BUSINESS CLASS SIP TRUNKS

Avaya IP Office 500
Firmware 8.0/Office Manager 10.0

Document Version: 1.0

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Document Purpose and Target Audience

This document will serve as a reference guide to configure the Avaya IP Office 500 IP PBX to interoperate with Time Warner Cable (TWC) SIP Trunk Service.

This guide is not intended to be a replacement of the PBX manufacture’s user or configuration guide. It is intended to provide additional guidance on configuring the PBX in preparation to receive voice service from the SIP Trunk. It provides detailed instructions and best practices for a successful installation with TWC SIP Trunks.

There are many options for establishing and maintaining service using the Avaya IP Office series. This guide focuses on the minimum configurations essential for successful interoperability with Time Warner Cable Business Class SIP Trunks.

This configuration guide is based on:

Customer Premise Equipment:

<table>
<thead>
<tr>
<th>Model</th>
<th>Avaya IP Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware</td>
<td>8.0.44</td>
</tr>
</tbody>
</table>

TWC Network Equipment:

<table>
<thead>
<tr>
<th>ESG</th>
<th>InnoMedia ESBC 9378-4B</th>
</tr>
</thead>
</table>
SIP Trunk Components

The Time Warner Cable Business Class (TWCBC) SIP Trunks product is an IP-based, voice only trunk that uses Session Initiation Protocol (SIP) to connect an IP PBX to the PSTN. The IP PBX uses SIP to exchange signaling information with the service provider and to deliver and receive voice in IP packets.

The IP PBX is connected to the TWC Enterprise SIP Gateway (ESG), which provides network access for voice traffic. The customer is responsible for the LAN infrastructure and configuration, including the physical connection to the LAN port 2 on the ESG.

The ESG is the demarcation point to the TWC network. The ESG is connected to a dedicated router for SIP Trunks delivered over a fiber connection or to a cable modem when delivered over a DOCSIS connection.

SIP Trunk components located on the customer premise, including connections to the TWC network, are illustrated below.

All TWC SIP Trunk calls are routed over Time Warner Cable’s IP network and are not routed over the public internet.
Getting Started

You will need to have the TWC “SIP Trunk Questionnaire” and “Business Class (BC) SIP Trunks: Customer Cut Sheet” in order to configure your IP PBX for TWC Business Class SIP Trunk service.

Confirm that your IP PBX model number and software versions recorded on the Customer Cut Sheet match those associated with your current equipment. If they do not, be sure to alert your TWC sales engineer or TWC project manager as this can impact how TWC designs your service configuration.

Example from Customer Cut Sheet for Cisco UC 560:

<table>
<thead>
<tr>
<th>SERVICE INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRODUCT</td>
</tr>
<tr>
<td>IP-PBX MAKE</td>
</tr>
<tr>
<td>IP-PBX MODEL</td>
</tr>
<tr>
<td>IP-PBX SOFTWARE VERSION</td>
</tr>
</tbody>
</table>

While configuring your IP PBX for BC SIP Trunk service, you will need to know your Lead Telephone Number and the IP address of your IP PBX.

The Lead Number is confirmed on the Customer Cut Sheet as seen below:

<table>
<thead>
<tr>
<th>Trunk Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trunk Groups</td>
</tr>
</tbody>
</table>

The IP Address of the IP PBX was recorded on the SIP Trunk Questionnaire, Section 5. Signaling and Media as shown below:

5: Signaling and Media

<table>
<thead>
<tr>
<th>IP Address for PBX or SBC</th>
</tr>
</thead>
<tbody>
<tr>
<td>To setup LAN configuration for signaling of voice traffic to the ESG</td>
</tr>
<tr>
<td>IP: xxx.xxx.xxx.xxx</td>
</tr>
<tr>
<td>Subnet: 255.255.xxxx.xxxx</td>
</tr>
</tbody>
</table>

This document is intended as an aid to help configure a customer’s IP PBX for interoperability with TWCBC SIP Trunk Service.
Configuring System

To begin, configure **LAN2 IP Address (WAN IP Address)**. Navigate to **System→Avaya IP Office** on the left pane. Select LAN2 tab and then LAN Settings tab, as displayed in Figure 1.

Enter **IP Address**, **IP Mask** of IP Office WAN interface.

Enter **Primary Trans. IP Address** (which is ESBC LAN IP address).

![Figure 1 Avaya IP Office SIP Trunk Settings](image-url)
Configuring SIP Trunk

Configuring SIP Line
1. Navigate to Avaya IP Office > Line. If none exists, do a right mouse click on it to add a line.
2. Select SIP Line tab.
3. Enter ITSP Domain Name: This is the IP of the ESG LAN Port to which SIP PBX registers. In the example, the IP address is set to “172.16.253.1”, as Figure 2 displays.

![Figure 2 Configuring SIP Trunk - SIP Line](image)

Configuring SIP Proxy – Transport
1. Select Transport tab
2. Enter ITSP Proxy Address with the ESG LAN IP address, as Figure 3 displays.
Adding and Configuring SIP Accounts (SIP URI)
This associates the SIP User with a group, and also the IP address of the system.

1. Select **SIP URI** tab to configure SIP accounts.
2. Click **Edit** button to edit the highlighted account, or Click **Add** button to create a new account, as Figure 4 displays.
Add entry for each Phone Number.

- **Via** – the current IP address of your Avaya
- **Local URI, Contact, and Display Name**: select “Use Credentials User Name”
- **PAI** – Leave it as “None”, if not required
- **Registration** – Use the pull down to choose the line to configure
- **Incoming Group** – the example uses 1 for the setup.
- **Outgoing Group** – Assign it a number. Use this number to configure outgoing dial rules (known as ARS).
- **Max Calls Per Channel** – Use the information that ISP provides.

**Configuring SIP Credentials**

1. Select **SIP Credentials** tab.
2. Click **Add** button to create a new account, or click **Edit** button to edit the highlighted account, as Figure 5 displays.
Figure 5 Adding/Editing SIP Account Credentials

- **User Name** – Enter the SIP UA account information.
- **Authentication Name** – Enter the Name that TWC provides.
- **Contact** – may leave blank.
- **Password** – Enter the required password to register to the ESG for this account. (Note that if ESGs Authentication mode is set to “None”, leave this field blank.)
- **Expiry (mins)** – Leave it as default 60
- **Registration required** – If PBX runs with STATIC mode, and then uncheck this. This will enable the IP Office to send the Authentication Name and Password to ESG.
Configuring Outbound and Inbound Routes

Outgoing Dial Rules

1. Navigate to ARS -> SIP, as displayed in Figure 6.

![Figure 6 Avaya IP Office SIP Trunk Line Dialing Rule Settings](image)

2. Click button **Add** button to create a new ARS for outgoing Dial Rules or click **Edit** button to edit an existing Dial Rule.
   - To create a New ARS, the easiest way is to do a right mouse click on the Main and do Copy Paste.
   - Rename the Route Name to something that is appropriate for your environment, we used SIP in our example
   - Uncheck the Second Dial Tone if enabled
   - Keep the 11 and 911 Codes and remove all other codes
   - Add two new codes (you may need more Codes in your configuration) of N; and 9N;
     a. Code: N
     b. Feature : Dial
     c. Telephone Number: N”@172.16.253.1” - Use the IP address of the ESG LAN port you are connecting to instead of 172.16.253.1.
     d. Line Group ID: The number we entered in the SIP URI in the SIP Trunking above
     e. Locale: Leave blank
f. Force Account Code: Leave unchecked

- Alternate Route Priority
- Alternate Route Wait Time

![New Short Code](image)

**Figure 7 Add short code**

**Incoming Route Settings:**

1. Navigate to **Incoming Call Route** Add or Edit an Incoming Call Route. Do a right mouse click on the **Incoming Call Route** and click **New** to add, or highlight an existing route to edit, as Figure 8 displays.

- Bearer Capability – Configure for “Speech” from the pull down
- Line Group ID – Enter “Incoming Group” configuration that is created in **SIP URI** section. The example uses 1.
- Incoming Number – Enter the Phone Number/Caller ID sent from the ESG. The example uses account 2404983515.
- All other settings: Leave as default values.
Figure 8 Incoming route settings
2. Click **Destinations** tab to configure extension to send incoming calls.
   - Choose from the Destination pull down your desired Extension – this example assumes you already have configured extensions for your system, if not you will need to add an extension.
   - Do this for each DID number you want to map to an extension.

![Configure extension to send incoming calls.](image)

**Figure 9** Configure extension to send incoming calls.
**FAX Transmission**

*Transmitting FAX by G.711 Pass Through*

1. Navigate to Line, and click VoIP tab.

2. Choose required Fax transport protocol, as displayed in Figure 10. Note that only if T.38 or T.38 Fallback option is selected, then T.38 Fax tab can be configured.

3. ![Figure 10 Transmitting FAX by G.711 pass through](image-url)
Transmitting FAX by T.38

Click **T.38 Fax** Tab. Configure T.38 FAX parameters according to your network environment.

![Figure 11 Transmitting FAX by T.38](image-url)
Appendix

**TWC Turn-up Testing Procedure**

To ensure proper service between the IP PBX and the TWC network, test calls from the IP PBX will be made. Typically, the following call types will be used (call testing varies depending on service configuration):

1. Outbound/Inbound call to a local number
2. Outbound/Inbound call to a long distance number
3. Calls to 411 and 611
4. Outbound calls to a blocked number to verify call blocking settings
5. Other calls based on customer request, e.g. FAX testing using T.38 or calls to an auto-attendant to verify DTMF

**Questions**

If you have questions, please contact your Time Warner Cable Business Class Account Executive.