**Avaya Solution & Interoperability Test Lab**

# Application Notes for estos GmbH estos ECSTA with Avaya IP Office Server Edition – Issue 1.0

## Abstract

These Application Notes describe the configuration steps necessary for provisioning estos ECSTA v6.0 to successfully interoperate with Avaya IP Office Server Edition R11.1.

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.

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# 1. Introduction

These Application Notes describe the configuration steps necessary for provisioning estos GmbH estos ECSTA v6 to successfully interoperate with Avaya IP Office Server Edition R11.1.  estos ECSTA for Avaya IP Office is middleware which integrates with Avaya IP Office using the Centralized CTI Web Services API to provide, call control, device control and call monitoring.

**Note**: Avaya IP Office consists of an IP Office Server Edition running on a virtual platform as the primary server with an IP Office IP500 V2 running as an expansion cabinet. Both systems are linked by IP Office Line IP trunks that can enable voice networking across these trunks to form a multi-site network. Each system in the solution automatically learns each other's extension numbers and user names. This allows calls between systems and support for a range of internal call features. A connection to IP Office 500 V2 as a standalone is possible with the use of an IP Office Application Server but this was not the focus of these Application Notes.

Centralized CTI Web Services API was introduced on IP Office Server Edition R11.0 and provides, along with other services, Telephony functionality. With previous versions of IP Office, a TAPI connection to each IP Office node was required in order to provide call control and device control. With the introduction of Centralized CTI Web Services API, a single third-party server is now the requirement which will provide telephony functionality for all IP Office nodes. Centralized CTI Web Services uses one-X® Portal, which is installed with IP Office Server edition by default, and this must be configured along with some security settings on IP Office, (see **Section 5**).

# 2. General Test Approach and Test Results

The test approach was to connect estos ECSTA to IP Office using the Web Services API to obtain information on all the IP Office devices and then use a phone application to make and receive calls on these devices. The estos ECSTA TAPI driver was installed on a Windows 10 64bit PC. On the same PC, the phone application EPhone.exe was installed and was used to monitor and control Avaya H.323, SIP IP and Digital telephones, using the Web Services API via the IP Office Primary server. Inbound and outbound calls to the PSTN were made using simulated PSTNs.

The IP Office Centralized CTI Web Services API Telephony functionality includes:
- Make/Answer/Disconnect a call.
- Place a call on hold and retrieve a held call.
- Swap Hold.
- Transfer a call (Supervised & Blind).
- Initiate a conference/Drop a conference participant/Disconnect a conference.
- Call Forwarding, (all, CFNA and Busy).
- Generate DTMF tones.
- Mute/Unmute.
- Do Not Disturb.

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**Note:** A client was not used during compliance testing. Instead, a test harness called EPhone.exe provided by estos was used to demonstrate call control of the IP Office endpoints which included both IP and Digital phones.

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 IP Office and estos ECSTA did use a secure SSL link.

## 2.1. Interoperability Compliance Testing

The objective of Interoperability Compliance Testing is to provide assurance to the potential customers that the tested products operate as specified and can interoperate in an environment similar to the one that will be encountered at a customer's premises. The interoperability compliance testing focused ensuring that the connection between estos ECSTA and IP Office was successful and to do that the following tests were carried out using EPhone.exe.

- Answer incoming calls both from internal and external callers.
- Make calls to internal and external numbers.
- Hold/Unhold incoming and outgoing calls.
- Transfers (Blind/Supervised).
- Transfers to External/Mobile numbers.
- Set/Cancel Call Forwards.
- Serviceability testing, which focused on verifying the behaviour of estos ECSTA under different simulated LAN failures.

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## 2.2. Test Results

Tests were performed to ensure full interoperability of IP Office with estos ECSTA. Performance and load testing is outside the scope of the compliance testing. All the test cases passed successfully.

## 2.3. Support

Information on estos and product support can be obtained through the following:

- Online: https://support.estos.de/de
- Phone: + 49 (8151) 36856-177

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# 3. Reference Configuration

**Figure 1** illustrates the network topology used during compliance testing. The Avaya solution consists of an IP Office Server Edition Primary Server and IP500V2 Expansion. The estos ECSTA makes use of the Web Services API to provide telephony functions that allow for third party call control of all Avaya phones. A variety of Avaya deskphones were used to generate intra-switch calls (calls between phones on the same system), and outbound/inbound calls to/from the PSTN.

**Note:** Two simulated PSTN lines was used, consisting of a SIP trunk connection to Session Manager and an ISDN ETSI link to Communication Manager.
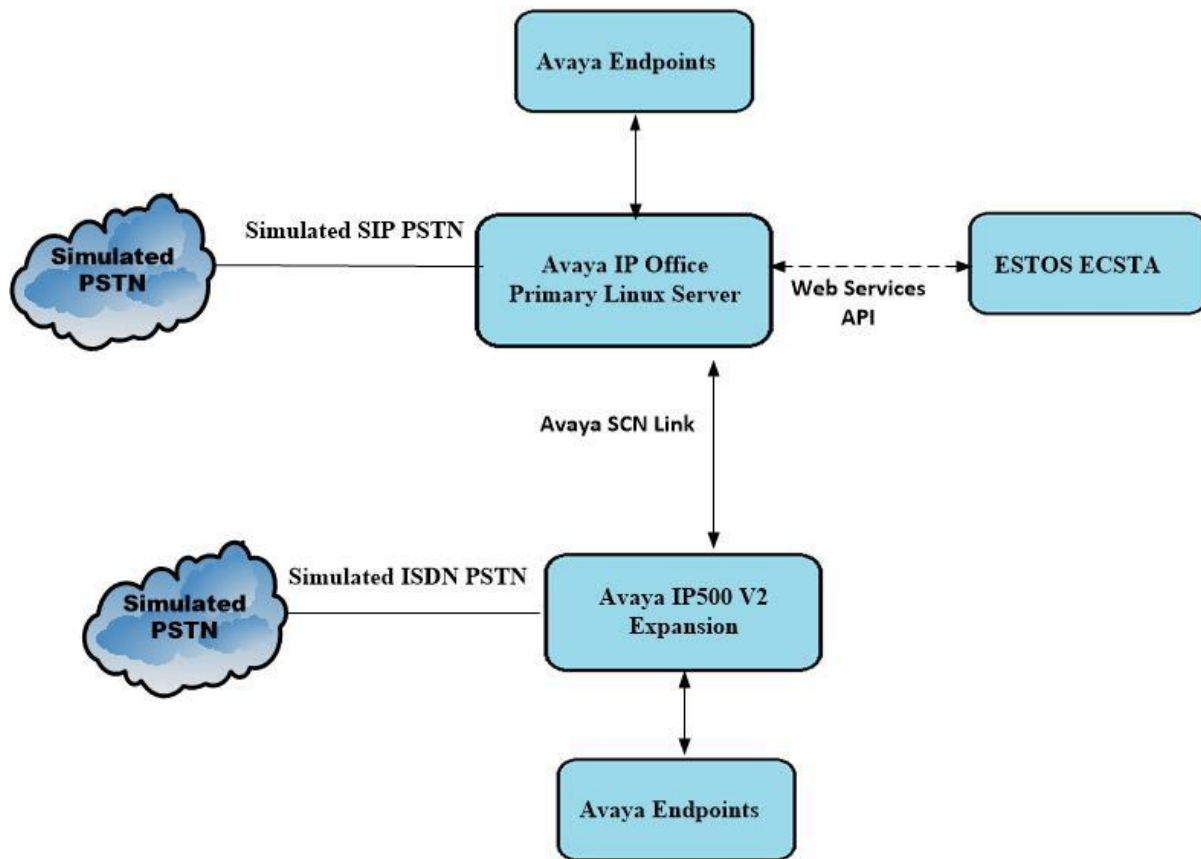


**Figure 1:** Avaya IP Office Server Edition and estos ECSTA reference configuration.

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# 4. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:
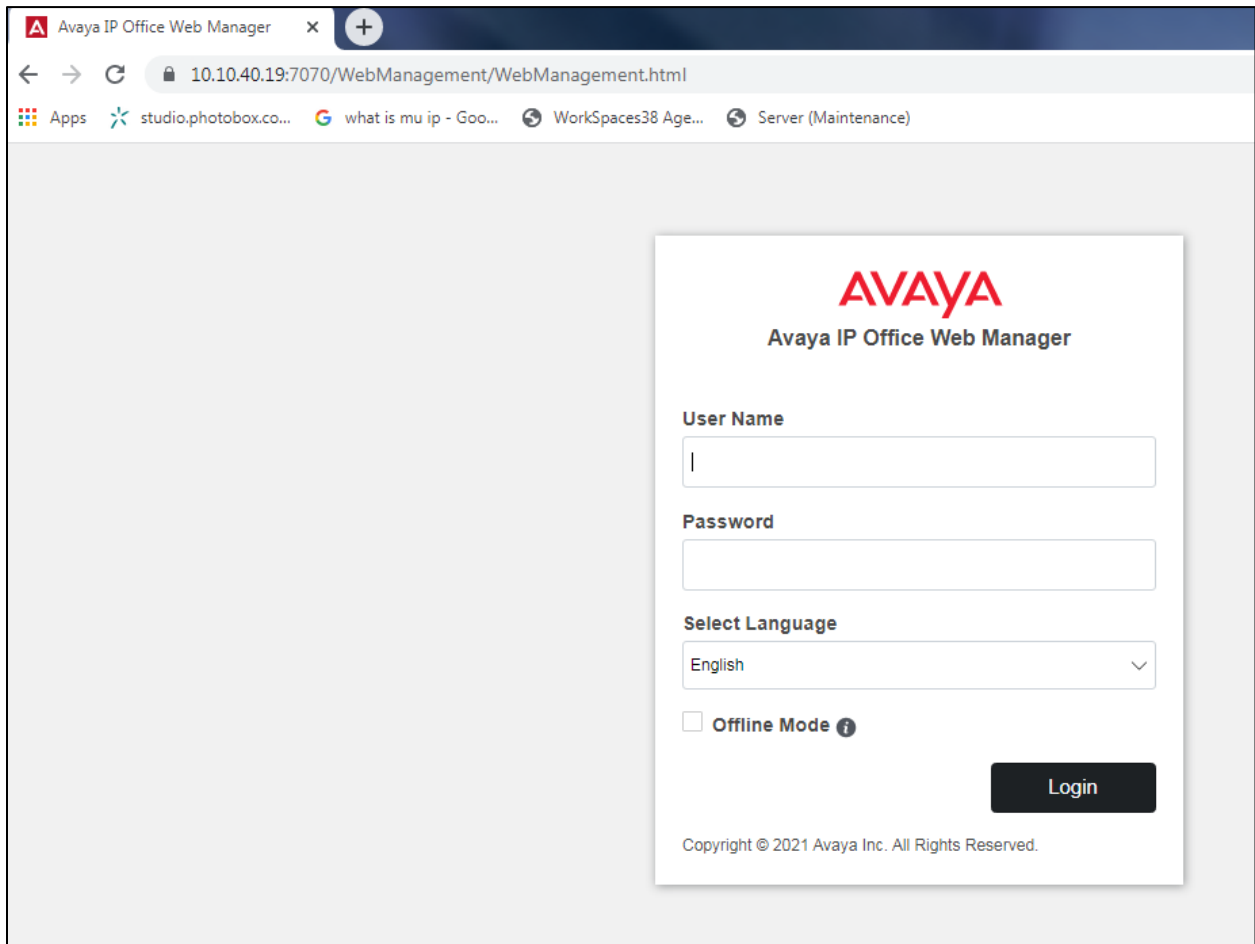
| Equipment/Software | Release/Version |
|---|---|
| Avaya IP Office Server Edition running on a Virtual Platform | 11.1.2.0.0 Build 239 |
| Avaya IP Office 500 V2 Expansion | 11.1.2.0.0 Build 239 |
| Avaya J179 IP Phone (H.323) | 6.8304 |
| Avaya J159 IP Phone (SIP) | 4.0.7.0.7 |
| Avaya 9508 Digital | 2.0 |
| estos GmbH estos ECSTA | 6.0.7.889 |

**Note:** Compliance Testing is applicable when the tested solution is deployed with IP Office Server Edition in any configuration. For a standalone IP500V2 configuration an additional Avaya IP Office Application Server is required and was not tested as part of this compliance testing.

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# 5. Configure Avaya IP Office

The configuration of IP Office can be carried out using the traditional IP Office Manager or the newer IP Office Web Manager. For this setup IP Office Web Manager was used to configure the connection to estos ECSTA. A new Rights Group and Service User were added specifically for the connection to estos ECSTA.

Open a URL to the IP Address of the IP Office Server Edition and enter the appropriate credentials, as shown below.

From the top menu, navigate to **Security → Security Settings**.
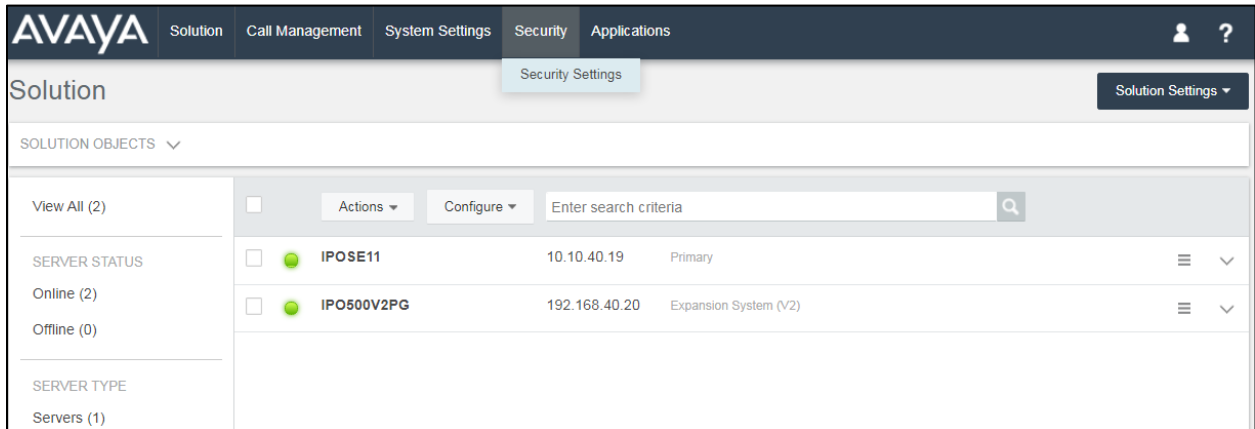


The **Primary** Server Edition was chosen.
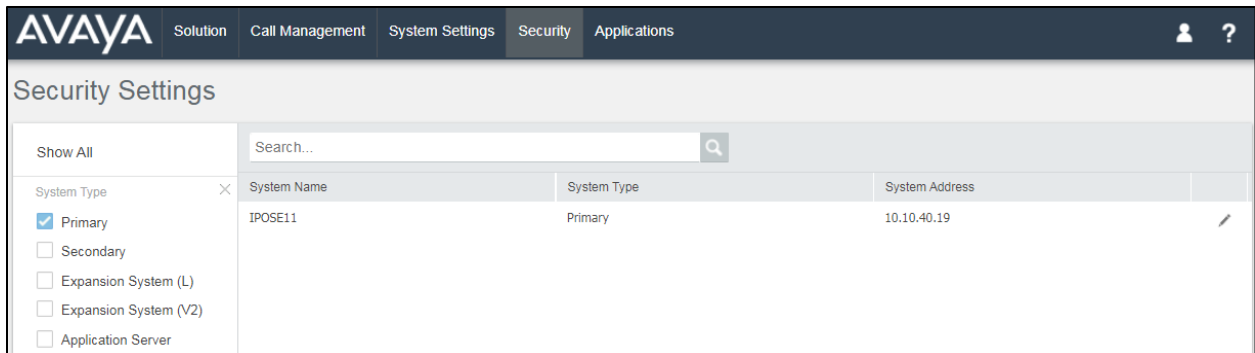


## 5.1. Add a new Rights Group for estos ECSTA

Before the user is added, a new Right Groups needs to be configured for this user. Navigate to **Rights Groups** in the left window and click on **Add Rights Group** in the main window.
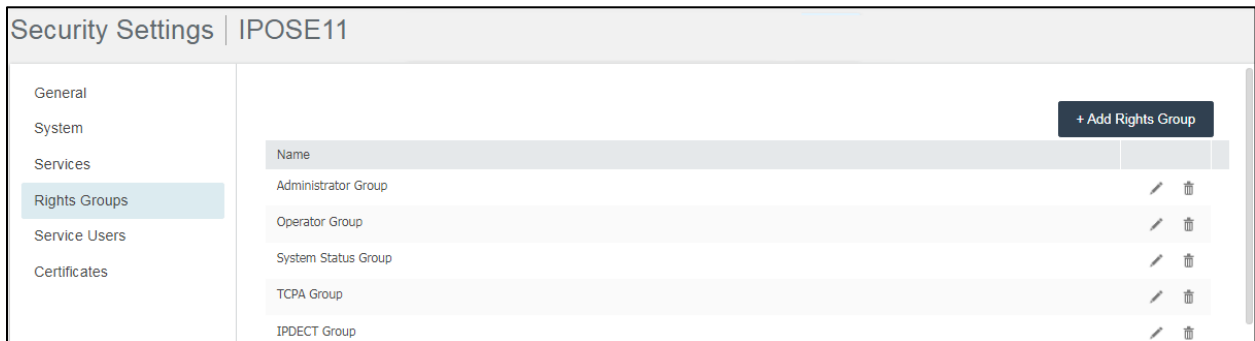
There are a number of tabs that can be configured, first enter a suitable **Name** in the **Group Details** tab.



Navigate to **Telephony APIs** and ensure that all are selected, as shown below.

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Under the **External** tab, ensure that **one-X CTI API** is ticked, as shown below. Click on **Save**.



## 5.2.  Add a Service User for estos ECSTA

Click on **Service Users** in the left window. Click on **Add Service Users** in the main window.

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Enter a suitable **Name** and **Password**. Ensure the **Account status** is **Enabled** and scroll down to add the **Rights Group** that was created previously in **Section 5.1**.



The **estosWS** Rights Group that was created in **Section 5.1** is selected here and **Save** is clicked to add the new user.

## 5.3. Configure Avaya one-X® Portal

For compliance testing the interface was using a secure link. However, if the interface is not using SSL the service must be allowed access to HTTP on port 8080. This is done on One-X® Portal Administrator under security.

Open a web browser to the IP Office Server Edition on **https://<Server IP>:9443/onexportal-admin.html**. Enter the appropriate credentials and click on **Login**.



Click on **Security** in the left window and on **HTTP/HTTPS Protocol** and ensure that that **Unsecure and Secure (HTTP and HTTPS)** button is selected and click on **Save**.

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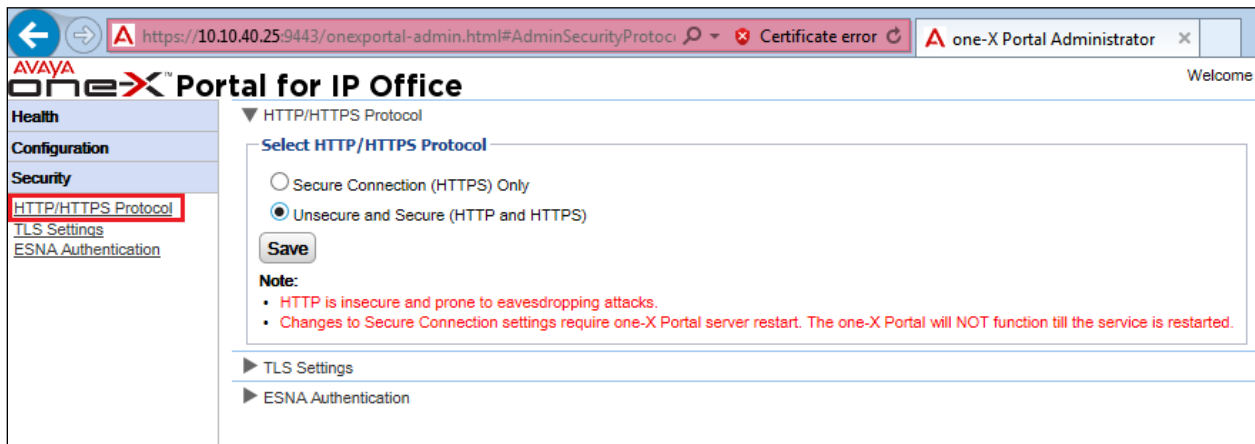
Once Save is pressed above the following message is displayed, click on **Yes**.

**Confirm**

(?) The one-X Portal will NOT function till the service is restarted. Are you sure to change the protocol?

Yes No
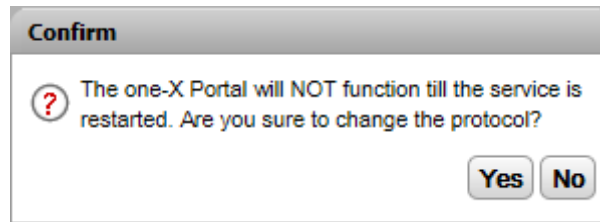
Once Yes is pressed above the following message is displayed, click on **Yes** again. The One-X® Portal will now restart and will log out the user automatically and will be offline for 2-3 mins.

**Confirm**

(?) Your change has been saved successfully. one-X Portal service needs to be restarted. Do you want to restart one-X Portal service?

Yes No
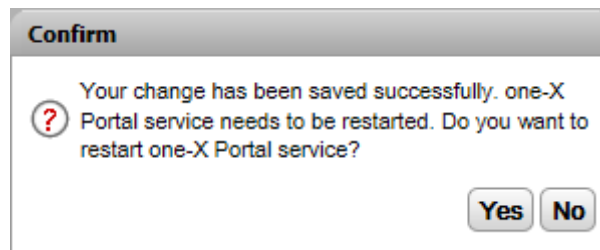
This concludes the setup on IP Office for CTI Web Services connections.

# 6. Configuration of estos ECSTA

This section outlines the steps to configure the estos ECSTA to connect to IP Office. estos ECSTA can be installed on a server or desktop PC. Installation is carried out using software provide by estos. Installation instructions are outside the scope of this document but information on installation of estos ECSTA can be found in **Section 9** of this document.

## 6.1. estos ECSTA configuration for IP Office

The **Phone Driver Options Advanced** can be located as shown below.
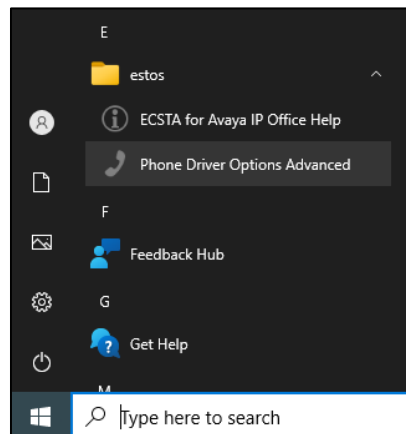


The **ECTSA for Avaya IP Office** driver is installed as part of the installation by the estos engineers. The existing driver can be configured by clicking on **Configure** at the bottom right of the screen. If a new driver was to be added for a second IP Office node, then click on **Add**.
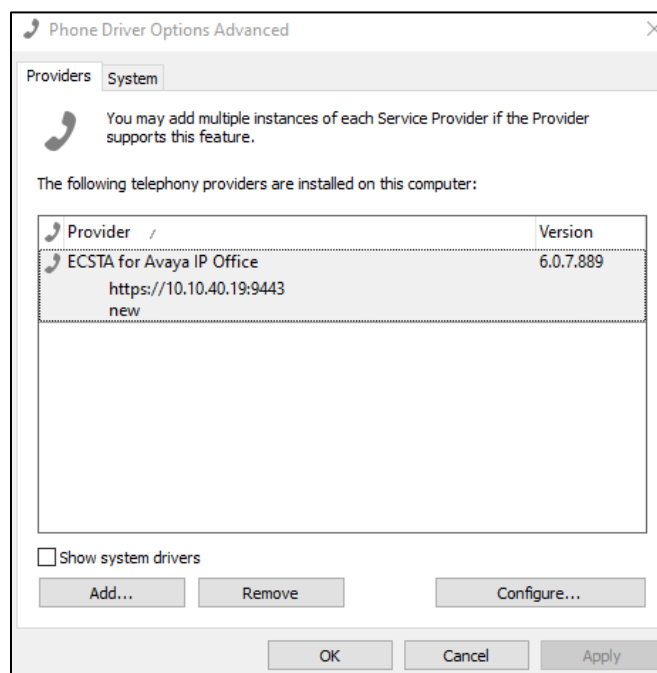
Clicking on **Add** will open a new window where an additional Driver or **Provider** can be added.
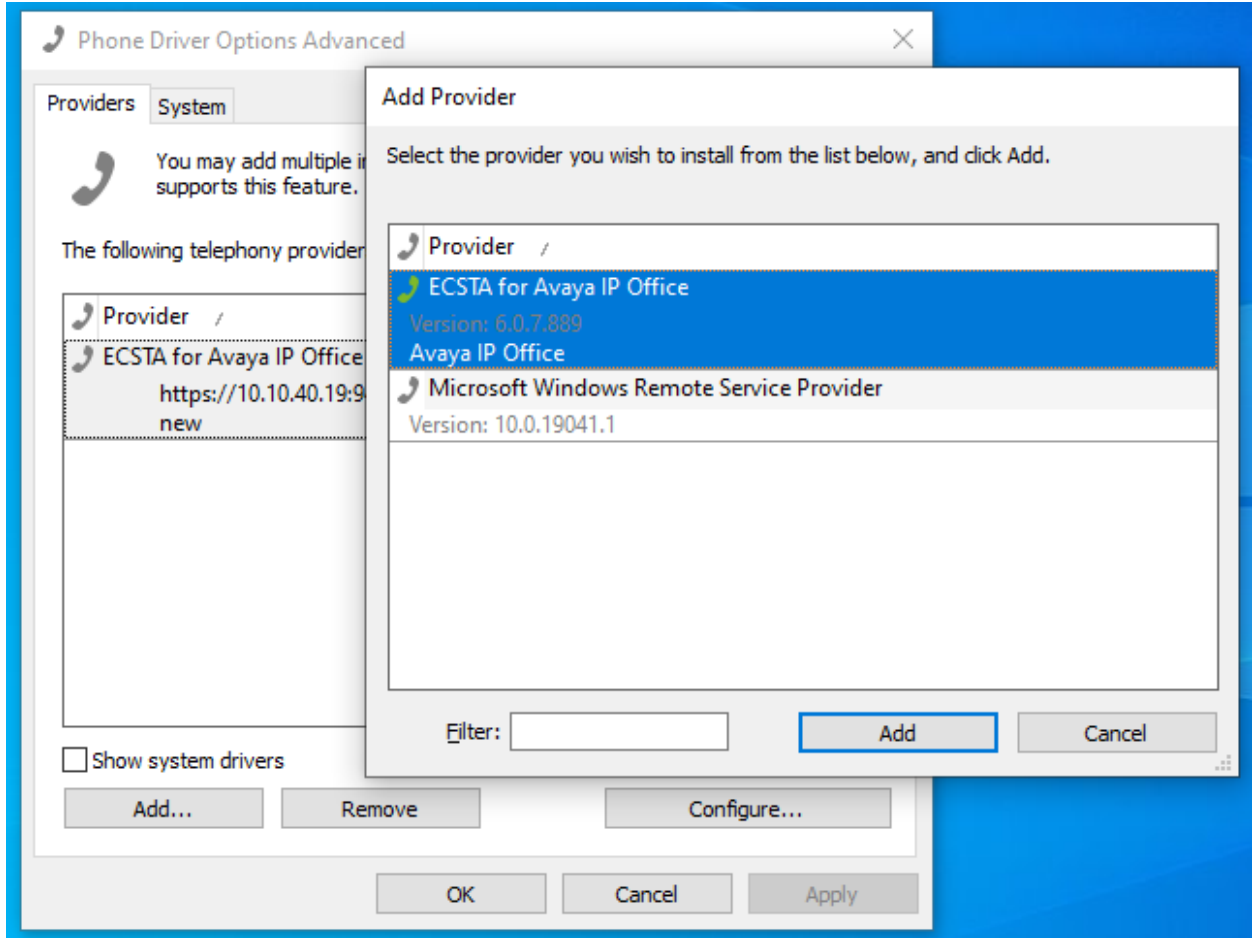
Pressing **Configure**, from the screen at the bottom of **Page 14**, opens the window below where the IP address of the Server Edition is added for **Host Name or IP - Port**, and **Port 9443** is used for the encrypted connection. **Encryption** is therefore set to **TLS Connection (encrypted)** as shown below. The **Username** and **Password** is set to that configured in **Section 5.2**. The Test connection button can be used, to verify, whether the configured parameters are correct so that a connection can be established between ECSTA TAPI driver and Avaya IP Office.
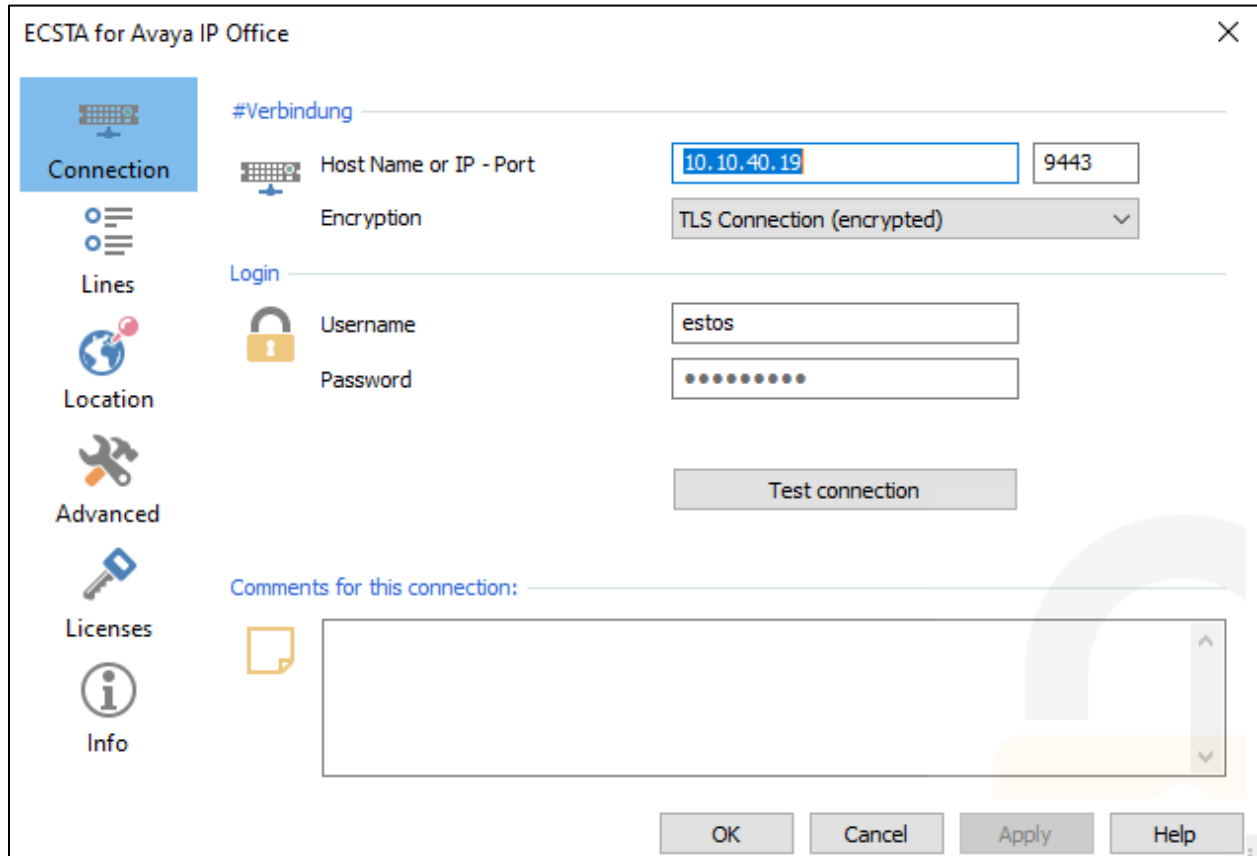
Clicking on **Lines** in the left window, allows the addition of the IP Office extensions, or Lines as they are called in reference to TAPI. The extensions that are to be monitored by ECSTA will be added here. A whole range of lines can be added by selecting **Extras** and **Load Lines** as shown below, or one Line can be added by clicking on **Add**.
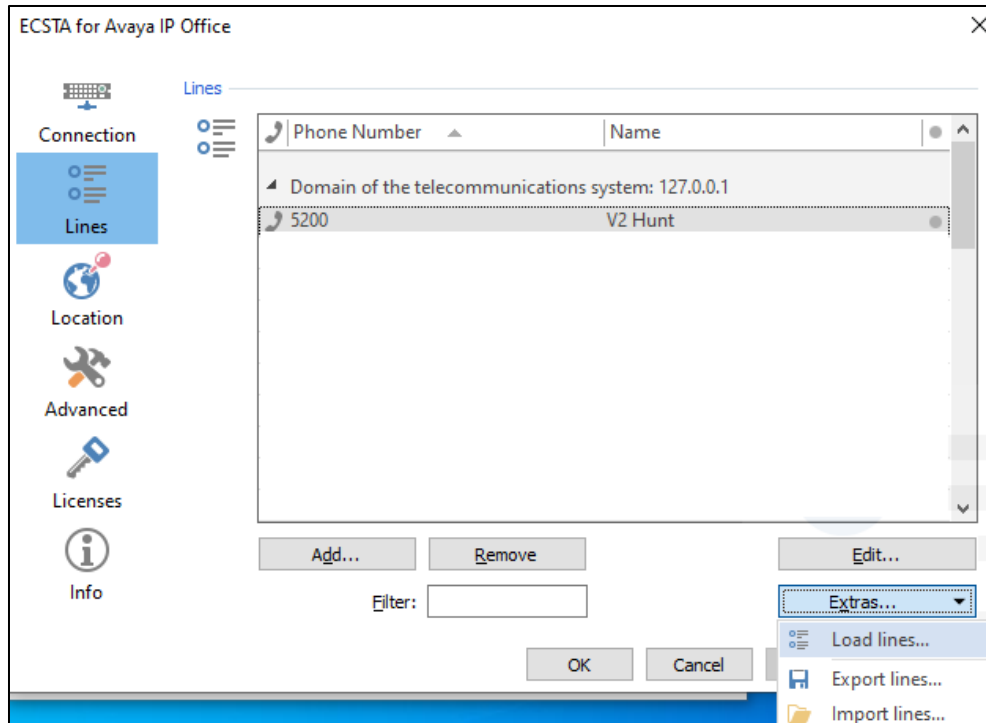


For compliance testing, a range of lines were added as shown below. Fill in the appropriate details and click on **Read lines**.

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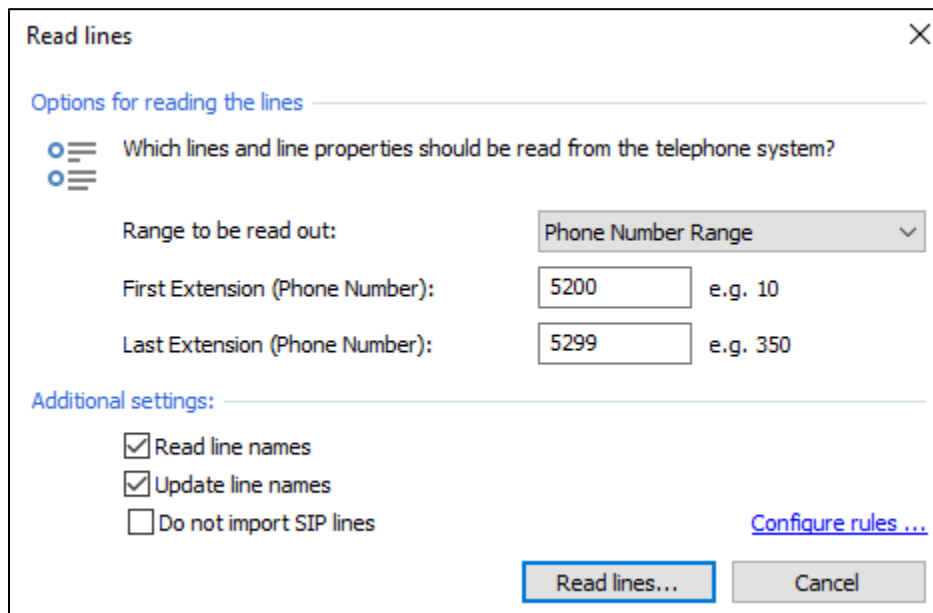
To add an individual line, click on **Add** as shown below.
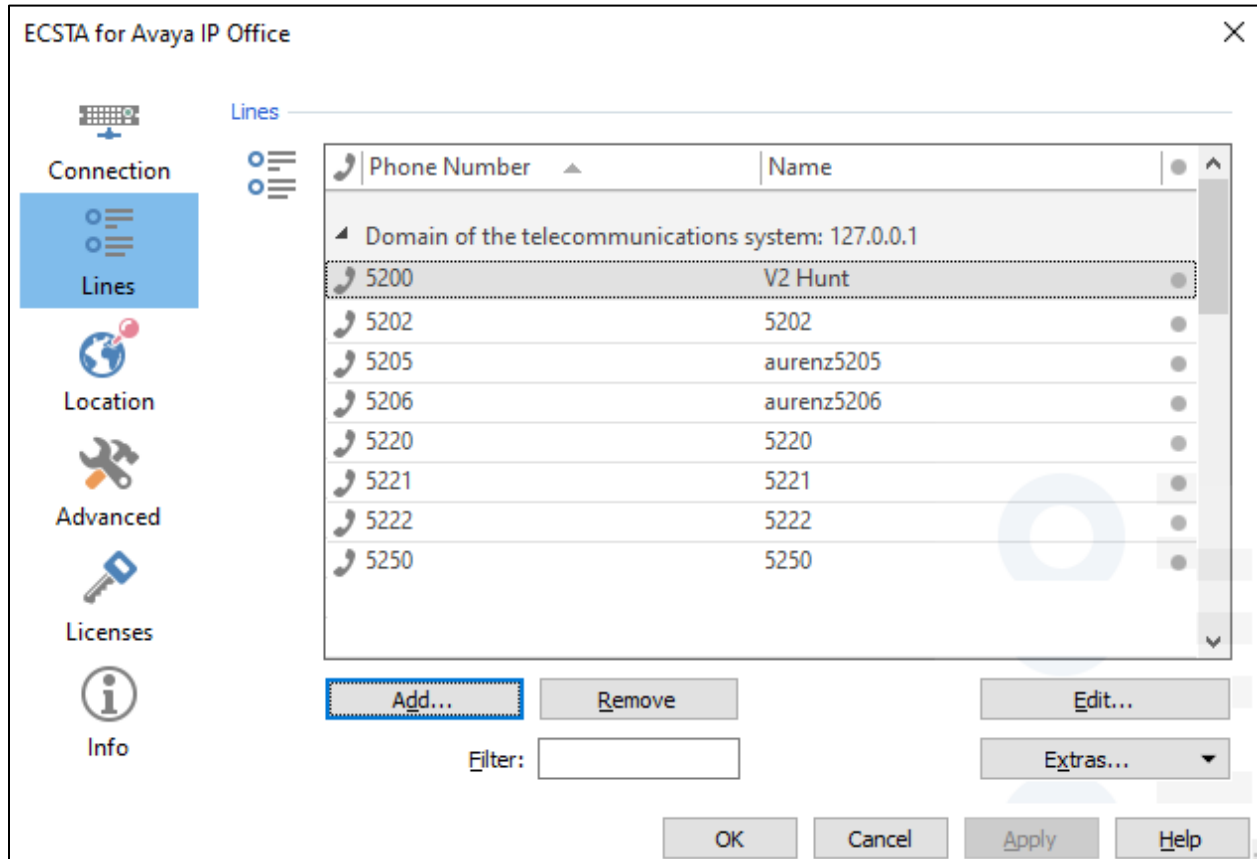


The **Phone Number** will be the extension number of the IP Office extension in question. The **Name** can be anything but may be useful to keep this the same as the extension number. **Domain of the telecom** was set to **127.0.0.1**, because One-X® Portal and IP Office were running on the same host. This could have been 10.10.40.19 also, as this was the IP address of the IP Office hosting one-X® Portal. ECSTA already has a link to 10.10.40.19 configured and so 127.0.0.1 was used.

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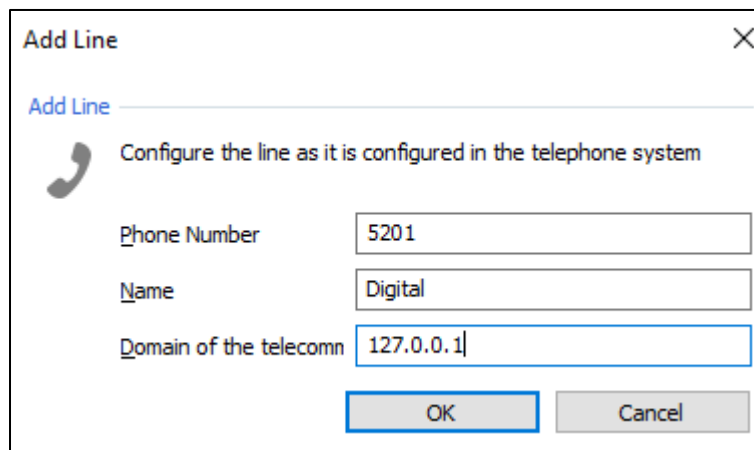
Clicking on **Location** in the left window, shows the settings that can be set for the Location information. There were no specific settings set for compliance testing.
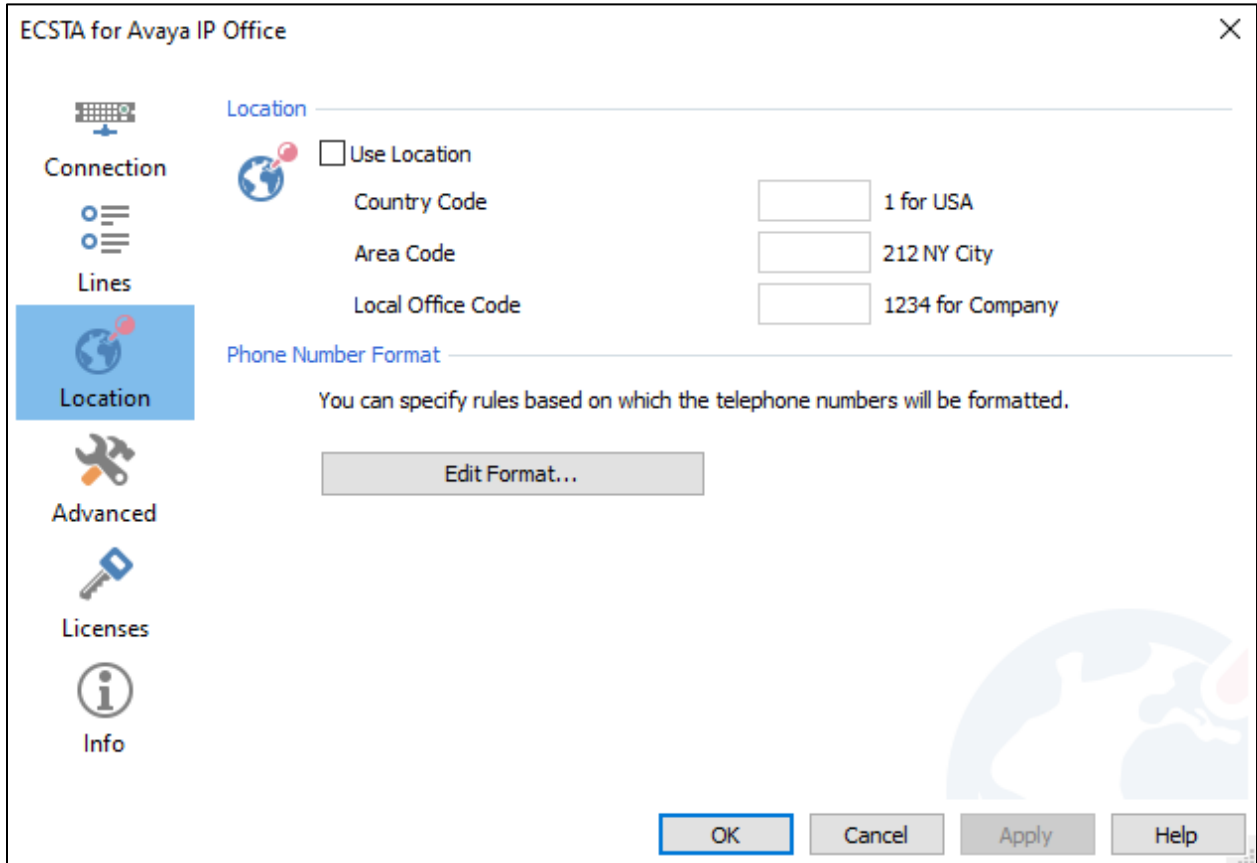
Clicking on **Advanced** in the left window, opens the settings as shown below. Again, these were left as **Default** for compliance testing but can be changed depending on the setup required.

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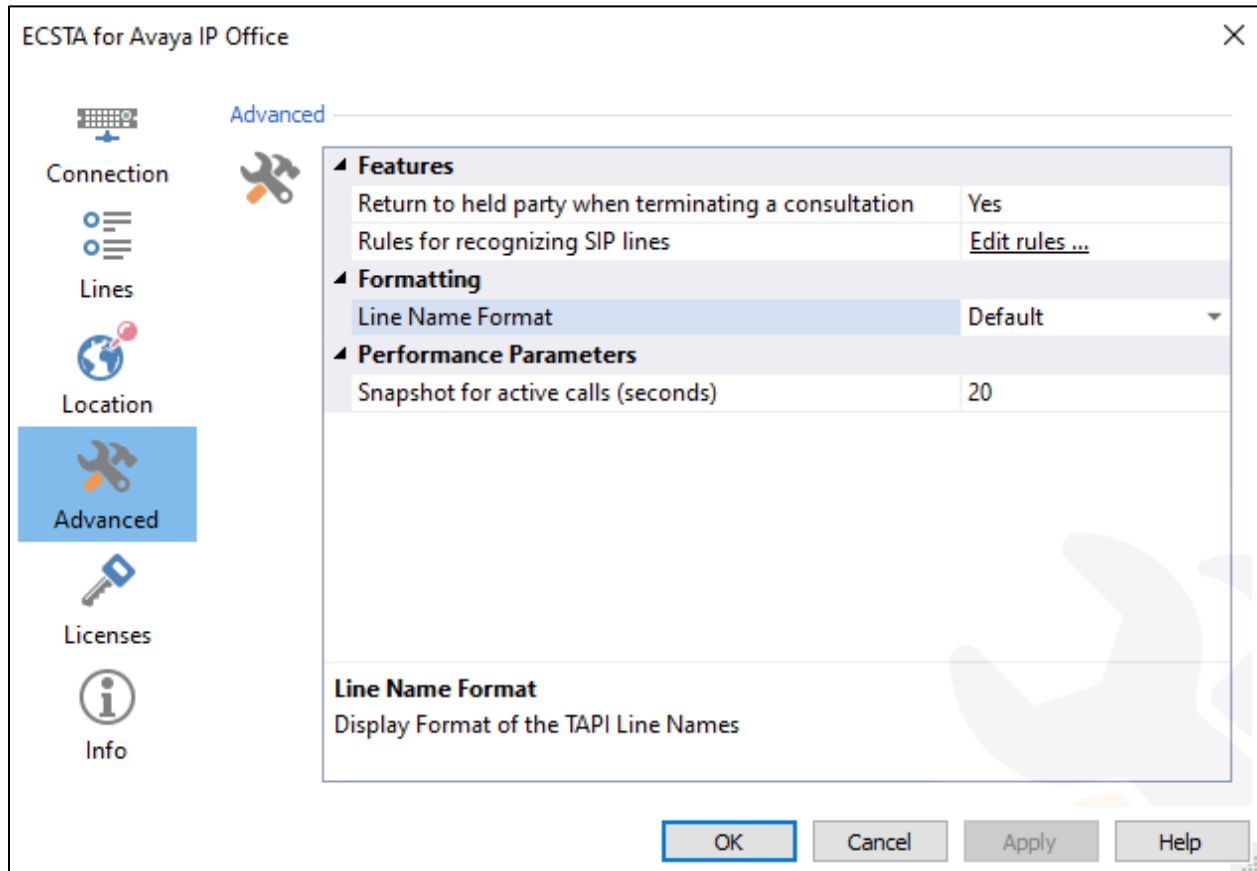
Clicking on **Info**, shows the location of the log files and the ECSTA **TAPI Driver** version. Clicking on **OK** at the bottom of the screen should exit the setup and save the changes.

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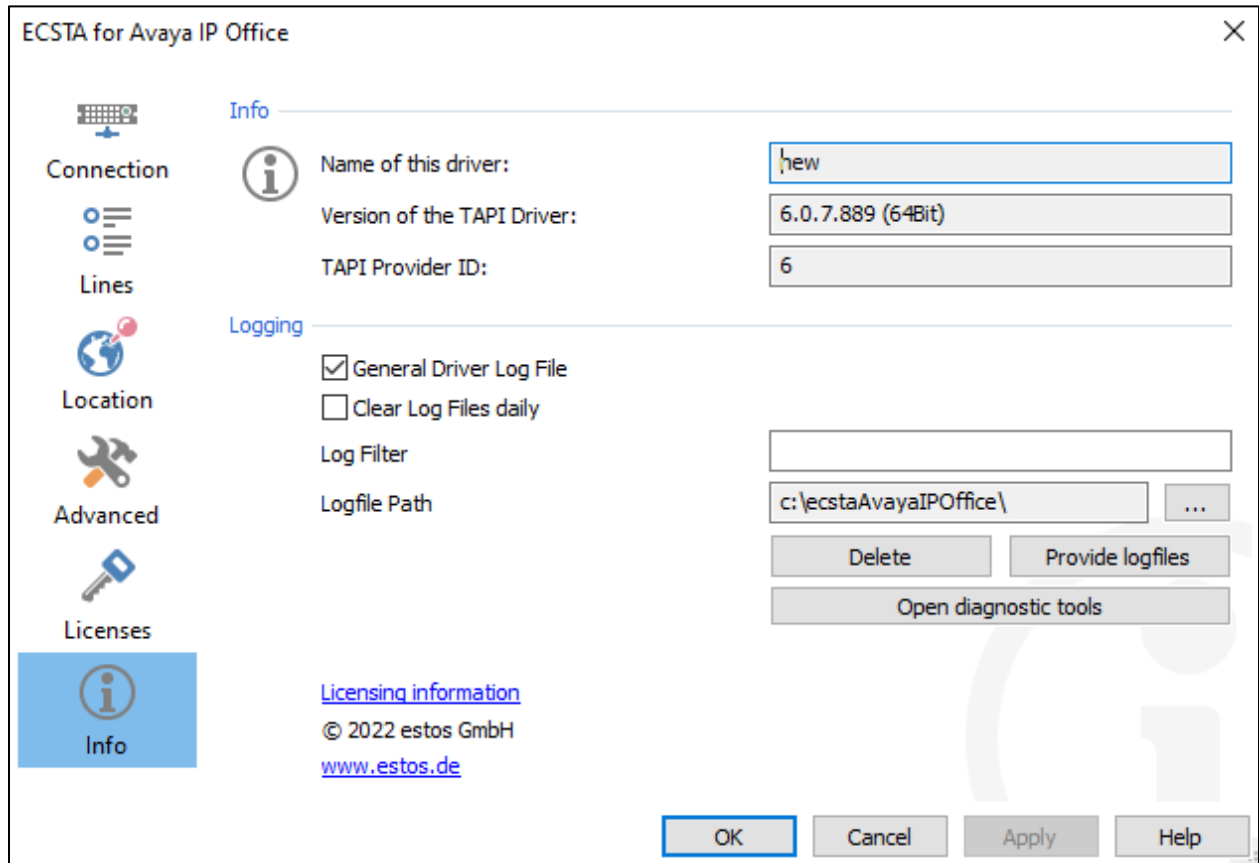
# 7. Verification Steps

This section provides tests that can be performed to verify correct configuration of the Avaya and estos solution. To verify the solution, calls are made/received using the estos EPhone TAPI phone application.

## 7.1. Verify the connection using estos EPhone.exe

The connection can be tested by opening the EPhone.exe or EPhoneX64.exe and using it to make and receive a call. That is the ultimate goal of compliance testing and once that can be achieved the setup is deemed successful. The EPhone.exe is typically located in the **estos**/**ECSTA** folder which would be under Program Files. Once the EPhone application is opened a **Device** is chosen, from a list of devices that appear, when the **Device** drop-down box is clicked (not shown). Extension **5350** was chosen below, which means that this device is now controlled by **estos TAPI Phone Dialer**. A call was made to this extension from **091731101** and the call can be answered by pressing the **Answer** button.

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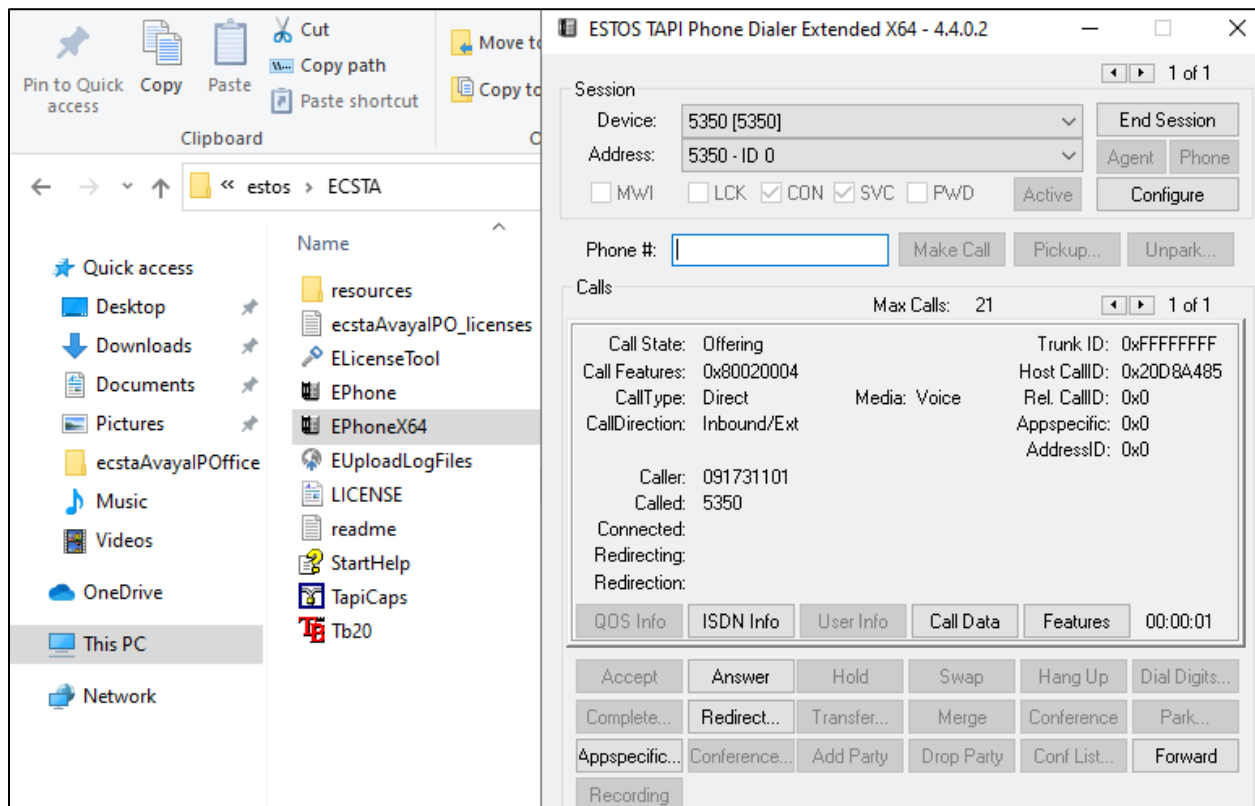
Once the call is answered, more telephony functions were enabled, such as **Hold**, **Transfer**, **Conference** and **Hang Up**.

Once these calls are successfully initiated using the TAPI Phone **Dialer** application, then there must be a successful connection between estos ECSTA TAPI driver and IP Office.

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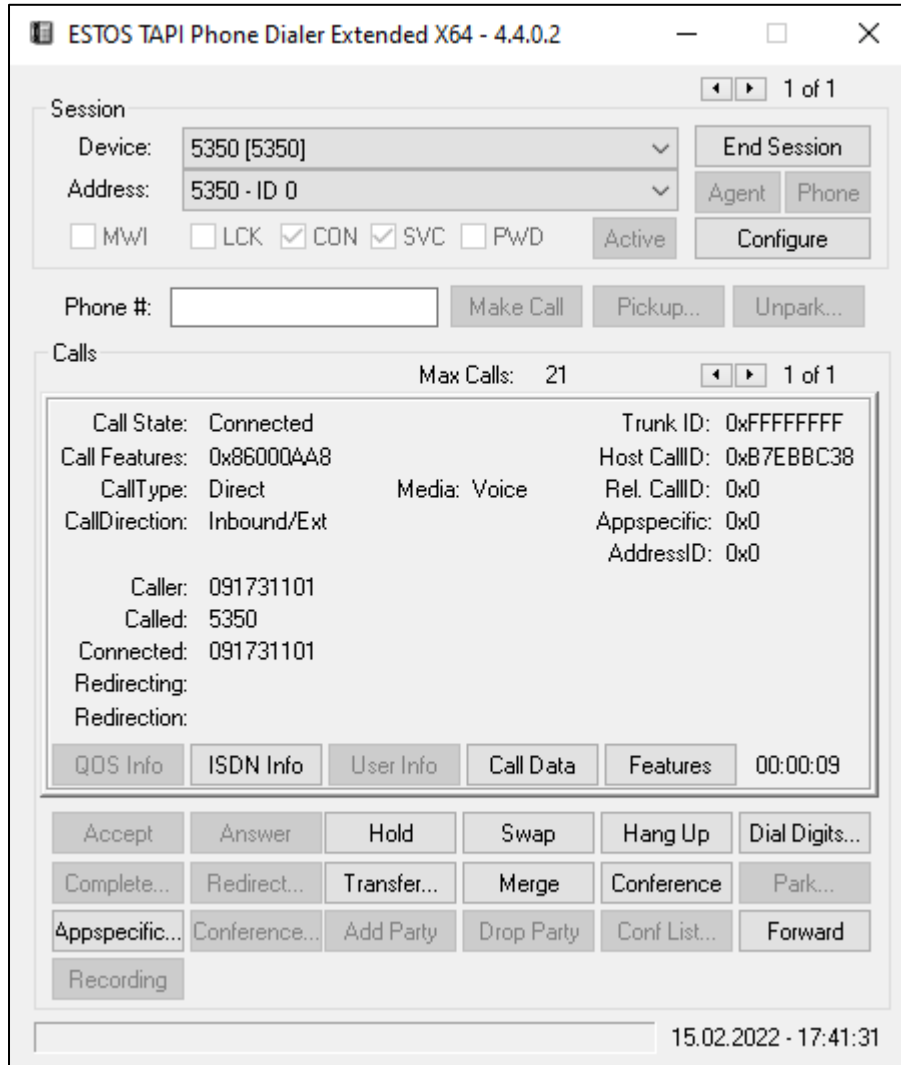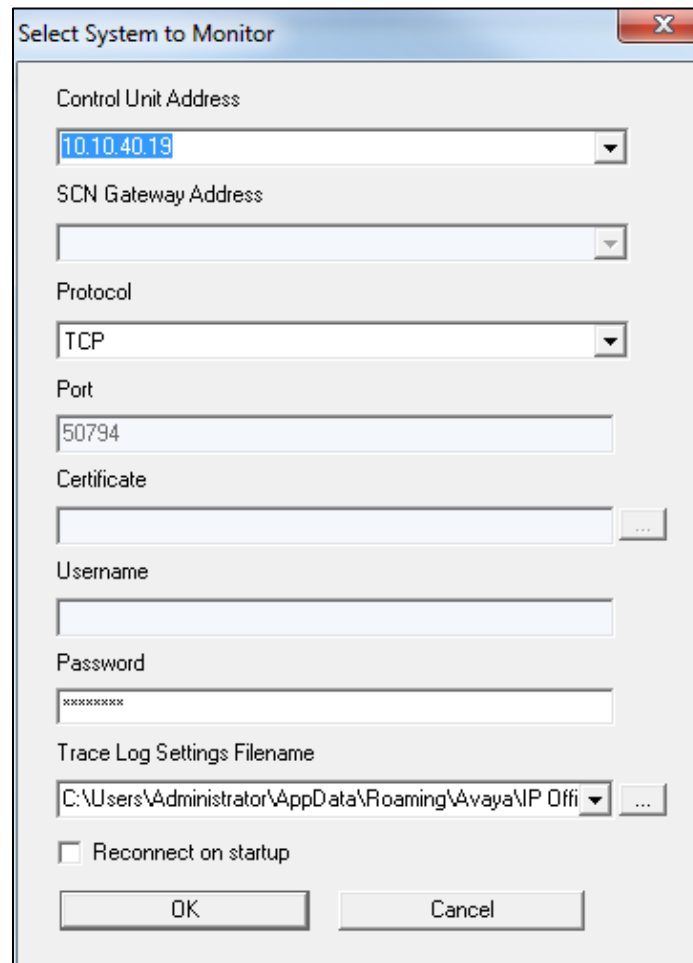
## 7.2. Verify connection from IP Office

IP Office Monitor can be used to check on the TAPI messages on IP Office. Open IP Office **Monitor**.
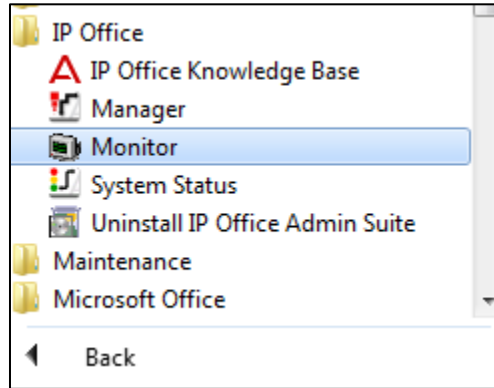


Select the IP Office (under **Control Unit Address**). Enter the appropriate credentials and click on **OK**.

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Click on **Trace Options**.



There are a number of traces that can be set, under CTI the following can be set for TAPI and CTI events. Clicking on **TAPI** below will show certain TAPI events, the type of events can be widened by selecting other boxes that may be relevant. Click on **OK** once everything has been selected appropriately.
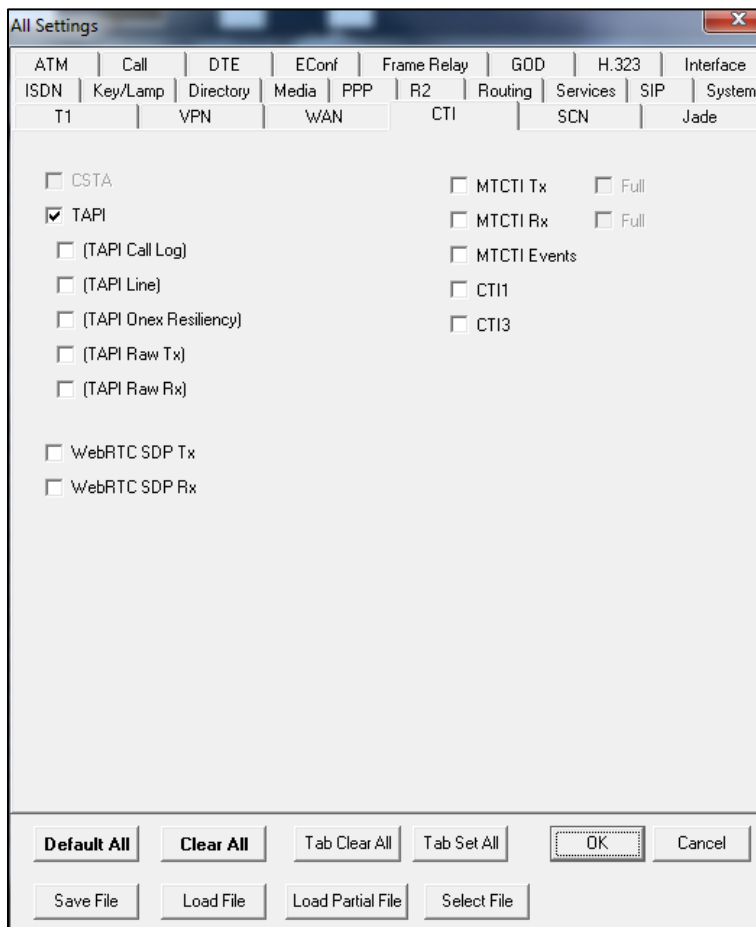
When a call is made and answered, the trace should show the TAPI messages, something like what is shown below.

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# 8. Conclusion

A full and comprehensive set of feature functional test cases were performed during compliance testing. Estos GmbH estos ECSTA v6.0 is considered compliant with Avaya IP Office R11.1. All test cases were passed.

# 9. Additional References

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] *Administering Avaya IP Office™ Platform with Manager,* Release 11.0, February 2019.

Information on the installation and configuration of estos ECSTA can be found at https://www.estos.com.

[2] *estos ECSTA for Avaya IP Office*, Release 6.0.8.896.

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