IP Office

Deploying an IP Office as an Avaya Cloud Office ATA Gateway

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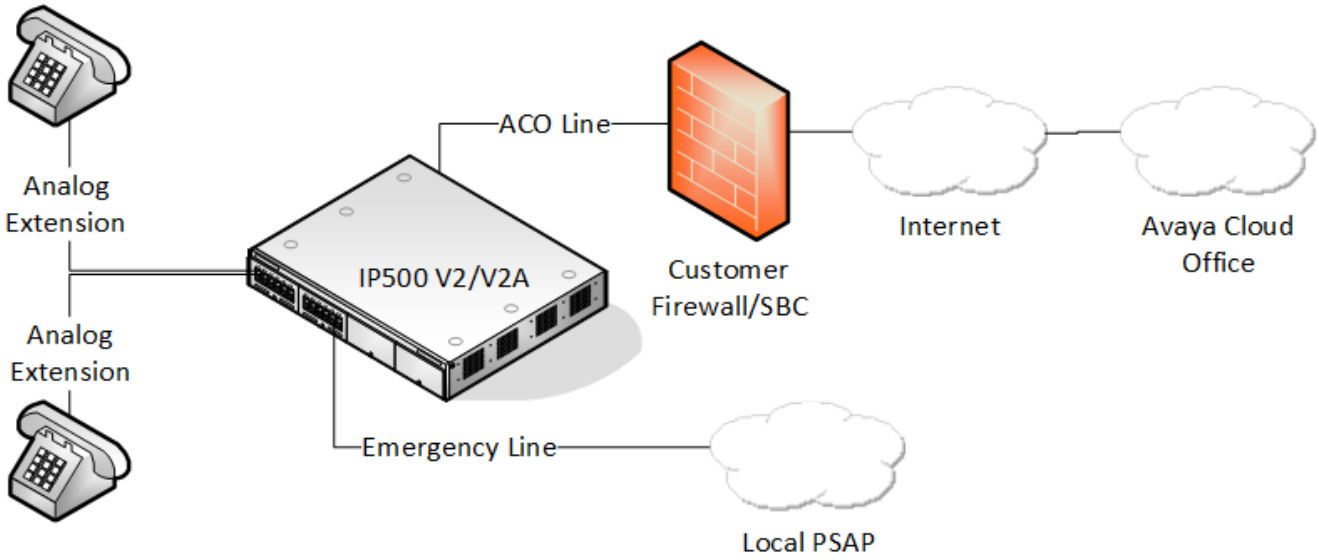
Contents

Chapter 1.

IP Office as an Avaya Cloud Office Gateway

1. IP Office as an Avaya Cloud Office Gateway

This document covers the configuration of IP Office as an Avaya Cloud Office ATA gateway. In this mode, IP Office analog extensions connect to Avaya Cloud Office as Avaya Cloud Office extensions. The IP Office uses an Avaya Cloud Office line to connect to Avaya Cloud Office.



- Avaya only supports using an IP Office as an Avaya Cloud Office gateway with IP500 V2/V2A control units running IP Office R11.1.2.3 or higher.
  - IP Office systems previously connected to Avaya Cloud Office using IP Office R11.1.2.2 must upgrade for continued support. See Upgrading from IP Office R11.1 FP2 SP2 34.
- Up to 300 analog extensions can connect to Avaya Cloud Office. The number of extensions depends on the installed IP Office hardware.
- The maximum number of simultaneous calls is 40.
- The IP Office uses a local IP Office external trunk (analog, PRI, or BRI) for emergency calls.

When using an IP Office system to support Avaya Cloud Office extensions, Avaya only supports the IP Office features detailed in this document. Enabling other features may cause unexpected or incorrect operation.

Summary

1.1 IP Office Features

When using an IP Office system to support Avaya Cloud Office extensions, Avaya only supports the IP Office features detailed in this document. Enabling other features may cause unexpected or incorrect operation.

- Supported on IP Office IP500 V2/V2A control units running IP Office R11.1.2.3 or higher.
- The solution supports up to 384 analog extensions.
- The solution uses SRTP for media security. This limits the maximum number of simultaneous calls to 40.
- The solution uses an ACO line for the connection to Avaya Cloud Office.
- The solution uses a VCM channel for each current call. This requires the installation of VCM hardware.
- The IP Office uses a local trunk for emergency calls.
- The solution supports fax calls through an analog extension (see Fax Configuration 34).

1.2 Calls and Call Capacity

This solution supports up to 40 simultaneous calls between Avaya Cloud Office and IP Office analog extensions.

Each Avaya Cloud Office call uses the following IP Office resources:

Resource Required per Call	Description
An IP Office Analog extension	Each analog extension requires an analog extension port on the IP Office system. The IP Office provides analog extension ports using base cards installed in the IP500 V2/V2A control unit and/or external expansion modules attached to the control unit. See IP Office Hardware 6.
An IP Office VCM Channel	The IP Office system uses VCM channels to convert audio between the analog extension and the ACO line. Each simultaneous call uses 1 VCM channel for the duration of the call. The IP Office provides VCM channels using hardware installed in the IP500 V2/V2A control unit. See IP Office Hardware 6.

1.3 IP Office Licenses

Deploying an IP Office system as an Avaya Cloud Office ATA gateway does not require any IP Office licenses. For any system configured to run in this mode, all licenses present in the system configuration except those listed below, become dormant.

Optional Licenses

- **IP500 Universal PRI (Additional channels)**
  By default the IP Office system supports 8 call channels for each installed PRI port without requiring any licenses. If using a PRI trunk as the local emergency trunk, you only need **IP500 Universal PRI (Additional channels)** licenses if you want to enable additional call channels up to the maximum capacity of PRI ports installed and PRI mode selected.

1.4 IP Office Hardware

In Avaya Cloud Gateway mode, the IP Office system supports up to 384 analog extensions connected to Avaya Cloud Office using the following hardware:

- **IP500 V2/V2A Control Unit**
  Avaya supports Avaya Cloud Gateway mode on IP500 V2 and IP500 V2A control units.
- **Avaya IP Office System SD Card**
  The IP Office uses the card's serial number to check its licenses.
- **Analog Extension Ports**
  Avaya Cloud Gateway mode supports up to 384 analog extension ports:
  - **IP500 Analog Phone Cards**
    These base cards provide either 2 or 8 analog extension ports depending on the card model.
  - **IP500 ATM Combination Cards**
    Each of these base cards provides a combination of 6 digital extensions ports, 2 analog extension ports, 4 analog trunk ports and 10 VCM channels. You can install a maximum of 2 ATM combination cards. The solution does not support the digital extension ports.
  - **IP400 Phone V2 External Expansion Modules**
    Each of these external expansion modules supports 16 or 30 analog extension ports depending on the module model.
- **Voice Compression Module (VCM) Ports**
  The IP Office system uses VCM channels to convert audio between the analog extensions and the ACO line. Each current call requires a VCM channel (up to the 40 simultaneous calls supported by this solution). The IP500 V2/V2A supports VCM channels (up to 148) using the following IP500 base cards.
  - **IP500 ATM Combination Cards**
    See above. Each combination card provides 10 VCM channels.
  - **IP500 VCM Cards**
    These base cards provide 32 or 64 VCM channels depending on the card model. Note: The codec used also affects the maximum number of channels the card supports. The default IP500 V2/V2A system codec is G.711. You can install a maximum of 2 VCM base cards.

Codec	IP500 VCM 32	IP500 VCM 64
G.711 A-Law	32	64
G.711 U-Law	32	64
G.729ab	30	60
G.723	22	44
G.722	30	60

Optional Hardware

- **Local Trunk Cards**
  You can use a local analog or PRI trunk to support local routing of emergency calls. For analog or PRI trunks, you can use any current IP500 V2/V2A trunk card or external expansion module.
  - Analog trunk cards do not require any licenses.
  - PRI trunk card support up to 8 call channels per PRI port without requiring any licenses. You only need **IP500 Universal PRI (Additional channels)** licenses if you want to enable additional call channels.
- **4-Port Expansion Card**
  You can use this base card to increase the number of supported external expansion modules to 12 (8 otherwise).

Additional Hardware Information

For additional information, refer to the "*Deploying an IP Office 500 V2/V2A in IP Office Essential Edition Mode*" manual.

1.5 Resilience

For external and internal calls by extensions, there is no IP Office resilience support.

- **If the ACO Line connection is not available:**
  The IP Office continues attempting to register the extensions with Avaya Cloud Office until successful. When in this state, the IP Office system only supports emergency calls using the local trunk.
- **If the IP Office power fails:**
  In this scenario, depending on the IP Office hardware, some analog extensions can make emergency calls. See Emergency Call Support Options 7.

1.6 Emergency Call Support Options

The customer solution must support emergency calls using a local IP Office trunk. This applies to all extensions. You must configure the IP Office so that all emergency numbers route via the local IP Office trunk.

The solution supports the use of analog, PRI and BRI trunks for the local emergency trunk.

Simple Emergency Call Routing

The example in this document uses the following method:

1. System short codes define which numbers the system should treat as emergency calls.
2. The system uses the first available local trunk with the same group ID as the system short codes above for the emergency call.

Location Based Emergency Call Routing

The IP Office can support the use of different local trunks depending on the extension's physical location.

1. System short codes define which numbers the system should treat as emergency calls.
2. The location assigned to each extension sets the emergency ARS it should use to route emergency calls.
3. The emergency ARS sets the outgoing trunk group to use for emergency calls.
4. The system uses the first available local trunk with the same group ID for the emergency call.

Additional Information

For more information on IP Office emergency call operation, refer to the *"IP Office Emergency Call Configuration"* manual.

IP Office Power Fail Operation

When using an analog trunk for emergency calls, IP Office IP500 V2/V2A systems support options for power failure scenarios. These allow some analog extensions to still connect to the analog trunks for emergency calls. Refer to *"Deploying an IP Office 500 V2/V2A in IP Office Essential Edition Mode"*.

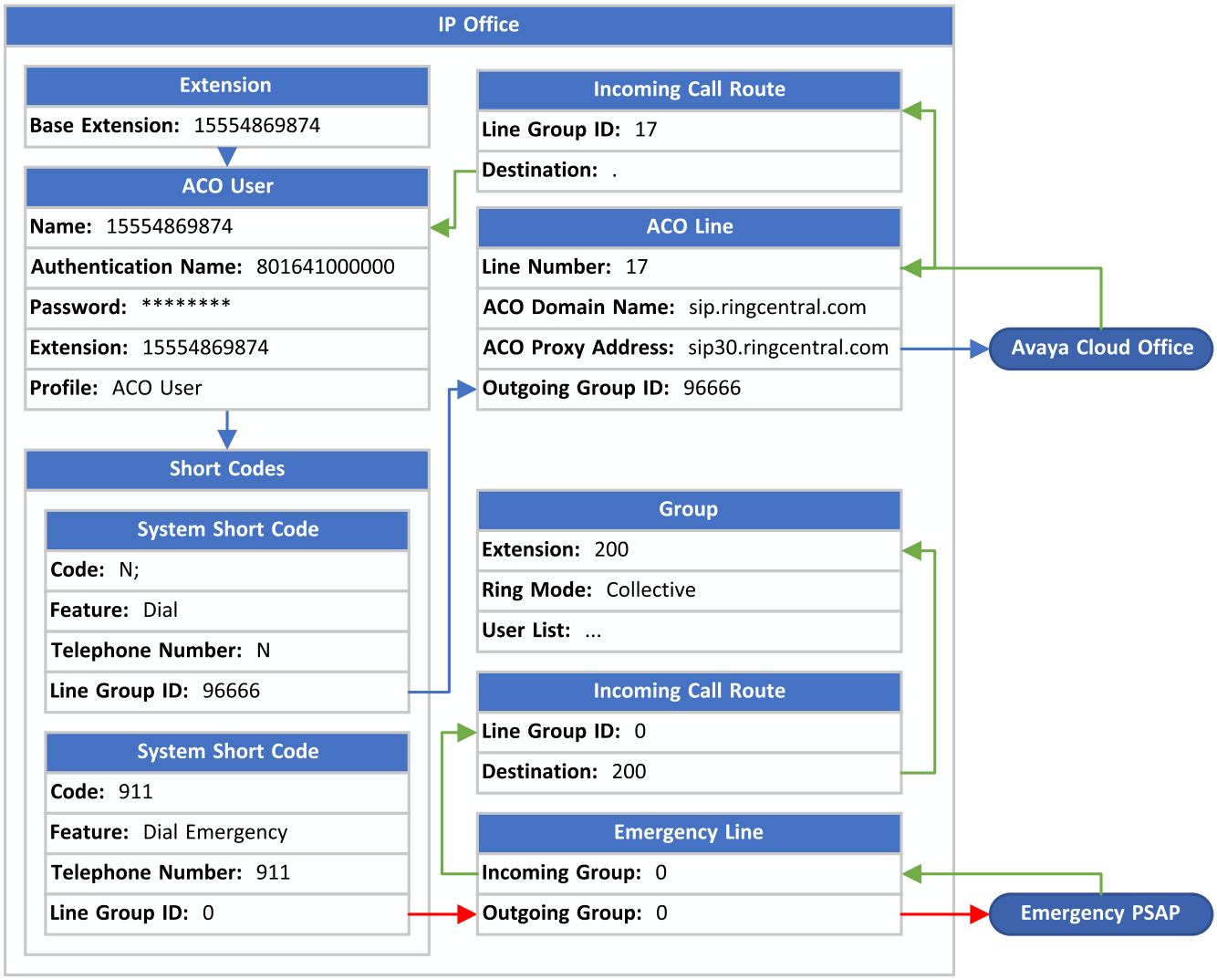
Testing Emergency Call Operation

You must test emergency call operation following local laws and regulations. In some locations, making calls to the PSAP when there is no emergency may be illegal.

- If the PSAP allows test calls, do not end the calls without informing the PSAP responder that the call is a test.
- Some PSAP providers support emergency call test number such as 933. When called, an automated response gives the address on record for the calling number. Where supported, configure the test number to use the same call routing as the emergency numbers.

1.7 Call Flow Schematic

This schematic shows a simplified example of the IP Office call flow for calls to/from the Avaya Cloud Office extension users.



1.8 Additional Documentation

Avaya technical documentation can be obtained from the Avaya support website (https://support.avaya.com) and Avaya documentation website (https://documentation.avaya.com).

For this installation, the following specific documents contain additional information:

- Deploying an IP Office 500 V2/V2A in IP Office Essential Edition Mode
- IP Office Emergency Call Configuration
- IP Office Platform Guidelines Capacity
- IP Office Security Guidelines

1.9 Other Phones and Extensions

This solution only supports analog extensions connecting to Avaya Cloud Office.

- If the physical IP Office hardware used includes non-analog extension ports, Avaya does not support the use of those additional ports.
  - You should clearly label the additional extension ports as non-functional.
  - You should remove any user records created in the IP Office configuration for the non-ACO extensions.
  - The system automatically creates extension records for all physical extension ports. Even if you remove these, the system automatically recreates the extension records after any system restart.
- Other phones, including Avaya phones, can connect from the customer site to Avaya Cloud Office directly. The provisioning and operation of those phones is separate from the IP Office.

1.10 Codecs

Avaya Cloud Office and IP Office support the following VoIP audio codecs. For IP Office analog extensions, the codec support uses a VCM channel for each call. See IP Office Hardware 6.

Codec	Avaya Cloud Office	IP500 V2/V2A
Opus	Yes	–
iLBC	Yes	–
G.711 A-Law	Yes	Yes
G.711 U-Law	Yes	Yes
G.722	Yes	Yes
G.729ab	Yes	Yes
G.723	–	Yes

1.11 Ports and Addresses

The document https://support.avaya.com/public/index?page=content&id=DOCS100741 provides a summary for phones and softphones connecting to Avaya Cloud Office. For analog extensions connecting through IP Office, the IP Office ACO line connects the analog extension using secure RTP.

Outbound Traffic

Traffic Type	Protocol	Destination Port
Media - Secure	SRTP/UDP	20000 to 64999
Signaling - Secure	SIP/TLS/TCP	5096

Inbound Traffic

Traffic Type	Protocol	Destination Port
Media - Secure	SRTP/UDP	20000 to 64999
Signaling - Secure	SIP/TLS/TCP	5060

1.12 Glossary/Abbreviations

Abbreviation	Definition
ARS	**Automatic Route Selection** An IP Office ARS entry is a set of short codes used to set which telephone line or lines the system should use to route calls.
ATA	**Analog Terminal Adapter** A device that allows an analog telephone to connect to a non-analog port. In this case, the IP Office is acting as an ATA for multiple analog extensions to connect to Avaya Cloud Office.
FXS	**Foreign Exchange Service** A term for scenarios where one telephone system supports extensions on another telephone system as if those extensions are local to itself. In this case, Avaya Cloud Office supports IP Office extensions as if directly connected to Avaya Cloud Office.
PSAP	**Public Service Access Point** The service to which calls to emergency numbers connect. The PSAP responder relays information as needed to the relevant emergency service. That information can include any address information held by the PSAP for the telephone number from which the emergency call originated.

1.13 Document History

Date	Version	Changes
19th July 2022	03a	Update for Avaya Cloud Office support with IP Office R11.1 FP2 SP3 (R11.1.2.3).

Chapter 2.

Obtaining the Avaya Cloud Office Details

2. Obtaining the Avaya Cloud Office Details

To configure the IP Office, you need to obtain a range of information from Avaya Cloud Office.

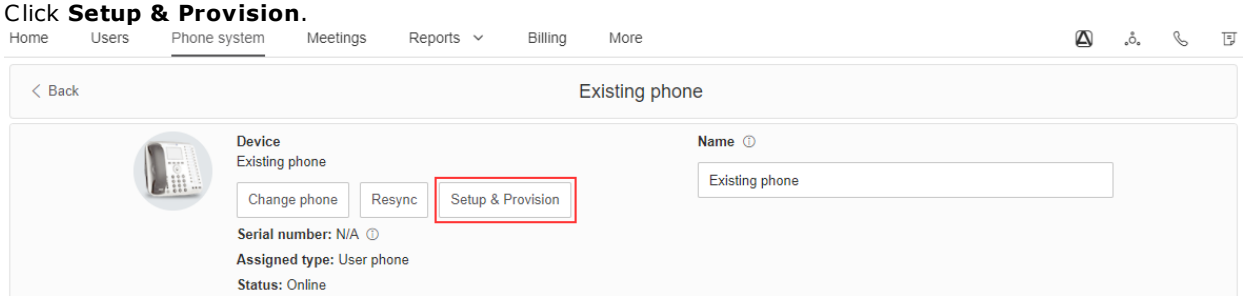
Summary

2.1 Setup the ACO User Phone Details

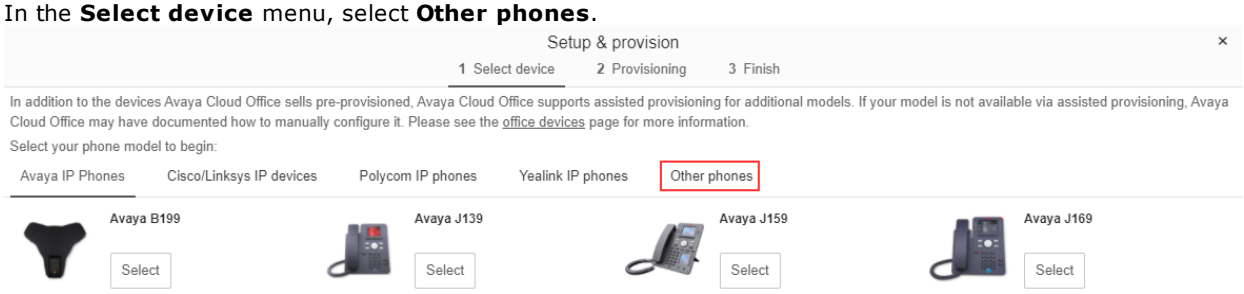
The configuration of the IP Office ACO line requires details provided by Avaya Cloud Office.

Procedure

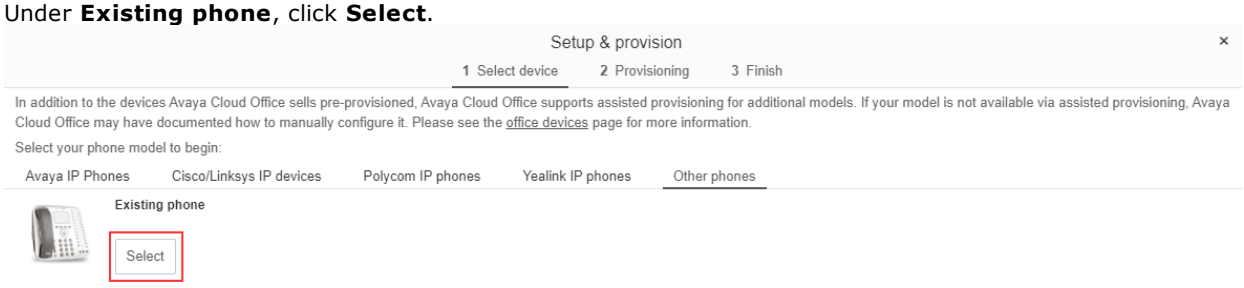
1. As a system administrator, login to Avaya Cloud Office at https://service.cloudoffice.avaya.com.
2. Select **Phone System | Phones & Devices | User Phones**.
3. Within the Avaya Cloud Office administration menus, setup the Avaya Cloud Office user's phone.
4. Click the **Existing phone** link next to the required user.
5. Click **Setup & Provision**.



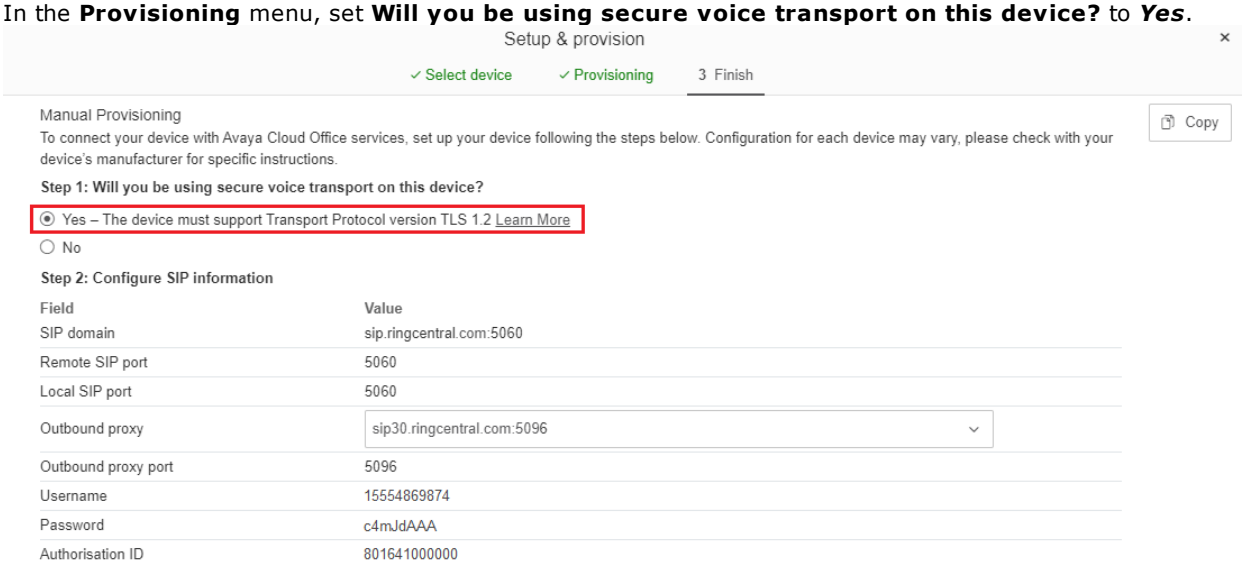
6. In the **Select device** menu, select **Other phones**.



7. Under **Existing phone**, click **Select**.



8. In the **Provisioning** menu, set **Will you be using secure voice transport on this device?** to ***Yes***.



9. Note the settings. You can use the **Copy** button to copy the details into a document. Whilst the line settings are the same for each user, the user/extension values are different for each user.

ACO Value	IP Office Line Value
SIP domain	**ACO Line | ACO | ACO Domain Name** without the port number.
Outbound proxy	**ACO Line | ACO | ACO Proxy Address** without the port number.

ACO Value	IP Office User/Extension Value
Username	**User | User | User Name** **User | User | Extension** **Extension | Extn | Base Extension**
Password	**User | Password**
Authorization ID	**User | Authentication Name**

10. Click **Done**.
11. Repeat the process for the next user extension.

Next

- Go to Downloading the ACO Certificates 14.

2.2 Downloading the ACO Certificates

The connection between the IP Office and Avaya Cloud Office use SRTP and TLS. To support both, you need to obtain two certificates from Avaya Cloud Office.

Procedure

1. Using the following links, download the two certificates:
   a. **Intermediate Certificate:**
   https://www.websecurity.symantec.com/content/dam/websitesecurity/support/digicert/thawte/ica/Thawte_EV_RSA_CA_2018.pem
   b. **Root Certificate:**
   https://www.websecurity.symantec.com/content/dam/websitesecurity/support/digicert/thawte/root/DigiCertHighAssuranceEVRootCA.pem
2. Save the certificate files.

Next

- Go to IP Office System Configuration 16.

Chapter 3.

IP Office System Configuration

3. IP Office System Configuration

The processes in this section prepare the IP Office system for the configuration of the Avaya Cloud Office user extensions.

- This document does not cover the configuration of other equipment such as the customer network, firewalls, and any SBC equipment.

Summary

3.1 Prerequisites

Ensure that you have the following prerequisites:

- Avaya Cloud Office user details. See Setup the ACO User Phone Details 12.
- Avaya Cloud Office certificate files. See Downloading the ACO Certificates 14.
- If the local emergency trunk is a PRI line, a license file including **IP500 Universal PRI (Additional channels)** licenses.

Next

- Assemble and install the IP Office hardware using the details in the Deploying an IP Office 500 V2/V2A in IP Office Essential Edition Mode manual.
- When complete, go to Initial IP Office System Configuration 16.

3.2 Initial IP Office System Configuration

This process runs the initial configuration menu on the IP500 V2/V2A control unit.

- **! Warning**
  Running this process on an existing system erases the existing configuration and ends all current calls and services.

Procedure

1. Load the IP Office configuration in IP Office Manager.
   - On an existing IP Office system this will load the system's existing configuration. To repurpose the system as an Avaya Cloud Gateway mode system, click **File | Advanced | Initial Configuration**.
   - On a new system, set and note the new values for the system passwords.
2. In the initial configuration menu:
   a. Set the **System Mode** to ***IP Office ACO ATA Gateway Mode***.
   b. For an existing system being repurposed, deselect **Retain existing configuration**.
   c. Configure the settings to match the customer's locale and network. Note that this affects the default settings for the flash hook signal used by the system. For more details, see Adjusting the Flash Hook Timers 34.
   d. Click **Save**.
   e. The new system configuration opens in IP Office Manager.
3. From the navigation pane, select  **System**.
4. Select the **Telephony** tab and then the **Telephony** sub-tab.
   a. Set the **Dial Delay Time (sec)** to 4 seconds.
   b. Check that the **Dial Delay Count** is set to the default (0 for the US, 4 for other locales).
   c. Switch the **Inhibit Off-Switch Forward/Transfer** setting off.
5. Select the **Voicemail** tab.
   a. Set the **Voicemail Type** to ***<None>***.
6. Click the  icon. Accept the configuration save settings as shown and click **OK**. The IP Office system reboots.

Next

- Go to Adding IP Office Licenses 18.

3.3 Adding IP Office Licenses

You only need to follow this process if you want to license additional PRI call channels above the default 8 per PRI port. Otherwise, go to Configuring the Local Trunks 18.

The file is a single .xml file containing all the system licenses. These are issued against the serial number of the system's Avaya System SD card.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. From the navigation pane, select **License**.
3. Click **Add...** and select the license .xml file for the system.
4. IP Office Manager lists the licenses in the file. However, at this stage the reported status of all the licenses is incorrect.
5. Click **OK**.
6. Click the icon. Accept the configuration save settings as shown and click **OK**.
7. Click **File | Close Configuration** and then reload the configuration.
8. From the navigation pane, select **License** again.
9. Check the status of the licenses.
   - If using an PRI line for local emergency calls, any optional **IP500 Universal PRI (Additional channels)** license should appear as *"Valid"*.
   - Any other licenses present should appear as *"Dormant"* or *"Obsolete"*.

Next

- Go to Configuring the Local Trunks 18.

3.4 Configuring the Local Trunks

This document does not cover the configuration of the local IP Office trunk(s). Refer to the Deploying an IP Office 500 V2/V2A in IP Office Essential Edition Mode manual.

1. Ensure that any trunk ports not used are set as **Out of Service**. You can do this using the **Line | Admin setting**.
2. For digital trunks, ensure that the number of channels configured matches those licensed and provided by the line provider. Depending on the trunk type, you can do this using a 'number of channels' settings or a channel specific status setting.

Next

- Go to Edit the System Short Codes 19.

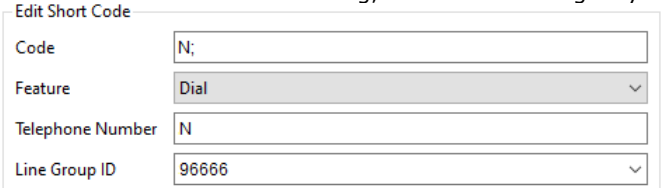
3.5 Edit the System Short Codes

The system short codes need 2 major changes:

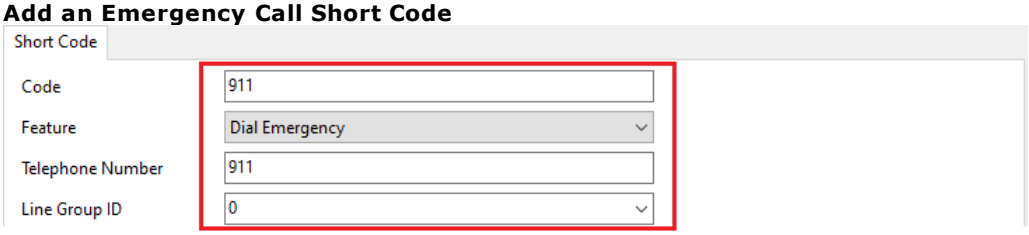
- Remove all system short codes for IP Office features. Avaya do not support those features for an IP Office acting as an Avaya Cloud Office gateway.
- Add an emergency short code(s) for emergency numbers.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. From the navigation pane, select **Short Code**.
3. **Delete the Default IP Office Short Codes**
   Select and highlight all the existing short codes. Right-click on the short codes and select **Delete**.
4. **Add an Outgoing Calls Short Code**
   This short code routes all dialing, other than emergency calls, to the ACO line.



   a. Click the icon and select ***Short Code***.
   b. Set the **Code** to **N;**
   c. Set the **Feature** to ***Dial***.
   d. In the **Telephone Number** field, enter ***N***.
   e. Set the **Line Group ID** to ***96666***.
   f. Click **OK**.
5. **Add an Emergency Call Short Code**



   a. Click the icon and select ***Short Code***.
   b. Set the **Code** to ***911***.
   c. Set the **Feature** to ***Dial Emergency***.
   d. In the **Telephone Number** field, enter ***911***.
   e. Set the **Line Group ID** set it to match the **Outgoing Group** setting of the local IP Office trunk(s).
   f. Click **OK**.
6. Repeat the process for any other emergency numbers needed.
7. Click **OK**.
8. Click the icon. Accept the configuration save settings as shown and click **OK**.

Next

- Go to Create a Local Callback Hunt Group 20.

3.6 Create a PSAP Callback Hunt Group

This process allows the emergency public service access point (PSAP) to make return calls. For example, when a caller to the PSAP unexpectedly disconnects. To achieve this:

- Create an emergency hunt group containing extensions staffed during normal business hours.
- Create an incoming call route from the line used for outgoing emergency calls. Configured the group as the destination.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. **Create an emergency callback group:**
   The group should contain user extensions staffed during normal business hours.
   a. From the navigation pane, select  **Group**.
   b. Click on the existing group *"Main"*.
   c. Change the **Name** to match group's function. For example, *"Emergency"*.
   d. Check that the **Ring Mode** is set to ***Collective***.
   e. **Edit the list of users:**
      By default, the system automatically adds the first 16 extensions to the group. However, these may not match the require extension users for emergency callback calls.
      i. In the **User List**, click **Edit**.
      ii. Edit the list of users as needed.
      iii. Click **OK**.
   f. Click **OK**.
3. **Route calls to the emergency callback group:**
   From the navigation pane, select  **Incoming Call Route**.
   a. Click the  icon and select **Incoming Call Route**.
   b. On the **Standard** tab, use the **Line Group ID** to select the ***Incoming Group*** value used for the local emergency trunk(s).
   c. Select the **Destinations** tab.
   d. For the **Destination** and **Fallback Extension** settings, select the emergency callback group.
   e. Click **OK**.
4. Click the  icon. Accept the configuration save settings as shown and click **OK**.

Next

- Go to Adding the ACO Certificates 21.

3.7 Adding the ACO Certificates

The following process uploads the certificates needed for TLS connection to Avaya Cloud Office (see Downloading the ACO Certificates 14).

- **! Warning**
  This process causes the IP Office operation to slow for a minute and end any calls currently in progress.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. Select **File | Advanced | Security Settings**.
3. From the navigation pane, select  **System**.
4. Click on the **Certificates** tab.
5. In the **Trusted Certificate Store** section
   a. Click **Add**.
   b. Select **Import certificate** from file and click **OK**.
   c. Note the warning and click **OK**.
   d. Select the intermediate certificate file and click **OK**.
   e. Repeat the process for the root certificate file.
6. Click **OK**.
7. Click the  icon.
8. Select **File | Configuration** to return to normal configuration editing.

Next

- Go to Adding the ACO Line 22.

3.8 Adding the ACO Line

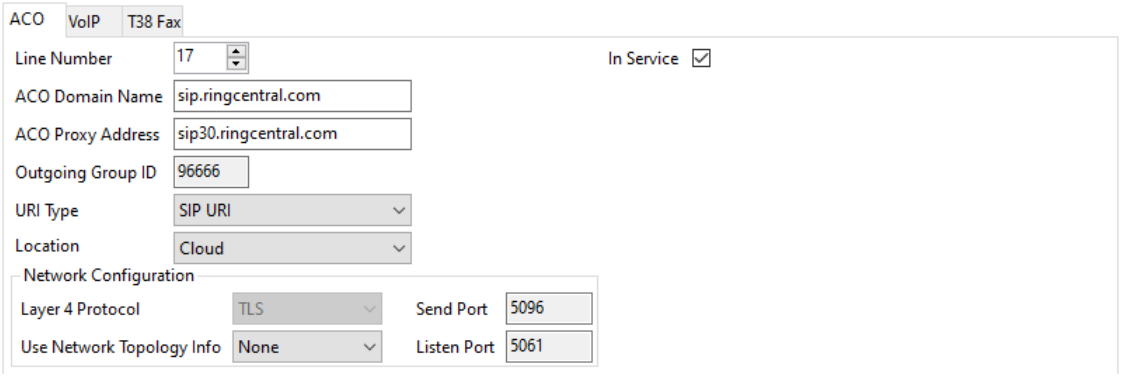
This process covers adding a new ACO line to the IP Office system configuration for calls to/from Avaya Cloud Office. The IP Office only requires a single ACO line.

You need to configure the line using the user details obtained from Avaya Cloud Office (see Setup the ACO User Phone Details 12).

- This document does not cover the configuration of other equipment such as the customer network, firewalls, and any SBC equipment.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. Click **Line** in the navigate pane. Click the icon and select ***ACO Line***.
3. Select the **ACO** tab:

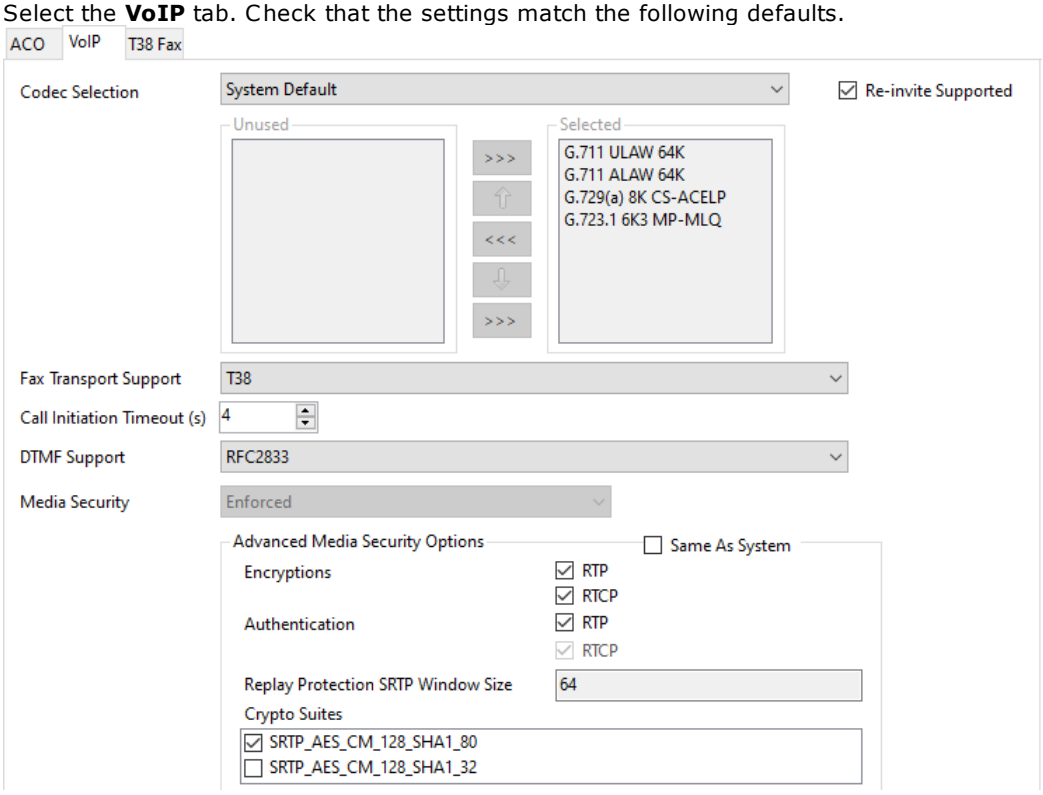


   a. Use the values obtained when setting up the ACO user phone details 12 to configure the ACO line:

ACO Value	IP Office Line Value
SIP domain	**ACO Line | ACO | ACO Domain Name** without the port number.
Outbound proxy	**ACO Line | ACO | ACO Proxy Address** without the port number.

4. Note the **Line Number**. You need to use this value to create an incoming call route for calls from Avaya Cloud Office. Change the value if required.
5. Set the **Use Network Topology Info** setting to match the requirements of the customer's network and internet connection:
   - **None** - The system determines routing for the line using address matches in the IP Office system's routing tables.
   - **LAN1/LAN2** - Use the matching LAN's **System | LAN | Network Topology** settings.

6. Select the **VoIP** tab. Check that the settings match the following defaults.



6. Select the **T38 Fax** tab. Check that the tab is set to **Use Default Values**. See Fax Configuration 34.
7. Click the icon. Accept the configuration save settings as shown and click **OK**.

Next

- Go to IP Office Extension User Configuration 26.

Chapter 4.

IP Office ACO User Configuration

4. IP Office ACO User Configuration

The processes in this section configure the IP Office analog extension users. Once completed, their non-emergency calls handled through Avaya Cloud Office.

Summary

4.1 Configuring the IP Office ACO Users

When first started, the IP Office system automatically creates user and extension entries for each extension port. For the analog extension ports, use the following process to configure the extensions associated user as an ACO extension user.

You need to configure each user using the user details obtained from Avaya Cloud Office (see Setup the ACO User Phone Details 12).

- Tip: At this stage, you can also delete all users not used for analog extension's connected to Avaya Cloud Office. Doing this simplifies future system maintenance.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. From the navigation pane, select  **User**.
3. Select the required user.
4. Select the **User** tab:
   a. Set the user's **Profile** to ***ACO User***.
   b. Set the **User Name**, **Authentication Name**, **Password** and **Extension** to match the values provided for the user by Avaya Cloud Office.

ACO Value	IP Office User/Extension Value
Username	**User | User | User Name** **User | User | Extension** **Extension | Extn | Base Extension**
Password	**User | Password**
Authorization ID	**User | Authentication Name**

   - IP Office Manager will display warnings regarding the password length not matching the IP Office system requirements.

   c. Click **OK**.
5. Repeat the process for the next user extension.
6. Click the  icon. Accept the configuration save settings as shown and click **OK**.

Next

- Go to Configuring the IP Office ACO Extension 27.

4.2 Configuring the IP Office ACO Extension

You need to change the extension number associated with each analog extension to match the ACO user's number.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. From the navigation pane, select **Extension**.
3. Select the required analog extension.
4. Select the **Extn** tab.
5. Change the **Base Extension** to match the ACO user's number.

ACO Value	IP Office User/Extension Value
Username	**User | User | User Name** **User | User | Extension** **Extension | Extn | Base Extension**
Password	**User | Password**
Authorization ID	**User | Authentication Name**

6. Select the **Analog** tab.
   a. Check that the **Equipment Classification** is set to ***Standard Telephone***. That includes extensions used for fax machines (see Fax Configuration 34).
   b. Check the **Flash Hook Pulse Width** is set to ***Use System Defaults***. This matches the default settings for the system's configured **Locale**. See Adjusting the Flash Hook Timers 34 for more details.
7. Repeat the process for the next user extension.
8. Click the icon. Accept the configuration save settings as shown and click **OK**.

Next

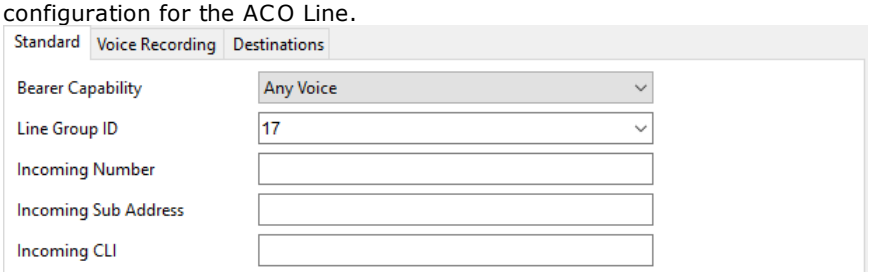
- Go to Configure ACO User Incoming Call Routing 28.

4.3 Configure ACO User Incoming Call Routing

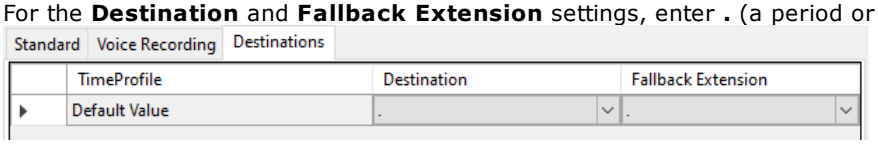
You need to add an incoming call route for calls from Avaya Cloud Office.

Procedure

1. Load the IP Office configuration in IP Office Manager.
2. From the navigation pane, select **Incoming Call Route**.
   a. Click the icon and select **Incoming Call Route**.
   b. On the **Standard** tab, for the **Line Group ID** , manually enter the ***Line Number*** shown in the configuration for the ACO Line.



   c. Select the **Destinations** tab.
   d. For the **Destination** and **Fallback Extension** settings, enter **.** (a period or full-stop).



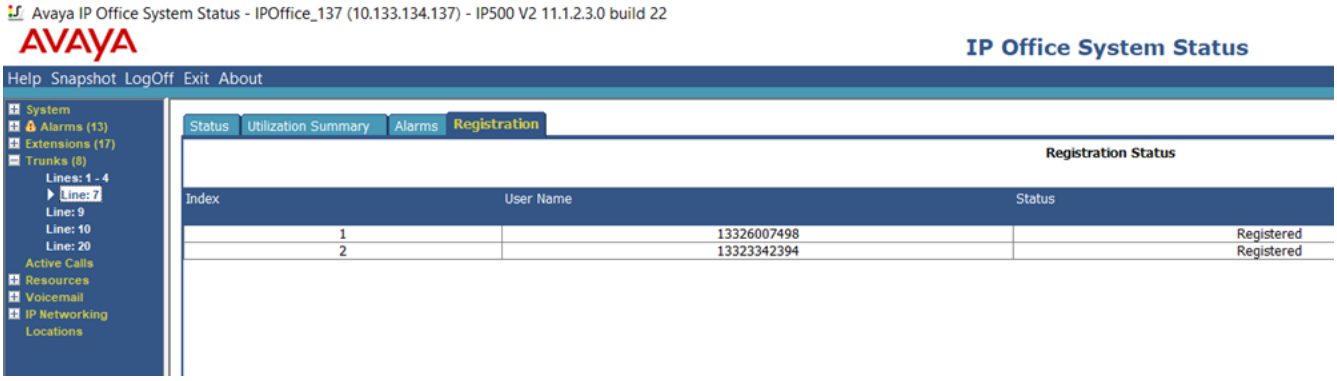
   e. Click **OK**.
3. Click the icon. Accept the configuration save settings as shown and click **OK**.

Next

- Go to Checking ACO Registration 28.

4.4 Checking ACO Registration

Using the IP Office System Status application, you can view the status of the user's registrations with Avaya Cloud Office.



Procedure

1. Connect to the IP500 V2/V2A system using IP Office System Status.
2. Expand the **Trunks** list and select the trunk number that matches the ACO line.
3. Select the **Registration** tab. The tab displays the status of each user's registration to Avaya Cloud Office.
4. If the tab show issues for some users, check their user settings. If the tab shows issues for all users, check the ACO line settings.

Next

- Go to Testing Operation 29.

4.5 Testing Operation

Testing Call Operation

1. Test calls between the Avaya Cloud Office users. The calls should route to Avaya Cloud Office and then back to the IP Office and the called Avaya Cloud Office user.
2. Test calls from Avaya Cloud Office extensions to an external PSTN number.
3. Test calls from an external PSTN number to the Avaya Cloud Office extensions.
4. Using the locally allowed protocol, make test emergency calls. See below.
5. Test that the system blocks calls to IP Office features.

Testing Emergency Call Operation

You must test emergency call operation following local laws and regulations. In some locations, making calls to the PSAP when there is no emergency may be illegal.

- If the PSAP allows test calls, do not end the calls without informing the PSAP responder that the call is a test.
- Some PSAP providers support emergency call test number such as 933. When called, an automated response gives the address on record for the calling number. Where supported, configure the test number to use the same call routing as the emergency numbers.

Chapter 5.
Additional Information

5. Additional Information

You need to be aware of how the analog extensions operate when using the IP Office system as an Avaya Cloud Office gateway.

5.1 Known Issues

The following known issues existed at the time of writing:

- **Audio issues:**
  For calls via Avaya Cloud Office of a long duration, if the user holds the call, when unheld the speech path is not always reestablished correctly.
- **Call transfer – Blind transfer:**
  When an Avaya Cloud Office extension user makes a blind call transfer, they should wait for 5 seconds after dialing the transfer target before hanging up. This allows for the time that the IP Office and Avaya Cloud Office need for call routing. If the user drops the call too soon after dialing the transfer number, the call transfer may fail.
- **Call waiting tone:**
  When call waiting is enabled on the user, the user only hears a single tone to indicate a 2nd incoming call.
- **Unplugged Extensions**
  After unplugging an analog extension, the IP Office system may still have an active Avaya Cloud Office registration for the extension. When that occurs, Avaya Cloud Office will still attempt to route calls to the extension rather than to the extension's Avaya Cloud Office voicemail.
- **Voicemail Message Waiting Indication**
  Avaya Cloud Office does not provide message waiting indication (MWI).

5.2 Local IP Office Call Handling

Analog telephones use the recall button to perform actions such as transfer, hold, unhold, answer call waiting. The button is known as the *"Recall"*, *"Flash"* or *"Hook Flash"* button and marked **R**, **F** or **H** respectively depending on the phone model. See

When using the recall button, the IP Office performs the call handling, not Avaya Cloud Office.

- For example: During a call, pressing recall places that call on hold on the IP Office system. Pressing recall again reconnects the call.

Whilst this does not prevent the use of recall functions on the analog extensions, you need to be aware of the following caveats:

- The dial tone heard when the analog extension user presses the recall button is local dial tone from the IP Office.
- If during an existing call the user hears call waiting tones, they can press the recall button to switch between their current call and the waiting call.
- When the analog extension user presses recall during a current call, the existing call to/from Avaya Cloud Office remains connected to the IP Office. The call hears the IP Office music-on-hold (by default a double-tone every 4 seconds).
- When transferring calls using the recall button, the IP Office performs the transfer. To allow this:
  - You must disable both the IP Office user and system **Inhibit Off-Switch Forward Transfer** settings.
  - User trying to perform an unsupervised/blind transfer should wait at 5 seconds after entering the transfer number before hanging up. This is necessary to allow both IP Office and Avaya Cloud Office call routing to complete. See Known Issues 32.

5.3 Avaya Cloud Office Feature Codes

For non-emergency calls, the IP Office sends all digits to Avaya Cloud Office as DTMF. The following table lists some of the Avaya Cloud Office feature codes that analog extension users may be able to use. For more details, refer to https://onecare.avaya.com/AvayaCloudOffice/kb/public/DOCS100771.

Feature	ACO Feature Code	Description
Open the Avaya Cloud Office Interactive Voice Response (IVR)	*	When calling your extension or Direct Number, press * to manage your Avaya Cloud Office account settings.
Call Flip	*<*Flip Number*>	During an active call, press *1 up to 8 to start call flip.
Call Recording	*9	During an active call, press *9 to start or end call recording.
Caller ID Block	*67<*10-Digit Number*>	When placing an outgoing call, dial *67 before the 10-digit number to block your outgoing caller ID on the call.
Intercom Call	*85<*Ext Number*>	Dial *85 to make an intercom call. For example: *85102 for extension 102
Voicemail	*86	Dial *86 to listen to your voicemail messages. Avaya Cloud Office does not provide message waiting indication.
Call Park	##*3	Press ##*3 to park an active call. Note: For calls between Avaya Cloud Office users, the caller cannot park the call using this code. The called user can park the call.
Call Park Retrieve	*<*Park Location*>	Press * and then the Park Location to pick up a parked call.
Call Return	*69	Initiate an outgoing call to the last incoming call in your call log.
Hold	##	Press ## to place an active call on hold. • Note: For calls between Avaya Cloud Office users, the caller cannot hold the call using this code. The called user can hold the call.
External Transfer	##*1<*10-Digit Number*>	Note that transfers shown the original caller's ID, not that of the extension transferring the call.
Internal Transfer	##<*Ext Number*>#	
Connect Directly to Voicemail	#	When calling another Avaya Cloud Office user, press # to go directly to their voicemail.
Page	*84<*Group Number*>#	Make an announcement to a group and hang up when finished.
Mute Conference Bridge Music	*#903#	If you are the only participant on an Avaya Cloud Office conferencing bridge, dialing this code mutes the hold music.

5.4 Adjusting the Flash Hook Timers

Analog devices use a flash hook signal during a call to indicate when they need additional services from the telephone system. For example, to put a call on hold or to transfer a call.

A flash hook signal is a short interruption in the call connection. Originally, analog telephone users would send a flash hook signal by briefly tapping the hook switch on their phone. On most modern phones, user can send a flash hook signal by pressing the key marked **R**, **Recall**, **H**, or **Hold**. The marking varies between different makes and models of phone.

The minimum and maximum interruption time for a hook flash signal vary between countries. For details of the different maximum and minimum width values used in various countries, refer to the "Avaya IP Office Locale Settings" manual.

For IP Office systems, you can adjust the settings to match local analog phones as follows:

1. **System Setting**
   The default settings for all analog extensions is set by the system's **System | System | Locale** setting. This set the values to match the selected country.
2. **Extension Setting**
   The **Extension | Analog | Flash Hook Pulse Width** setting for each analog extension is set to either ***Use System Default*** (the default extension setting) or to specific **Minimum Width** and **Maximum Width** values.

5.5 Fax Configuration

The solution supports the use of an analog fax machine. To do this:

1. The **Line | T38 Fax** settings of the IP Office system's ACO line should be set to ***Use Default Values***.
2. The fax extension's **Extension | Analog | Equipment Classification** setting should set as ***Standard Telephone***.

5.6 Upgrading from IP Office R11.1 FP2 SP2

Avaya previously supported IP Office to Avaya Cloud Office extensions using IP Office R11.1 FP2 SP2. However, to continue receiving support, those customers must upgrade to IP Office R11.1.2.3. You can do that using the following process.

Procedure

1. If using a SIP trunk for the local emergency trunk, install and test a replacement using an analog, PRI or BRI trunk.
2. Upgrade the IP500 V2/V2A from IP Office R11.1 FP2 SP2 to IP Office R11.1.2.3.
3. Delete the existing SIP lines.
4. Delete the existing ARS and Incoming Call Route entries other than any used for emergency call routing.
5. Delete the existing ACO users.
6. Follow the processes in this document from step 3 of Initial IP Office System Configuration 17.

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