



Avaya Solution & Interoperability Test Lab

Application Notes for Liquid Voice, Liquid IVR solution 7.2 with Avaya IP Office Server Edition 10 and 500v2 Expansion - Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate Liquid Voice, Liquid IVR solution 7.2 with Avaya IP Office Server Edition 10 and 500v2 Expansion. Liquid IVR is an Interactive Voice Response solution that connects to IP Office as a SIP line or a SIP endpoint.

Readers should pay attention to **Section 2**, in particular the scope of testing as outlined in **Section 2.1** as well as the observations noted in **Section 2.2**, to ensure that their own use cases are adequately covered by this scope and results.

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 to successfully integrate Liquid Voice, Liquid IVR solution 7.2 with Avaya IP Office (IP Office) Server Edition 10 and 500v2 Expansion. Liquid IVR is a solution that connects to IP Office as a SIP Line or SIP Endpoint. Interactions are initiated on the Liquid IVR by calling Liquid IVR and following prompts to direct calls efficiently.

2. General Test Approach and Test Results

The general test approach was to configure the Liquid IVR to communicate with IP Office both as a SIP Trunk and a SIP Endpoint. An extension number was configured to dial Liquid IVR and initiate IVR scripts.

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 both feature functionality and serviceability testing. The feature functionality testing focused on interacting with the IVR in different call scenarios. The tests included:

- Liquid IVR SIP trunk is connected and in service.
- Liquid IVR SIP endpoint is registered and in service.
- Liquid IVR can route to and from SIP, Digital and H.323 endpoints.
- Liquid IVR can interpret DTMF and use digits to route calls.
- Service – Tests the behaviour of Liquid IVR Server during certain failed conditions.

2.2. Test Results

All test cases were passed with the following observations.

- When using the SIP Endpoint method, the ports used for UDP and TCP as layer 4 protocols, cannot be the same or registration issues were observed.
- When using the SIP Endpoint method, the type should be set as SIP and not SIP handset in the Liquid IVR configuration to allow virtual ports to be used and multiple calls to be answered.

2.3. Support

UK Office

Liquid Voice
Matrix House
Goodman Street
Leeds
LS10 1NZ
United Kingdom

Telephone +44 (0) 113 200 2021
Fax +44 (0) 113 335 0350
E-Mail support@liquidvoice.com
Internet <http://www.liquidvoice.com/support>

NZ Office

Liquid Voice

support@liquidvoice.co.nz
<http://www.liquidvoice.com/support>

3. Reference Configuration

The configuration shown in **Figure 1** was used during the compliance test of Liquid Voice, Liquid IVR with IP Office. Liquid IVR utilized a SIP trunk or SIP endpoint to interact with IP Office endpoints.

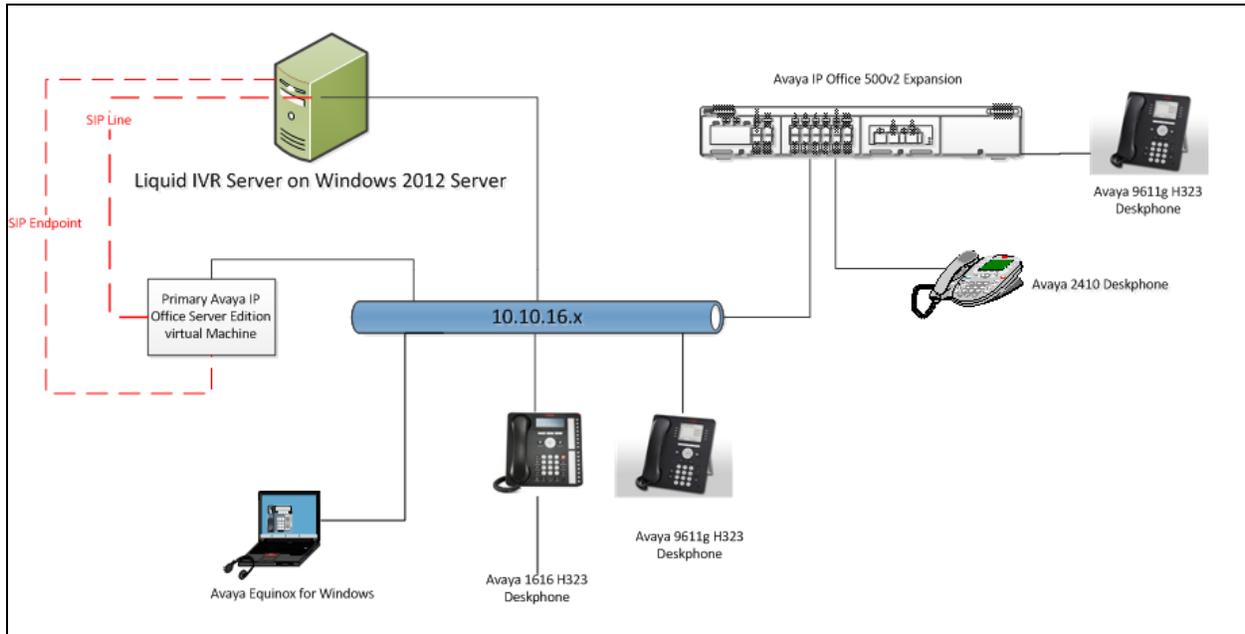


Figure 1: Connection of Liquid IVR with Avaya IP Office Server Edition 10 and 500v2 Expansion

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office Server Edition	10.0.0.0.3.0 Build 5
Avaya IP Office 500v2	10.0.0.0.3.0 Build 5
Avaya 1616 IP Deskphone - H.323	1.390A
Avaya 9611g IP Deskphone - H.323	6.6401
Avaya 2420 Series Digital Deskphone	N/A
Avaya Equinox for Windows - SIP	3.0.2.11
Liquid Voice, Liquid IVR	7.2

Note: Compliance Testing is applicable when the tested solution is deployed with a standalone IP Office 500 V2 and also when deployed with IP Office Server Edition in all configurations

5. Configure Avaya IP Office

This section describes the steps required for IP Office to communicate with Liquid IVR. It is assumed that IP Office is installed and configured before implementing the configuration steps below. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 10**.

The configuration illustrated in this section was performed using IP Office Manager.

Configuration steps include:

- Check SIP Trunk and Third Party Endpoint Licensing.
- Administer System LAN settings.
- Administer SIP Line.
- Administer Short Codes for routing.
- Administer SIP User.

5.1. Check IP Office Licenses

In IP Office Manager under **Configuration**, select **Licenses** and check the number of **SIP Trunk Channels**. Also, check **3rd Party IP Endpoints**. Ensure the values are adequate as per the Liquid IVR SIP trunk and endpoint requirements.

Feature	Instances	Status	Expiry Date	Source
Receptionist	10	Valid	Never	PLDS Nodal
Additional Voicemail Pro Ports	252	Valid	Never	PLDS Nodal
VMPro Recordings Administrators	10	Valid	Never	PLDS Nodal
Office Worker	1000	Valid	Never	PLDS Nodal
VMPro TTS Professional	40	Valid	Never	PLDS Nodal
IPSec Tunnelling	10	Obsolete	Never	PLDS Nodal
Power User	1000	Valid	Never	PLDS Nodal
Customer Service Agent	10	Obsolete	Never	PLDS Nodal
CCR SUP	5	Obsolete	Never	PLDS Nodal
Avaya IP endpoints	1000	Valid	Never	PLDS Nodal
SIP Trunk Channels	256	Valid	Never	PLDS Nodal
IP500 Universal PRI (Additional cha...	120	Obsolete	Never	PLDS Nodal
CTILink Pro	1	Valid	Never	PLDS Nodal
Wave User	16	Obsolete	Never	PLDS Nodal
3rd Party IP Endpoints	1000	Valid	Never	PLDS Nodal
Server Edition R10	150	Valid	Never	PLDS Nodal
UMS Web Services	1000	Valid	Never	PLDS Nodal
Avaya Mac Softphone	1000	Valid	Never	PLDS Nodal
Avaya Softphone Licence	1000	Valid	Never	PLDS Nodal
SM Trunk Channels	128	Valid	Never	PLDS Nodal

5.2. Check System LAN Settings

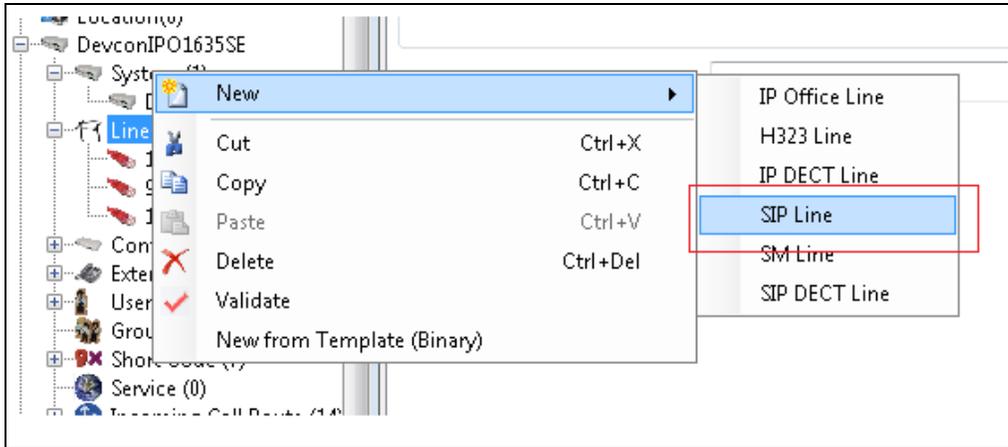
Select the **Server edition (IPOSE1635)** → **System** and Go to the **LAN1** tab. Verify that **SIP Trunks Enable** and **SIP Registrar Enable** are selected under the **VoIP** tab. In the tested configuration it should be noted that **Layer 4 Protocol** for UDP and TCP are set to use different ports.

The screenshot displays the configuration interface for system IPOSE1635. The left sidebar shows a tree view with 'System (1)' selected. The main area is divided into 'System' and 'IPOSE1635' tabs. Under the 'IPOSE1635' tab, the 'LAN1' sub-tab is active, and the 'VoIP' section is expanded. In the 'VoIP' section, the following settings are visible:

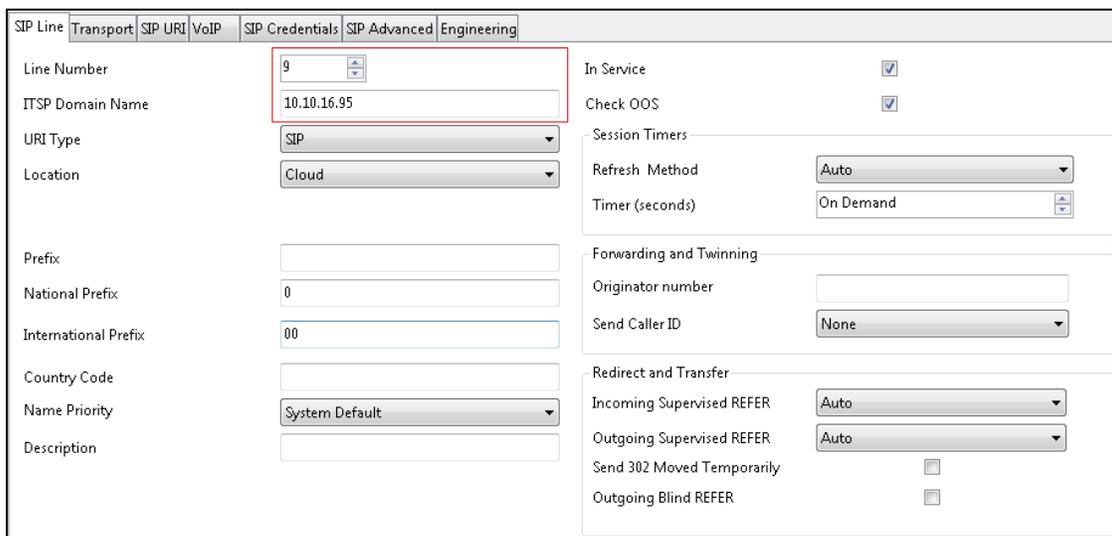
- H323 Gatekeeper Enable
- Auto-create Extn
- Auto-create User
- H323 Remote Call S...
- H.323 Signalling over TLS: Disabled
- SIP Trunks Enable
- SIP Registrar Enable
- Auto-create Extn/User
- SIP Domain Name: devconnect.local
- SIP Registrar FQDN: [Empty]
- Layer 4 Protocol:
 - UDP, UDP Port: 5070
 - TCP, TCP Port: 5060
 - TLS, TLS Port: 5061
- Challenge Expiry Time (secs): 10

5.3. Administer a SIP Line

A SIP Line is required for interactions with Liquid IVR scripts. From the **Server Edition** → **Line** right click and select **New** → **SIP Line**.



Under the the **SIP Line** tab, enter an unused **Line Number** and an **ITSP Domain Name**. **ITSP Domain Name** is the Liquid IVR Server IP Address.

A screenshot of the 'SIP Line' configuration page in the Avaya system. The page has several tabs: 'SIP Line', 'Transport', 'SIP URI', 'VoIP', 'SIP Credentials', 'SIP Advanced', and 'Engineering'. The 'SIP Line' tab is active. The 'Line Number' field is set to '9' and the 'ITSP Domain Name' field is set to '10.10.16.95'. Both fields are highlighted with a red rectangular box. Other fields include 'URI Type' (set to 'SIP'), 'Location' (set to 'Cloud'), 'Prefix', 'National Prefix' (set to '0'), 'International Prefix' (set to '00'), 'Country Code', 'Name Priority' (set to 'System Default'), and 'Description'. On the right side, there are checkboxes for 'In Service' and 'Check OOS', both of which are checked. There are also several dropdown menus for 'Session Timers', 'Refresh Method', 'Timer (seconds)', 'Forwarding and Twinning', 'Originator number', 'Send Caller ID', 'Redirect and Transfer', 'Incoming Supervised REFER', 'Outgoing Supervised REFER', 'Send 302 Moved Temporarily', and 'Outgoing Blind REFER'.

Under the **Transport** tab, enter the Liquid IVR Server IP Address as the **ITSP Proxy Address** and set the **Layer 4 Protocol** and **Send Port**.

SIP Line Transport SIP URI VoIP SIP Credentials SIP Advanced Engineering

ITSP Proxy Address: 10.10.16.95

Network Configuration

Layer 4 Protocol: UDP Send Port: 5060

Use Network Topology Info: None Listen Port: 5060

Explicit DNS Server(s): 0 . 0 . 0 . 0 0 . 0 . 0 . 0

Calls Route via Registrar:

Separate Registrar:

Under the **SIP URI** tab, click on **Add** and select **Auto** for **Local URI**, **Contact**, **Display Name** and **Diversion Header**. Set the **Incoming** and **Outgoing Group** to the SIP Line number. Click on **OK** to save changes.

SIP Line Transport SIP URI VoIP SIP Credentials SIP Advanced Engineering

URI	Groups	Local URI	Contact	Display Name	Identity	Header	Originator Number	Send Caller ID	Diversion Header
1	2	Auto	Auto	Auto	Auto	PAI		None	Auto

Edit URI

Local URI: Auto

Contact: Auto

Display Name: Auto

Identity

Identity: Auto

Header: P Asserted ID

Forwarding And Twinning

Originator Number:

Send Caller Id: None

Diversion Header: Auto

Registration: 0; <None>

Incoming Group: 9

Outgoing Group: 9

Max Sessions: 10

OK Cancel

Under the **SIP Advanced** tab, select **Caller ID from From header** and **Send From In Clear**. Click on the **OK** button (not shown) to save.

5.4. Administer a Short code for routing calls to Liquid IVR

A short code is required to allow calls to be made to Liquid IVR and record and distribute alarms. From **Solution** → **Short Code** right click and select **New** (not shown). Enter the number you wish to dial to reach the Liquid IVR as the **Code**. Select **Dial** from the **Feature** drop down, enter the same number as **Code** in **Telephone Number** and select the **SIP Line Group ID** used to dial Liquid IVR. Click on the **OK** button (not shown) to save.

Configuration	Short Code	895N;; Dial*																																											
<ul style="list-style-type: none"> BOOTP (6) Operator (3) Solution <ul style="list-style-type: none"> User (41) Group (8) Short Code (52) Directory(0) Time Profile(0) Account Code(5) User Rights(9) Location(2) IPOSE1635 System (1) Line (8) 	<table border="1"> <thead> <tr> <th>Code</th> <th>Telephone Number</th> <th>Featu</th> </tr> </thead> <tbody> <tr> <td>*66*N#</td> <td>N</td> <td>Conf</td> </tr> <tr> <td>*0131827N;</td> <td>0131827N</td> <td>Dial</td> </tr> <tr> <td>*10N;</td> <td>10N</td> <td>Dial</td> </tr> <tr> <td>*113;</td> <td>2570001</td> <td>Dial E</td> </tr> <tr> <td>*3N;</td> <td>3N</td> <td>Dial</td> </tr> <tr> <td>*807N;</td> <td>807N</td> <td>Dial</td> </tr> <tr> <td>*823N;</td> <td>823N</td> <td>Dial</td> </tr> <tr> <td>*827N;</td> <td>827N</td> <td>Dial</td> </tr> </tbody> </table>	Code	Telephone Number	Featu	*66*N#	N	Conf	*0131827N;	0131827N	Dial	*10N;	10N	Dial	*113;	2570001	Dial E	*3N;	3N	Dial	*807N;	807N	Dial	*823N;	823N	Dial	*827N;	827N	Dial	<table border="1"> <thead> <tr> <th colspan="2">Short Code</th> </tr> </thead> <tbody> <tr> <td>Code</td> <td>895N;</td> </tr> <tr> <td>Feature</td> <td>Dial</td> </tr> <tr> <td>Telephone Number</td> <td>895N</td> </tr> <tr> <td>Line Group ID</td> <td>9</td> </tr> <tr> <td>Locale</td> <td></td> </tr> <tr> <td>Force Account Code</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Force Authorization Code</td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Short Code		Code	895N;	Feature	Dial	Telephone Number	895N	Line Group ID	9	Locale		Force Account Code	<input type="checkbox"/>	Force Authorization Code	<input type="checkbox"/>
Code	Telephone Number	Featu																																											
*66*N#	N	Conf																																											
*0131827N;	0131827N	Dial																																											
*10N;	10N	Dial																																											
*113;	2570001	Dial E																																											
*3N;	3N	Dial																																											
*807N;	807N	Dial																																											
*823N;	823N	Dial																																											
*827N;	827N	Dial																																											
Short Code																																													
Code	895N;																																												
Feature	Dial																																												
Telephone Number	895N																																												
Line Group ID	9																																												
Locale																																													
Force Account Code	<input type="checkbox"/>																																												
Force Authorization Code	<input type="checkbox"/>																																												

5.5.

After all IP Office configurations have been completed, it needs to be saved and the IP Office must be rebooted.

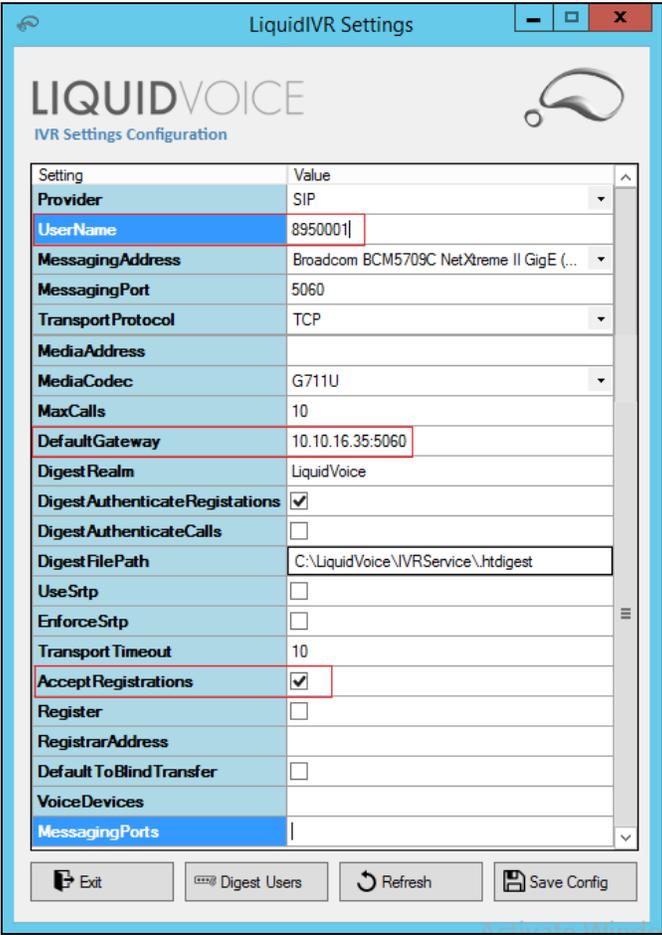
6. Configure Liquid Voice, Liquid Interactive Voice Response

Liquid IVR installation steps are not described in these Application Notes. This section describes the configuration required to connect Liquid IVR to IP Office as a SIP Line or SIP User. For installation steps reference the documentation in **Section 9**

6.1. Configure Liquid IVR as SIP Registrar

The Liquid IVR System can be configured to accept registration requests from IP Office. This is used when Liquid IVR is configured as a SIP trunk on IP Office.

The Liquid IVR System Service configurator provides a GUI that can be used to configure settings on the IVR. The configurator is run on the Liquid IVR server by launching the application **LiquidIvrConfig.exe** from the installation directory. Enter the **UserName** as a number that the IP Office can dial to reach the IVR added in **Section 5.4**. Enter the **Default Gateway** as the IP Address:Port set in **Section 5.3**. Make sure that the **Accept Registrations** box is checked.



The screenshot shows the 'LiquidIVR Settings' window with the 'LIQUIDVOICE IVR Settings Configuration' interface. The settings are as follows:

Setting	Value
Provider	SIP
UserName	8950001
MessagingAddress	Broadcom BCM5709C NetXtreme II GigE (...)
MessagingPort	5060
TransportProtocol	TCP
MediaAddress	
MediaCodec	G711U
MaxCalls	10
DefaultGateway	10.10.16.35:5060
Digest Realm	LiquidVoice
Digest Authenticate Registrations	<input checked="" type="checkbox"/>
Digest Authenticate Calls	<input type="checkbox"/>
Digest File Path	C:\LiquidVoice\NVRService\htdigest
Use SrtP	<input type="checkbox"/>
Enforce SrtP	<input type="checkbox"/>
Transport Timeout	10
Accept Registrations	<input checked="" type="checkbox"/>
Register	<input type="checkbox"/>
Registrar Address	
Default To Blind Transfer	<input type="checkbox"/>
Voice Devices	
Messaging Ports	

At the bottom of the window, there are buttons for 'Exit', 'Digest Users', 'Refresh', and 'Save Config'.

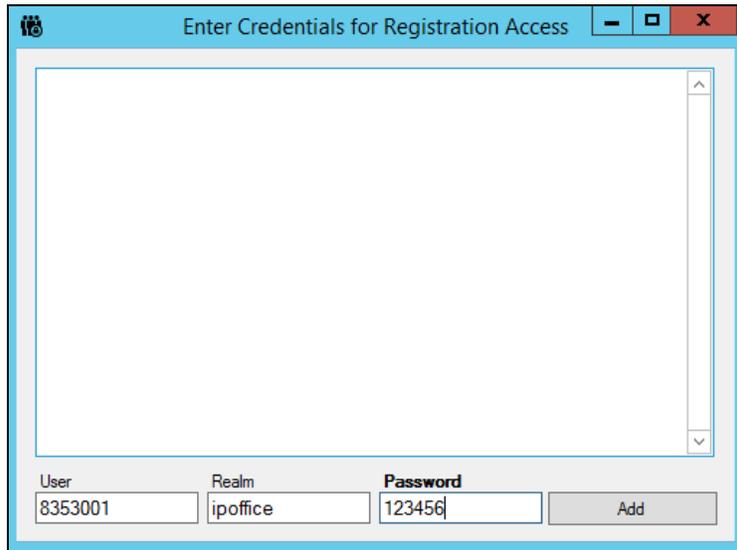
6.2. Configure Liquid IVR to Register as a SIP Endpoint

The Liquid IVR system can be configured to register with the IP Office. Enter the **UserName** configured in **Section 5.5**. Check the Register option and enter the **RegistrarAddress** as the IP Address and Port configured in **Section 5.2**. Enter numbers for the **VoiceDevices** separated by a , (These can be any number). The amount of **VoiceDevices** added correspond to the number of concurrent calls the IVR can handle. Enter **MessagingPorts** to correspond with used by the the **VoiceDevices**. Click on **Digest Users** to add the registration credentials for the SIP Endpoint.

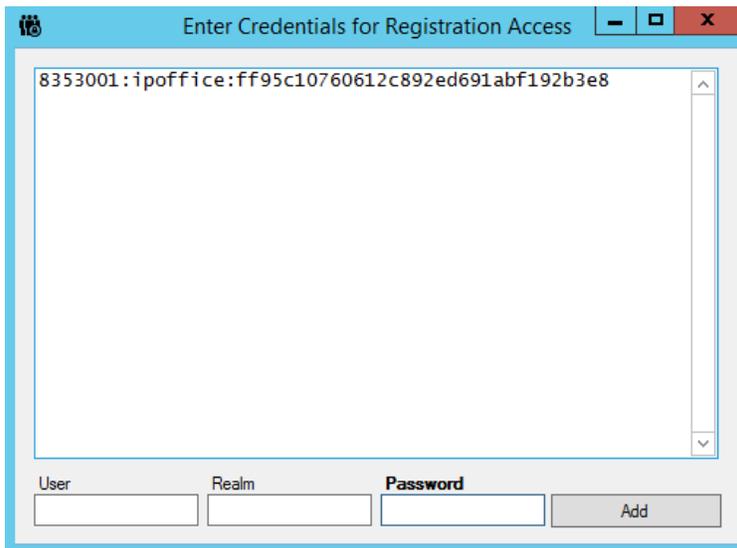
Setting	Value
Provider	SIP
UserName	8353001
MessagingAddress	Broadcom BCM5709C NetXtreme II GigE (...)
MessagingPort	5060
TransportProtocol	UDP
MediaAddress	
MediaCodec	G711U
MaxCalls	10
DefaultGateway	10.10.16.35:5060
DigestRealm	LiquidVoice
DigestAuthenticateRegistrations	<input checked="" type="checkbox"/>
DigestAuthenticateCalls	<input type="checkbox"/>
DigestFilePath	C:\LiquidVoice\IVRService\htdigest
UseSntp	<input type="checkbox"/>
EnforceSntp	<input type="checkbox"/>
Transport Timeout	10
Accept Registrations	<input checked="" type="checkbox"/>
Register	<input checked="" type="checkbox"/>
RegistrarAddress	10.10.16.35:5070
Default To Blind Transfer	<input type="checkbox"/>
VoiceDevices	100,101,102,103
MessagingPorts	

Exit Digest Users Refresh Save Config

Enter the **User** configured in **Section 5.5**, **Realm** is not important but is required so **ipoffice** was used and **Password** configured in **Section 5.5**. Click on **Add** to add the digest to the list



When all digests have been added the window can be closed and a prompt will pop up asking to save the entries (not shown).



7. Verification Steps

This section describes the checks that can be carried out to verify the connection between Liquid IVR and IP Office

7.1. IP Office Verification

Using **IP Office System Status** select **Trunks** → **Line:x** where x is the line added above. Check that the Trunk shows **In Service** and that the trunks are Idle or Active

SIP Trunk Summary

Line Service State: In Service
 Peer Domain Name: devconnect.local
 Resolved Address: 10.10.16.95
 Line Number: 9
 Number of Administered Channels: 10
 Number of Channels in Use: 0
 Administered Compression: G711 Mu, G729 A, G711 A
 Enable Faststart: Off
 Silence Suppression: Off
 Layer 4 Protocol: UDP
 SIP Trunk Channel Licenses: 256
 SIP Trunk Channel Licenses in Use: 0
 SIP Device Features: REFER (Incoming and Outgoing)

Channel Number	URI Gr...	Call Ref	Current State	Time in State	Remote Media Address	Codec	Connection Type	Caller ID or Dialed Digits	Other Party
1			Idle	00:05:48					
2			Idle	00:05:59					
3			Idle	00:09:30					
4			Idle	00:11:15					
5			Idle	00:11:15					
6			Idle	00:11:15					
7			Idle	00:11:15					
8			Idle	00:11:15					
9			Idle	00:11:15					
10			Idle	00:11:15					

Using **IP Office System Status** select **SIP Extensions** → **Standard SIP Extensions** → **Extension** where extension is the User added to IP Office and Liquid IVR . Check that Registration information is shown.

Extension Status

Extension Number: 8353001
 IP address: 10.10.16.95
 Standard Location: None
 Registrar: Primary
 Telephone Type: Unknown SIP Device
 User Agent: LiquidVoice.Sip.SipStack V1.6.1.7
 Layer 4 Protocol: UDP
 Current User Extension Number: 8353001
 Current User Name: LVSmartInt
 Forwarding: Off
 Twinning: Off
 Do Not Disturb: Off
 Message Waiting: Off
 Phone Manager Type: None
 SIP Device Features: REFER
 License Reserved: No
 Last Date and Time License Allocated: 22/06/2017 09:12:08
 Packet Loss Fraction: Connection Type:
 Jitter: Codec:
 Round Trip Delay: Remote Media Address:

Call Ref	Current State	Time in State	Calling Number or Called Number
	Idle	00:00:11	

7.2. Liquid IVR Verification

The connection to Liquid IVR can be verified by calling the numbers administered in **Section 5.4** and the IVR script being activated correctly.

8. Conclusion

These Application Notes describe the configuration steps required for Liquid Voice, Liquid IVR to interoperate with Avaya IP Office Server Edition with 500v2 Expansion. All feature functionality and serviceability test cases were completed successfully as outlined in **Section 2.2**.

9. Additional References

This section references the Avaya and Liquid Voice product documentation that are relevant to these Application Notes.

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

[1] *Administering Avaya IP Office Platform with Manager, Id: 101005673*

[2] *Using IP Office Platform System Status, Id: 101005061*

Product documentation for Liquid Voice Liquid IVR can be obtained by visiting the following website <http://www.liquidvoice.com>.

©2017 Avaya Inc. All Rights Reserved.

Avaya and the Avaya Logo are trademarks of Avaya Inc. All trademarks identified by ® and ™ are registered trademarks or trademarks, respectively, of Avaya Inc. All other trademarks are the property of their respective owners. The information provided in these Application Notes is subject to change without notice. The configurations, technical data, and recommendations provided in these Application Notes are believed to be accurate and dependable, but are presented without express or implied warranty. Users are responsible for their application of any products specified in these Application Notes.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.