Avaya Solution & Interoperability Test Lab

Application Notes for British Telecom Trading Platform 9.7 with Avaya IP Office 11.1 - Issue 1.0

Abstract

These Application Notes describe the configuration steps required to integrate British Telecom (Financial Technology Services) Trading Platform 9.7 with Avaya IP Office 11.1. British Telecom Trading Platform is a SIP endpoints management solution that interoperates with Avaya IP Office 11.1 to register British Telecom Trading Turrets as SIP endpoints.

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 British Telecom (BT) Trading Platform 9.6 with Avaya IP Office 11.1. The BT Trading Platform is a SIP endpoints management solution that interoperates with Avaya IP Office 11.1 to register British Telecom Trading Turrets as SIP endpoints.

British Telecom (BT) Trading Platform consists of a set of BT Trading Turrets, a Turret Support Server (TSS), and a Turret Proxy to Open Line Dealing Server (TPO). The BT Trading Turrets register as SIP endpoints with Avaya IP Office.

- **TSS Server**: It provides security extensions, end user profiles management, hunt group, and bridge to middle-office applications.
- **BT Trading Turret**: The BT Trading Turret is SIP-based VoIP trading phone.
- **Turret Proxy to Open Line Dealing Server (TPO)**: The TPO server serves as a proxy phone between a remote extension and local BT Trading Turrets end-users. When the local BT Trading Turrets end-users dial the remote TPO proxy number, the users can speak publicly or privately to that remote proxy phone. In these Application Notes, the TPO server registers one SIP endpoint as the proxy phone with Avaya IP Office.

2. General Test Approach and Test Results

The general test approach was to configure the BT Trading Turrets to communicate with the Avaya IP Office 11.1 as third-party SIP endpoints.

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 BT Trade Platform did not include use of any specific encryption features as requested by British Telecom.

This test was conducted in a lab environment simulating a basic customer enterprise network environment. The testing focused on the standards-based interface between the Avaya solution and the third-party solution. The results of testing are therefore considered to be applicable to either a premise-based deployment or to a hosted or cloud deployment where some elements of the third party solution may reside beyond the boundaries of the enterprise network, or at a different physical location from the Avaya components.

Readers should be aware that network behaviors (e.g. jitter, packet loss, delay, speed, etc.) can vary significantly from one location to another and may affect the reliability or performance of the overall solution. Different network elements (e.g. session border controllers, soft switches, firewalls, NAT appliances, etc.) can also affect how the solution performs.

If a customer is considering implementation of this solution in a cloud environment, the customer should evaluate and discuss the network characteristics with their cloud service provider and network organizations and evaluate if the solution is viable to be deployed in the cloud.

The network characteristics required to support this solution are outside the scope of these Application Notes. Readers should consult the appropriate Avaya and third-party documentation

for the product network requirements. Avaya makes no guarantee that this solution will work in all potential deployment configurations.

2.1. Interoperability Compliance Testing

The interoperability compliance test included both feature functionality and serviceability testing. The feature functionality testing focused on carrying out different call scenarios with good quality audio. The tests included:

- Successful registration of BT Trading Turret DDI lines with IP Office Server Edition and Expansion using TCP connection.
- Calls between BT Trading Turret and Avaya SIP, H.323, and digital telephones.
- G.711A, G.711U codecs support and negotiation, with and without media shuffling.
- Basic features include audio call, answer, hang up, music on hold, DTMF transmission, and feature access code dialing.
- Call features including Hold, Transfers and Conference.
- Basic video between Avaya Workplace Client and BT Trading Turrets.
- Proper system recovery after removal and reconnection of LAN cable.

2.2. Test Results

All the test cases passed.
The following observations were noted:

- After an IP Office restart, the BT Turrets need restarting to register again.

2.3. Support

For technical support on BT Trading Platform, send email to Unified.Trading.interop.team@bt.com

3. Reference Configuration

The configuration shown in **Figure 1** was used during the compliance test of BT Trading Platform with Avaya IP Office. BT Trading Platform manages BT Trading Turrets and uses the DDI lines by registering to Avaya IP Office and allowing communication with Avaya desk phones.

BT Trading Platform interoperates with Avaya IP Office using TCP connection.

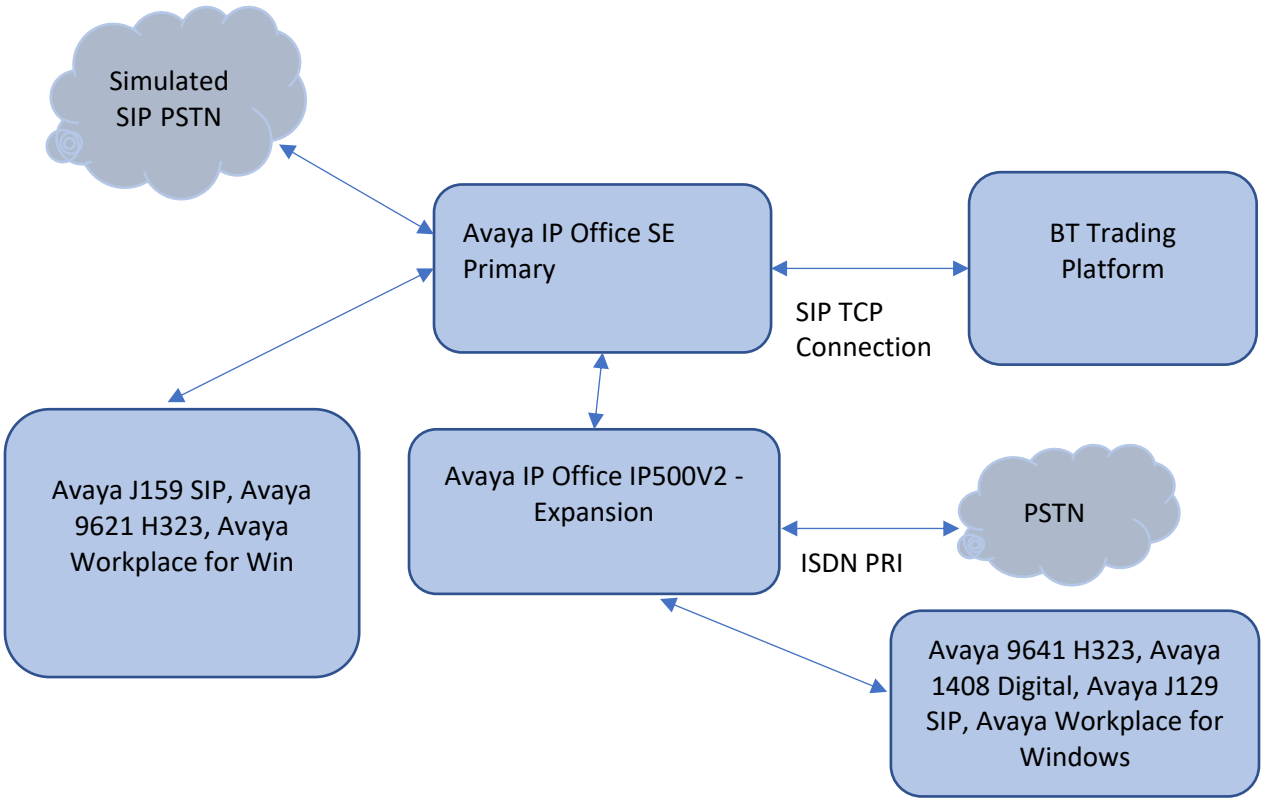


Figure 1: Connection of BT Trading Platform with Avaya IP Office

4. Equipment and Software Validated

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

Equipment/Software	Release/Version
Avaya IP Office 500v2 Expansion System	11.1 FP2 SP4
Avaya IP Office Manager running on a Windows 10 PC	11.1 FP2 SP4
Avaya IP Office Server Edition on VMware	11.1 FP2 SP4
9641G and J159 IP Deskphone (H.323)	6.8.5
Avaya Workplace Client for Windows	3.29.0.54
Avaya J159 and J179 IP Deskphone (SIP)	4.0.21
Avaya 1408 Digital Deskphone	2.0 Service Pack 9 (R20)
BT Trading Platform Turret Support Server (TSS) • Firmware • Bootstrap	R9.7.9.56615 R9.7_9.56602
BT TPO with Redundancy Mode Session Persistency • Firmware • Bootstrap	R9.7_9.56619 R9.7_9.56613
BT Trading Turrets BT TouchPro • Firmware • Bootstrap BT FlexPro Version	 R9.7_9.56619 R9.7_9.56613 R9.7_9.56619

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

5. Configure Avaya IP Office

Configuration and verification operations on 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 IP Office for this solution. It is implied a working system is already in place with the necessary licensing. 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:

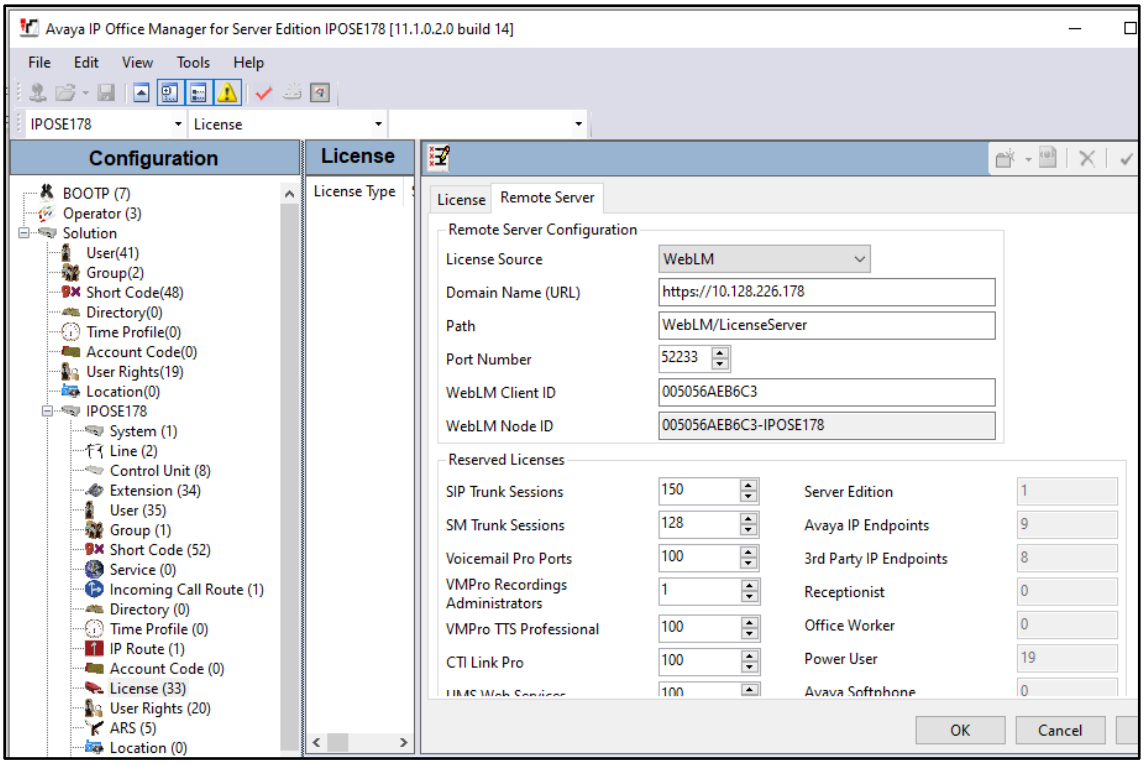
- Launch Avaya IP Office Manager (Administration)
- Check 3rd Party IP Endpoints License
- Add Users for BT Trading Turrets
- Save Configuration

5.1. Launch Avaya IP Office Manager (Administration)

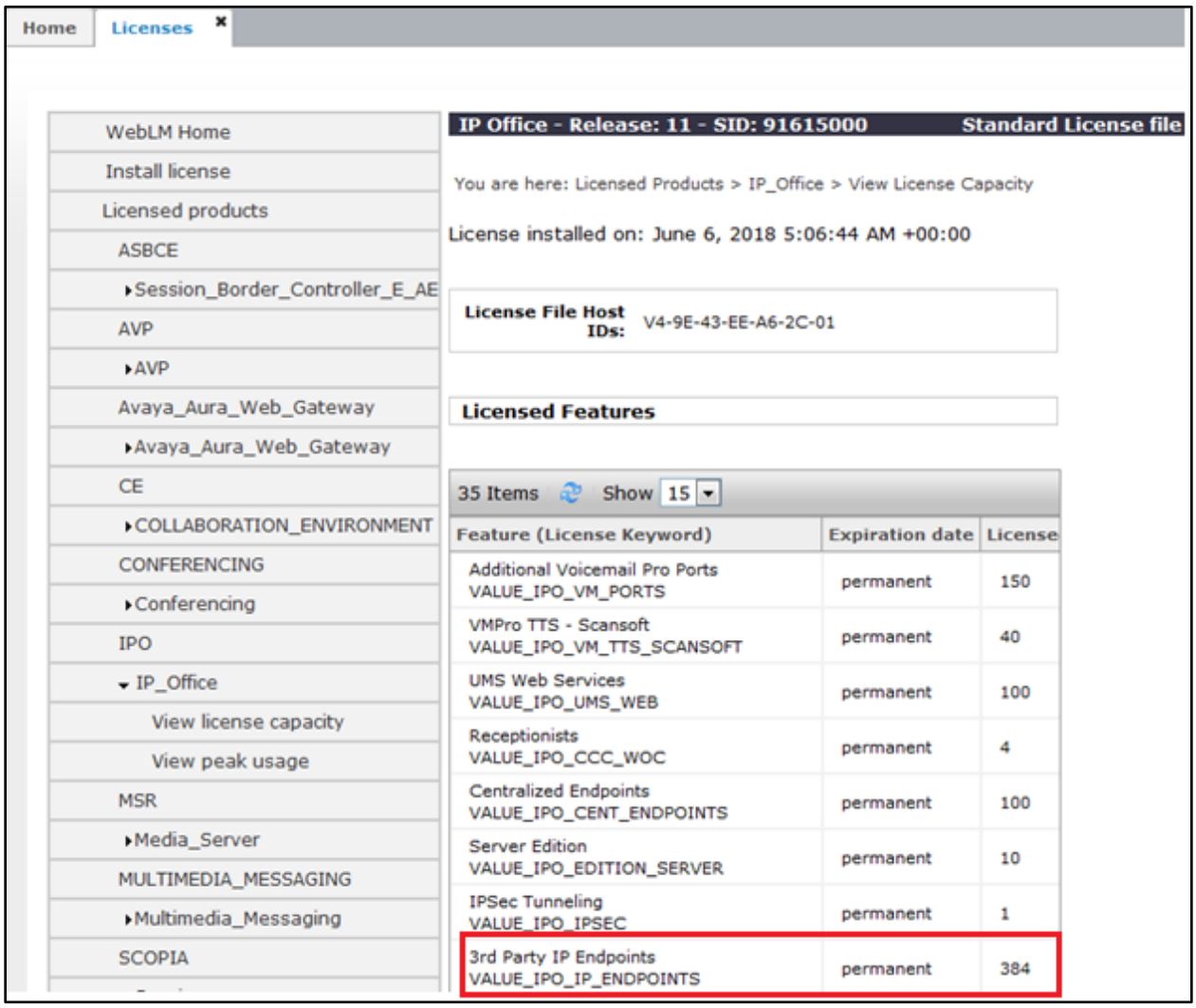
From the Avaya IP Office Manager PC, go to **Start → Program → IP Office → Manager** to launch the Manager application. Log into **Avaya IP Office** using the appropriate credentials to receive its configuration (Not Shown).

5.2. Check 3rd Party IP Endpoints License

Select **IPO Server Edition (Primary) → License → Remote Server** to display the applicable WebLM server. Log into WebLM server using the appropriate credentials and navigate to display installed licenses (not shown).



Select **Licensed products → IPO → IP Office** in the left pane, to display the **Licensed Features** screen in the right pane.
Verify that there are sufficient licenses for **3rd Party IP Endpoints**, as shown below.



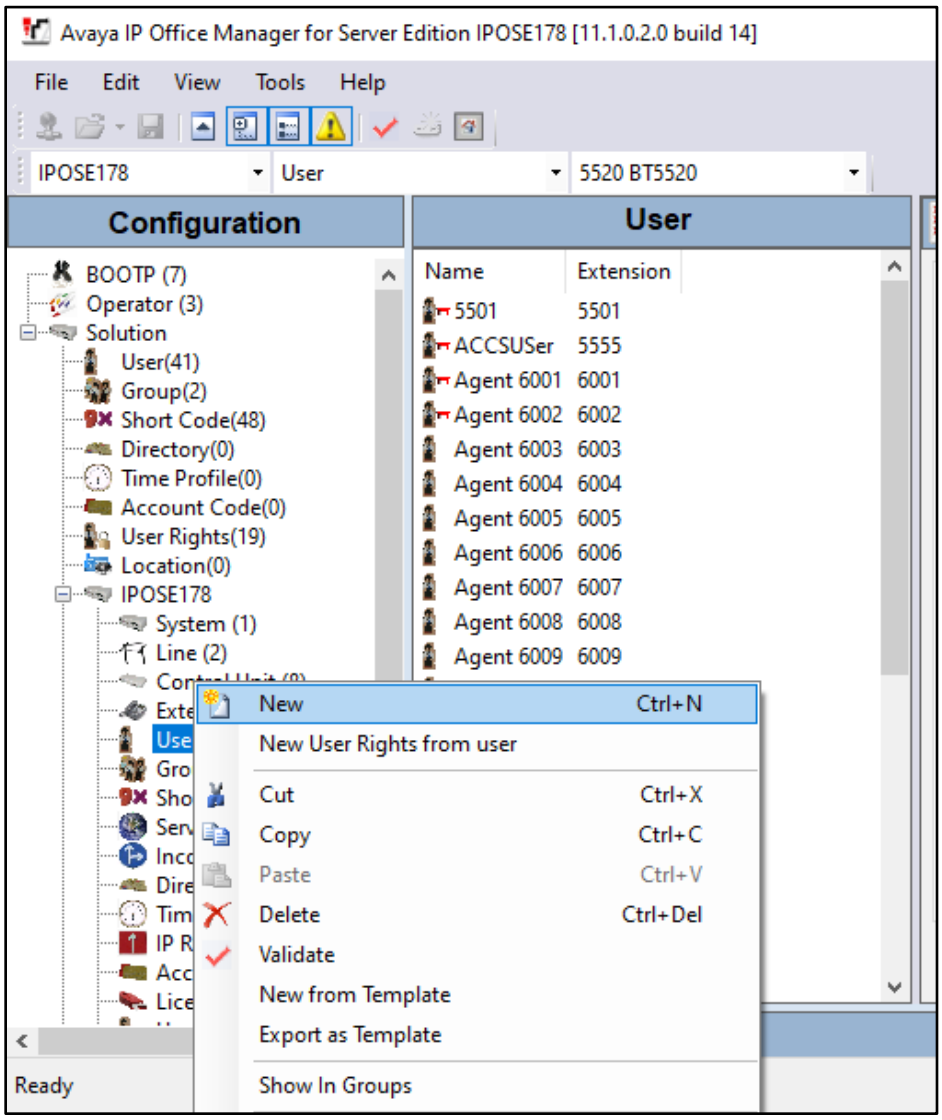
5.3. Add Users for BT Trading Turrets

In this section the configuration steps required to connect BT Trade Platform to Avaya IP Office as SIP Endpoints are described. It is assumed that Avaya IP Office has already been installed and configured as this is out with the scope of this document. All Configuration steps were carried out using **Avaya IP Office Manager**. Configuration steps will include:

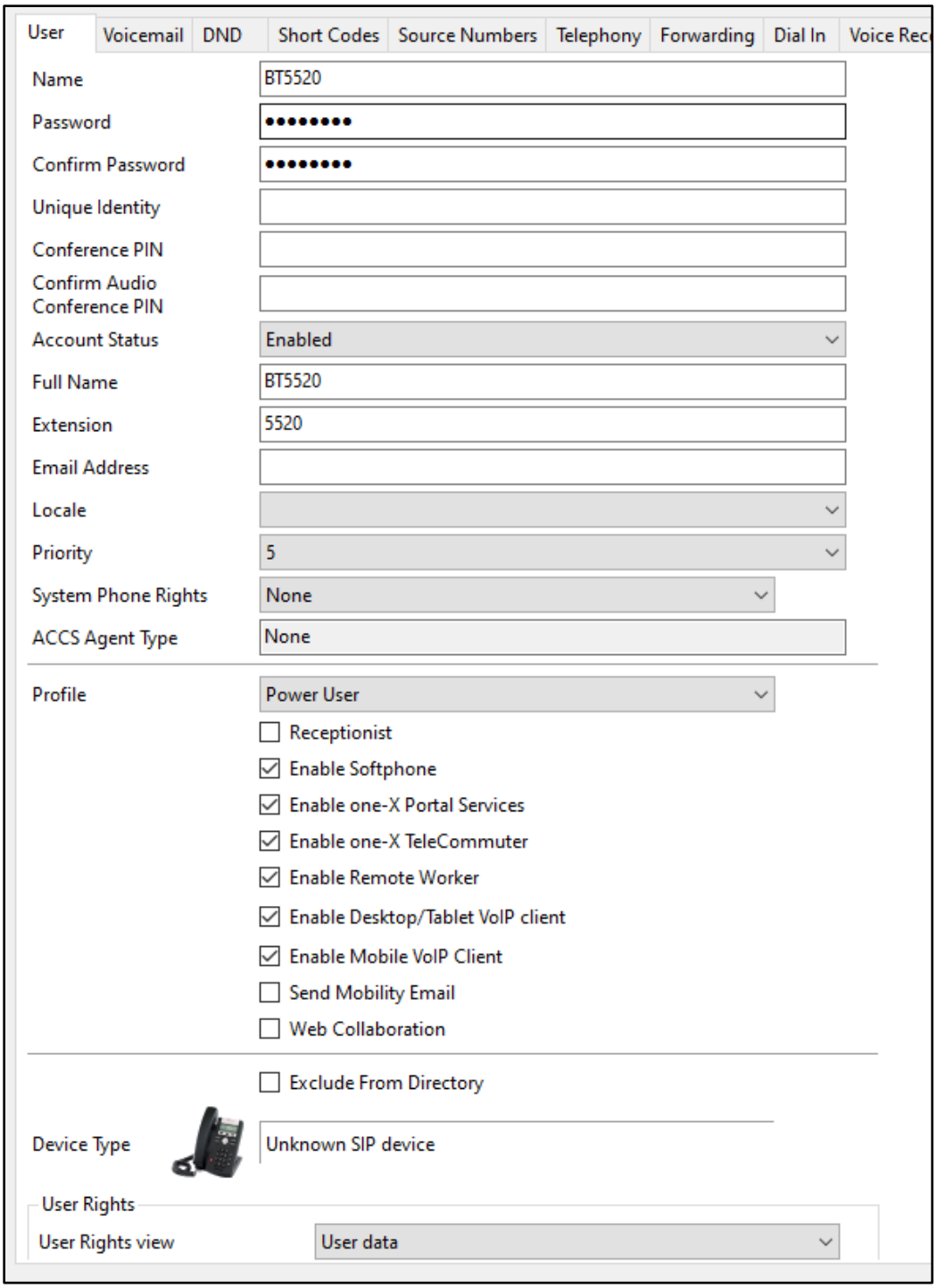
- Adding a BT Trading Turrets as SIP Users.
- Check Extension Properties.

5.3.1. Create a New User

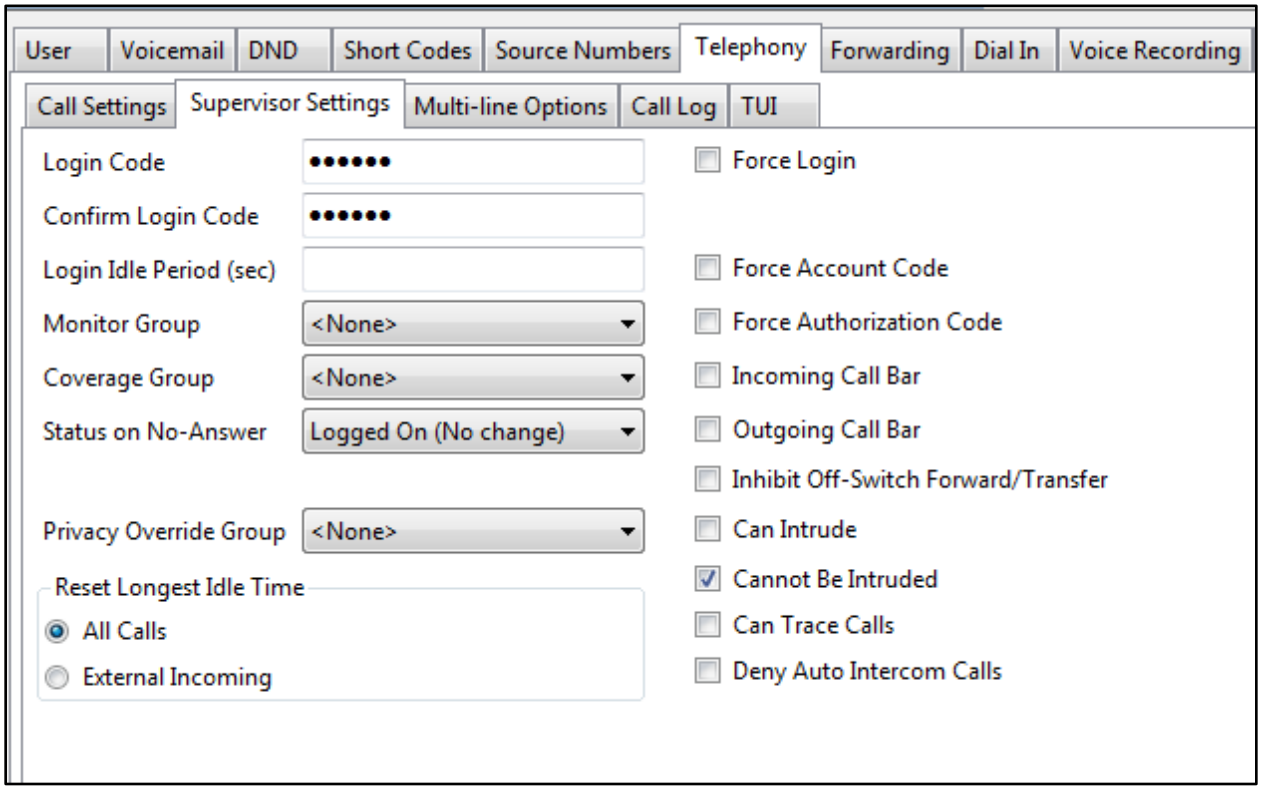
A SIP user must be added for each BT Trading Turret required. In this compliance test, 6 Users are created: **5520-5525** for BT Trade Turrets.
From the Avaya IP Office Manager, Select **IPO Server Edition (Primary) IPOSE178,** right click on **User** and select **New.**



On the Identity tab enter an identifying **Name, Full Name**, **Extension** and administer a password in the **Password** and **Confirm Password** fields. Select **Basic User** from the **Profile** drop down box

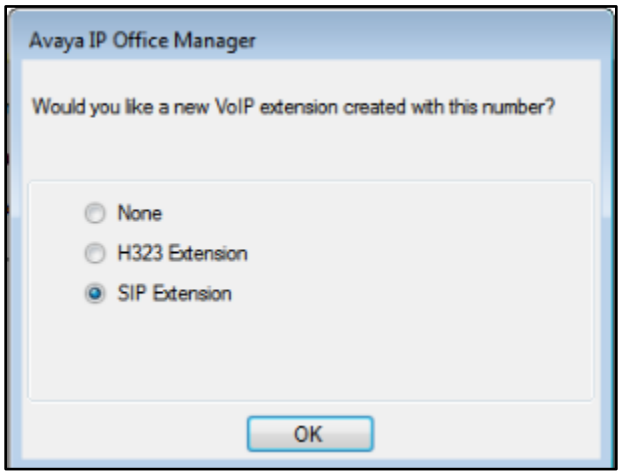


Under the **Telephony** tab and **Supervisor Settings** tab, enter the password again for the **Login Code**.



Once **OK** is clicked at the bottom of the screen a new window should appear asking to create a new extension. Select **SIP Extension** as is shown below.

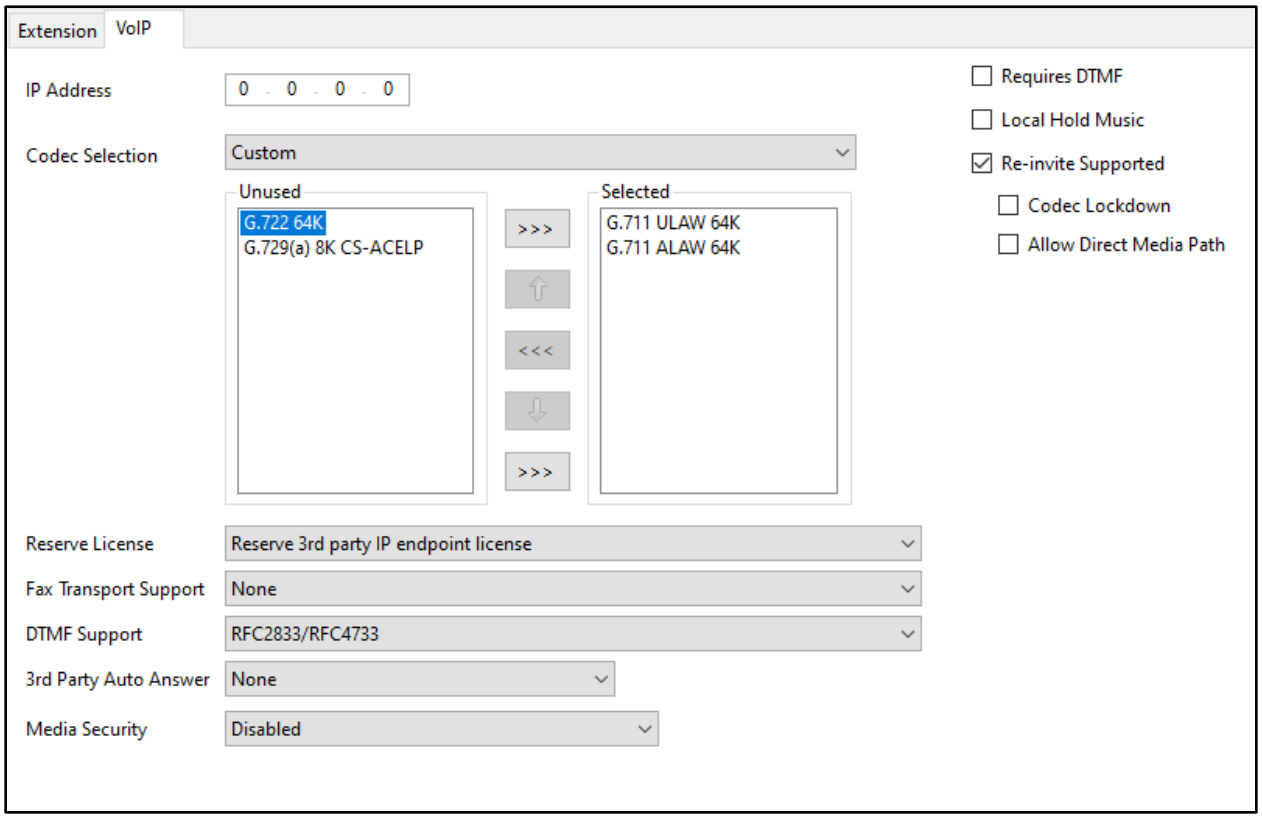
Note: If the system is not setup to auto-create extensions then a new extension can be added by right-clicking on **Extension** on the left window and selecting **New**, (not shown).



5.3.2. Check Extension Properties

Once the SIP extension has been successfully created in **Section 5.3.1**, open the extension configuration. Select **Extension** in the left window and select the required extension number. In the main window under **VoIP** tab, Allow **Direct Media Path** can be checked or unchecked as shown below. Other settings such as **DTMF Support** and **Codec Selection** are possible to change here as well again if required by BT.

Select **Reserve 3rd party IP endpoint license** from **Reserve License** drop box. And select **Disabled** from **Media Security** drop box.



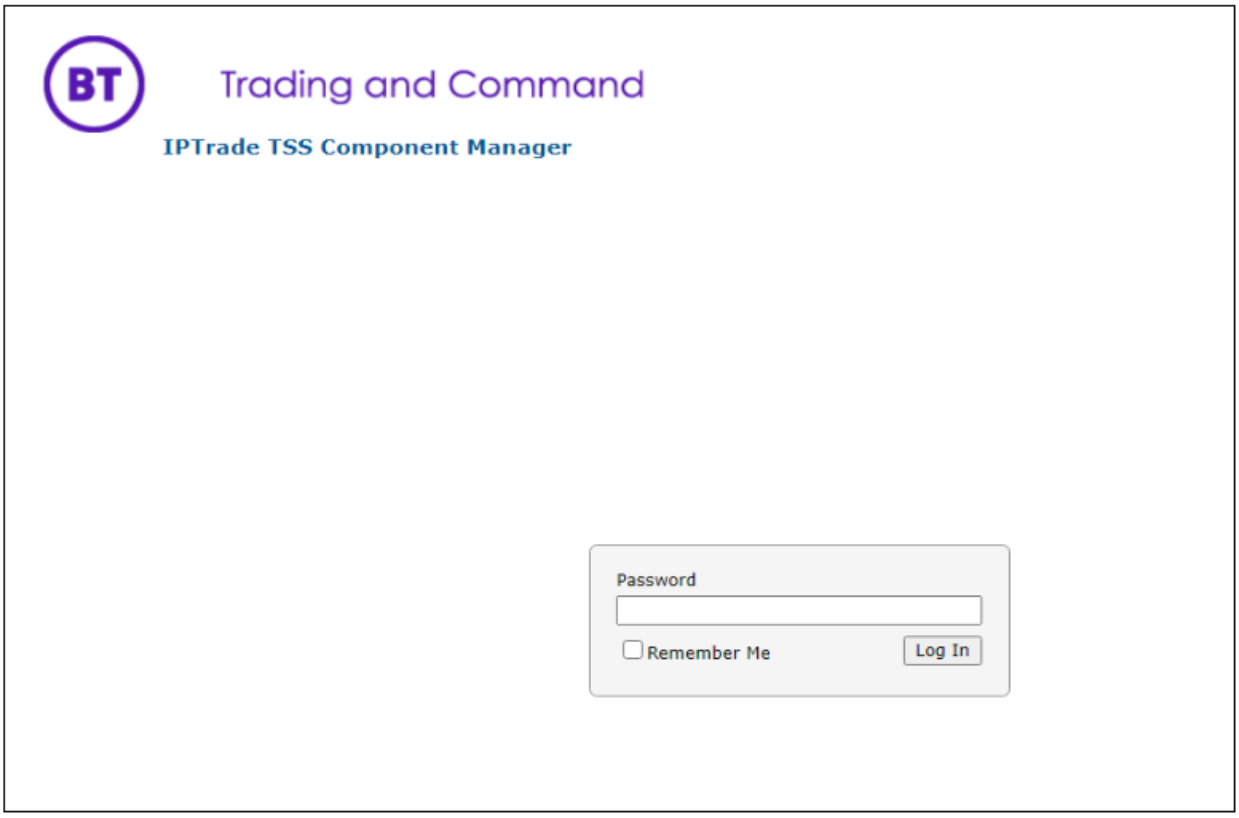
6. Configure the BT Trading Platform

This section addresses the administrative steps to be performed on the BT Trading Platform solution. The installation of the BT Trading Platform solution software, as well as the initial configuration of the turrets and servers, is beyond the scope of this document.

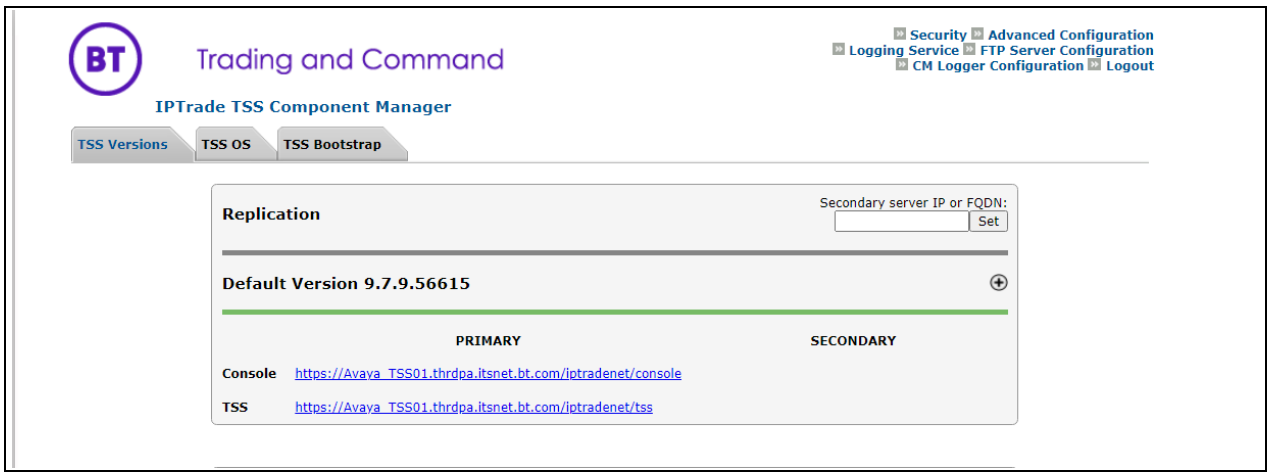
6.1. Configure the BT Trading Turret Support Server

This section describes the procedure for configuring the BT Trading Platform Turret Support Server (TSS). This procedure assumes that the TSS has already been configured with an anonymous profile and that a TFTP server (typically co-resident with the TSS) is being used for downloading certain configuration parameters to the turrets.

From a Web browser, navigate to the IP Address of the TSS. Enter the correct password and click on **Log In**.

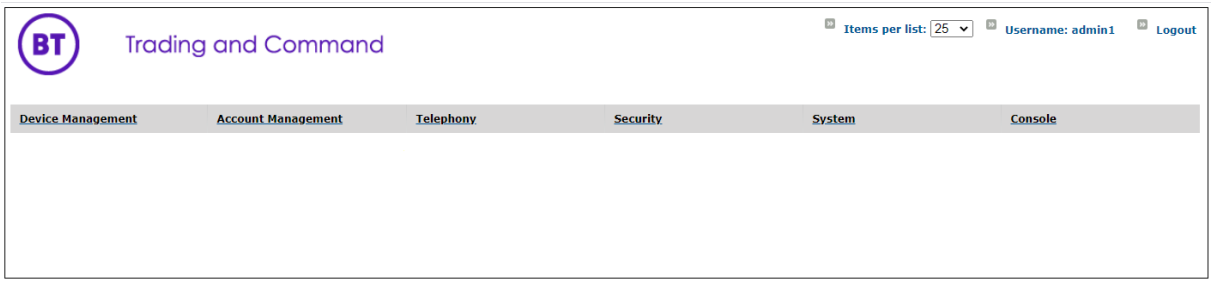


From the **TSS Versions** tab, select the **Console** Link as shown below.



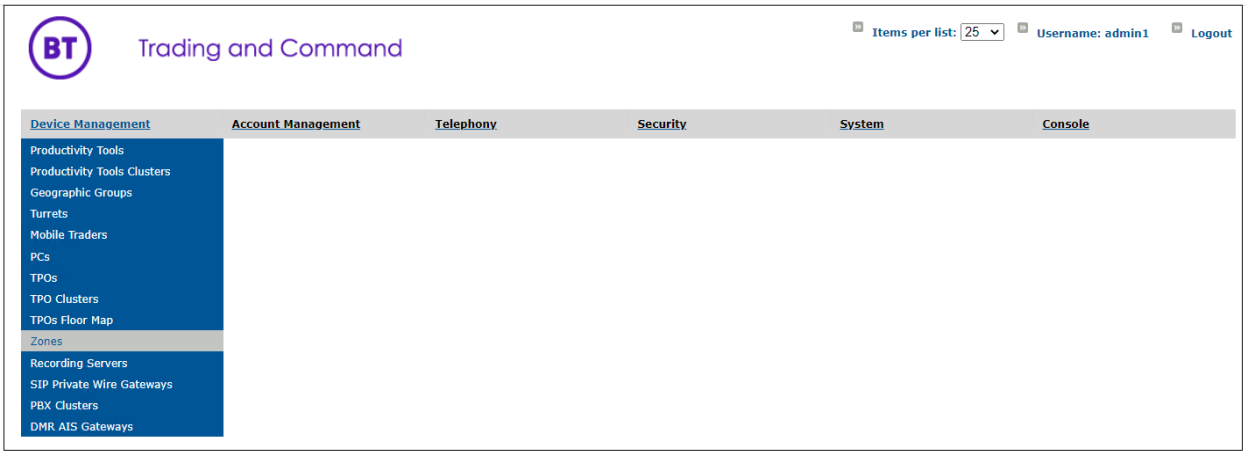
Enter the **User Identifier** and **Password** for the BT Trading Platform and select **Log In**.

Upon successful login, the following screen will be presented.



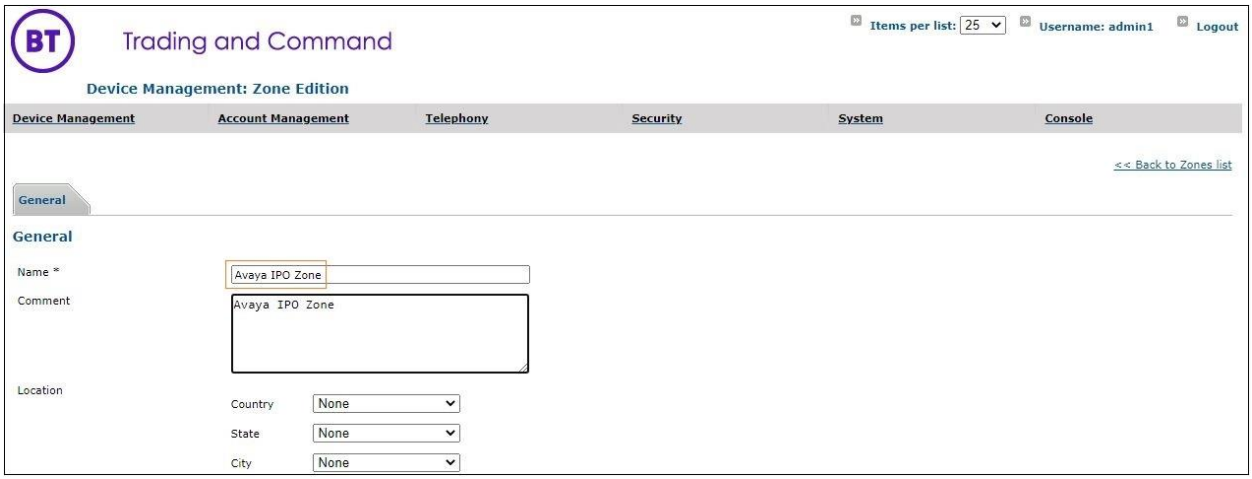
6.1.1. Configure Avaya Zone

Select **Device Management** from the top menu bar and then **Zones** from the resulting drop-down box.

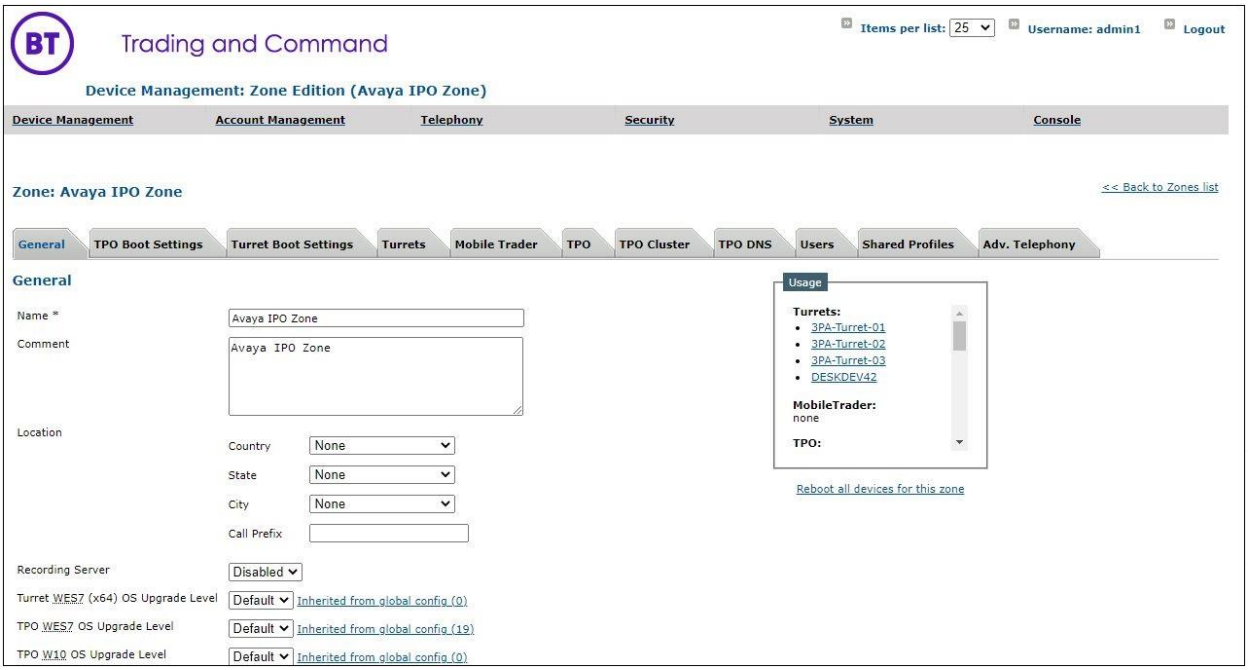


Select **Add new** from the Zone menu bar.

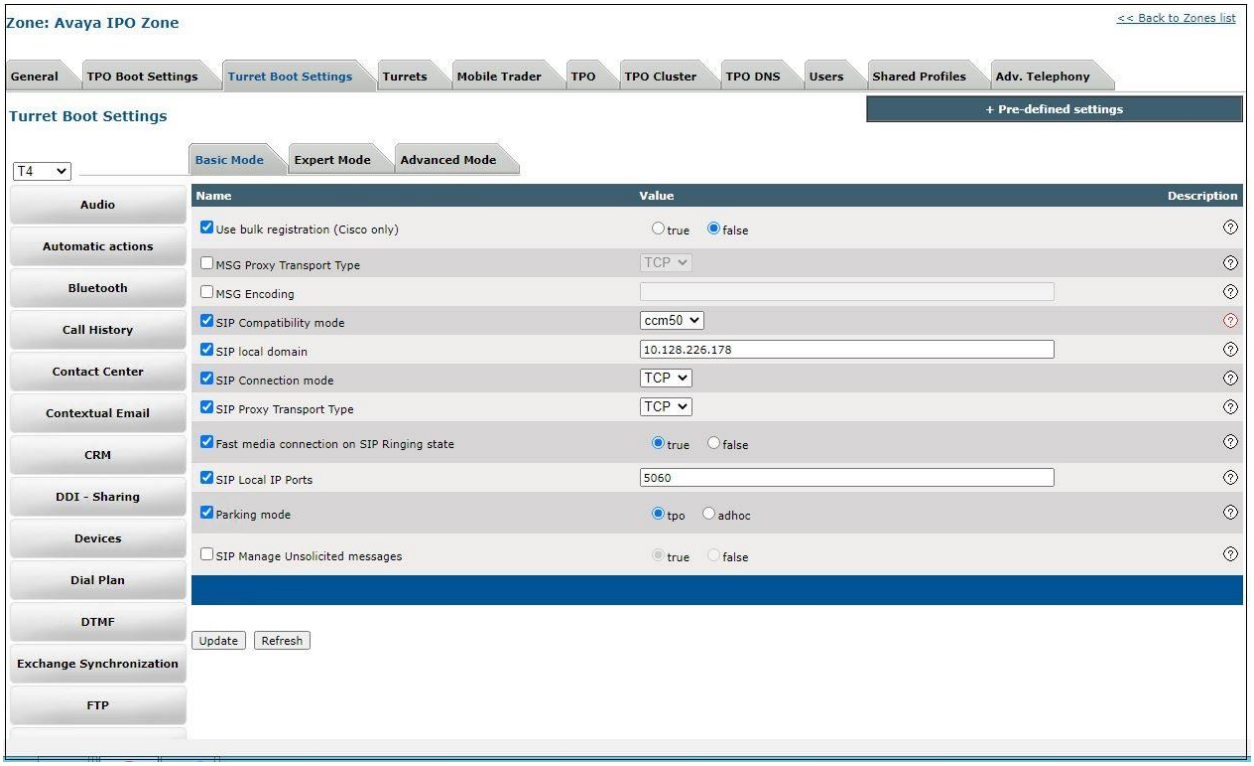
Enter the name of new Avaya Zone here its Avaya IPO Zone and **Update.**



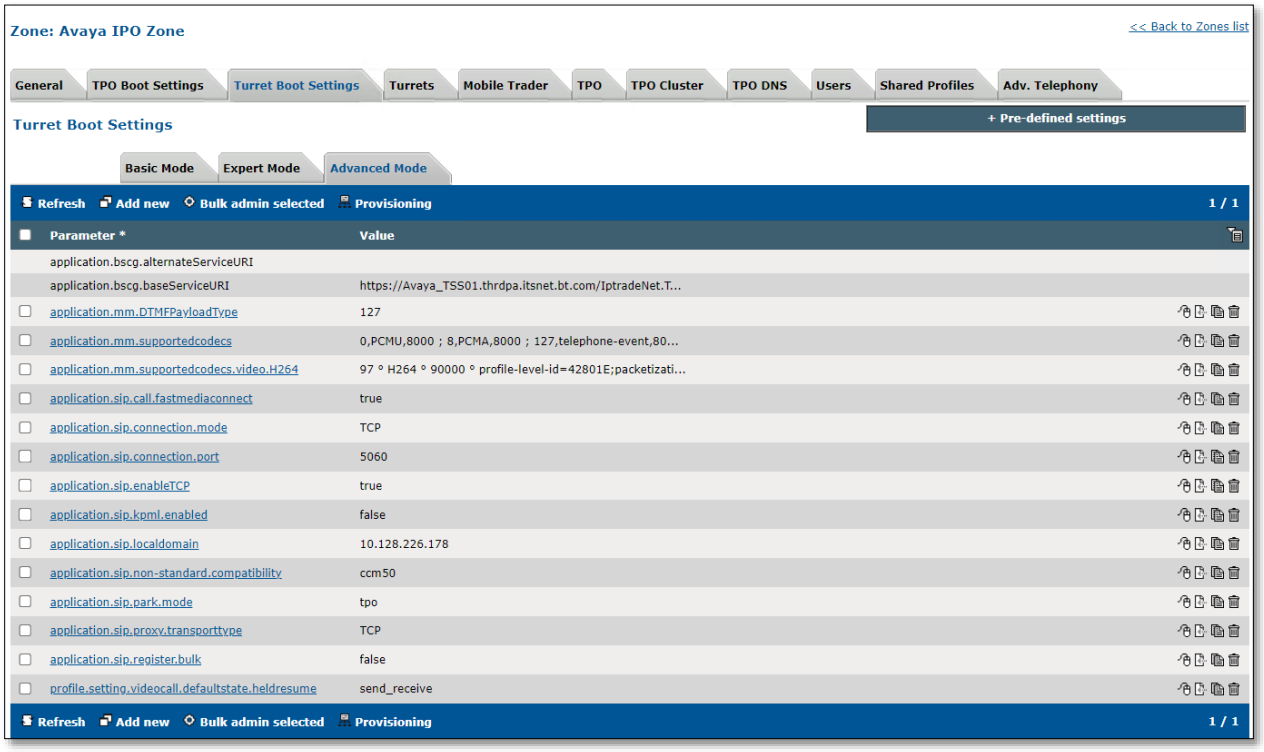
Once Avaya IPO Zone is created, the additional tabs will be displayed.



Navigate to the **Turret Boot Settings** tab in Avaya IPO Zone, then select **SIP** option **Basic Mode** (not shown) and update Avaya IP Office server address to 10.128.226.178 and other highlighted parameters below.

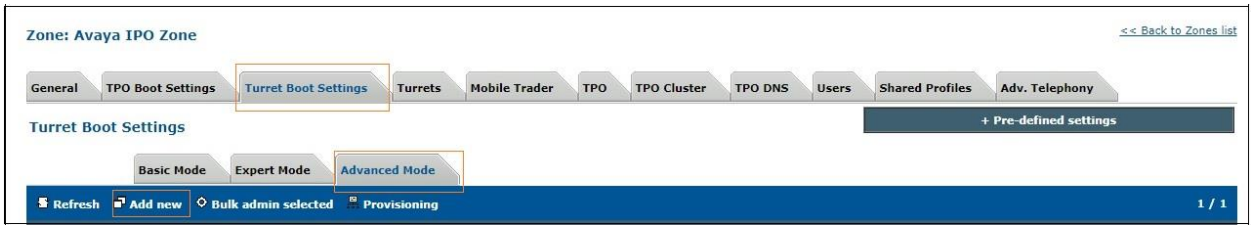


Navigate to the **Turret Boot Settings** tab and then select **the Advanced Mode** tab.

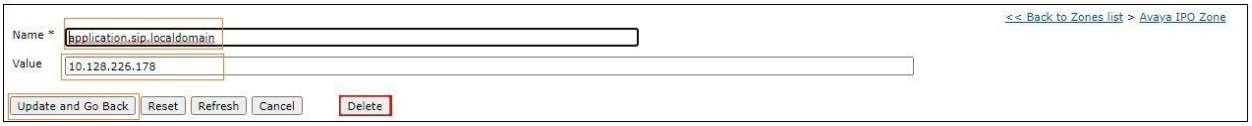


Note: If any of the above advanced parameters are already configured, edit them rather than add. This can be done either by clicking the advanced parameter or by selecting either of the two symbols as shown in the picture below.

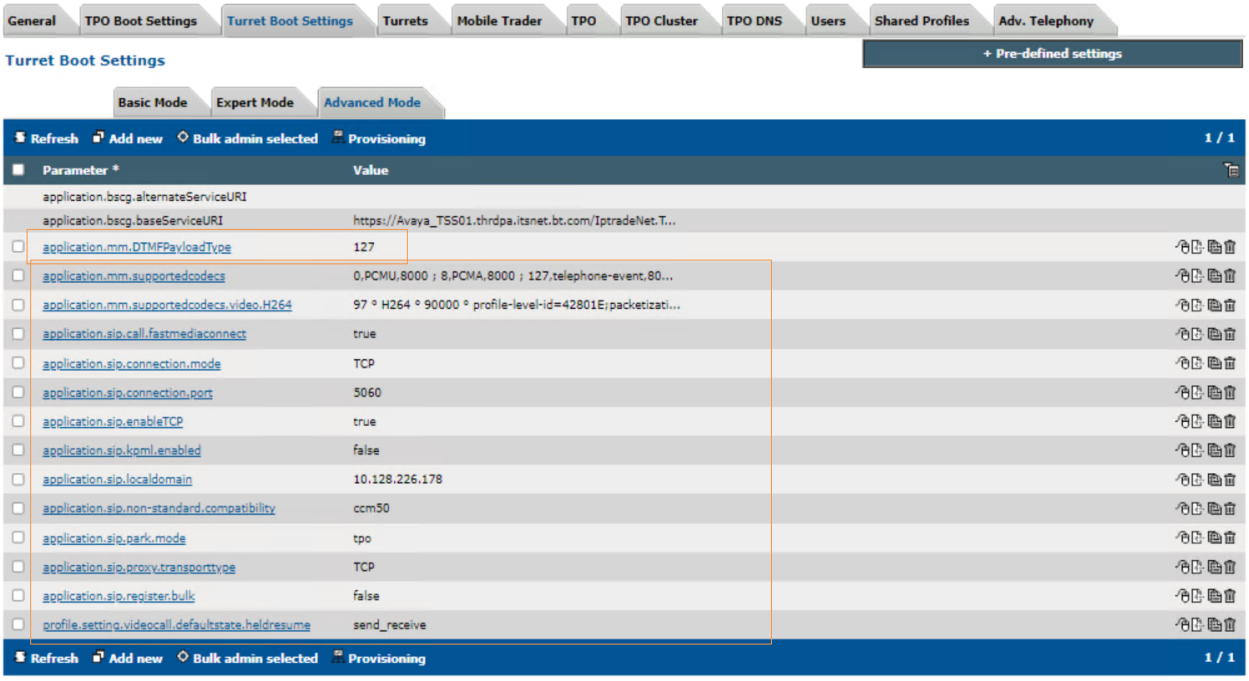
If the advanced parameter is not present, select **Add new.**



Now, enter the following statement, the IP Address should mirror the Avaya IP Office. In this example, the IP Address is 10.128.226.178. When complete, select **Update and Go Back.**

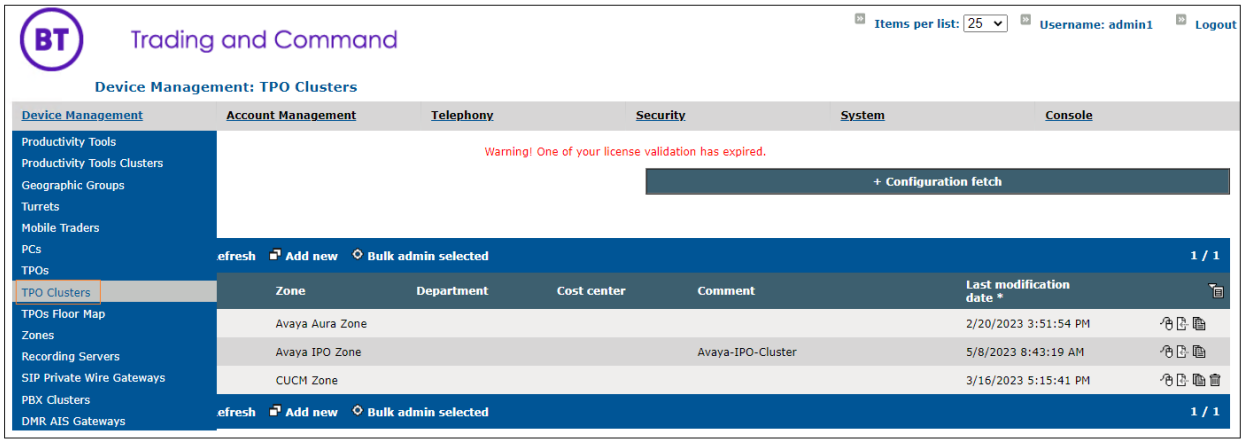


Finally, ensure that all other advanced parameters are configured as shown below. Add any that are missing by using the same process as above or by using the individual menus.

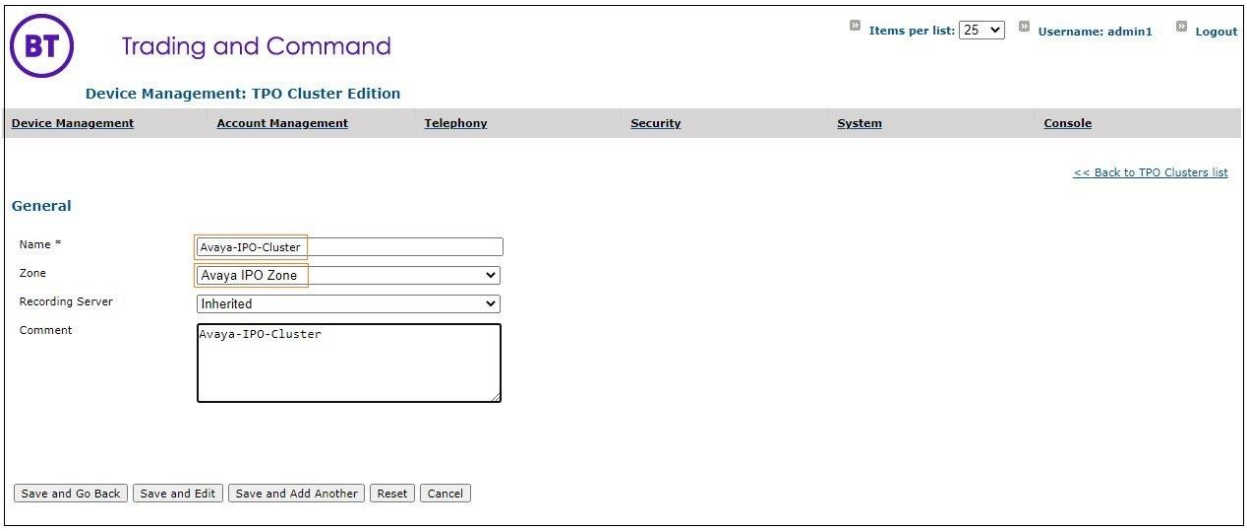


6.1.2. Configure Avaya TPO Cluster

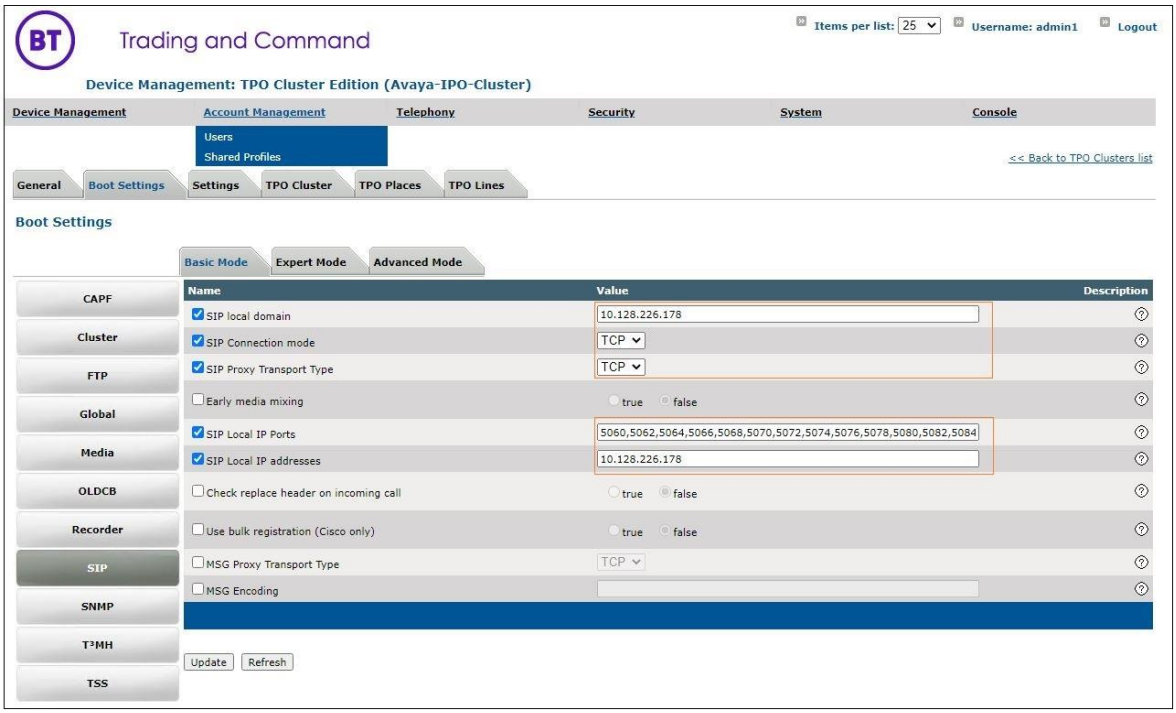
From the top menu, select **Device Management** and then **TPO Clusters.**



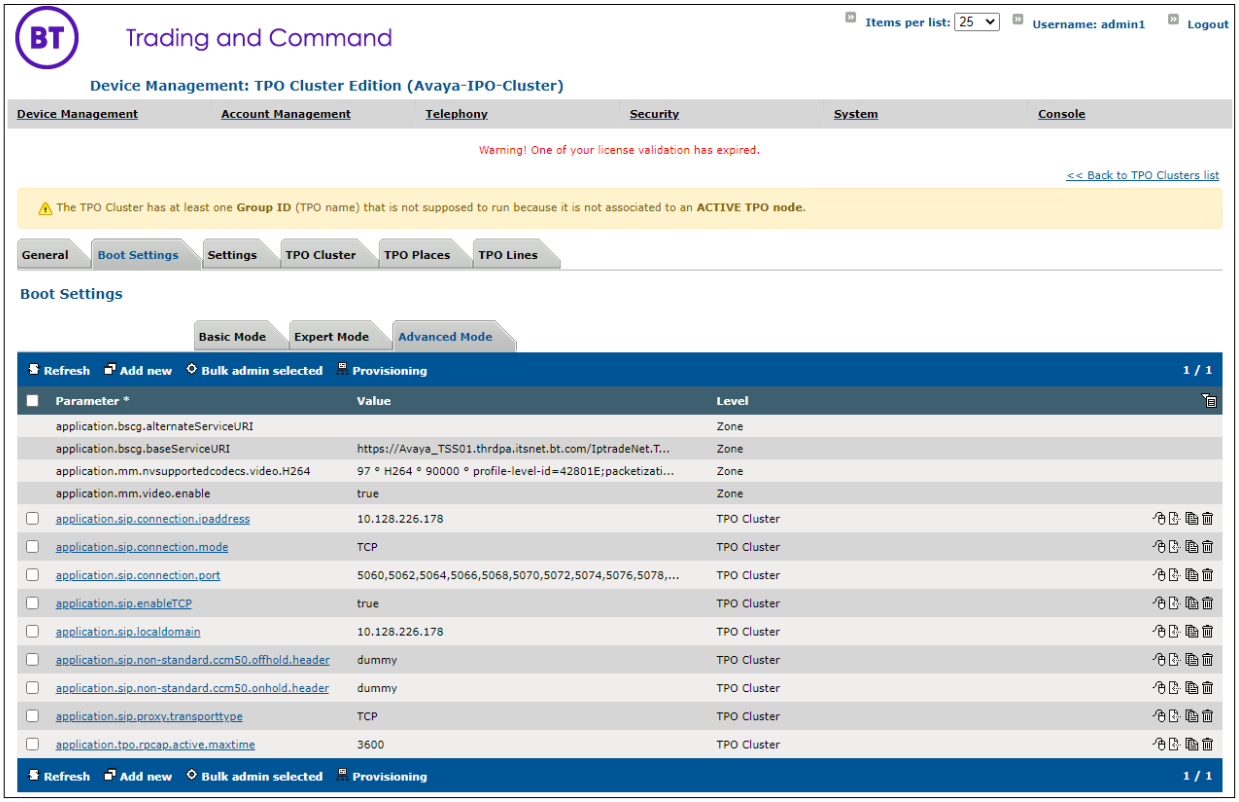
Click **Add new** and provide the TPO cluster name as **Avaya-IPO-Cluster**. Assign the Zone as **Avaya IPO Zone** → Click on Save and Go Back.



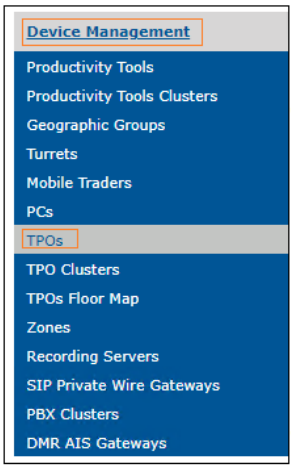
Navigate to **Avaya-IPO-Cluster → Boot Settings** and configure IP Office IP and other parameters shown in picture below.



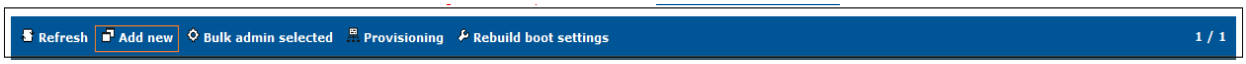
Select the **Boot Settings** tab and then **Advanced Mode**, ensure that the configuration matches with the below snapshot.



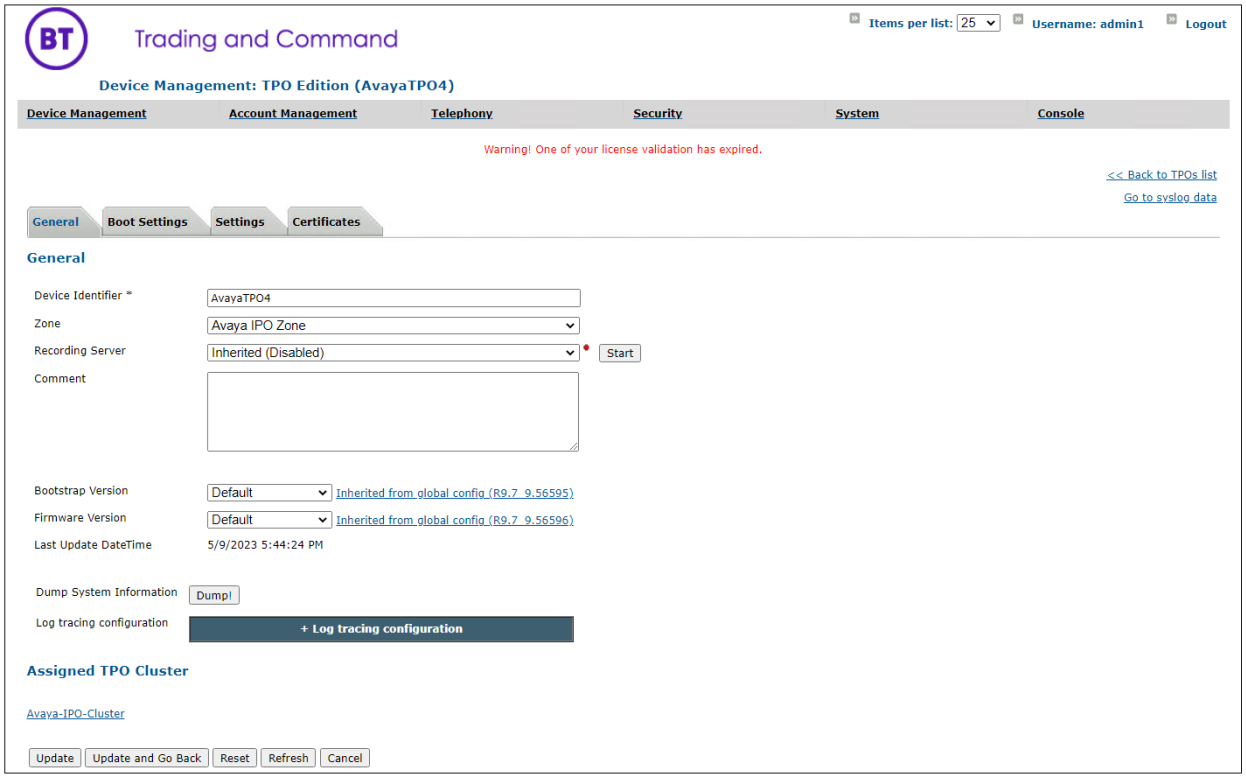
Select Device Management and navigate to TPOs.



Select **Add new** from the menu bar.

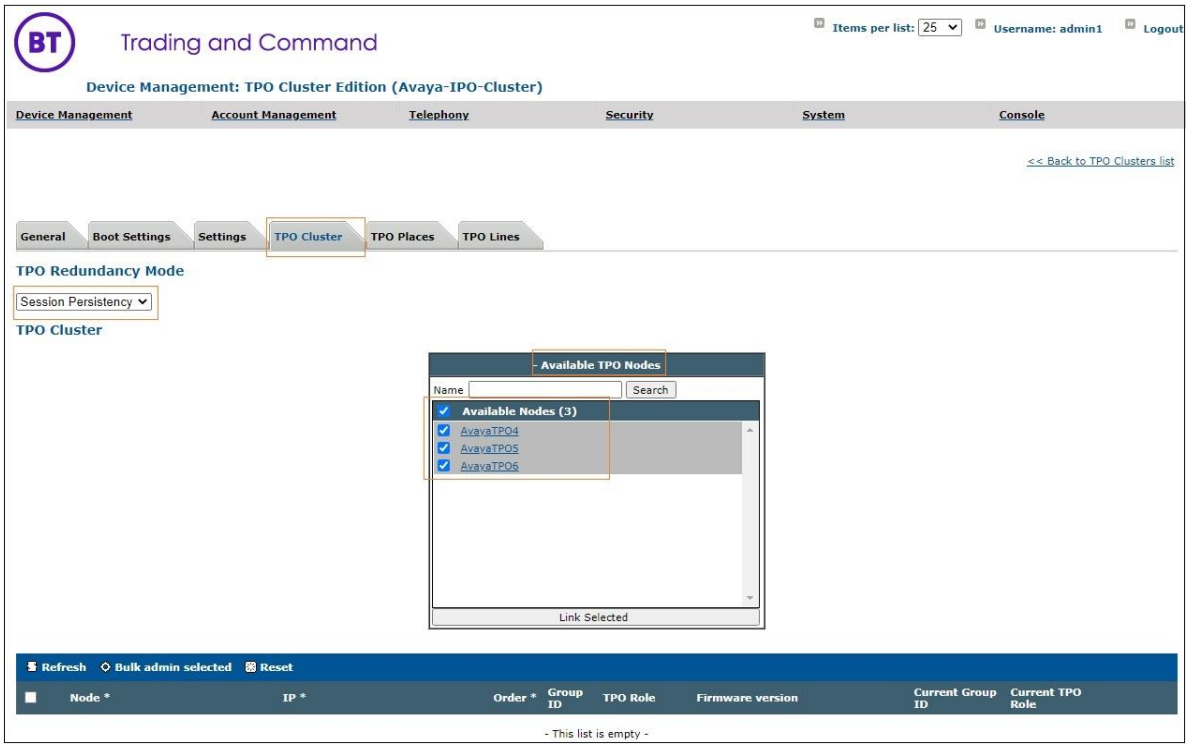


Enter new TPO **Device Identifier** i.e., **AvayaTPO4** and select the **Avaya IPO Zone** created in previous steps. Repeat the same step again to add more TPO's. **AvayaTPO5** & **AvayaTPO6.**



Link newly added TPO's to the TPO cluster i.e., **Avaya-IPO-Cluster.** Navigate to **Device Management → TPO Cluster**s **→ Avaya-IPO-Cluster → Settings → TPO Cluster →** Select **AvayaTPO4**, **AvayaTPO5** and **AvayaTPO6** which are added in the previous step and click on **Link6Selected** to link TPO's to Cluster.

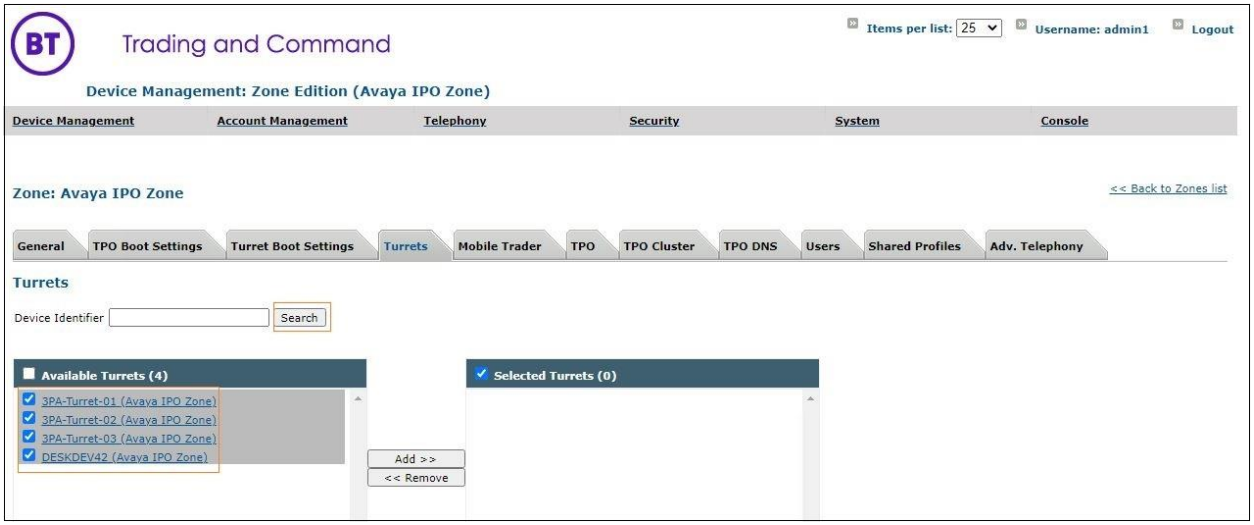
Select the TPO Redundancy mode to '**Session Persistency**'.



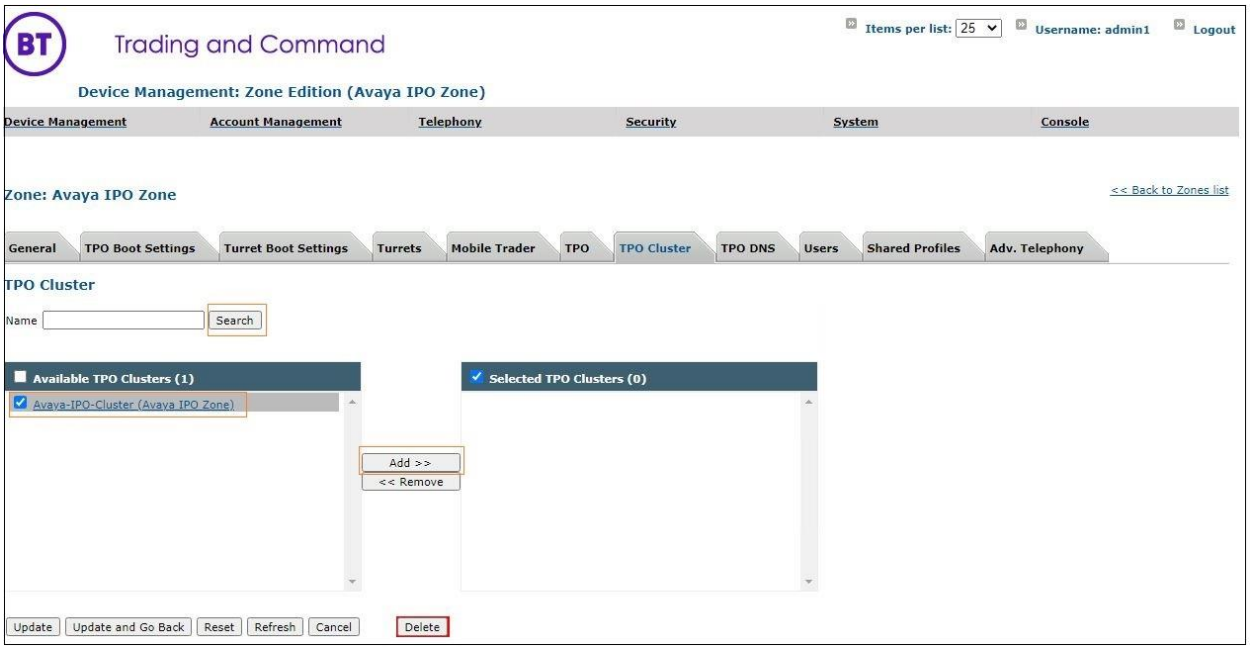
6.1.3. Assign Turrets to the Avaya Zone

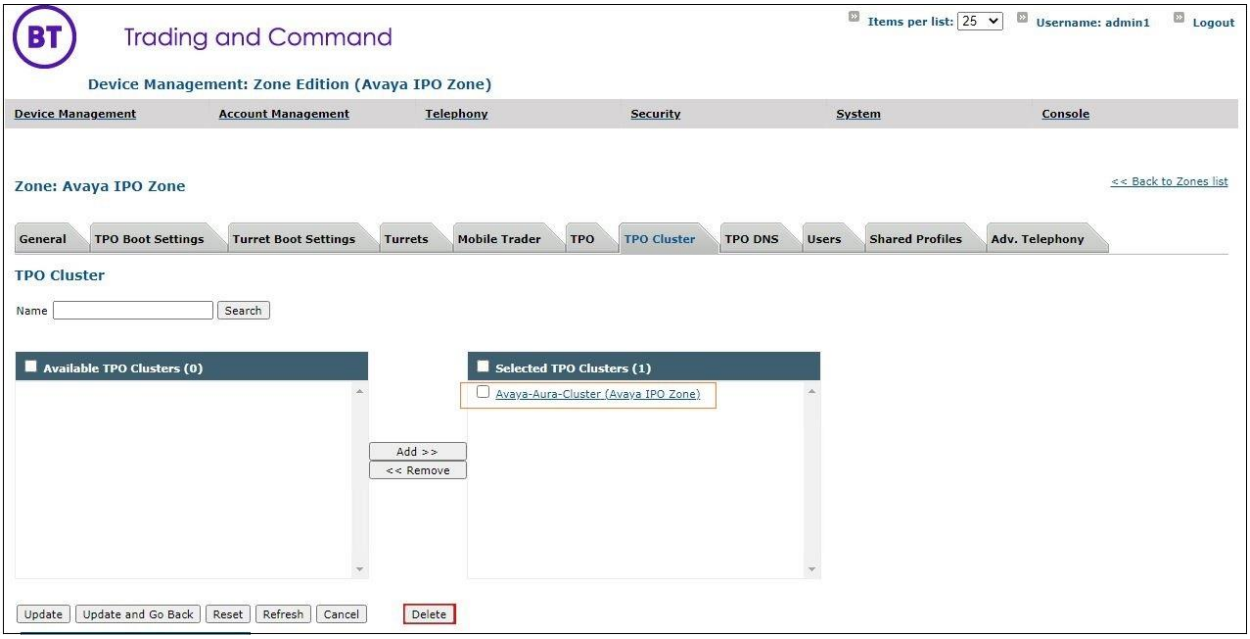
Select **Device Management → Zones: Avaya IPO Zone,** select the **Turrets** tab. Click **Search** as shown in the picture below and look for the turrets needing to be added into the Avaya Zone.

Select the Turrets from the left-hand window and select **Add** to move the Turrets into the Zone. Select **Update**.

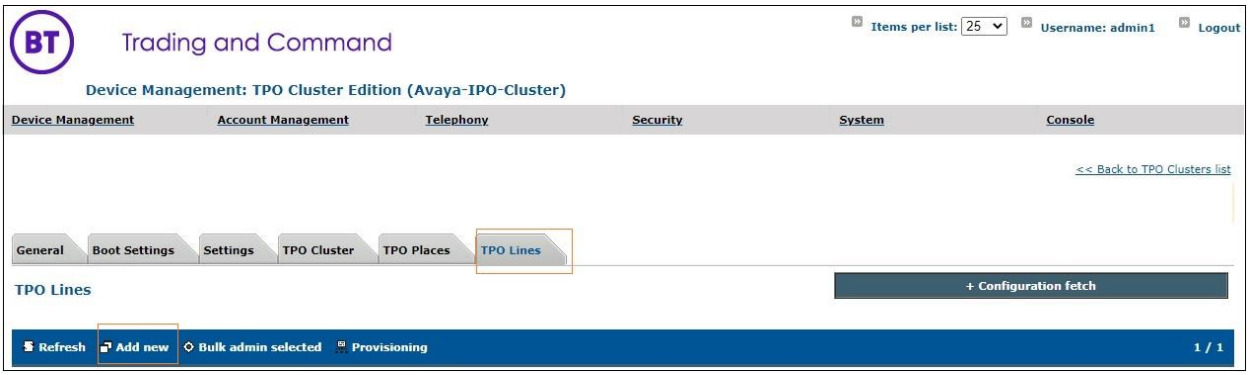


Select the **TPO Clusters** tab and select **Search**, select the TPO Cluster created from the left-hand window and select the **Add** button.
Select **Update and Go Back.**



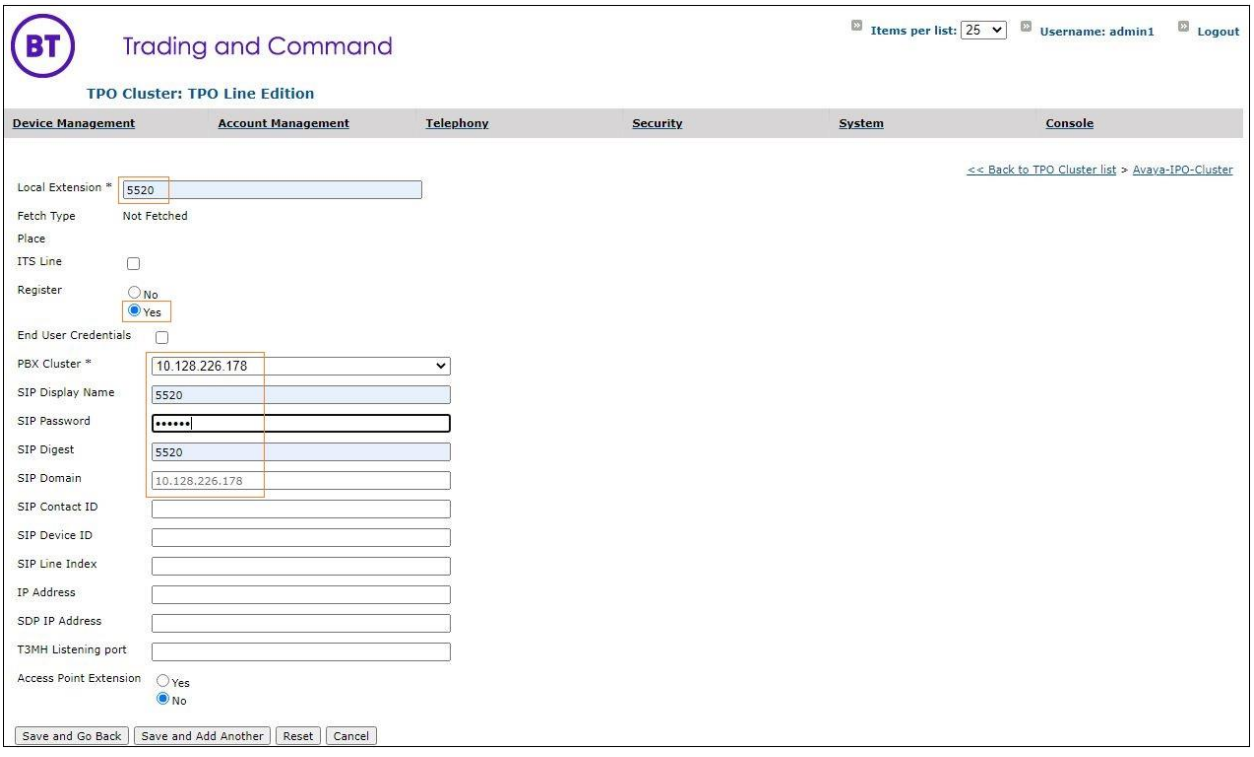


Select **Device Management** and the **TPO Clusters → Avaya IPO Cluster** and configure TPO lines by selecting the **TPO Lines** tab and select **Add new**

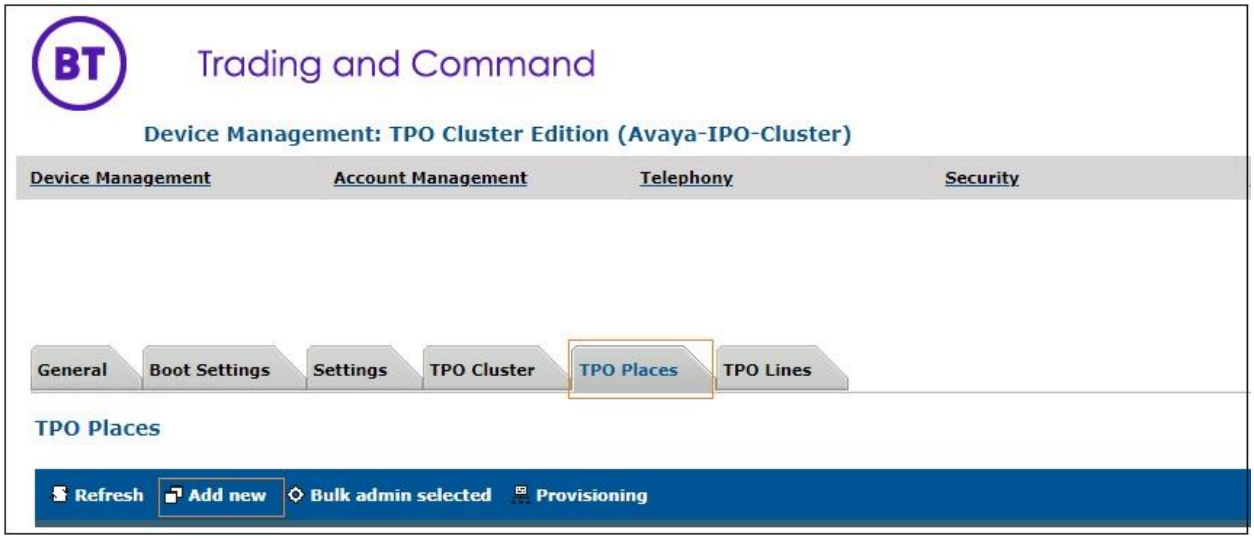


Enter the data as shown below.

Extension: The Avaya Number defined in **Section 5.3.1**
Register: Select the Yes radio button.
SIP Display Name: Define the Avaya Number again.
SIP Password: The Extension Password that you set on IP Office.
SIP Digest: Define the Avaya Number again.
SIP Domain: Define the IP Address of IP Office.
Access Point Extension: Set the radio button to No.

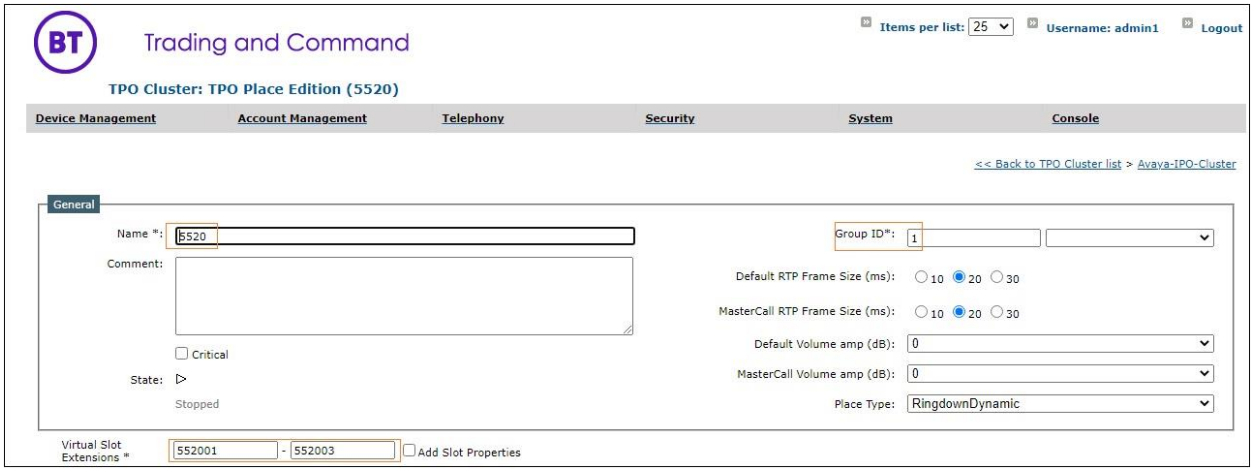


Once complete, select **Save and Go Back** (not shown)**.**
Select **TPO Places** and **Add new**

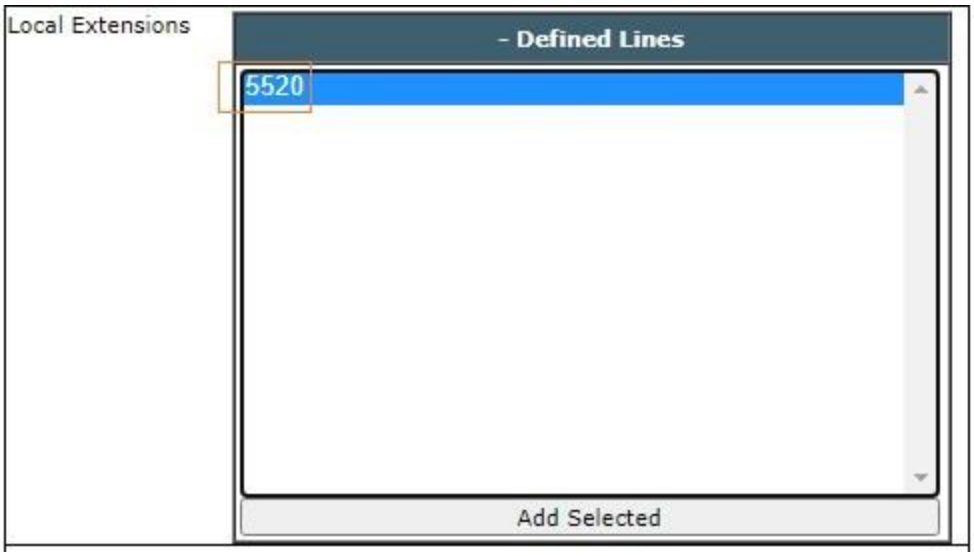


In the first instance, create a **Name**. Select the **Group ID** used. Ensure **RingdownDynamic** is selected as the **Place Type**.

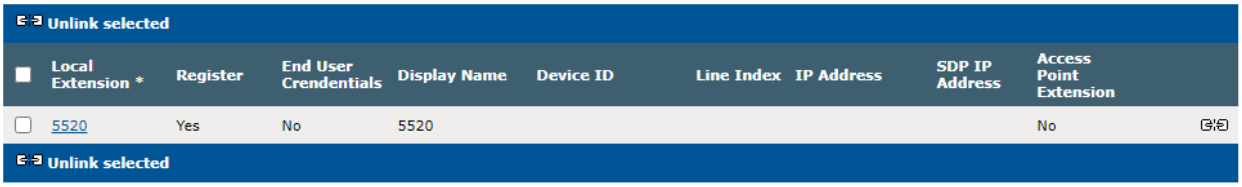
In the **Virtual Slot Extensions** field, 552001 to 552003 are specified. This will create three appearances for the 5520 DDI line which is associated with Avaya IP Office, 5520**01** is Slot 1, 5520**02** is Slot 2 and 5520**03** and Link the Line to the TPO Place by selecting the grey **Defined Lines** box (not shown).



Select **Add Selected** to add the local Extensions.

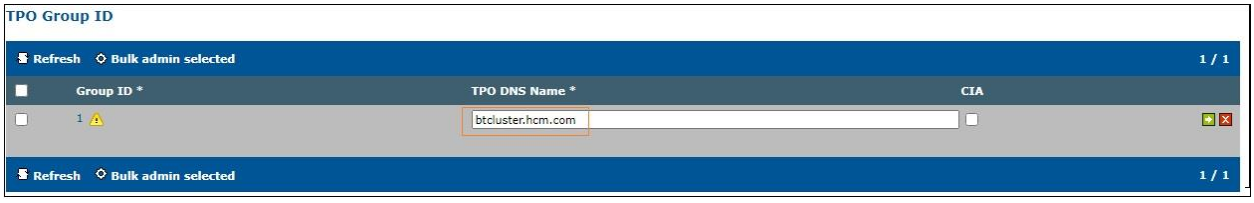


Ensure that the extension has linked correctly by looking at the linked extensions below.

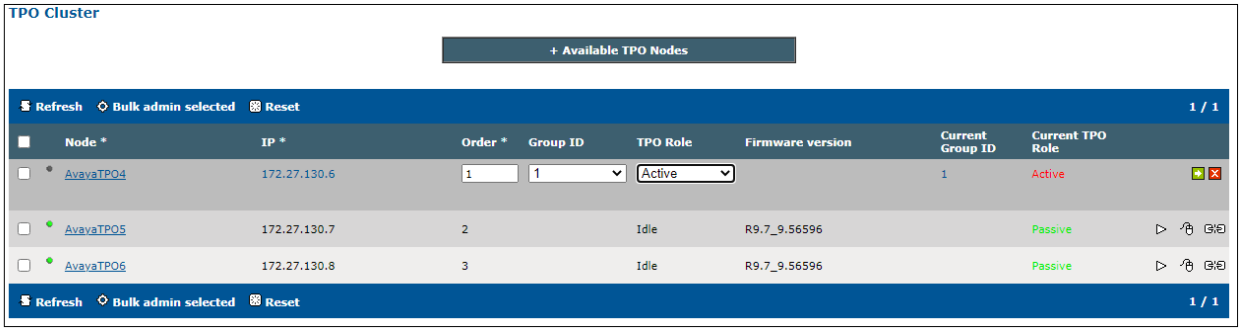


Next, navigate to the **TPO Cluster** Tab.

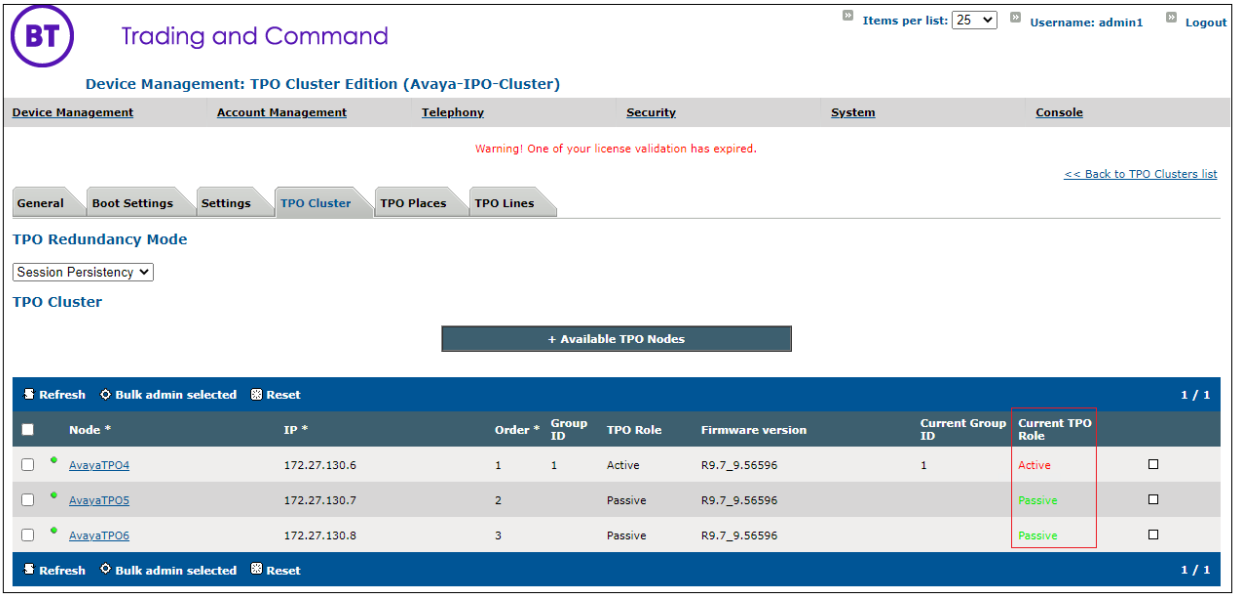
Add the **TPO Group ID** in a format which has a dot in it, in this example ‘btcluster.hcm.com’ is used as TPO DNS Name. This name is registered on the DNS. Again, select the green arrow to commit the changes.



Add the **Order** of preference (if more than two TPO's are in a TPO Cluster). The **Group ID** that Lines were added to. Select **Active** from the **TPO Role** drop down. Select the green arrow to the right to save the changes. Follow the same step and select the TPO Role to passive to configure passive TPO's in the cluster.

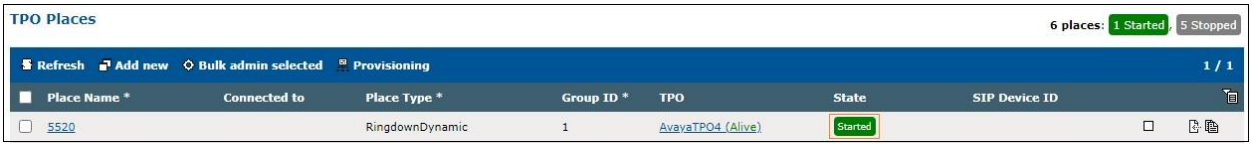


After a couple of seconds, the TPO current role will become active, passive, and passive.



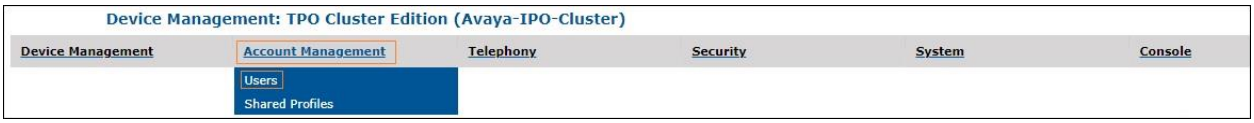
Now select the **TPO Places** tab and select the Play button and wait for the TPO places to start.

Once the place registers, it will display a status Alive **started**.



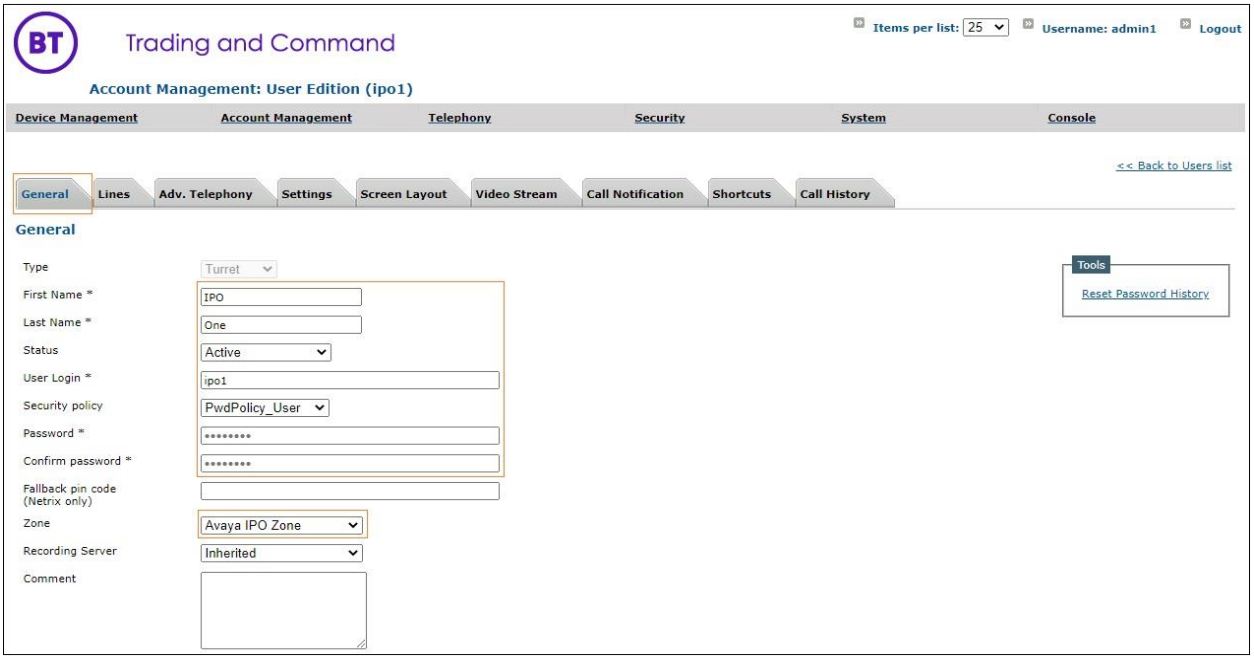
6.1.4. Add Users

The next task is to add a user, use the top menu and select User Management, and then Users.

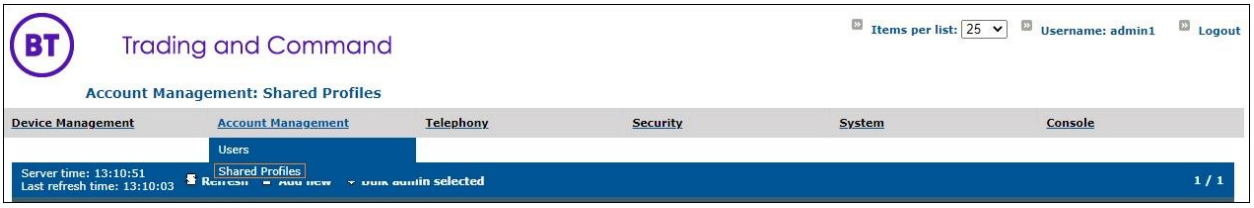


Select **Add new**.

Enter the information regarding the user below. For this example, the user ipo1 is created.

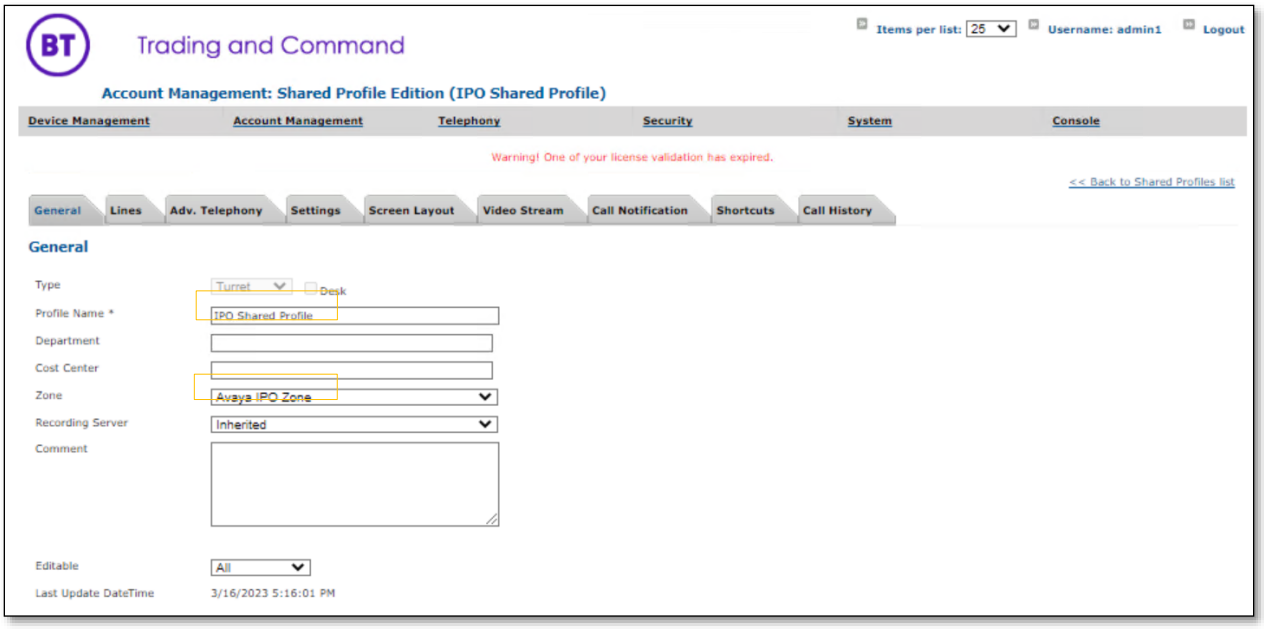


Now create a shared profile, select **Account Management** and then **Shared Profiles.**



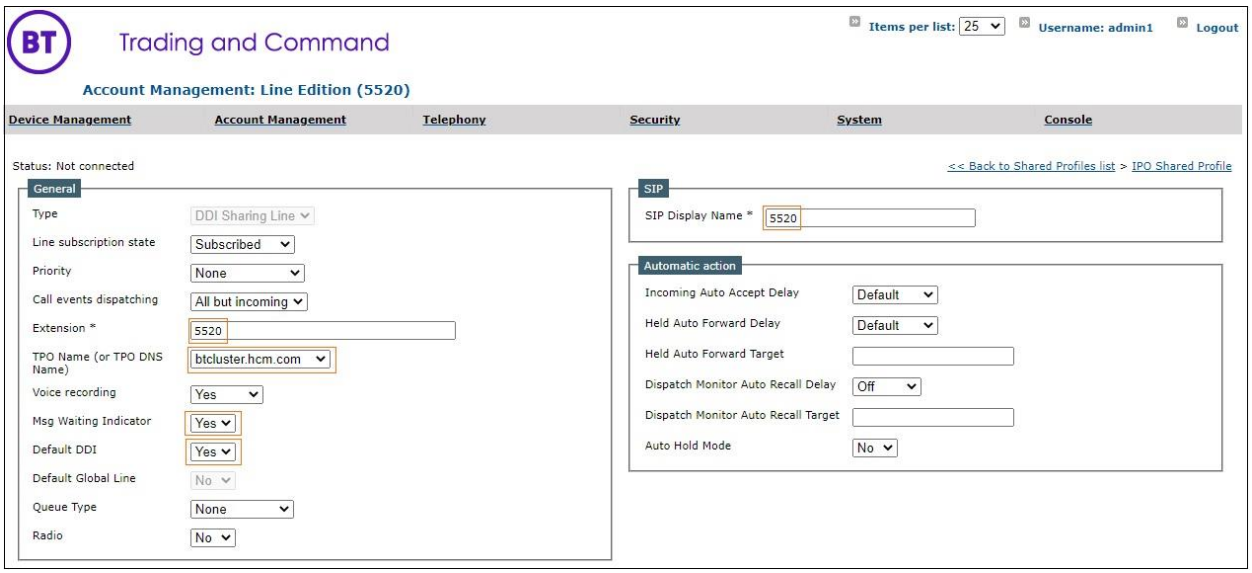
Select **Add new**.

Configure the shared Profile. Select **Update** (not shown).



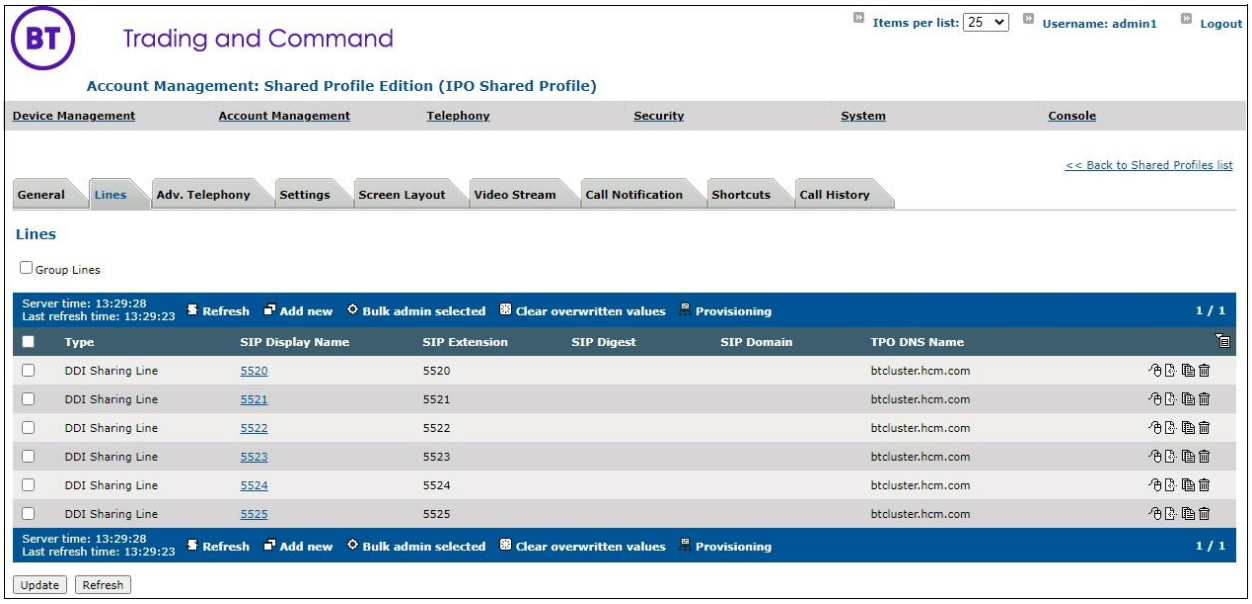
Select the Lines tab, then select **Add new**.

Enter all the Lines associated with the **IPO Shared profile** by entering the following information. In this example, the shared line 5520 is added.



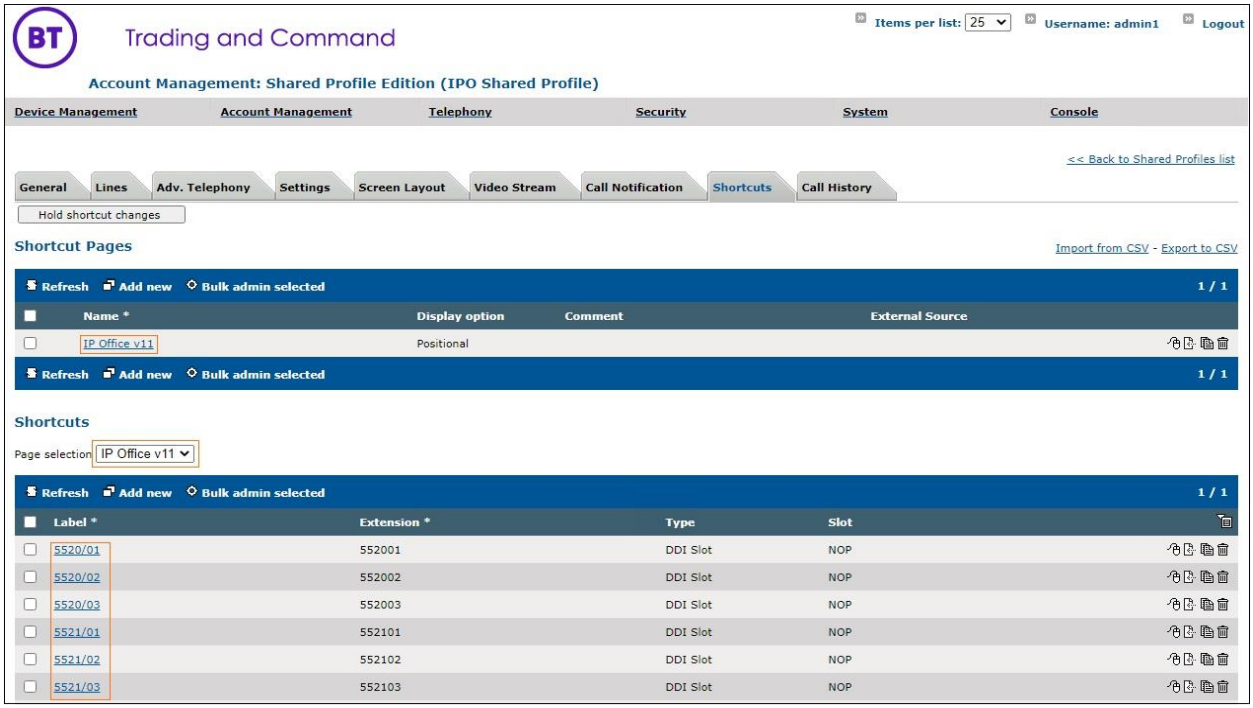
Select **Update and Go Back** when completed.

Ensure all the Lines are present via the shared profile by selecting the **Lines** tab.



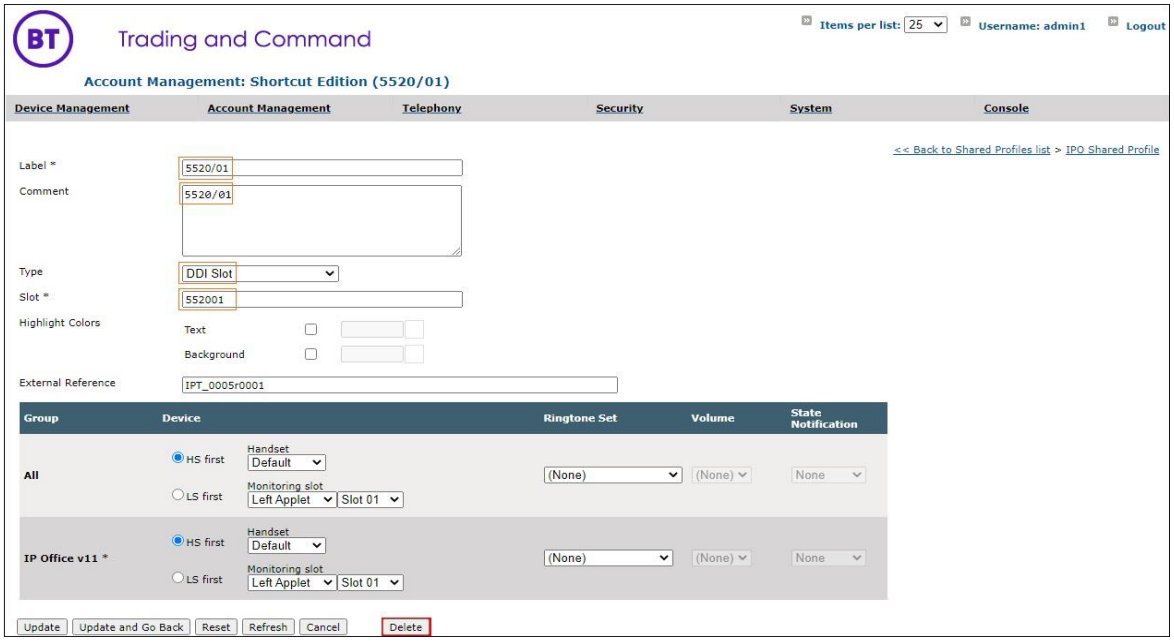
Now that the lines are added, they need to be inserted onto a key page. Navigate **to Account Management** and then **Shared Profiles** (not shown).

Select **the Shared Profile** and select the **Shortcuts** tab from the Menu bar select **Add New** Shortcut page (e.g. **IP Office v11**) and configure **shortcuts** for Avaya DDI Lines.



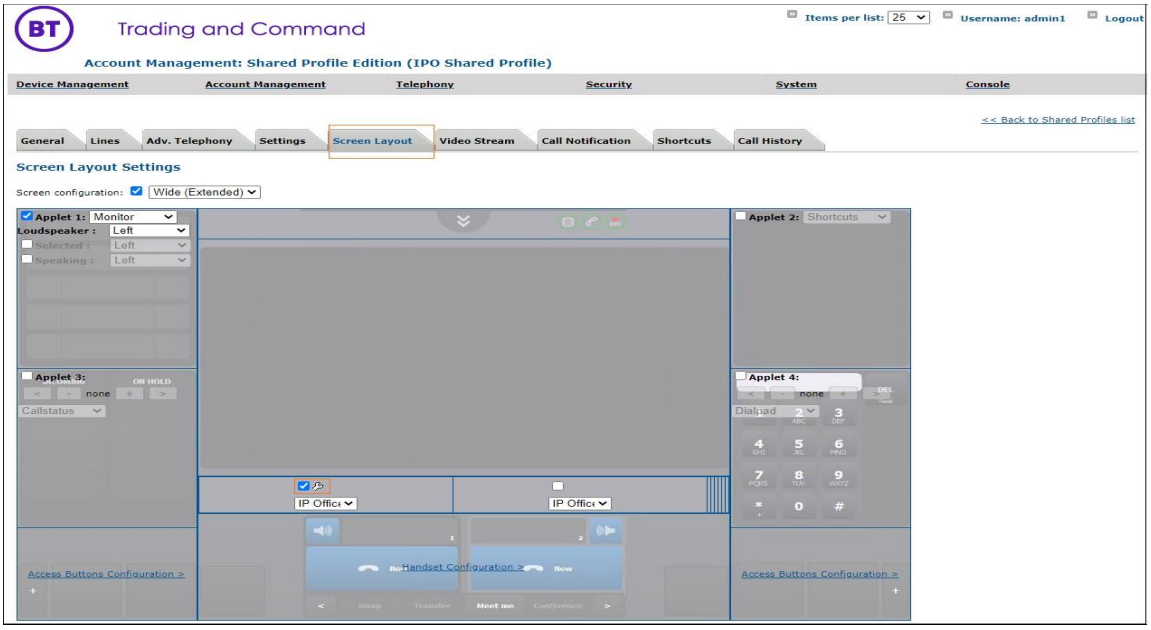
Configure the example shown below. In this example, the first slot (5520/1) is configured for Shared Appearance 5520.

Label: The Shared Appearance followed by the slot number.
Type: Select **DDI Slot**.
Slot: The full Shared Appearance. 552001.

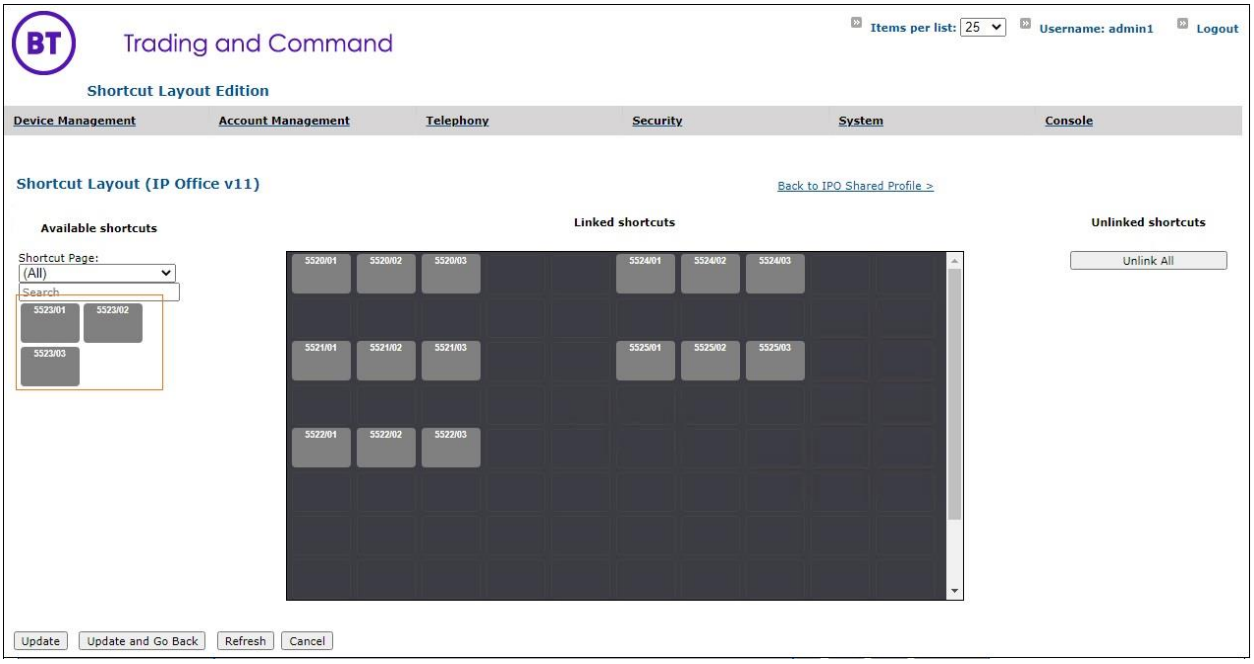


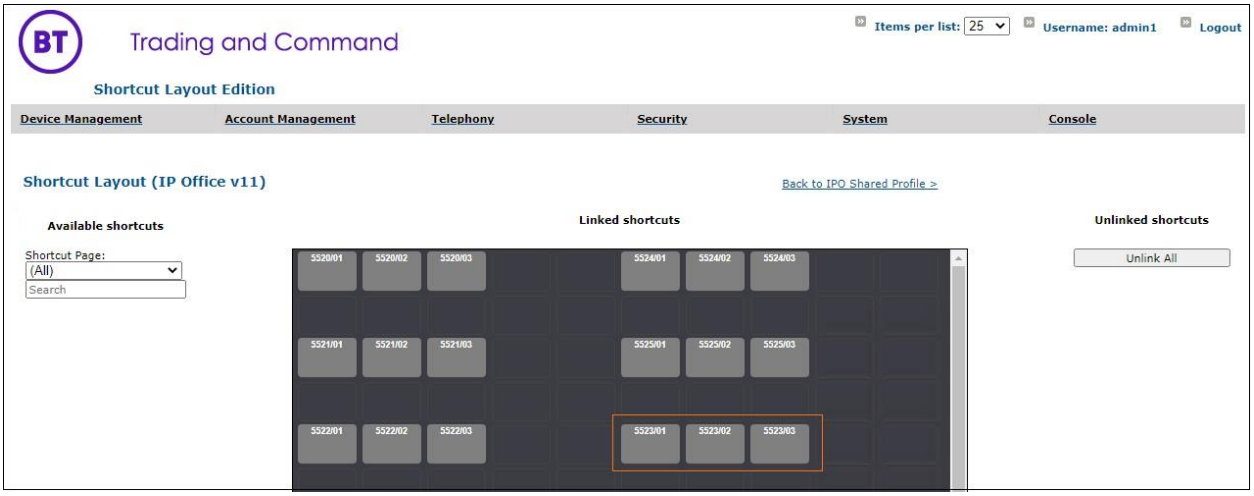
Once complete, select **Update and Go Back**.

Next, select the Screen Layout tab from the top menu bar. Select the Key page to place the shared appearances by checking the tick box and then selecting the spanner symbol next to it as shown in the picture below.



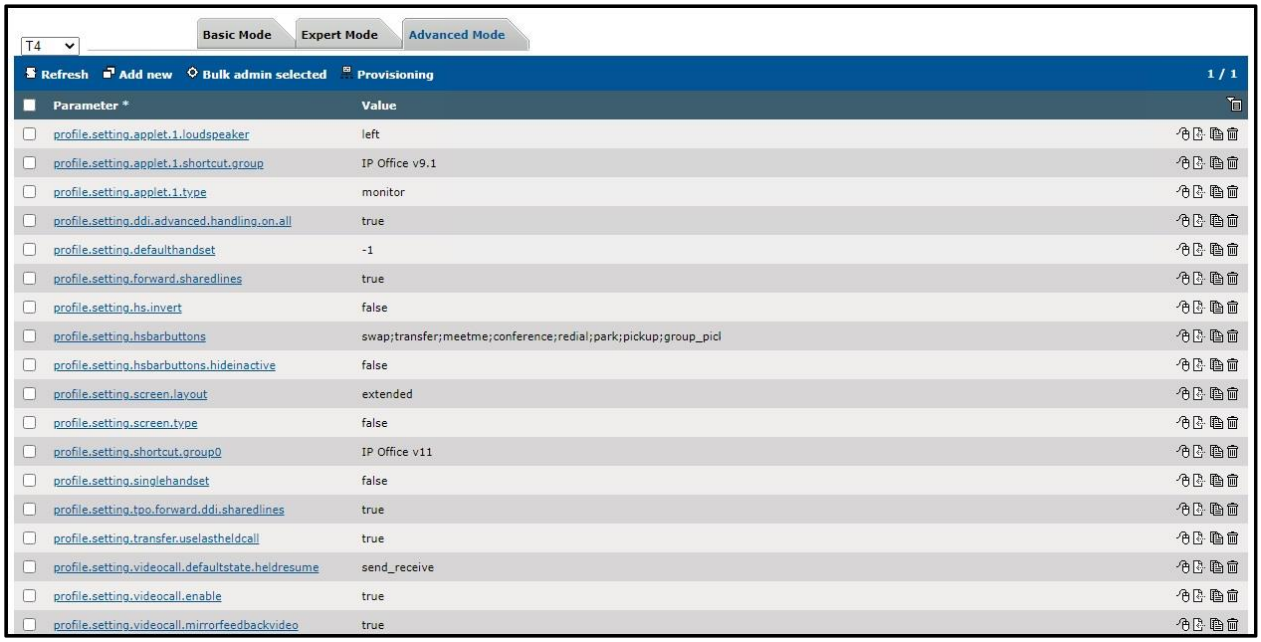
The shortcuts you have just created as Available Shortcuts on the left-hand side of the screen. Click each shortcut which will automatically place the shortcut into the Unlinked shortcuts window. Click and drag the shortcut into the Linked shortcuts window.





Select **Update and Go Back** after linking the shortcuts.

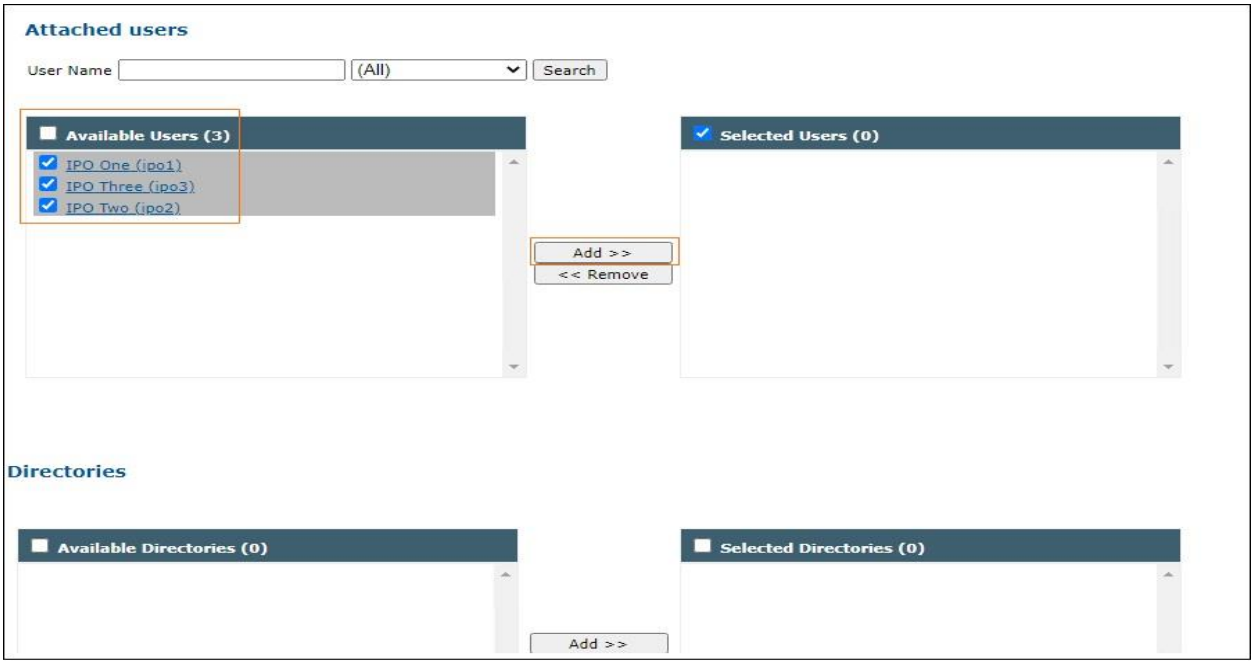
Navigate to **Shared Profile** Setting tab, ensure that all the advanced settings are present as per the picture below. Please refer to earlier in this document for adding new parameters.



Assign **Avaya IP Office** shared profile to the Users.

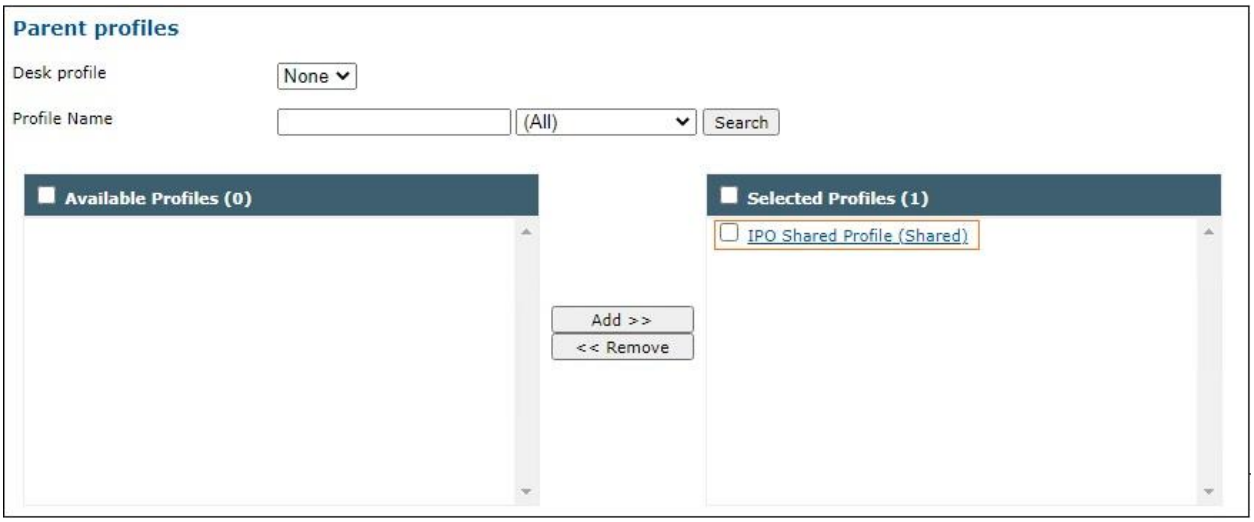
Select the **General** Tab (not shown) and halfway down the page there is a search box as shown in the picture below. Select **Search**.

All Users configured on the system will appear, select the ones you want to add into this Shared Profile and select **Add.**



The users have been added into the right-hand window. Select **Update and Go Back** (not shown).

To confirm, select the **User** and check if the user is showing as added into the Shared Profile.

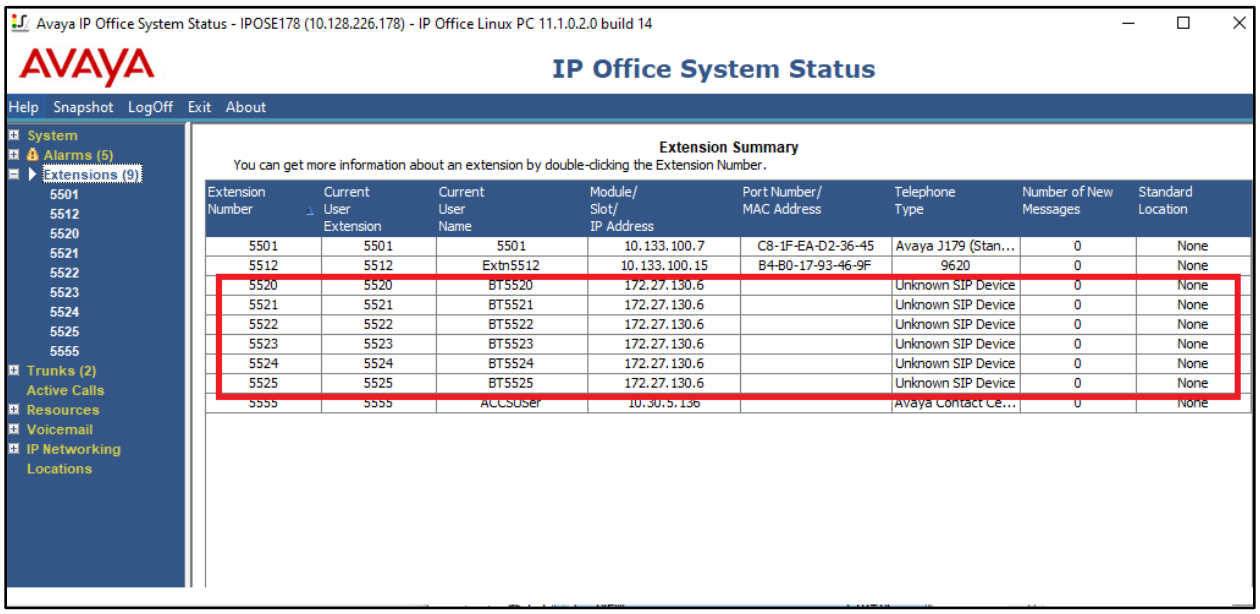


7. Verification Steps

This section describes the verification that can be carried out to verify the connection between BT Trading Platform with Avaya IP Office.

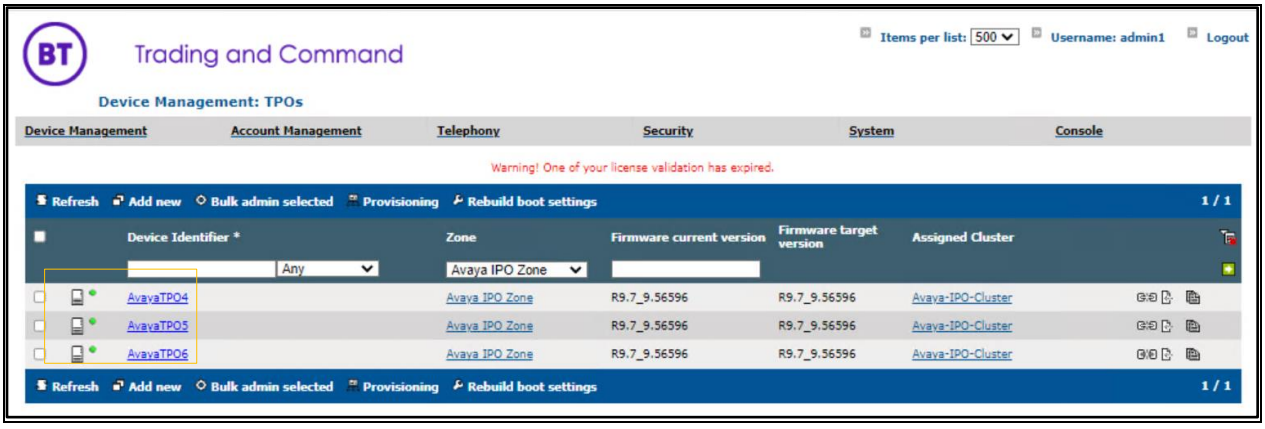
7.1. Avaya IP Office Verification

Using **IP Office System Status** program, click on **Extensions** and verify that the BT Trading Turrets are registered.

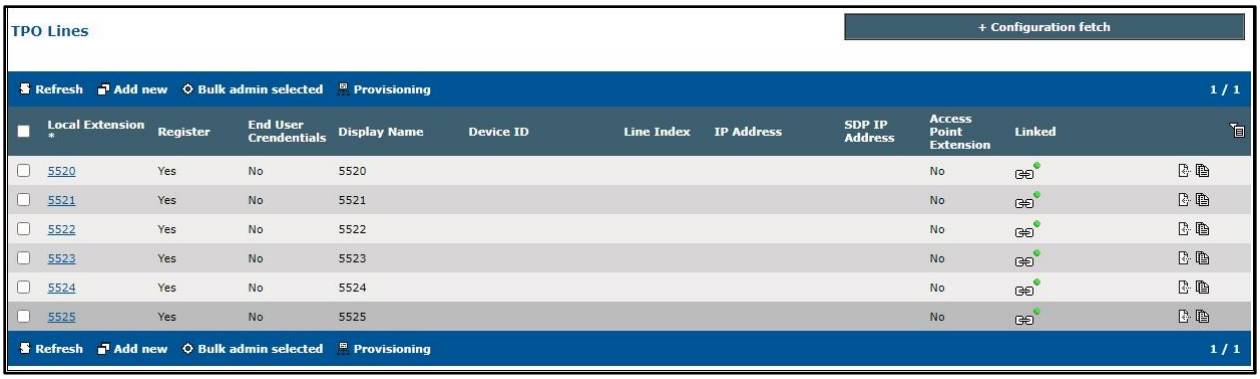


7.2. BT Trading Platform Verification

In **Device Management/TPOs**, ensure that the TPO is reachable. This is indicated by a Green Status as shown below.



In Device Management/TPO Clusters/Your TPO Cluster, navigate to the **TPO Lines** Tab. The Lines must be linked to a TPO Place. This is indicated by the Linked column. Green status indicates that the TPO is up and the TPO Place is started.



In the same area, on the TPO Cluster tab, the TPO must show a green status and as Active.

Lastly, select the **TPO Places** tab (not shown). All lines show a status of Started; this indicates that the TPO has registered the line to the Avaya IP Office.

7.3. Verification calls between Avaya endpoints and BT Turrets

From an Avaya endpoint make call to BT Turret's number. Make sure that BT Turret can receive the call correctly. Using **IP Office System Status** and verify the call:

Extension Status

Extension Number:	5520		
IP address:	172.27.130.6		
Standard Location:	None		
Registrar:	Primary		
Telephone Type:	Unknown SIP Device		
User-Agent SIP header:			
Media Stream:	RTP		
Layer 4 Protocol:	TCP		
Current User Extension Number:	5520		
Current User Name:	BT5520		
Forwarding:	Off		
Twinning:	Off		
Do Not Disturb:	Off		
Message Waiting:	Off		
Number of New Messages:	0		
Phone Manager Type:	None		
SIP Device Features:	UPDATE		
License Reserved:	Yes		
Last Date and Time License Allocated:	6/27/2023 5:30:28 PM		
DTMF Required:	No		
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	Direction	Other Party on Call
7	Alerting	00:00:07		Incoming	Extn 5511, Extn5511

Accept the call from BT Turret and verify audio is clear in both sides.

8. Conclusion

These Application Notes describe the configuration steps required for BT Trading Platform to interoperate with Avaya IP Office. 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 BT product documentation that are relevant to these Application Notes.

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

i. *Deploying IP Office Essential Edition (IP500 V2) IP Office™ Platform 11.0, 2 Issue 35h (Tuesday, May 18, 2021)*
ii. *Deploying Avaya IP Office™ Server Edition Solution (English), Release 11.1 FP1, Issue 16, February 2021*
iii. *Administering Avaya IP Office with Manager (English), Release 11.1.1, Issue 25, February 2021*
iv. *Administering Avaya IP Office with Web Manager (English), Release 11.1.1, Issue 25, February 2021*

Information regarding product documentation for BT Trade can be obtained by contacting the BT Support email in **Section 2.3**

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.