Avaya Solution & Interoperability Test Lab

Application Notes for Configuring Avaya IP Office Server Edition 10.1 to interoperate with Zenitel Turbine - Issue 1.0

Abstract

These Application Notes describe the configuration steps required for Zenitel Turbine to interoperate with Avaya IP Office Server Edition 10.1. The Zenitel Turbine is an IP Intercom that supports voice transmission using the Session Initiation Protocol (SIP).

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 for Zenitel Turbine IP Intercom Substation to interoperate with Avaya IP Office. The Zenitel Turbine IP Intercom Substations is a communicator that supports voice transmission using the Session Initiation Protocol (SIP) in harsh environments in sectors like Maritime, Oil&Gas, Heavy Industry, Transportation, Building security and Public safety. In the compliance testing, the Zenitel Turbine IP Intercom Substation was set up as a SIP user on Avaya IP Office and underwent testing of various call scenarios with other Avaya telephones and Zenitel Turbine IP Intercom Substations.

2. General Test Approach and Test Results

The general test approach was to place calls to and from Turbine and exercise basic telephone operations. For serviceability testing, failures such as cable pulls and hardware resets were performed.

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.

Avaya recommends our customers implement Avaya solutions using appropriate security and encryption capabilities enabled by our products. The testing referenced in these DevConnect Application Notes included the enablement of supported encryption capabilities in the Avaya products. Readers should consult the appropriate Avaya product documentation for further information regarding security and encryption capabilities supported by those Avaya products.

Support for these security and encryption capabilities in any non-Avaya solution component is the responsibility of each individual vendor. Readers should consult the appropriate vendor-supplied product documentation for more information regarding those products.

For the testing associated with these Application Notes, the interface between Avaya systems and the Zenitel Turbine IP Intercoms utilized enabled capabilities of TLS/SRTP.

2.1. Interoperability Compliance Testing

The interoperability compliance test included feature and serviceability testing. TCIS 1-3,TCIS 4-5, TCIV-3/TCIV-6, TFIE 1-2 and TMIS-1 models were tested. The feature testing was to verify that:

- Turbine successfully registers with IP Office using IP address and FQDN using UDP, TCP and TLS
- Turbine successfully establishes audio calls with good quality RTP and SRTP audio to Avaya H.323, SIP and digital endpoints registered to IP office
- Turbine successfully establishes audio calls with PSTN.
- Turbine IP successfully negotiates the appropriate audio codec.
- DTMF tones could be passed successfully to energize relay on Turbine unit and switch audio direction.
- Turbine successfully calls multiple destinations using a cover answer group.
- Turbine successfully calls a variety of endpoints in its call list.
- Correct handling of forwarded calls, cover paths and cover answer groups.
- Video was tested on the TCIV-3 model.

The serviceability testing focused on verifying the ability of Turbine to recover from adverse conditions, such as disconnecting/reconnecting the Ethernet cable to the devices and denying service on IP Office.

2.2. Test Results

All test cases passed successfully.

2.3. Support

Technical support on Zenitel Turbine can be obtained through the following:

- **Phone:** +47 4000 2700
- **Web:** https://www.zenitel.com/customer-service

3. Reference Configuration

Figure 1 illustrates a test configuration that was used to compliance test the interoperability of Turbine with IP Office. The configuration consists of IP Office Server Edition and 500v2 Expansion. IP Office has connections to 96x1 IP (H.323) deskphones. IP Office has SIP registrations with Turbine and 96x1 IP (SIP) deskphones. An ISDN-PRI trunk connects IP Office to the PSTN.

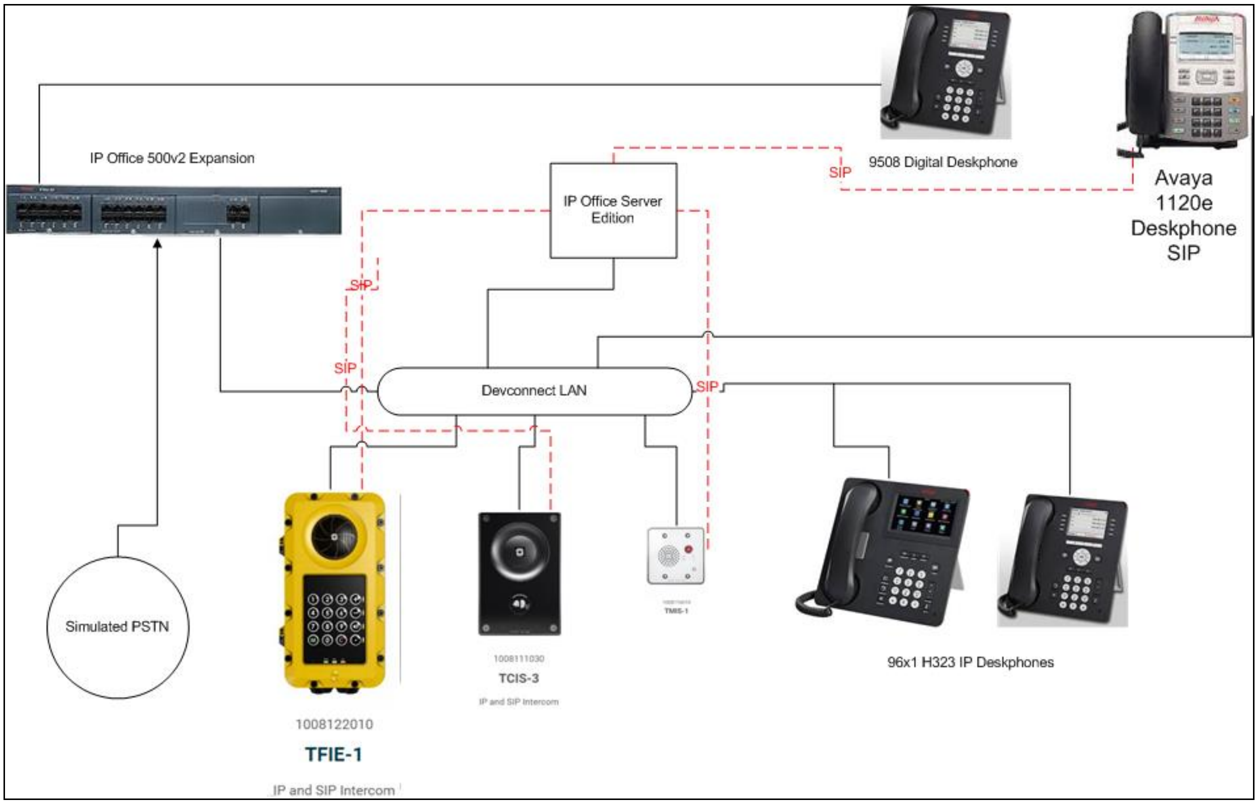


Figure 1: Avaya IP Office with Zenitel Turbine Configuration

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	10.1.0.0.0 Build 237
Avaya IP Office 500v2	10.1.0.0.0 Build 237
Avaya 1120 SIP	SIP 1120e.04.04.23.00
Avaya 9508 Digital	NA
Avaya 9608G IP Telephone H323	6.6401
Zenitel Turbine	4.7.3

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**.**

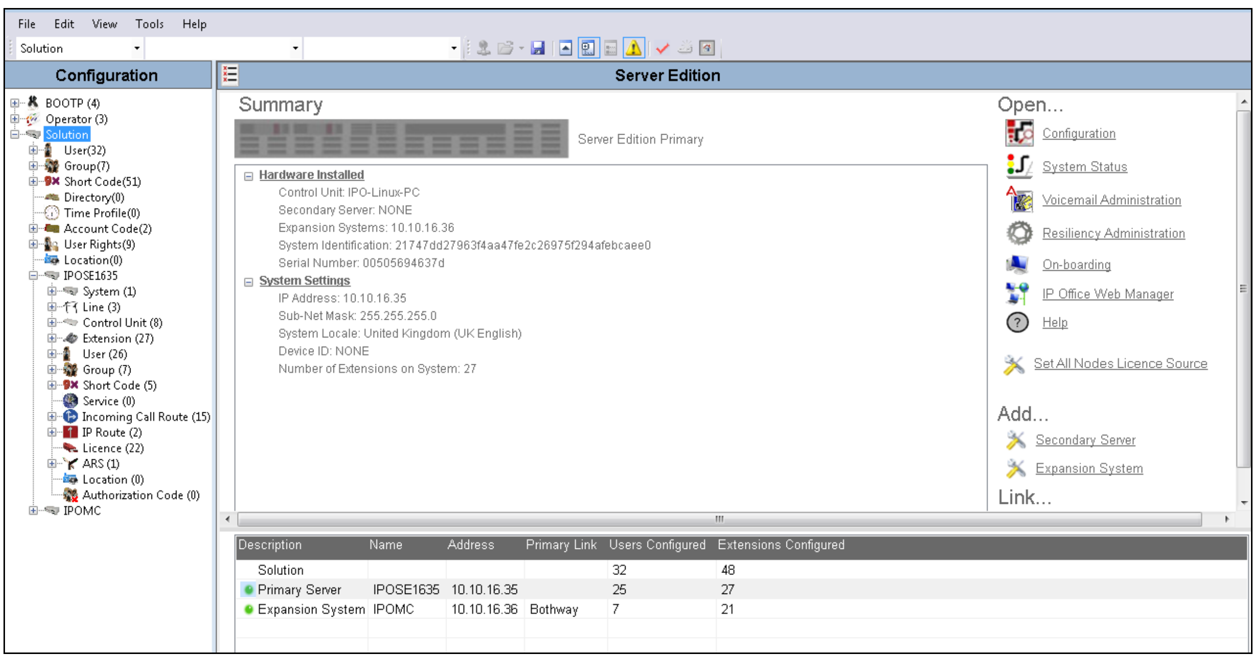
5. Avaya IP Office Configuration

Configuration and verification operations on the Avaya IP Office illustrated in this section were all performed using Avaya IP Office Manager. The information provided in this section describes the configuration of the Avaya IP Office for this solution. It is implied a working system is already in place. For all other provisioning information such as initial installation and configuration, please refer to the product documentation in **Section 9**. The configuration operations described in this section can be summarized as follows:

- Launch Avaya IP Office Manager
- LAN1 Configuration
- VoIP Configuration
- Create a SIP Extension for the Turbine Intercom
- Create a User for the Turbine Intercom
- Save Configuration

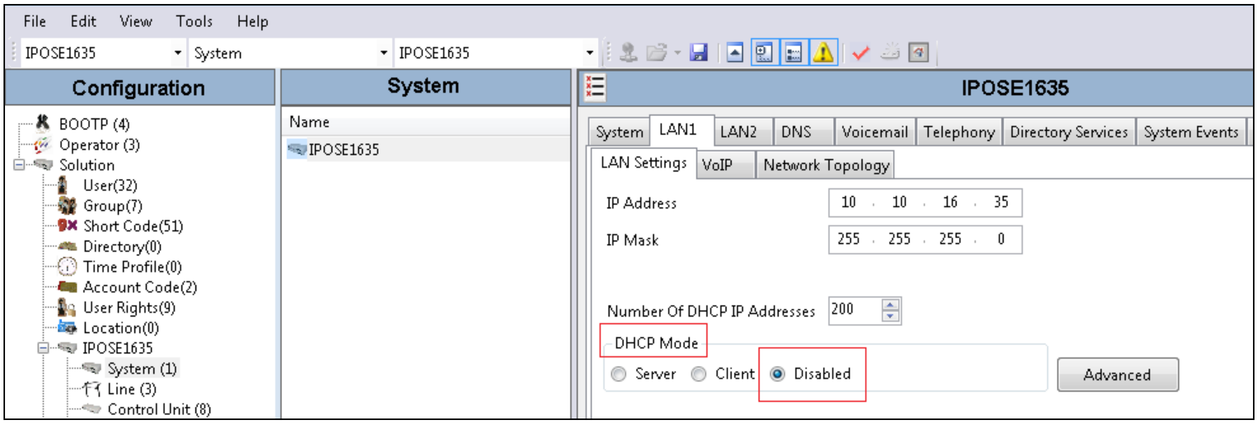
5.1. Launch Avaya IP Office Manager

From the Avaya IP Office Manager PC, go to **Start→Programs→IP Office→Manager** to launch the Manager application. Log in to Avaya IP Office using the appropriate credentials to receive its configuration (not shown). In the IP Office window, click on Configuration. During compliance testing the System was called IPOSE1635.



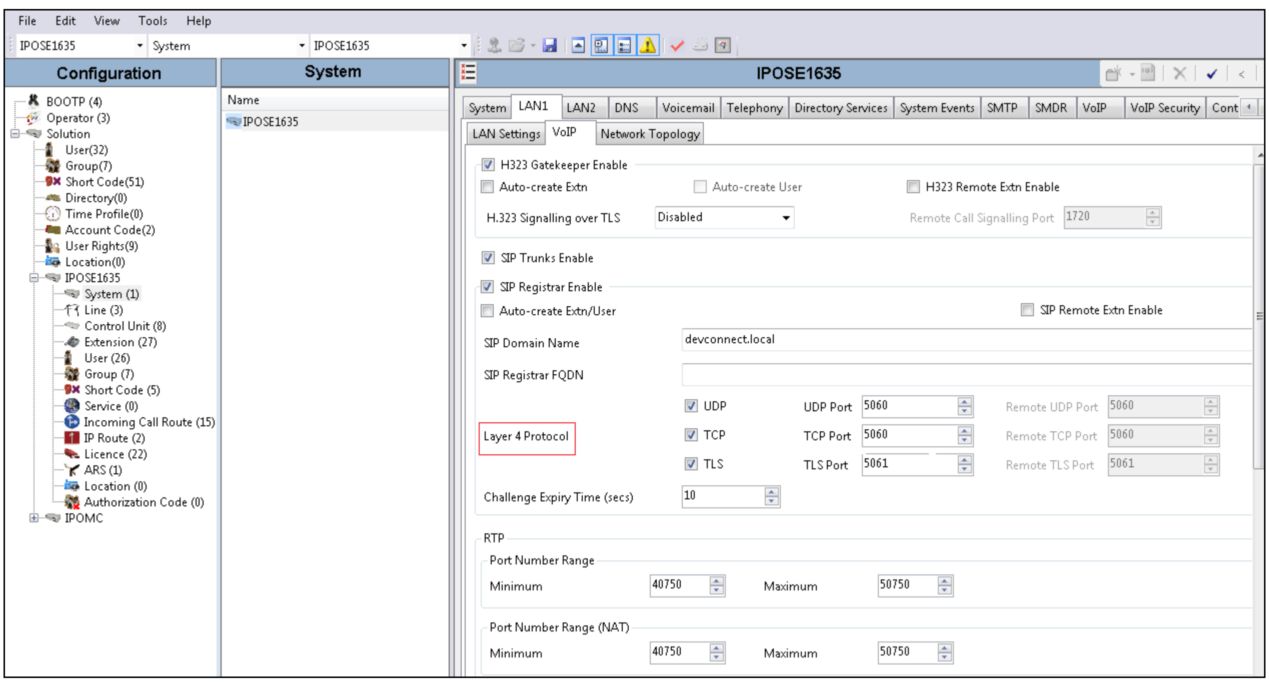
5.2. LAN1 configuration

For the Turbine handsets to communicate with the IP Office **DHCP MODE** must be disabled. To disable DHCP, select **IPOSE1635 → System (1)** then on the **LAN1** tab followed by the **LAN Settings** tab click on the **Disabled** radio button in the **DHCP Mode** section. Click the **OK** button (not shown) to save.

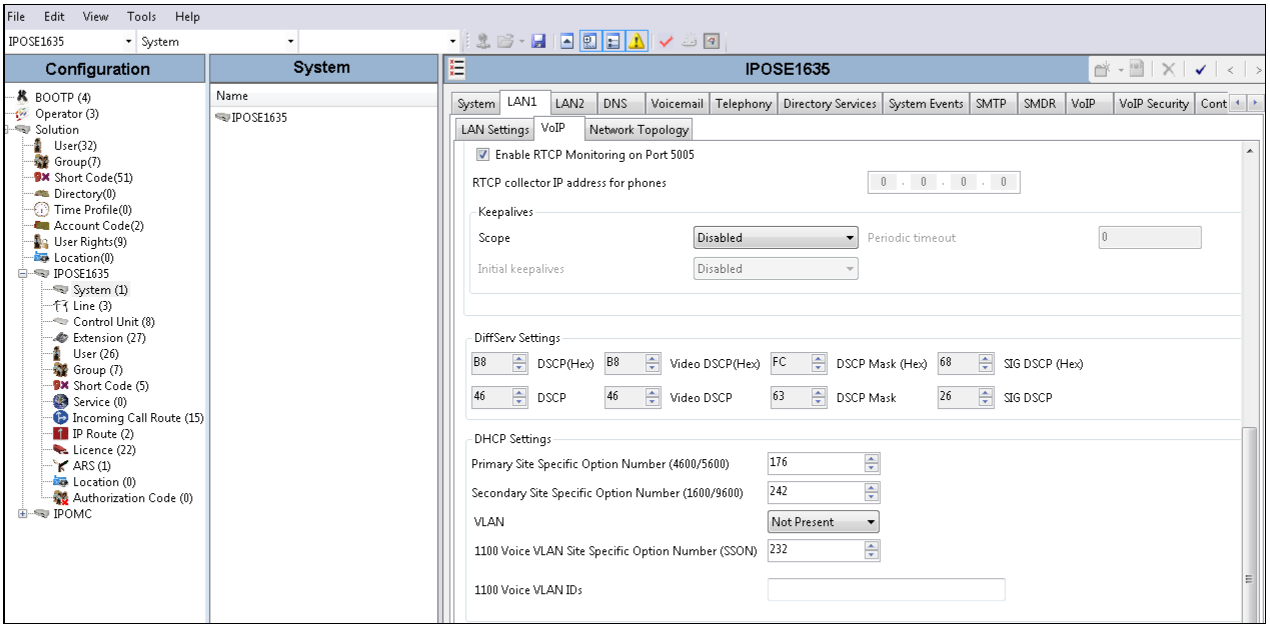


5.3. VoIP Configuration

Select the **VoIP** tab and in the **Layer 4 Protocol** section check the **UDP**, **TCP** and **TLS** check boxes and select **Port 5060** and **5061** from the dropdown boxes. Using the scroll bar on the right hand side, scroll down to the **DiffServ Settings** section.

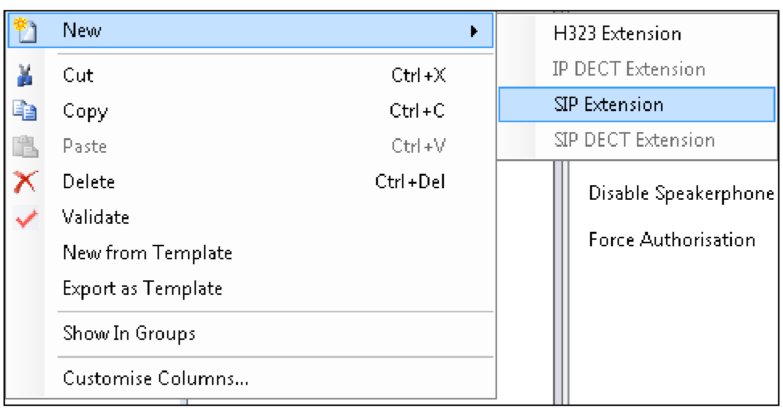


At the **DiffServ Settings** section select **46** from the **DSCP** drop down box and **26** from the **SIG DSCP** dropdown box. Click the **OK** button to save.

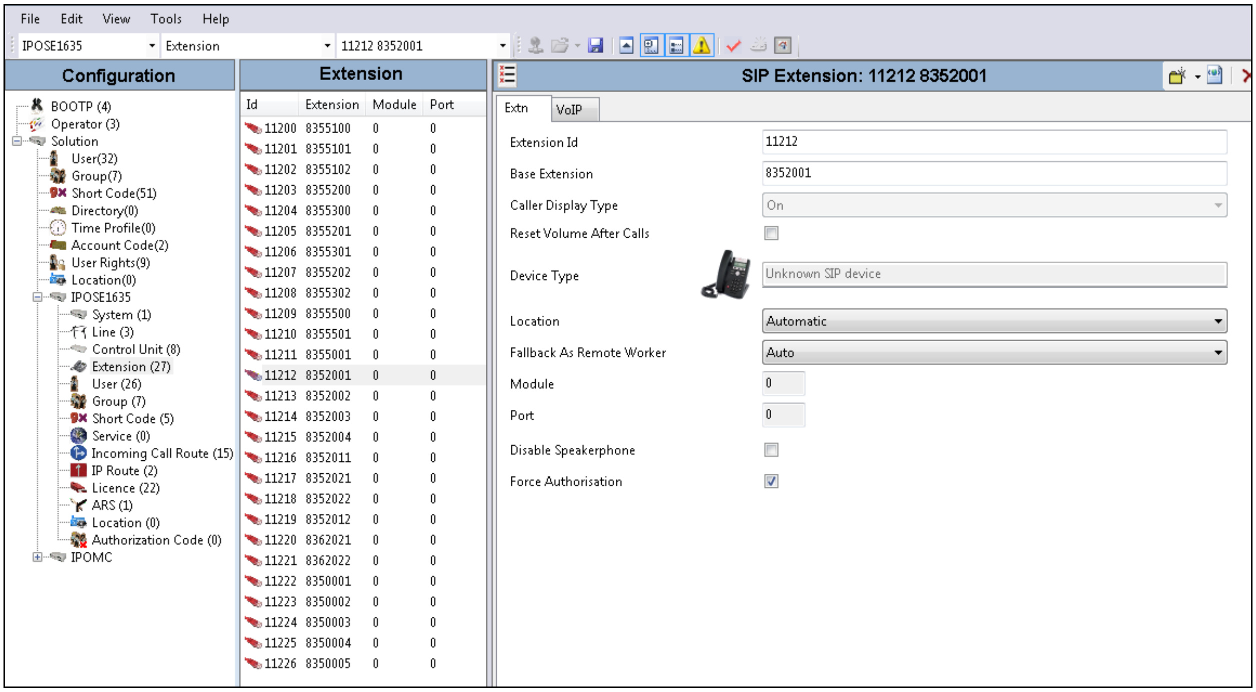


5.4. Create a SIP Extension for the Turbine Intercom

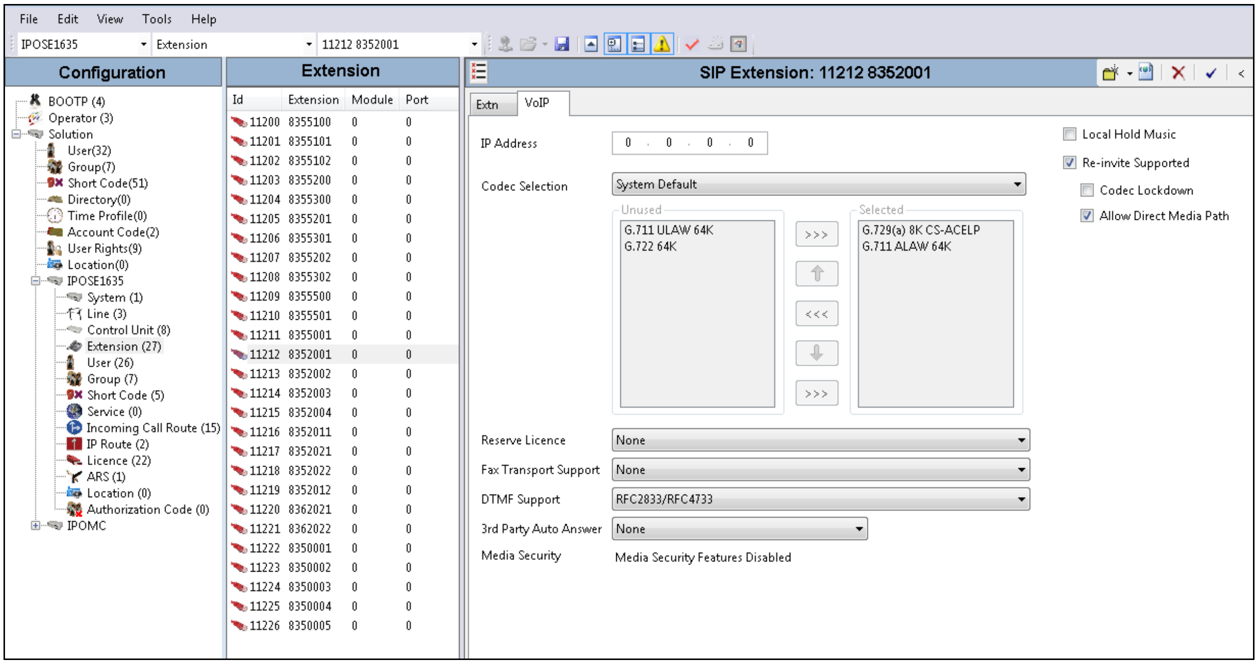
The DECT Handsets are configured as SIP Extensions on the IP Office. From the Configuration Tree click on **Extension** then right click and select **New** followed by **SIP Extension**. The example below shows an extension 8352001; repeat these steps for each DECT Handset extension.



When the new window opens enter the **Base Extension**. The Extension ID will be automatically filled in.

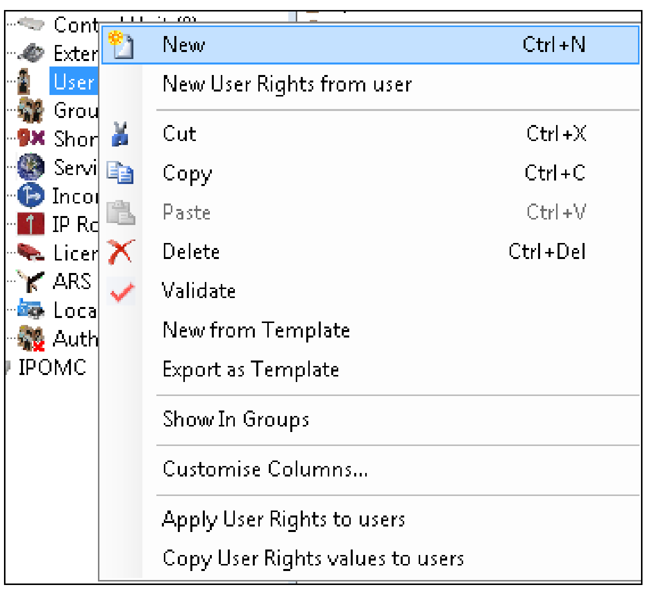


Click on the **VoIP** tab, and when the **VoIP** tab opens click the **Allow Direct Media Path** check box. Click the **OK** button to save.



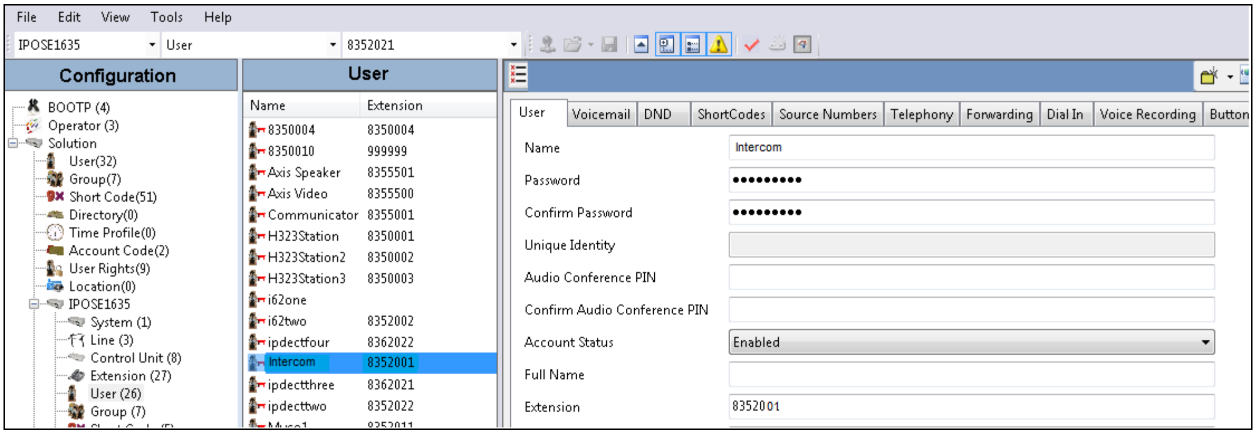
5.5. Create a User for the Turbine Intercom

A user must be configured for all Turbine Intercom Extensions. From the Configuration Tree, click on **User** then right click and select **New**.



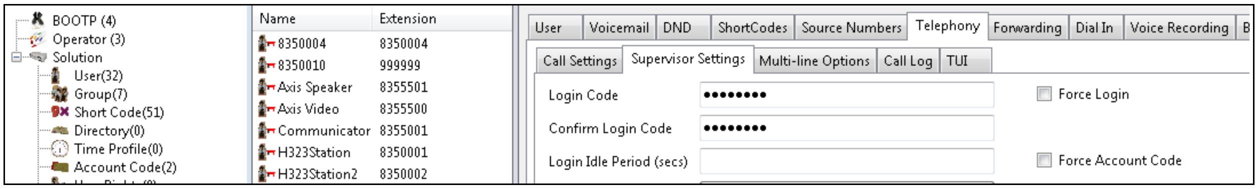
When the **User** window opens, select the **User** tab and enter the follow:

- **Name** Enter an name for this user, i.e. **Intercom**
- **Password** Enter the Password
- **Confirm Password** Confirm the Password
- **Extension** Enter the Extension which was created previously, i.e. **Section 5.4**



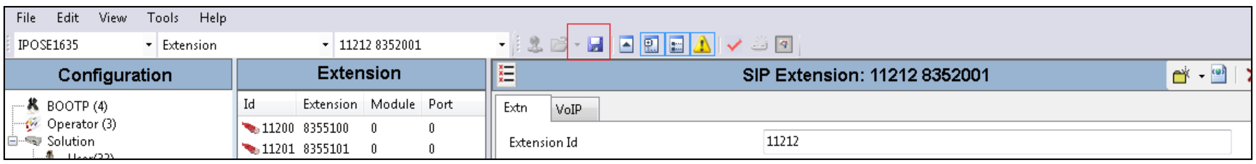
Click on **Telephony** tab followed by the **Supervisor Settings** tab and enter a Login Code in the **Login Code** box. Click the **OK** button (not shown) to save.

Note: The Login Code is used by the Funktel f.airnet DECT Handset to log in to the IP Office in **Section 6**. Ensure all DECT Handset Users use the same **Login Code**.

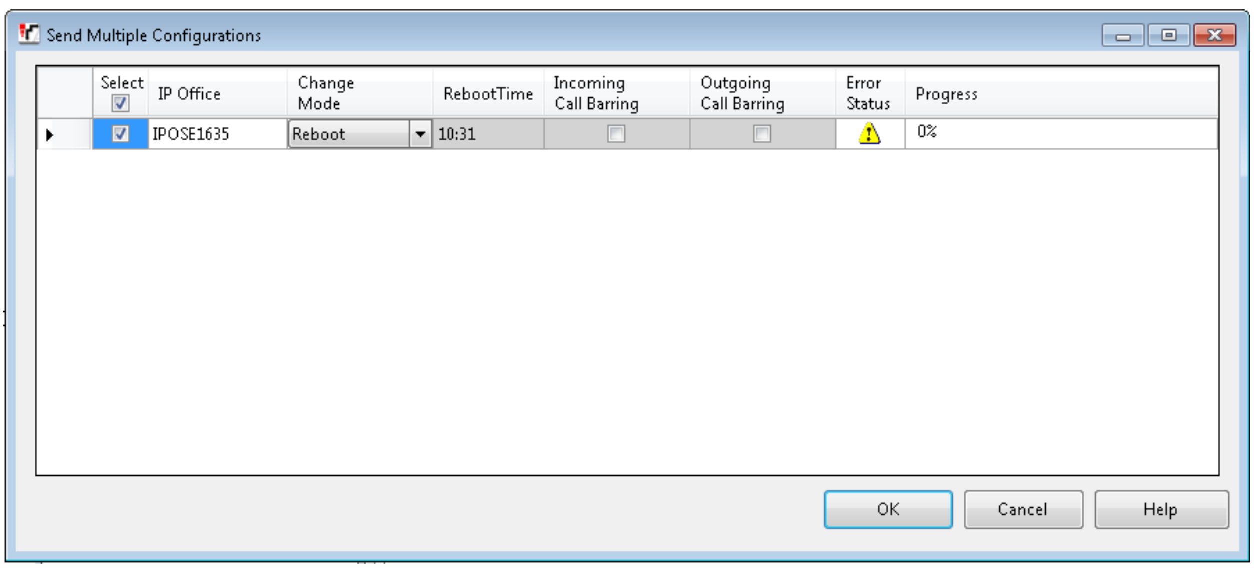


5.6. Save Configuration

Once all the configurations have been made it must be sent to the IP Office. Click on the **Save** Icon as shown below.



Once the **Save Configuration** Window opens, click the **OK** button.



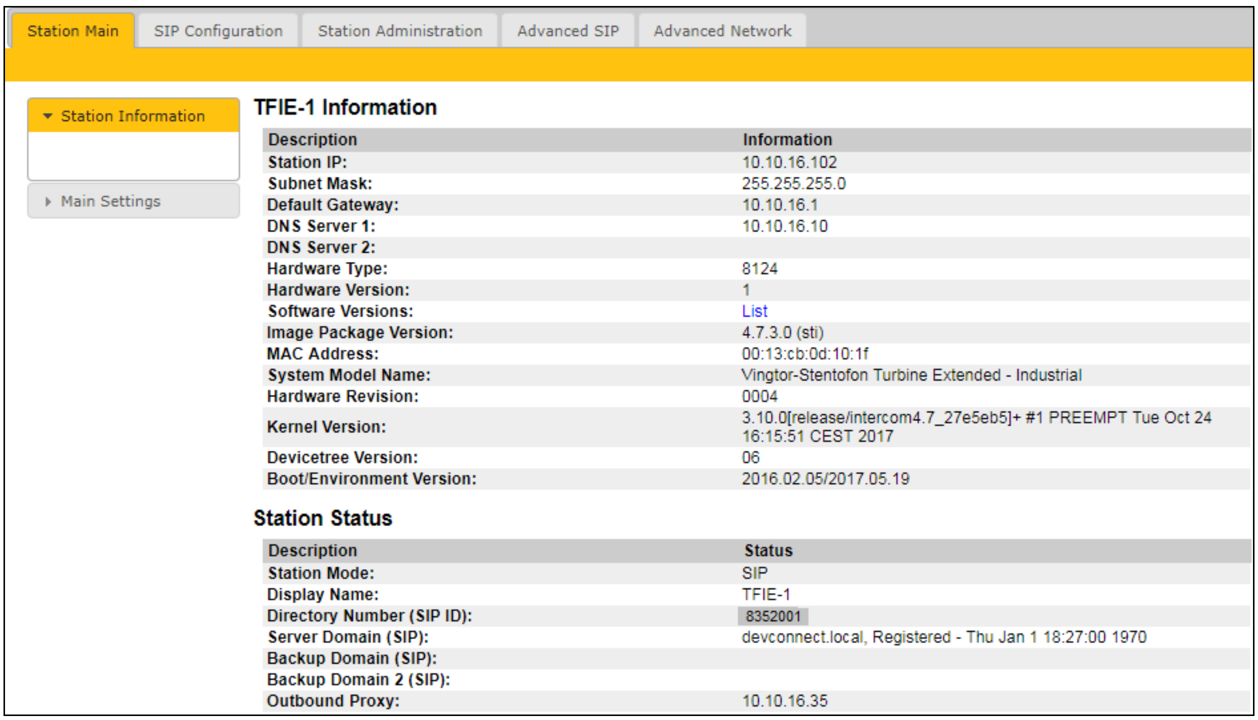
6. Configure Zenitel Turbine

The following steps detail the configuration for Turbine using the Web Interface. The steps include the following areas:

- Launch Web Interface
- Add Root Certificate
- Administer SIP Settings
- Configure Direct Access Key

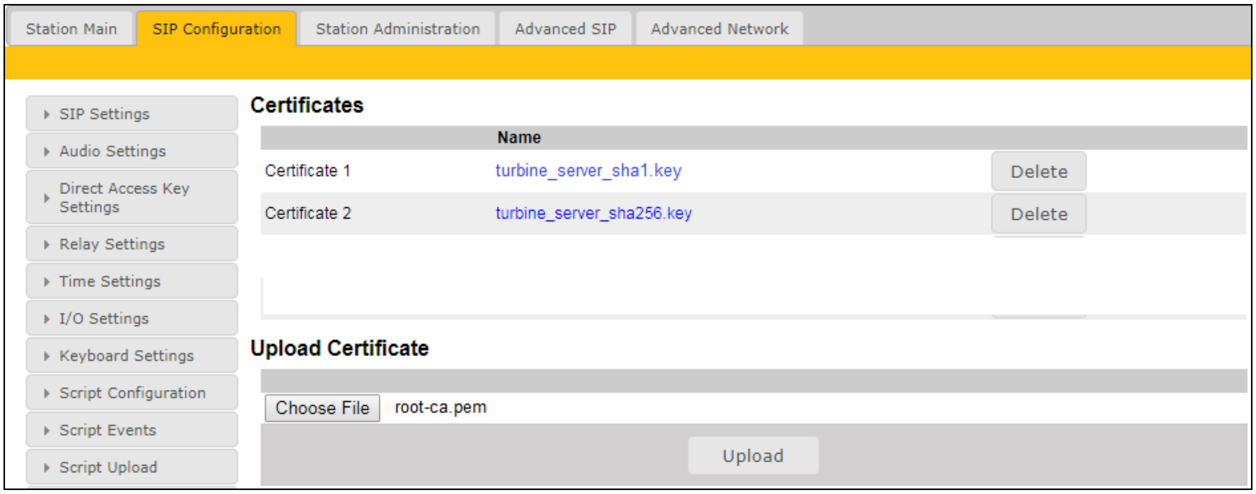
6.1. Launch Web Interface

Access the Turbine web interface, enter **http://<ipaddress>** in an Internet browser window, where **<ipaddress>** is the IP address of Turbine. Log in with the appropriate credentials. The **IP-StationWeb** screen is shown.

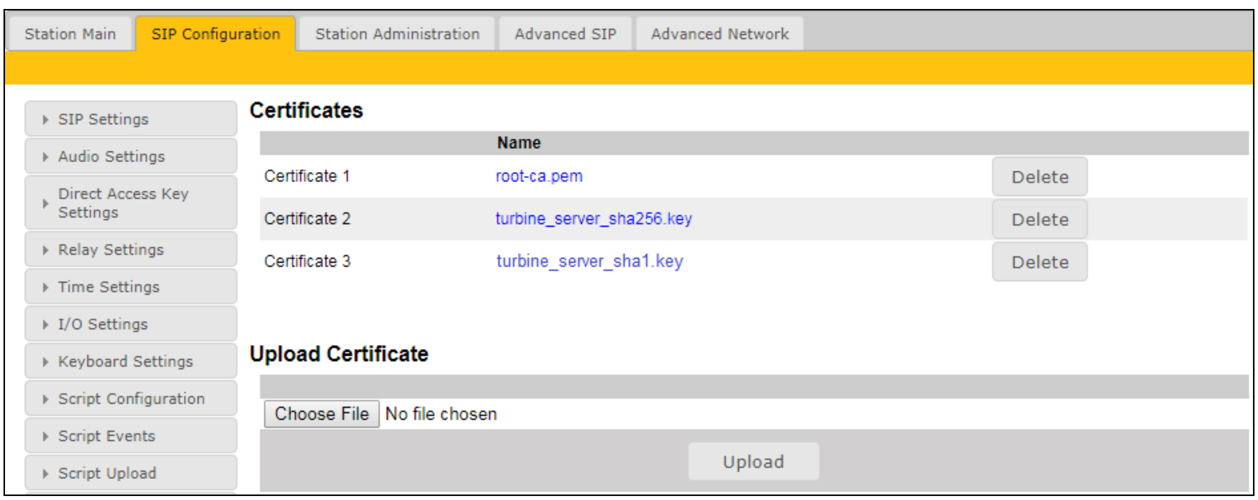


6.2. Add IP Office root Certificate

Select **SIP Configuration** tab and from the left hand menu select **Certificates**. The Turbine certificates are listed. Click on the **Choose file** and browse to the location of the root certificate .pem file. When selected click on the **Upload** button.

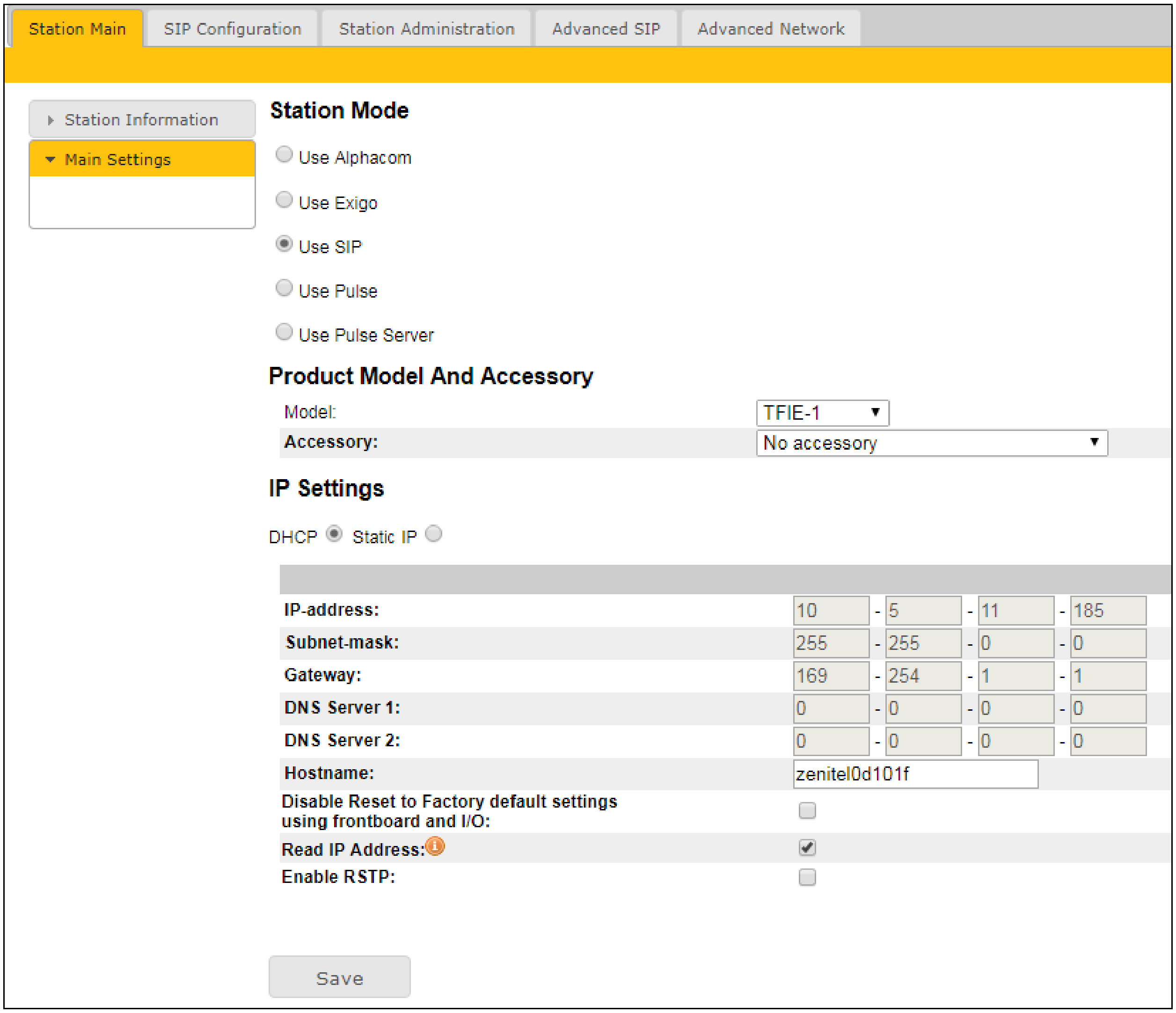


The root certificate is uploaded and is shown in the list.



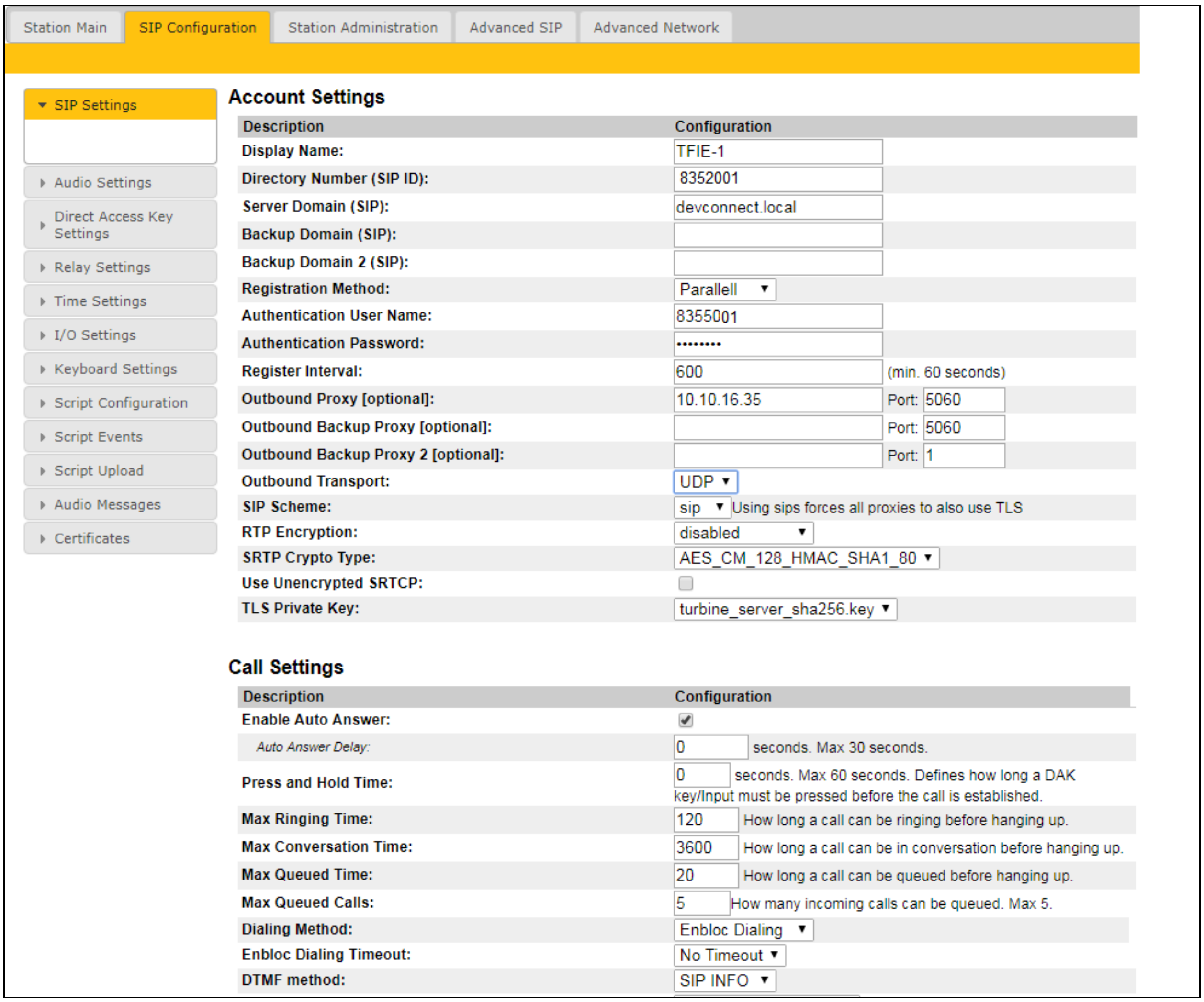
6.3. Administer SIP Settings

Select **Main Settings** from the left menu and select **Use SIP**. From the **Model:** drop down menu choose **TCIS 1-3,TCIS 4-5, TCIV-3/TCIV6, TFIE 1-2** or **Mini (TMIS-1)** depending on the model tested. Click **Save** when done. A screen will appear (not shown) to confirm the setting, click Apply and Turbine will reboot.

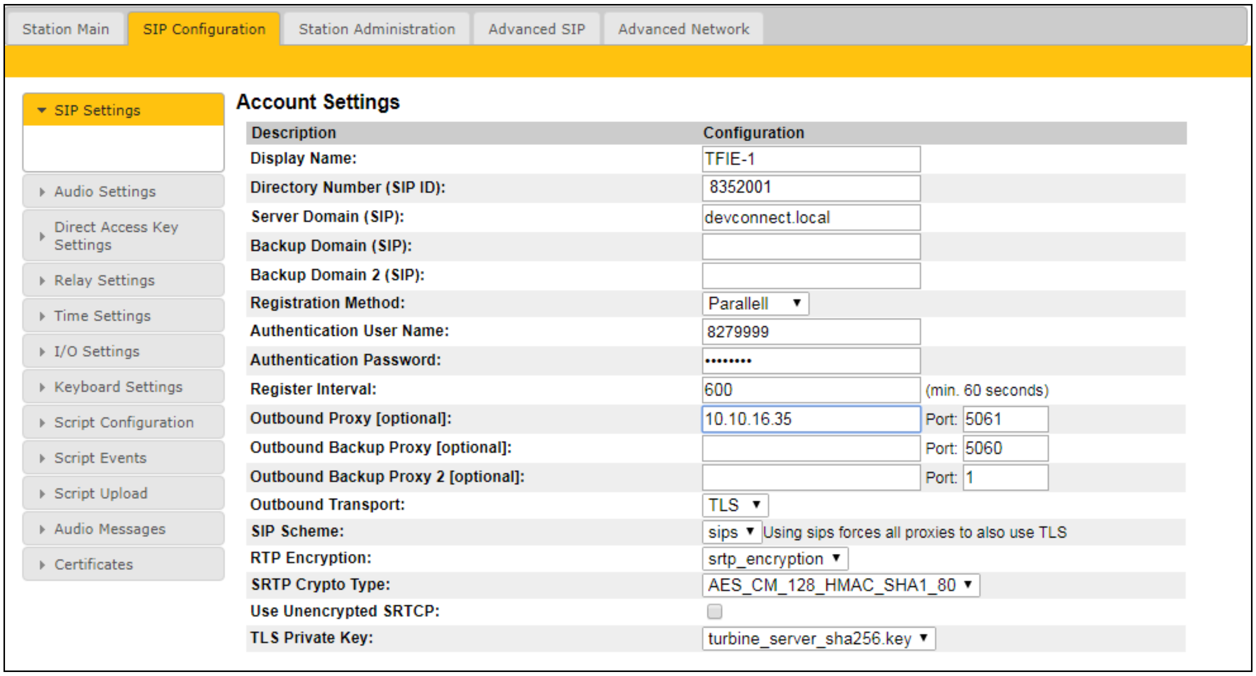


Click on **SIP Configuration → SIP Settings** and configure the following in the **Account Settings** section:

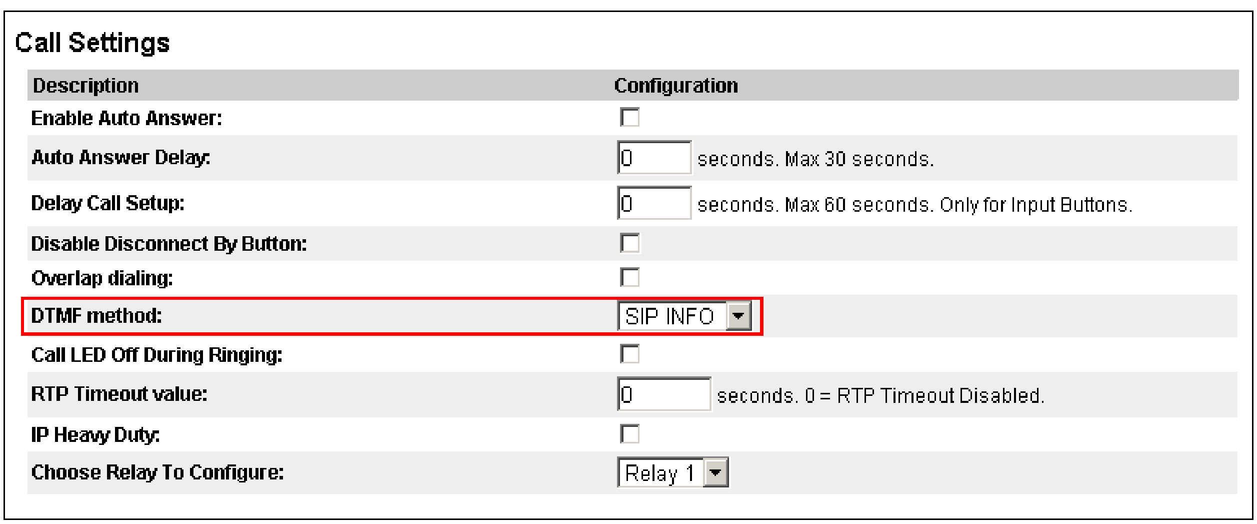
- **Display name**: Enter the desired name.
- **Directory Number (SIP ID)**: Enter a user extension administered from **Section 5.4**.
- **Server Domain (SIP)**: Enter the Domain of IP Office.
- **Authentication User Name**: Enter a user extension administered from **Section 5.4**.
- **Authentication Password**: Enter the **Communication Profile Password** from **Section 5.2**.
- **Outbound Proxy (optional)**: Enter the IP address of IP Office and **5060** as the **Port** for UDP/TCP.



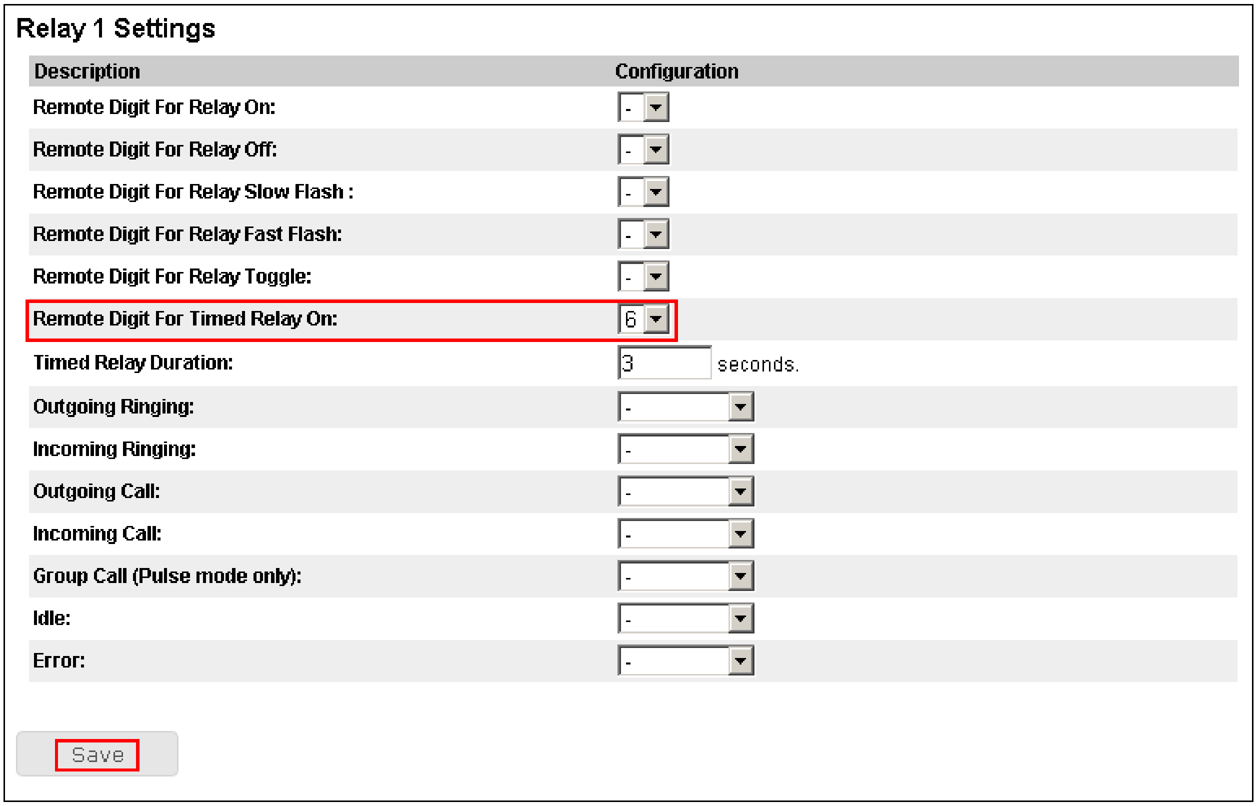
- **Outbound Proxy (optional)**: Enter the IP address of IP Office and **5061** as the **Port** for TLS
- **SIP Scheme**: Choose **sips** from the drop down.
- **RTP Encryption**: Select **srtp_encryption** from the drop down.



In the **Call Settings** section, configure as required the **DTMF Method** as **SIP INFO** or RFC 2833 (not shown), this allows DTMF tones to be either sent in-band or using SIP INFO messaging. Configure other options as required.

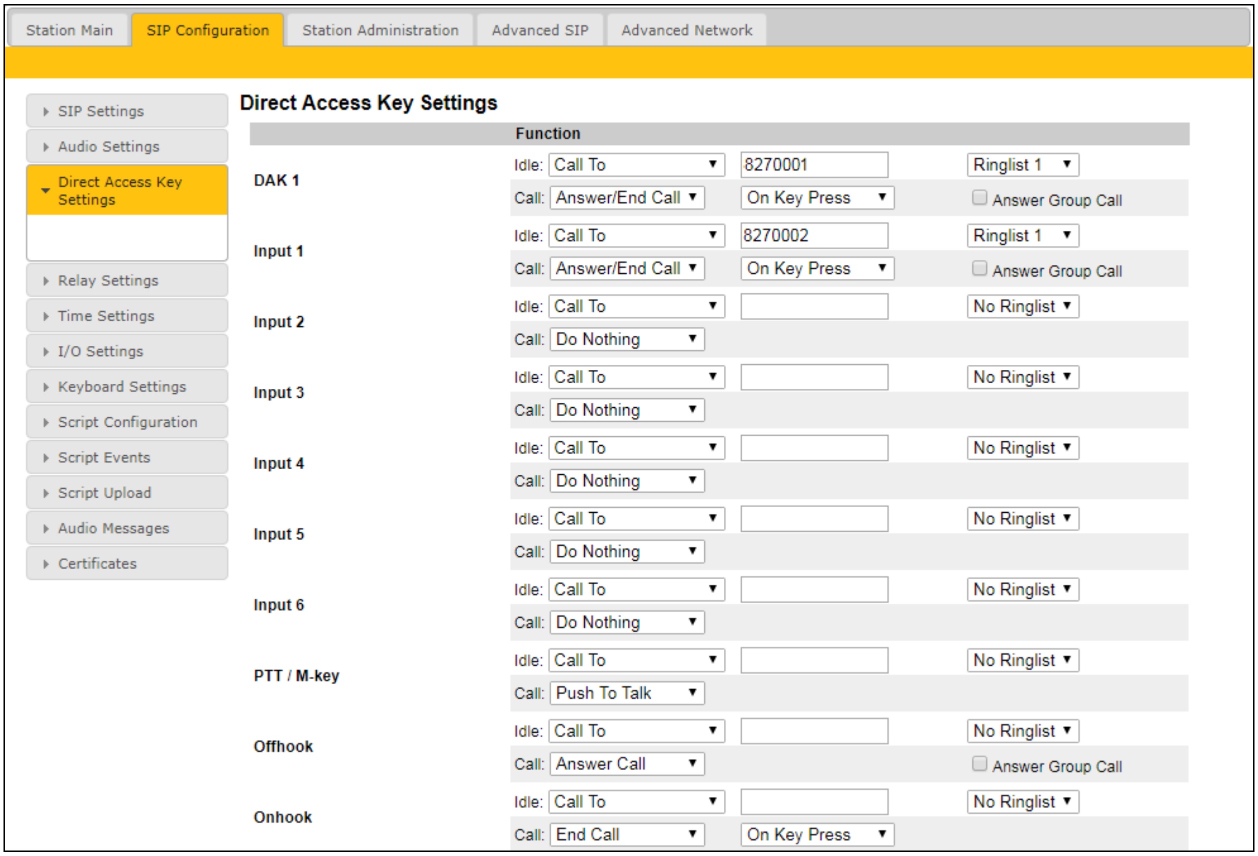


In the **Relay 1 Settings** section select a digit from the drop down box for **Remote Digit for Timed Relay On**. When this digit is pushed by a called party, the relay in the Turbine will be energized. Retain the default values for the remaining fields. Click **Save** when done. A screen will appear (not shown) to confirm the setting, click Reboot and Turbine will reboot.



6.4. Configure Direct Access Key

Select **SIP Configuration → Direct Access Key Settings** from the left menu and select **DAK 1** to configure it. In the **Idle** field, select **Call To** from the drop down and enter the extension to be called when the **DAK 1** key is pushed. In the **Call** field, select **Answer/End Call** and **On Key Press**.

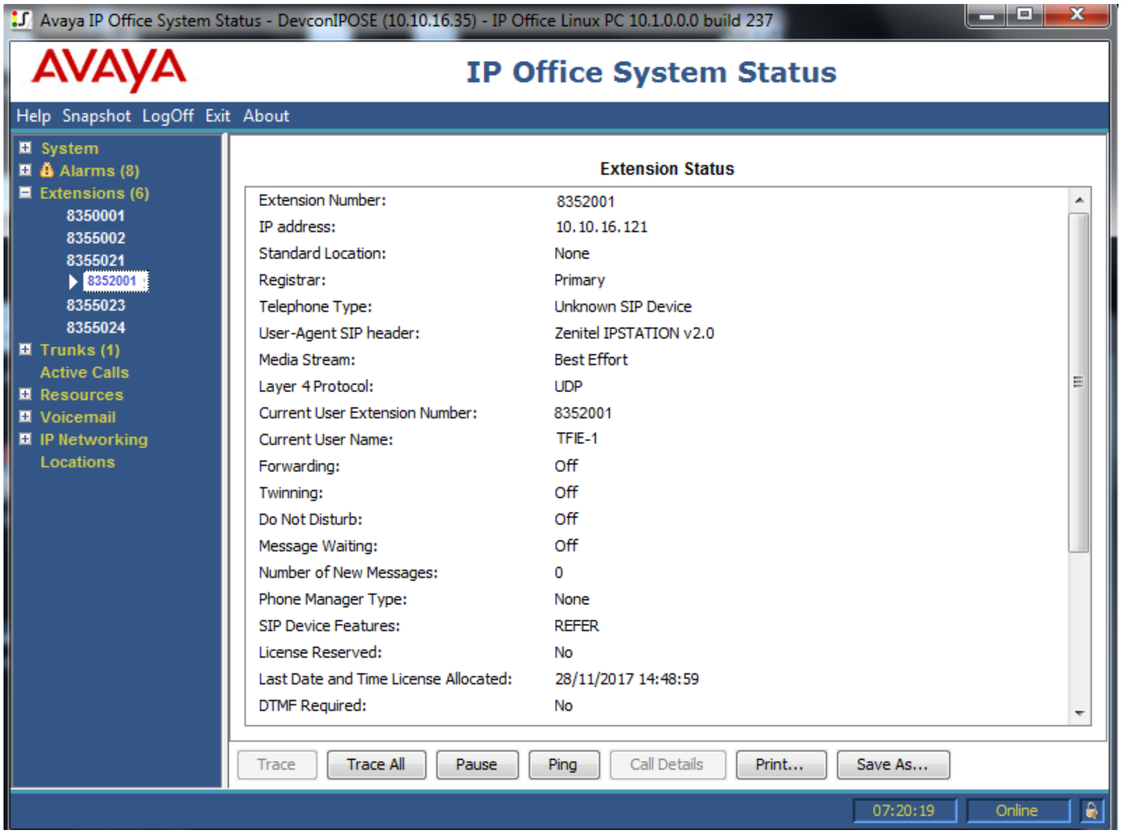


7. Verification Steps

This section provides the tests that can be performed to verify correct configuration of IP Office and Turbine.

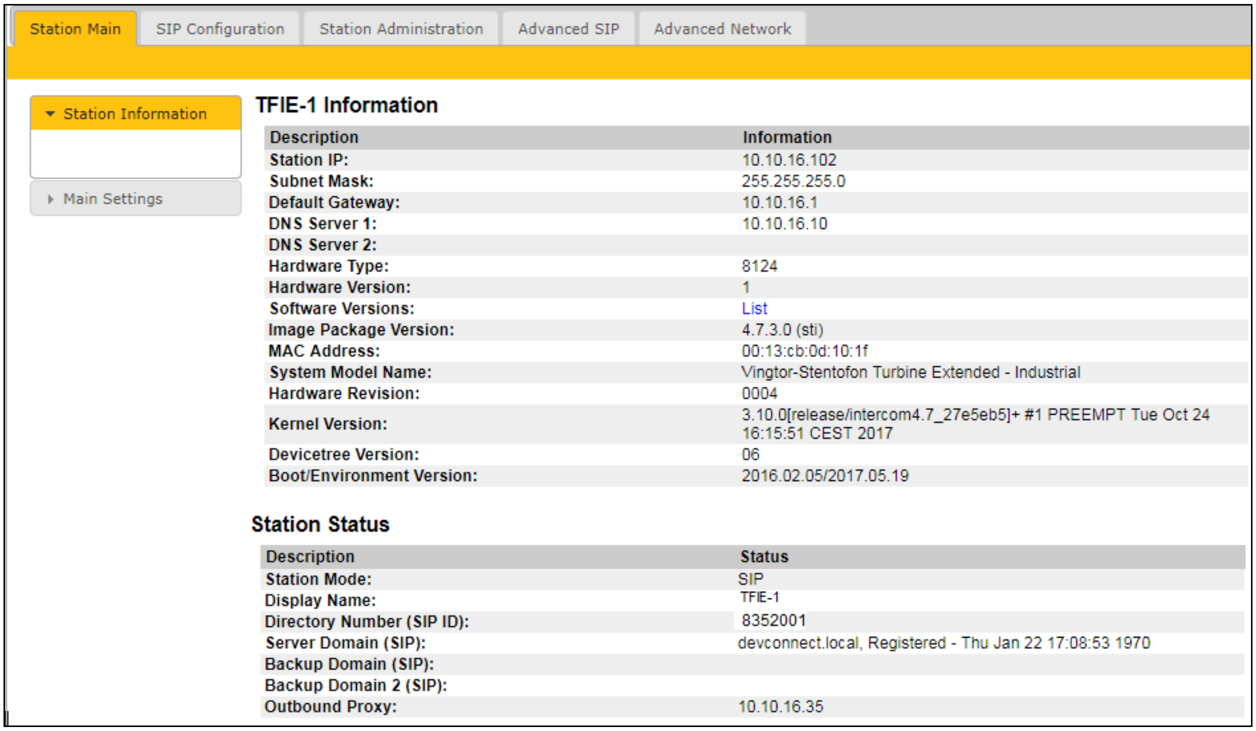
7.1. Verify Avaya IP Office SIP Endpoint Registration

Open the IP Office System Status application and click on **Extensions.** Verify that Turbine endpoints are successfully registered as shown below.



7.2. Verify Turbine SIP Registration

From the Turbine web interface, select **Information** from the left menu. Verify that the **Registration state** shows **Registered**. Place a call to another endpoint to verify basic call operation.



TFIE-1 Information

Description	Information
Station IP:	10.10.16.102
Subnet Mask:	255.255.255.0
Default Gateway:	10.10.16.1
DNS Server 1:	10.10.16.10
DNS Server 2:	
Hardware Type:	8124
Hardware Version:	1
Software Versions:	List
Image Package Version:	4.7.3.0 (sti)
MAC Address:	00:13:cb:0d:10:1f
System Model Name:	Vingtor-Stentofon Turbine Extended - Industrial
Hardware Revision:	0004
Kernel Version:	3.10.0[release/intercom4.7_27e5eb5]+ #1 PREEMPT Tue Oct 24 16:15:51 CEST 2017
Devicetree Version:	06
Boot/Environment Version:	2016.02.05/2017.05.19

Station Status

Description	Status
Station Mode:	SIP
Display Name:	TFIE-1
Directory Number (SIP ID):	8352001
Server Domain (SIP):	devconnect.local, Registered - Thu Jan 22 17:08:53 1970
Backup Domain (SIP):	
Backup Domain 2 (SIP):	
Outbound Proxy:	10.10.16.35

7.3. Verify Successful Calls

Place a call to and from the Turbine endpoint. Verify 2-way audio is heard and validate call terminates successfully.

8. Conclusion

These Application Notes describe the configuration steps required for configuring Zenitel Turbine to interoperate with Avaya IP Office. All feature and serviceability tests were completed successfully with observations made in **Section 2.2**.

9. Additional References

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

These documents form part of the Avaya official technical reference documentation suite. Further information may be obtained from *http://support.avaya.com* or from your Avaya representative.

[1] *Avaya IP Office Manager 10.1, Document 15-601011, Issue 1, June 2017*

The Zenitel Turbine documentation can be found at http://www.zenitel.com.

[1] *A100K11013-Pulse-Getting-Started.pdf.*

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.