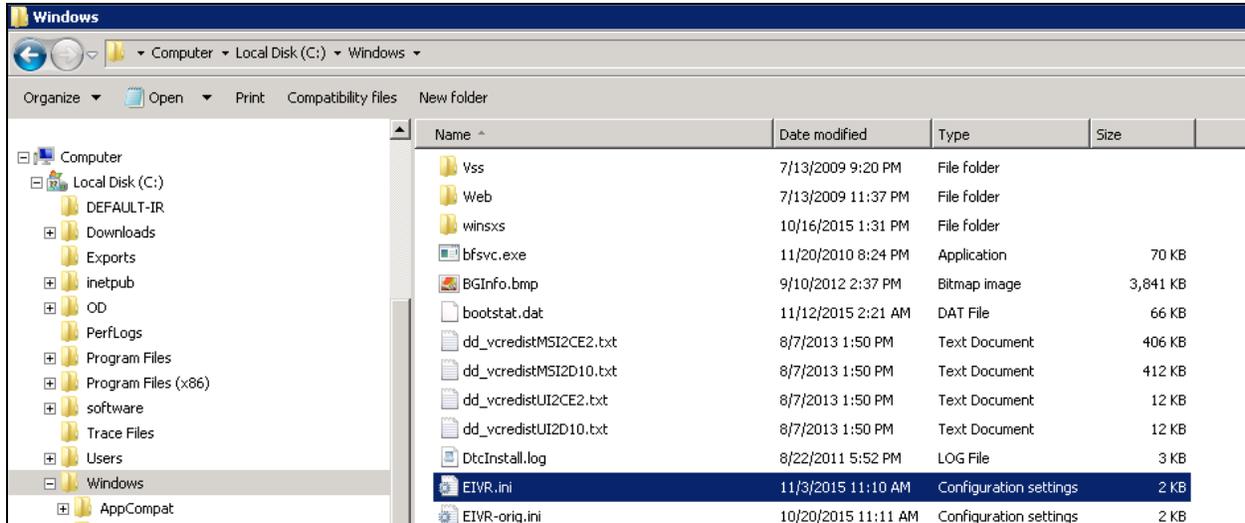
In the **Channel Setting** sub-section, select the first channel entry. For **Extension**, enter the applicable extension used for the inbound application, in this case “72061”. By default, all third party channel resources are used for inbound applications unless otherwise specified. Note that the compliance testing used five channel resources, which is governed by the Dialogic license.

In the compliance testing, only one inbound application was used, and therefore only the first channel resource needs the extension mapping.

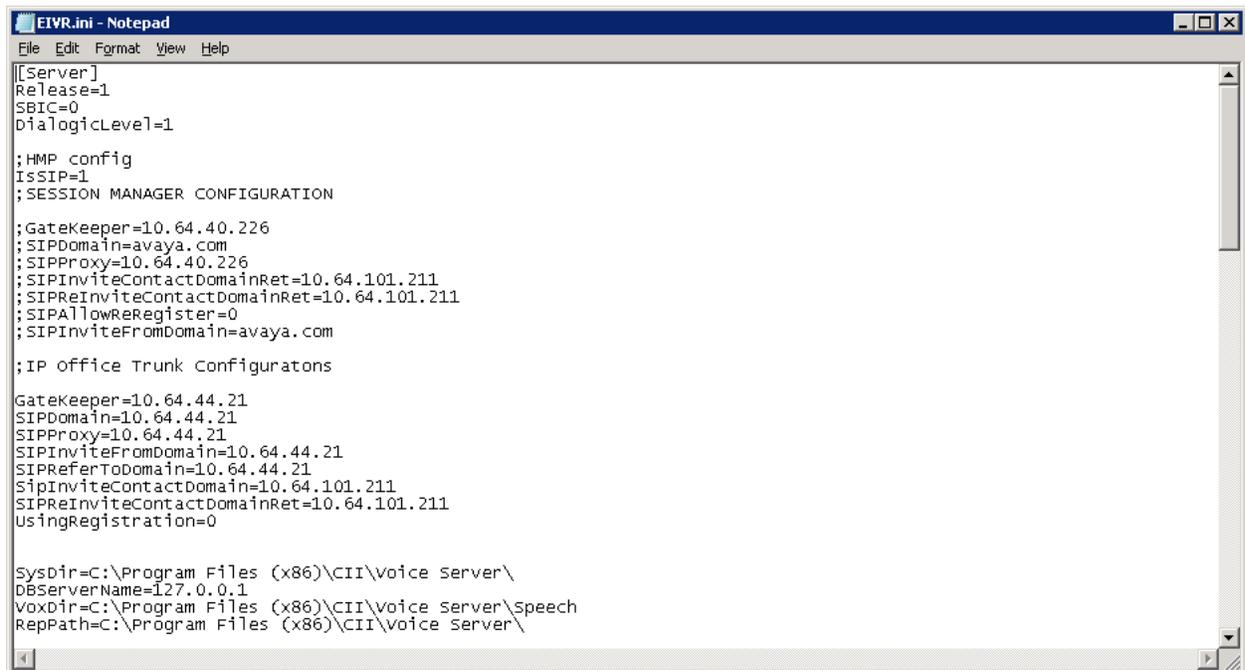


## 6.2. Administer EIVR.ini

From the eONE server, navigate to the **C:\Windows** directory to locate the **EIVR.ini** file shown below.



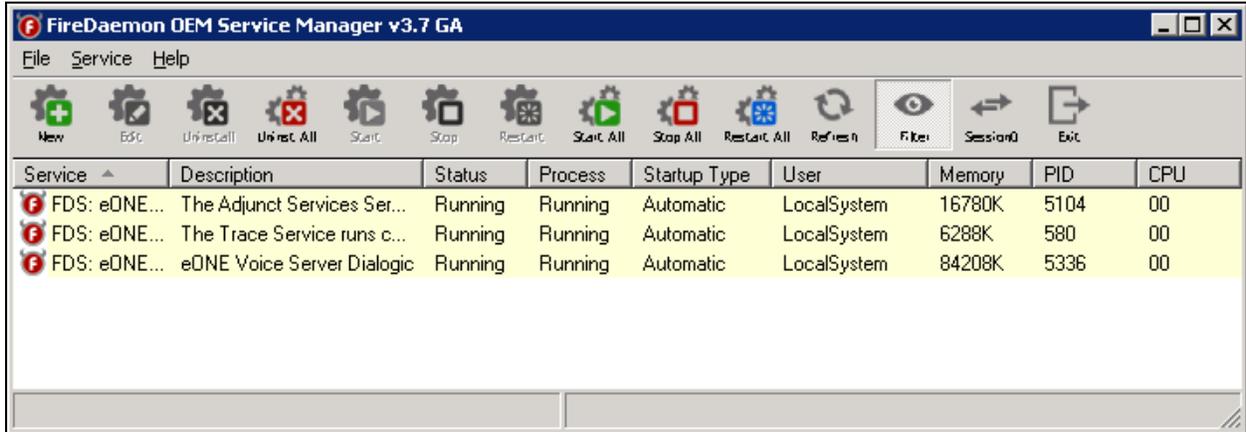
Open the **EIVR.ini** file with the Notepad application. Configure the parameters as shown below, where “10.64.44.21” is the IP address of IP Office, “10.64.101.211” is the IP address of the eONE server, and “avaya.com” is the domain name. During the compliance test, the domain name is converted to IP address in the hosts file.



### 6.3. Restart Service

Run the c:\Program Files (x86)\FireDaemon OEM\FireDaemonUI.exe or select the **Service**

**Manager** icon, , from Desktop to display the screen below. Restart the **eONE Voice Server Dialogic** service and verify that the **Status** is *Running* as shown below.



Service	Description	Status	Process	Startup Type	User	Memory	PID	CPU
FDS: eONE...	The Adjunct Services Ser...	Running	Running	Automatic	LocalSystem	16780K	5104	00
FDS: eONE...	The Trace Service runs c...	Running	Running	Automatic	LocalSystem	6288K	580	00
FDS: eONE...	eONE Voice Server Dialogic	Running	Running	Automatic	LocalSystem	84208K	5336	00

## 7. Verification Steps

This section provides tests that can be performed to verify proper configuration of Avaya IP Office and eONE.

### 7.1. Verify from Avaya IP Office

This section provides the tests that can be performed to verify proper configuration of Avaya IP Office and CI eONE. Establish a call between Avaya IP Office and CI eONE.

Navigate to **All Programs** → **IP Office** → **System Status** (not shown) to launch the System Status application, and log in using the appropriate credentials. The **IP Office System Status** screen is displayed. Expand **Trunks** in the left pane and select the SIP line in use, in this case “20”.

Verify that the **SIP Trunk Summary** screen shows an active channel with **Current State** of “Connected”. Also verify that the **Remote Media Address** contains the IP address of CI eONE, and that **the Other Party on Call** contains the local IPO user.

The screenshot displays the Avaya IP Office System Status application. The main window title is "Avaya IP Office System Status - 00E00705AC6F (10.64.44.21) - IP500 V2 9.1.4.0 build 1.37". The application title is "IP Office System Status". The left sidebar shows a tree view with "Trunks (17)" expanded to "Line:20". The main content area shows the "SIP Trunk Summary" for Line 20. The summary includes the following details:

- Line Service State: In Service
- Peer Domain Name: 10.64.44.21
- Resolved Address: 10.64.101.211
- Line Number: 20
- Number of Administered Channels: 20
- Number of Channels in Use: 1
- Administered Compression: G711 Mu
- Enable Faststart: Off
- Silence Suppression: Off
- Media Stream: RTP
- Layer 4 Protocol: UDP
- SIP Trunk Channel Licenses: Unlimited
- SIP Trunk Channel Licenses in Use: 0
- SIP Device Features: REFER, (Incoming and Outgoing)

A green circle indicates 0% of licenses are in use. Below the summary is a table with the following columns: Channel Number, URI, Call Ref, Current State, Time in State, Remote Media Add..., Codec, Connect..., Caller ID or Date..., Other Party on Call, Direction of Call, Round Trip Delay, Receive Jitter, Receive Packet..., Transmit Jitter, and Transmit Packet... The table shows four channels, with Channel 1 in a 'Connected' state and the others in 'Idle'.

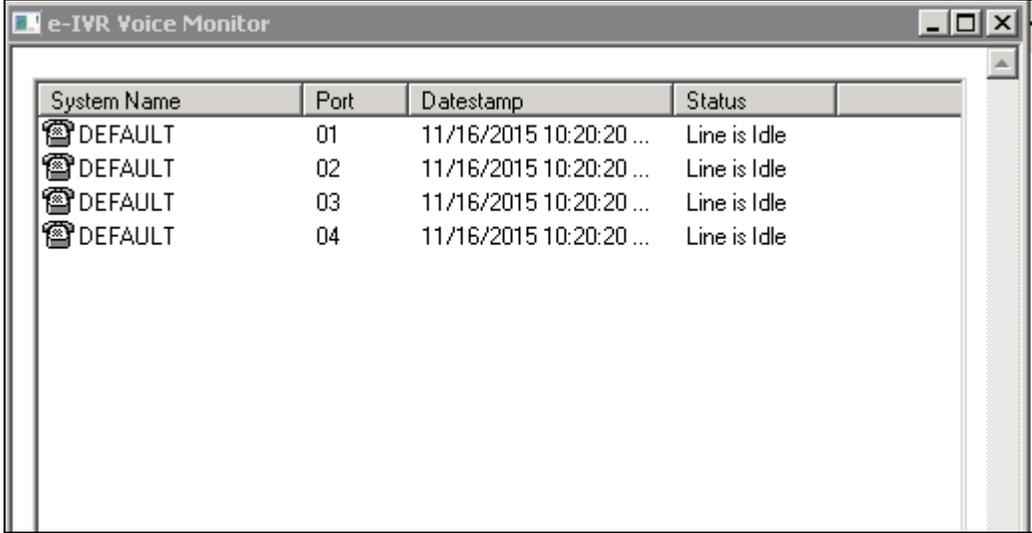
Channel Number	URI	Call Ref	Current State	Time in State	Remote Media Add...	Codec	Connect...	Caller ID or Date...	Other Party on Call	Direction of Call	Round Trip Delay	Receive Jitter	Receive Packet...	Transmit Jitter	Transmit Packet...
1	0	54	Connected	00:00:18	10.64.101...	G711...	RTP Relay		Extn 77023, Extn2	Outgoing	24ms			17.2ms	0%
2			Idle	08:50:37											
3			Idle	08:50:37											
4			Idle	08:50:37											

At the bottom of the application, there are buttons for "Line", "Trunk All", "Pause", "Ping", "SIP Trunk", "Graceful Shutdown", "Force Out of Service", "Print...", and "Save As...". The status bar at the bottom right shows "11:14:13 AM" and "Online".

## 7.2. Verify from Computer Instruments eONE



Select the **Voice Monitor** icon, , from Desktop to display the **eONE Voice Monitor** screen. Verify that the **Status** for all ports is “Line is Idle”, as shown below.

A screenshot of a Windows-style application window titled "e-IVR Voice Monitor". The window contains a table with four columns: "System Name", "Port", "Datestamp", and "Status". There are four rows of data, each representing a port. The status for all ports is "Line is Idle".

System Name	Port	Datestamp	Status
DEFAULT	01	11/16/2015 10:20:20 ...	Line is Idle
DEFAULT	02	11/16/2015 10:20:20 ...	Line is Idle
DEFAULT	03	11/16/2015 10:20:20 ...	Line is Idle
DEFAULT	04	11/16/2015 10:20:20 ...	Line is Idle

## 8. Conclusion

These Application Notes describe the configuration steps required for Computer Instruments eONE to successfully interoperate with IP Office 9.1.4 using SIP trunks. All feature and serviceability test cases were completed.

## 9. Additional References

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

1. *Deploying Avaya IP Office Platform IP500 V2*, Document Number 15-601042, Issue 30s, October, 2015.
2. *Administering Avaya IP Office Platform with Manager*, Release 9.1, Issue 10.28, October 2015.
3. *Installing eONE*, available from <http://www.instruments.com>.
4. *eONE Application Server*, available from <http://www.instruments.com>.

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