

Avaya Solution & Interoperability Test Lab

Configuring Alternate Route Selection in Avaya IP Office to Support Failover of SIP Voice Services with ISDN-PRI and Analog Trunks – Issue 1.0

Abstract

These Application Notes describe the procedures required for configuring the Avaya IP Office for Alternate Route Selection to provide redundancy for voice services. The Alternate Route Selection (ARS) feature in the Avaya IP Office provides call routing facilitated by short codes and alternative routing measures for outgoing calls during network failure.

The ARS feature was implemented in firmware release 4.0 and above for Avaya IP Office and replaces the Least Cost Routing feature used in previous releases. These Application Notes will also encompass administration tasks for Avaya SIP Enablement Services related to the configuration of Avaya IP Office.

1. Introduction

These Application Notes describe the procedures required for configuring the Avaya IP Office for Alternate Route Selection to provide redundancy for voice services. The Alternate Route Selection (ARS) feature in the Avaya IP Office provides call routing facilitated by short codes and alternative routing measures for outgoing calls during network failure. The ARS feature was implemented in releases 4.0 and above for Avaya IP Office and replaces the Least Cost Routing feature used in previous releases of Avaya IP Office.

When the dialed digits match a specific short code configured on the Avaya IP Office, the short code routes the outgoing call to the ARS configuration as the destination. The final routing of the outgoing call is controlled by the ARS configuration when triggered by the dialed digits based on the matching short code. If the initial ARS configuration is unavailable, an alternate ARS configuration is referenced to provide failover to the PSTN. The testing approach of these Application Notes is to confirm the failover capabilities of ARS for the Avaya IP Office 500 hosted at the Branch location using the simulated WAN and PSTN. For outgoing calls from the Avaya IP Office, if the SIP trunk is not seized within a specified time or is unavailable, the ARS configuration will activate the ISDN-PRI trunk as the first alternate route. If the ISDN-PRI trunk is not seized within a specified time or will activate the analog trunk as the second alternate route.

Figure 1 illustrates the network environment used to verify these Application Notes. The Main location consists of Avaya S8710 Media Servers hosting Avaya Communication Manager with an Avaya G650 Media Gateway as well as Avaya SIP Enablement Services (SES) to provide functionality for SIP telephony. The Main location communicates with the Branch location through the WAN and has PSTN connectivity using ISDN-PRI facilities. The Branch location hosts an Avaya IP Office 500 and communicates with the Main location through the WAN and has PSTN connectivity using an ISDN-PRI facility and an analog trunk. Avaya Communication Manager and the Avaya IP Office 500 have SIP trunks connected to the Avaya SES Server hosted at the Main location for routing SIP proxy requests. The Main and Branch locations communicate through a Multi-Protocol Label Switched (MPLS) network simulating the WAN and basic telephony service is provided by a simulated PSTN environment.

With the exception of the components mentioned above, any configuration related to the underlying network infrastructure will not be covered. Also, these Application Notes provide a sample of the administrative tasks that can be performed by the ARS feature for the Avaya IP Office and does not cover all its features and capabilities. Please see **Section 8** of these Application Notes for additional references on configuration for Avaya IP Office.



Figure 1: Network Configuration

2. Equipment and Software Validated

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

| Equipment | Software |
|--|------------------------|
| Avaya IP Office 500 | 4.0(5) |
| Avaya S8710 Media Server (2) | |
| Avaya Communication Manager | 4.0 (R014x.00.0.730.5) |
| Avaya G650 Media Gateway | |
| • C-LAN | • FW24 HW01 |
| MEDPRO | • FW116 HW20 |
| Avaya SIP Enablement Services | 3.1.2(306) |
| Avaya C363T-PWR Converged Stackable Switch | 4.5.14 |
| Avaya 4621 IP Telephone | 2.7 |
| Avaya 5610 IP Telephone | 2.3 |
| Cisco Catalyst 3750 Switch | 12.4 |
| Cisco 3825 WAN Router | 12.4 |
| Cisco 2811 Access Router | 12.4 |

3. Configure the Avaya IP Office 500

Listed below are the steps used to provision the Avaya IP Office 500 at the Branch location illustrated in **Figure 1**. The Avaya IP Office 500 will be configured for WAN and PSTN connectivity as well as enable the ARS feature to perform call redundancy for outbound calls. For brevity, this section will assume the reader of these Application Notes has a basic understanding of Avaya IP Telephony and will not cover details regarding the initial configuration for Avaya IP Office.

Note: These Application Notes cover implementing the ARS feature for redundancy of the Avaya IP Office only. See Section 8 for references on redundancy measures for Avaya Communication Manager.

1. Open the Avaya IP Office Manager application. From the Avaya IP Office Manager, select the **File** option from the top menu and scroll to the **Open Configuration...** selection. This will open a new window displaying the Avaya IP Office systems available to the Avaya IP Office Manager.



| 2. In | n the | new v | window | , ma | ark the o | chec | kbox for the A | vaya IP (| Offi | ce system s | slate | d for con | figuration. |
|-------|-------|-----------|--------|------|-----------|------|----------------|-----------|------|-------------|-------|-----------|-------------|
| Clic! | k the | OK | button | to | display | the | authentication | prompt | for | accessing | the | selected | Avaya IP |
| OIII | | | | | | | | | | | | | |

| Select IP Office | | | |
|---------------------------|---------|----|--------|
| Name IP Ad Type | Version | | |
| Version 4.0 | | | |
| ▼ IPO 500 44.1.1.1 IP 500 | 4.0 (5) | | |
| CP Discovery Progress | | | |
| Unit/Broadcast Address | | | |
| 44.1.1.1 | Refresh | ОК | Cancel |

3. Enter valid credentials at the Service User Login prompt. Click the **OK** button to display the opening page of the Avaya IP Office Manager application for the selected system.

| IP Office : | IP Office 406 - IP 406 DS |
|-----------------------|---------------------------|
| Service User Name | **** |
| Service User Password | ••••• |
| | OK Cancel Help |

4. When the Avaya IP Office Manager opens, right-click on **Line** from the configuration list under the left window. Select **New > SIP Line** to open a new window for configuring the SIP trunk to the Avaya SES Server.

| 2 🖻 - 🗐 🔺 | 🔝 🔜 🔺 🗸 🐸 🕴 IPC |) 500 🔽 Line | • 1 | - | | |
|------------------|-------------------|----------------------|------------------|-----------------------------|-------------|-----------|
| IP (| Offices | | PRI 24 - Lir | ne 1 | 🖆 - 1 | X ✓ < |
| ■ K BOOTP (2) | ^ | PRI 24 Line Channels | | | | |
| Operator (3) | | | 01 | Line SubType | PRI | ~ |
| 🗄 🤜 Systen 🎦 | New | • | IP Line | Dura data | Land Tales | |
| | Cut | Ctrl+X | IP DECT Line | Provider | LUCAI TEICO | ` |
| - 🛩 2 🗈 | Сору | Ctrl+C | SIP Line | * | | |
| ->5 🗈 | Paste | Ctrl+V | | | | |
| -fr 10 × | Delete | Ctrl+Del | | | | |
| -17 11 🗸 | Validate | | | | | |
| -17 12 | Show In Groups | | Network | Framing | ESF | ~ |
| -17 14 | Customico Columna | | | Zero Suppression | B8ZS | ~ |
| -17 15 | Cascomise Columns | | | Line Signalling | CPE | ~ |
| E Control Unit | (5) | Haul Length | Lengthaul (OdP) | Tecoming Doubing Diaib | - 4 | |
| 🗄 🛷 Extension (1 | 9) | naurtengur | Longhaul (oub) | | > <u>+</u> | |
| User (21) | | | | | | |
| Remotel | Manager | | | | | |
| 201 Extr | 1201 | | | | | |
| 203 Extr | 1203 | < | | Ш | | |
| 206 Extr | 1206 | | | | OK Cancel | Help |
| 📲 207 Extr | 1207 🗸 🗸 | | | | | Theip |

5. In the new window for the SIP Line, use the automatically assigned value or select a line number to identify the SIP trunk in the Line Number field. Enter the SIP URI (domain name) and IP address that will be used by the Avaya SES Server in the ITSP Domain Name and ITSP IP Address fields respectively. Mark the In Service checkbox to register this line number with the Avaya IP Office and place the SIP trunk in the operational state. Select the G.711 ULAW 64K option from the Compression Mode drop-down list to define the method of voice compression.

Under Network Configuration, select the **TCP** option from the **Layer 4 Protocol** drop-down list to define the transport method for the SIP trunk and select **None** from the **Use Network Topology Info** drop-down list. Enter **5060** as the port value for the **Send Port** (outgoing) and **Listen Port** (incoming) fields. Leave remaining parameters at the default settings and click the SIP URI tab to configure trunk channel properties.

| | Line | • ³ | | | - |
|---|---------------------------------|-------------------|--------------------------|----------------|-------|
| IP Offices | | SIP Line - Line 5 | | 📥 - 🗙 | ✓ < |
| BOOTP (2) | SIP Line SIP URI | | | | |
| IPO 500 | Line Number | 5 | Registration Required | | |
| | ITSP Domain Name | retail.com | In Service | V | |
| Control Unit (5) | ITSP IP Address | 30 1 1 25 | Use Tel URI | | |
| User (21) | Primary Authentication Name | | VoIP Silence Suppression | | |
| MantGroup (1) | Primary Authentication Password | | Out Of Band DTMF | | |
| - 🍘 Service (0) - 🎿 RAS (1) | Primary Registration Expiry | 60 😂 | Local Tones | | |
| Incoming Call Route (4) | Secondary Authentication Name | | Fax T38 | | |
| man Directory (0) | Secondary Authentication Passwo | rd | RE-INVITE Supported | | |
| () Time Profile (0) | Secondary Registration Expiry | 60 | Voice Packet Size | 20 | |
| Proute (2) | | | Compression Mode | G.711 ULAW 64K | ~ |
| | - Network Configuration | | | | |
| | Layer 4 Protocol TC | P Send Por | 5060 | \$ | |
| 🛛 🏰 User Rights (8) 🖓 💼 Auto Attendant (1) | Use Network Topology Info No | ne 🔽 Listen Po | rt 5060 | \$ | |
| AR5 (4) | < | | | | |
| Corr Dystem (1) | E-2 | | | | _ |

6. At the window for the SIP URI tab, click the **Add** button to open the New Channel window and configure channel properties for the SIP trunk. In the New Channel window, select **Use User Data** from the **Local URI**, **Contact** and **Display Name** drop-down lists to apply values on a per-user basis when making calls that seize the SIP trunk.

Enter the line number identified in the previous step in the **Incoming Group** and **Outgoing Group** fields to reference the new channel. Leave the remaining parameters at the default setting and click the **OK** button in the New Channel window. Click the **OK** button to submit the line form for the configured SIP trunk.

| . 🖻 - 🔛 🖪 💽 🖬 🔥 🛹 🛎 | IPO 500 • Line • 5 • | | |
|---|--|-----------|-----------------------|
| IP Offices | SIP Line - Line 5* | 📥 - 🗙 | ✓ < |
| BOOTP (2) ✓ Operator (3) ✓ IPO 500 ← System (1) ← System (1) ← Control Unit (5) ← Extension (19) ← Luce (21) ← Short Code (67) ● Short Code (67) | SIP Line SIP URI Channel Groups Via Local URI Contact | | Add Remove Edit |
| Service (y) Service (y) | New Channel Via Local URI Local URI Use User Data Contact Use User Data Display Name Use User Data Registration Primary Incoming Group 5 Outgoing Group 5 Max Calls per Channel 10 | | OK Cancel |
| | | OK Cancel | Help |

7. From the Avaya IP Office Manager, right-click on **Line** from the configuration list under the left window. Select an available line denoted by the \checkmark icon to open the window for configuring an ISDN-PRI trunk to the PSTN. Select the **PRI** option from the **Line SubType** drop-down list to enable T1 ISDN operation and select **5ESS** from the **Switch Type** drop-down list to define the ISDN switch version. Select **Network** from the **Clock Quality** drop-down list to define clock source for line synchronization and select the **ESF** option from the **Framing** drop-down list to define the framing type.

From the **Zero Suppression** drop-down list, select **B8ZS** and select **CPE** (Customer Premise Equipment) from the **Line Signaling** drop-down list. (Optional) Mark the checkbox for **CSU Operation** and select a desired line length from the **Haul Length** drop-down list. Leave remaining parameters at the default settings and click the Channel tab to configure ISDN-PRI channel properties.

| گ 🛩 - 🔜 🏊 👥 🖬 🗘 🛹 🛎 🎚 | IPO 500 🔹 Line | • 1 | • | | |
|---|--|-----------------|-----------------------------|--------------------|----------|
| IP Offices | | PRI 24 - Line 1 | 1 | 📥 - 🗙 | |
| BOOTP (2) Greator (3) IPO 500 System (1) -↑7 (Line (11) | PRI 24 Line Channels Line Number Switch Type | D1 SESS | Line SubType Provider | PRI Local Telco | ~ |
| 2 5 | Channel Allocation Prefix Test Number | 1-> 23 | | | |
| -111 -112 -113 -113 -114 | Clock Quality CRC Checking | Network | Framing Zero Suppression | ESF B825 | * |
| (1) (1) (2) | CSU Operation Haul Length | LongHaul (0dB) | Line Signalling | 4 | V |
| 208 Extn208 209 Extn209 210 Extn210 | <u>~</u> | | | OK Cancel | Help |

8. At the window for the Channel tab, hold the Shift key and highlight the desired number of channels belonging to the ISDN-PRI trunk. Click the **Edit** button to open the Multiple Channel Edit window to configure channel properties for the ISDN-PRI trunk. In the Multiple Channel Edit window, enter the line number identified in the previous step in the **Incoming Group** and **Outgoing Group** fields to reference the multiple channels selected. Select the **Bothway** option from the **Direction** drop-down list and select the **Any** option from the **Bearer** drop-down list to define the traffic type.

From the **Service** drop-down list, select **None** and select the **In Service** option from the **Admin** drop-down list to enable operational status for the highlighted channels. Leave the remaining parameters at the default setting and click the **OK** button in the Multiple Channel Edit window. Click the **OK** button to submit the line form for the configured ISDN-PRI trunk.

| 2 🖻 - 🔲 🖪 💽 🖬 🔺 🛹 🏄 🞚 | IPO 500 🔹 Line | • 1 • | |
|--|---|---|--|
| IP Offices | X | PRI 24 - Line 1 | ☆ - X √ < |
| ★ BOOTP (2) ✓ Operator (3) ✓ IPO 500 🐨 System (1) IP (1) | PRI 24 Line Channel Groups Lin 1 1 1 70 2 1 70 70 3 1 1 70 4 1 70 70 5 1 1 70 6 1 1 70 7 1 1 70 8 1 1 70 8 1 1 70 8 1 1 70 8 1 1 70 8 1 1 70 8 1 1 70 9 1 1 70 9 1 1 70 9 1 1 70 9 1 1 70 9 1 1 70 0 0 1 1 70 0 0 1 1 </th <th>Appearance Direction Bearer Service Bothway Any None Bothway IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII</th> <th>Admin Edit In Service In Service In Service In Service In Service In Service In Service Cancel</th> | Appearance Direction Bearer Service Bothway Any None Bothway IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII | Admin Edit In Service In Service In Service In Service In Service In Service In Service Cancel |
| | | | OK Cancel Help |

9. From the Avaya IP Office Manager, right-click on **Line** from the configuration list under the left window. Select an available physical analog port in the Avaya IP Office to open the window for configuring an analog trunk to the PSTN. Enter an available line number in the **Incoming Group** and **Outgoing Group** fields to identify the analog trunk. Leave remaining parameters at the default settings and click the **Analogue Options** tab to configure line parameters for the analog trunk.

| 2 🖻 - 🔒 🖪 🖪 🖬 🔥 🗸 🕹 | i IPO 500 🝷 I | ine 🔻 9 | • | |
|---|---|---|----|----------------------------|
| IP Offices | | Analogue Trunk - Line 9 | , | ☆ - X √ < > |
| * BOOTP (2) • Operator (3) • IPO 500 • System (1) • T (Line (11)) • Control Unit (5) • Extension (19) • User (21) • WarnGroup (1) • Short Code (67) • Incoming Call Route (4) • Directory (0) • Directory (0) | Line Settings Analogue Op Line Number Telephone Number Incoming Group ID Outgoing Group ID Outgoing channels Voice channels Prefix National Prefix | tions 9 9 9 9 9 1 9 1 0 1 0 1 0 1 0 0 0 0 0 0 | | |
| | | | ОК | Cancel Help |

10. At the window for the Analogue Options tab, select the **Loop Start ICLID** option from the **Trunk Type** drop-down list to define the line type used for the analog trunk. Select the **Bothway** option from the **Direction** drop-down list and select the **Any** option from the **Bearer** drop-down list to define the traffic type. Leave the remaining parameters at the default setting and click the **OK** button to submit the line form for the configured analog trunk.

Note: Calls using analog trunks set to Loop Start ICLID do not send Caller ID information instantaneously therefore the Avaya IP Office will delay service while waiting for all ICLID digits before call routing is determined.

| | ; IPO 500 Tine | | • 9 | | - | | | |
|--|----------------------------|-----------------|-----------|---------------|----------------------|-----------------------|-------|-----------|
| IP Offices | × | Analog | jue Trunk | - Line | 9 | Ċ | - > | < ✓ < |
| , BOOTP (2) Operator (3) IPO 500 | Line Settings Analogue Opt | ions | | - Ping Pe | rsistency | - Discoppect Clear | , | |
| | Trunk Type | Loop Start ICLI |) 🗸 | Units (ms) | 400 | Units (ms) | 500 | \$ |
| | Signalling Type | DTMF Dialing | ~ | -Ring Of | f Maximum | Pulse Width | | |
| User (21) | Direction | Bothway | ~ | Units (ms) | 5000 🗘 | On (Units - ms) | 40 | * |
| | Bearer | Any | * | -Flash P | ulse Width | Off (Units - ms) | 60 | \$ |
| Service (0) Ass (1) | | | | Units (ms) | 500 🗘 | Secondary Dial T | one — | |
| - 🕞 Incoming Call Route (4) | 🗖 Allem Analan Tumb ka | Two-by Compared | | Await D | ial Tone | (Units - ms) | 3000 | * |
| Directory (0) | | Trank Connecc | | (ms) | 3000 😂 | Digit(s) n = | 1 | * |
| { | | | | Interme | ediate Digit Pause — | Matching Digit | 8 | * |
| IP Route (2) | | | | (ms) | 500 🗘 | Gains | | |
| - 🍋 Licence (44) | Secondary Dial Tone | | | -Voice R | ecording | T× (A - D) | OdB | ~ |
| 🙀 Tunnel (0) 🚄 Logical LAN (0) | Disconnect Clear | | | Level | Low 🗸 | R× (D - A) | 0dB | ~ |
| user Rights (8) | Long CLI Line | | | -Echo Ca | ancellation | DTMF | | |
| - 📁 Auto Attendant (1) 🍸 ARS (4) | Modem Enabled | | | Delay | 16 ms 💌 | Mark (Units - ms) | 80 | - |
| 📲 E911 System (1) | | | | | | Space (Units - ms) | 80 | \$ |
| | < | | | | | | | |
| | | | | | r | | | |

11. From the Avaya IP Office Manager, right-click on **ARS** from the configuration list under the left window. Select **New** to open a window for provisioning a new ARS entry for the SIP trunk configured in Steps 5 and 6 of this section. At the window for the new ARS entry, enter a descriptive name for the ARS using the SIP trunk in the **Route Name** field. Mark the checkbox for **Secondary Dial tone** to invoke secondary dial tone during calls until a trunk channel is seized and mark the checkbox for **In Service** to place the ARS entry in operational state. Leave the remaining parameters at the default setting and click the **Add** button to open the New Short Code window to add matching criteria for call routing.

| | V 20 ; IPO 500 | ARS | 52: retail-sip | • | | |
|--------------------------------------|-----------------------|------------------|------------------------------------|----------------------|---------------|-----------------|
| IP Offices | | 1 | etail-sip* | | | 📥 • 🗙 🗸 < |
| BOOTP (2) | ARS | | | | | |
| P IPO 500 | ADC Dauta Id | F2 | | Secondary Dial top | e | |
| System (1) | AKS KOULE ID | 52 | | | | |
| | Route Name | retail-sip | | SystemTone | ~ | |
| 一行(Line (11) 一一行(Control Unit (E) | | | | | | |
| Extension (19) | Dial Delay Time | System 🛟 | | Check User Call Bar | ring | |
| 1 User (21) | | | | | | |
| HuntGroup (1) | To Comise | | | Out of Comico Doute | -Mana - | |
| Short Code (67) | In Service | · · | | Out of Service Route | <none></none> | ¥ |
| Service (0) | | Ļ | | | | |
| RAS (1) | Time Profile | | | Out of Hours Route | <none></none> | ~ |
| WapPort (0) | nine r tonie | sitiones - | | out of hours reduce | SNORCE | |
| | | 1 | | | | |
| Time Profile (0) | Code | Telephone Number | Feature | Line Group | td | 0 dd |
| 🖳 🕕 Firewall Profile (1) | 11 | 011 | Dial Emergence | 0 | 10 | Hadin |
| IP Route (2) | 911 | 911 | Dial Emergenc | ν Ο | | Remove |
| Account Code (0) | <u>15.5.5</u> | | | | | |
| | | | | | | Edit |
| - 🚄 Logical LAN (0) | | | | | | |
| 📲 User Rights (8) | | | | | | |
| Auto Attendant (1) | | | | | | |
| AA-R4 | | 1 | | | | |
| F ARD (4) | | Ļ | | | | |
| | Alternate Route Prior | ity Level 3 | | | | |
| | | | | | | |
| | | 1 | | | | 1 |
| | Alternate Route Wait | Time 10 🗘 | | Additional Route | <none></none> | ~ |
| | | | | | | |
| | < | | | | | |
| | | | | | | |
| | | | | | ОК | Cancel Help |

12. At the New Short Code window, enter the dialing digits used to trigger the short code for extensions registered to Avaya Communication Manager at the Main location in the **Code** field. Select the **Dial** feature from the **Feature** drop-down list to define the action of the short code. In the **Telephone Number** field, enter the dialing digits for extensions registered to Avaya Communication Manager at the Main location and include a suffix with the special characters, "@<IP address of Avaya SES Server>". See Section 8 for references on special characters used in short code configurations for the Avaya IP Office.

Select the line number for the SIP trunk configured in Steps 5 and 6 of this section from the **Line Group Id** drop-down list. Leave the remaining parameters at the default setting and click the **OK** button to return to the ARS entry window for the SIP trunk. Click the **OK** button at the ARS entry window to submit this ARS entry for the SIP trunk. Repeat this step as necessary for all dialing digits destined for call routing by this ARS entry.

| Code | 333N; | | OK |
|--------------------|--------------------|---|--------|
| Feature | Dial | ~ | |
| Telephone Number | 333N''@30.1.1.25'' | | Cancel |
| Line Group Id | 5 | ~ | |
| Locale | | * | |
| Force Account Code | | | |

13. From the Avaya IP Office Manager, right-click on **ARS** from the configuration list under the left window. Select **New** to open a window for provisioning a new ARS entry for the ISDN-PRI trunk configured in Steps 7 and 8 of this section. Repeat Step 11 of this section to configure the ARS entry.

| - 🗐 🖪 🔛 📰 🚣 🗸 | / 🛎 🕺 IPO 500 | ARS | 51: retail-pstn | - | | |
|---|------------------------|---------------------|-------------------------------------|---------------------|---------------|---------------|
| IP Offices | 1 | re | tail-pstn* | | | 🖻 • 🗙 • 1 |
| OOTP (2) | ARS | | | | | |
| 0 500 System (1) | ARS Route Id | 51 | | Secondary Dial tone | | |
| (Line (11) Control Unit (5) | Route Name | retail-pstn | Sy | stemTone | ~ | |
| Extension (19) User (21) | Dial Delay Time | System 🤤 | | Check User Call Bar | ring | |
| Short Code (67) Service (0) | In Service | ✓ | | of Service Route | <none></none> | ~ |
| Incoming Call Route (4) WanPort (0) | Time Profile | ↓ <none></none> | | of Hours Route | <none></none> | ~ |
| Directory (0) Time Profile (0) | | 1 | | | | |
| Firewall Profile (1) | Code | Telephone Number | Feature | Line Group | Id | Add |
| Account Code (0) | 11 | 911 | Dial Emergency | 0 | | Pemove |
| Licence (44) | 911 | 911 | Dial Emergency | 0 | | |
| Logical LAN (0) User Rights (8) Auto Attendant (1) ARS (4) | | | | | | Edit |
| 2911 System (1) | Alternate Route Priori | ity Level 3 | | | | _ |
| | Alternate Route Wait | Time 10 | Add | itional Route | <none></none> | + |
| | < | | | | | |
| | | | | | ОК | Cancel |

14. At the New Short Code window, enter the dialing digits used to trigger the short code for extensions registered to Avaya Communication Manager at the Main location in the **Code** field. Select the **Dial** feature from the **Feature** drop-down list to define the action of the short code. In the **Telephone Number** field, enter the dialing digits or special characters for extensions registered to Avaya Communication Manager at the Main location. See Section 8 for references on special characters used in short code configurations for the Avaya IP Office.

Select the line number for the ISDN-PRI trunk configured in Steps 7 and 8 of this section from the **Line Group Id** drop-down list. Leave the remaining parameters at the default setting and click the **OK** button to return to the ARS entry window for the ISDN-PRI trunk. Click the **OK** button at the ARS entry window to submit this ARS entry for the ISDN-PRI trunk. Repeat this step as necessary for all dialing digits destined for call routing by this ARS entry.

| Code | 333N; | ОК |
|--------------------|--------|--------|
| Feature | Dial 💌 | |
| Telephone Number | 333N | Cancel |
| Line Group Id | 1 💌 | |
| Locale | × | |
| Force Account Code | | |

15. From the Avaya IP Office Manager, right-click on **ARS** from the configuration list under the left window. Select **New** to open a window for provisioning a new ARS entry for the analog trunk configured in Steps 9 and 10 of this section. Repeat Step 11 of this section to configure the ARS entry.

| 📓 🔺 🔝 🔛 🔺 | 🗸 🛎 🕴 IPO 500 | ARS | 🔹 53: retail-analog 🔹 🔹 | |
|--|------------------------|---------------|-------------------------|---------------|
| IP Offices | | rei | tail-analog* | 🖆 - 🗙 🗸 |
| TP (2) rator (3) | ARS | | | |
| 500 System (1) | ARS Route Id | 53 | Secondary Dial tone | |
| Line (11) | Route Name | retail-analog | SystemTone | ~ |
| Extension (19) | Dial Delay Time | System 😂 | Check User Call Barring | 1 |
| HuntGroup (1) Short Code (67) | | | | |
| Service (0) | In Service | ✓ | Out of Service Route | <none></none> |
| (ncoming Call Route (4) | | Ļ | | |
| WanPort (0) Directory (0) | l ime Profile | <none></none> | Out of Hours Route | <none></none> |
| Time Profile (0) Firewall Profile (1) | | + | | |
| (P Route (2) | Lode 11 | 911 | Dial Emergency 0 | Add |
| icence (44) | 911 | 911 | Dial Emergency 0 | Remove |
| Tunnel (0) .ogical LAN (0) | | | | Edit |
| Jser Rights (8) | | | | |
| Auto Attendant (1) ARS (4) | | | | |
| E911 System (1) | | I | | |
| | Alternate Route Priori | ity Level 3 | | |
| | | I | | |
| | Alternate Route Wait | : Time 30 | Additional Route | <none></none> |
| | | | - |) |
| | | | | |
| | | | | OK Cancel |

16. At the New Short Code window, enter the dialing digits used to trigger the short code for extensions registered to Avaya Communication Manager at the Main location in the **Code** field. Select the **Dial** feature from the **Feature** drop-down list to define the action of the short code. In the **Telephone Number** field, enter the dialing digits or special characters for extensions registered to Avaya Communication Manager at the Main location. See Section 8 for references on special characters used in short code configurations for the Avaya IP Office.

Select the line number for the analog trunk configured in Steps 9 and 10 of this section from the **Line Group Id** drop-down list. Leave the remaining parameters at the default setting and click the **OK** button to return to the ARS entry window for the analog trunk. Click the **OK** button at the ARS entry window to submit this ARS entry for the analog trunk. Repeat this step as necessary for all dialing digits destined for call routing by this ARS entry.

| Code | 333N; | OK |
|--------------------|--------|--------|
| Feature | Dial 💌 | |
| Telephone Number | 333N | Lancel |
| Line Group Id | 9 🗸 | |
| Locale | ¥ | |
| Force Account Code | | |

17. From the Avaya IP Office Manager, click on the entry under **ARS** configured for the SIP trunk in Steps 11 and 12 of this section. At the window for the ARS entry, select the ARS entry configured for the ISDN-PRI trunk in Steps 13 and 14 of this section from the **Additional Route** drop-down list. This will route calls with matching criteria specified in the short code configuration to the ARS entry for ISDN-PRI when the ARS entry for SIP is unavailable. Select a priority level for accessing the designated additional route for ISDN-PRI from the **Alternate Route Priority Level** drop-down list. Leave the remaining parameters at the default setting and click the **OK** button to submit the ARS entry for SIP.

| | 500 ARS | ▼ 52: retail-: | ip | | | |
|---|--|---|---|--|-----------------|---|
| | <u>. 1</u> | re | tall-sip" | | | □ [*] • × ∨ < |
| | ARS ARS Route Id Route Name Dial Delay Time | 52 retail-sip System | Syste | condary Dial ton mTone eck User Call Bai | rring | |
| | In Service Time Profile | ✓ ↓ <none> ✓ –</none> | Out of | Service Route Hours Route | <none></none> | v v |
| | Code 11 911 333N; | Telephone Number 911 911 333N"@30.1.1.25" | Feature Dial Emergency Dial Emergency Dial | Line Group 0 0 5 | Id | Add Remove Edit |
| - K 50: Main - K 51: retail-pstn - K 52: retail-sip - K 53: retail-analog ⊛ K £911 System (1) | Alternate Route Priori | ty Level 3 v - | | nal Route | 51: retail-pstn | |
| | < | | 10 | | ОК | Cancel Help |

18. From the Avaya IP Office Manager, click on the entry under **ARS** configured for the ISDN-PRI trunk in Steps 13 and 14 of this section. At the window for the ARS entry, select the ARS entry configured for the analog trunk in Steps 15 and 16 of this section from the **Additional Route** drop-down list. This will route calls with matching criteria specified in the short code configuration to the ARS entry for the analog trunk when the ARS entry for ISDN-PRI is unavailable. Select a priority level for accessing the designated additional route for analog from the **Alternate Route Priority Level** drop-down list. Leave the remaining parameters at the default setting and click the **OK** button to submit the ARS entry for ISDN-PRI.

| 🤽 🖻 - 📓 🖪 🔃 🔛 🛕 🗸 🐸 🗦 IPO 500 | ARS | 51: retail- | ostn 🔹 | | | |
|---|---|---|-----------------------------------|---|------------------------------|-------------------------------|
| IP Offices | <u>*</u> | ret | ail-pstn* | | | _ └ॉ → X ✓ < : |
| BOOTP (2) IPO 500 Incoming Call Route (4) Incoming Call Route (4) Incoming Call Route (4) IPO Foreite (1) IPO Foreite (1) IPO Foreite (1) IPO Foreite (1) </td <td>ARS ARS Route Id Route Name Dial Delay Time In Service Time Profile Code 11 911 333N; Alternate Route Prior</td> <td>51 retal-pstn 5 ♥ ↓ <</td> ↓ ✓ ↓ ✓ ↓ ✓ ↓ ✓ ↓ ✓ ↓ ♥11 911 333N | ARS ARS Route Id Route Name Dial Delay Time In Service Time Profile Code 11 911 333N; Alternate Route Prior | 51 retal-pstn 5 ♥ ↓ < | Feature Dial Emergency Dial | econdary Dial tone emTone heck User Call Bar f Service Route f Hours Route Uine Group 0 0 1 | ring <none> Id</none> | Add Remove Edit |
| | Alternate Route Wait | Time 10 🗢 – | Additi | onal Route | 53: retail-analo | g V |
| | | | | | ОК | Cancel Help |

19. From the Avaya IP Office Manager, right-click on **Short Code** from the configuration list under the left window and select **New**. From the New Short Code window, enter the dialing digits used to trigger the short code for extensions registered to Avaya Communication Manager at the Main location in the **Code** field. Select the **Dial** feature from the **Feature** drop-down list to define the action of the short code. In the **Telephone Number** field, enter the dialing digits or special characters for extensions registered to Avaya Communication Manager at the Main location. See Section 8 for references on special characters used in short code configurations for the Avaya IP Office.

Select the ARS entry for the SIP trunk configured in Steps 11, 12 and 17 of this section from the **Line Group Id** drop-down list. Leave the remaining parameters at the default setting and click the **OK** button to submit the short code configuration. Repeat this step as necessary for all dialing digits requiring a short code configuration destined for call routing by ARS.

| | x | | | di lasti |
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| IP Offices | | 333N: Dial | | Ĕ - X ✓ |
| OTP (2) erator (3) | Short Code | | | |
| 500 | Code | 333N | | |
| System (1) | Festure | Dial | | |
| Control Unit (5) | reacure | | • | |
| Extension (19) | Telephone Number | 333N | | |
| User (21) HustGroup (1) | Line Group Id | 52: retail-sip | ~ | |
| Short Code (67) | Locale | | ~ | |
| Service (0) | Force Account Code | | | |
| RA5 (1) Incoming Call Route (4) | | | | |
| Incoming Call Route (4) WapPort (0) | | | | |
| Directory (0) | | | | |
| Directory (0) | | | | |
| Time Profile (U) | | | | |
| Firewall Profile (1) | | | | |
| IP Route (2) | | | | |
| Account Code (0) | | | | |
| Licence (44) | | | | |
| Tunnel (0) | | | | |
| Logical LAN (0) | | | | |
| Lloor Diabte (9) | | | | |
| User Rights (0) | | | | |
| Auto Attendant (1) | | | | |
| AR5 (4) | | | | |
| 🏋 50: Main | | | | |
| 🍸 51: retail-pstn | | | | |
| Y 52: retail-sip | | | | |
| 🖌 53: retail-analog | | | | |
| K optional analog | | | | |
| EQ11 System (1) | | | | |
| E911 System (1) | | | | |

20. From the Avaya IP Office Manager, right-click on **Extension** from the configuration list under the left window and select **New**. From the New VoIP Extension window, enter digits for dialing the extension in the **Base Extension** field. Leave the remaining parameters at the default setting and click the **OK** button to submit the New VoIP Extension configuration.

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| IP Offices | VolP Extension: 8000 7012 | 📸 • 🗙 • < > |
| BOOTP (2) Operator (3) IPO 500 System (1) FT7 Line (11) Control Unit (5) Sternator (19) Sternator (10) Sternator (10) | Extn YoIP Extension Id 8000 Base Extension 7012 Caller Display Type On Reset Volume After Calls | |
| (in Firewall Profile (1) (i) IP Route (2) (ii) Account Code (0) (iii) Conce (44) (iii) Tunnel (0) (iii) Conce (44) (iii) Conce (44) (iii) Conce (44) | ▼ | OK Cancel Help |

21. From the Avaya IP Office Manager, right-click on User from the configuration list under the left window and select New. From the New User window, enter a descriptive name for the user in the Name field. In the Extension field, enter the dialing digits configured in the previous step to associate the user with the proper extension. Select a priority level for the user from the Priority drop-down list. The value for the priority level should be the same or greater than the Alternate Route Priority Level defined in Steps 17 and 18. Leave the remaining parameters at the default setting and scroll the User configuration tabs using the button to the SIP tab.

Note: The Device Type field is automatically populated with the physical characteristics of the endpoint when associated with the corresponding extension.

| 🎩 🗁 🖌 🔚 🕒 🔛 🔛 🖌 🗹 🍜 🗦 IP | 500 🔽 User | 7012 Extn7012 | |
|---|---|---|--|
| IP Offices | X X | Extn7012: 7012 | 📸 • 🗙 • < |
| ** BOOTP (2) ** Operator (3) ** PP 0500 ** System (1) ** The (11) ** Control Unit (5) ** Extension (19) ** Extension (19) ** Service (1) ** Fort Code (67) ** Service (0) ** RAS (1) ** Incoming Call Route (4) ** WanPort (0) ** Time Profile (1) ** Firewall Profile (1) ** Licence (44) ** Licence (44) ** Lugical LAN (0) ** Lugical LAN (0) ** E911 System (1) | User Voicemail DND Sho Name Password Confirm Password Full Name Extension Locale Priority Device Type User Rights User Rights User Rights view Working hours time profile Working hours User Rights Out of hours User Rights | rtCodes Source Numbers Telephony Forwarding Extn7012 United States (US English) 5 Ex Directory Avaya 5610 User data | Dial In Button Programming Menu Programmir |

22. From the SIP tab of the New User window, enter the extension digits that will be sent to the Avaya SES Server in the **SIP Name** field. Leave the remaining parameters at the default setting and click the **OK** button to submit the New User configuration.

Note: The value for the SIP Name displayed in the respective fields use the SIP URI according to the SIP trunk channel configuration in the Local URI, Contact and Display Name drop-down lists in Step 6 of this section.

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| IP Offices | × | Extn7012: 7012 | | 📥 - 🗙 🛛 | ✓ < |
| BOOTP (2) Operator (3) TRO 500 | Menu Programming Tw | inning T3 Options Phone Manager Options Hu | nt Group Membership | Announcements | SIP |
| | SIP Name SIP Display Name (Alias Contact | 7012 Extn7012 Extn7012 | | | |
| Luser (21) L | 3 | Anonymous | _ | | |
| | | | ОК | Cancel | Help |

23. From the Avaya IP Office Manager, right-click on **Incoming Call Route** from the configuration list under the left window and select **New**. From the window for New Incoming Call Route, select the **Any Voice** option from the **Bearer Capability** drop-down list to define the incoming traffic type. In the **Line Group Id** field, enter the line number configured in Step 5 of this section to associate the incoming call route with the SIP trunk. Enter the special character '.' in the **Destination** drop-down list to route any incoming dialed digits to the matching extension. Leave the remaining parameters at the default setting and click the **OK** button to submit the incoming call route for the SIP trunk.

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|---|---|------------------------|-----------|-----------|
| IP Offices | | 0 * | ± + × | ✓ < : |
| BOOTP (2) Operator (3) IPO 500 System (1) f (Line (11) Control Unit (5) | Standard Voice Record Bearer Capability Line Group Id Incoming Number Incoming Sub Address Incoming CLI Destination Locale Priority Fallback Extension | ng Any Voice 5 | | |
| | Night Service Profile Night Service Destination | <none></none> | OK Cancel | ✓ ✓ |

24. From the Avaya IP Office Manager, right-click on **Incoming Call Route** from the configuration list under the left window and select **New**. From the window for New Incoming Call Route, select the **Any** option from the **Bearer Capability** drop-down list to define the incoming traffic type. In the **Line Group Id** field, enter the line number defined in Step 9 of this section to associate the incoming call route with the analog trunk. Select the user configured in Step 21 from the **Destination** drop-down list to route any incoming dialed digits from the analog trunk to the specified extension. Leave the remaining parameters at the default setting and click the **OK** button to submit the incoming call route for the analog trunk.

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| IP Offices | ×= | 9 | <u> </u> |
| * BOOTP (2) • Operator (3) • IPO 500 • System (1) • T? Line (11) • Control Unit (5) • Extension (19) • User (21) • * • * • * • * • * • * • * • * • * • * • * • * • * • * • * • * • * * * * * * * * * * * * * * * * * * * * <td>Standard Voice Recording Bearer Capability Line Group Id Incoming Number Incoming Sub Address Incoming CLI Destination Locale Priority Fallback Extension Night Service Profile Night Service Destination</td> <td>Any 9 1 7012 Extn7012 1 </td> <td></td> | Standard Voice Recording Bearer Capability Line Group Id Incoming Number Incoming Sub Address Incoming CLI Destination Locale Priority Fallback Extension Night Service Profile Night Service Destination | Any 9 1 7012 Extn7012 1 | |
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| | Save Configuration As Change Working Directory Preferences Offline Advanced Backup/Restore Import/Export Exit Exit Tricoming Call Route (4) WanPort (0) Directory (0) Time Profile (1) Firewall Profile (1) Firewall Profile (1) Firewall Profile (1) Firewall Profile (1) Firewall Profile (1) Content Code (0) Content Code (0) Cod | m LANI LANZ DNS e Offset rs:minutes) Server IP Address Writer IP Address Writer IP Address U Gonferencing Center URL DS5 Status Beep on listen | Voicemail Telephony LDA 500 10 0 1 1 1 84 1 254 0 0 0 0 15100396 151000000 151000000000000000000000000 | P System Alarms To Locale United States Hide auto recording Favour RIP Routes, | winning CDR : (US English) ; (us english) , over static routes | | |
| | | | | | ОК | Cancel | Help |

25. From the Avaya IP Office Manager, click on **File > Save Configuration** to open the Send Configuration window and upload the configuration for the Avaya IP Office 500.

26. At the Send Configuration window, verify the **Immediate** radio button is selected under Configuration Reboot Mode and click the **OK** button to open the Service User Login prompt. Enter valid credentials at the Service User Login prompt. Click the **OK** button to submit the configuration of the above steps from the Avaya IP Office Manager and reboot the Avaya IP Office 500 immediately.

| Sand | Configuration | |
|-----------------|----------------------|--|
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| Service User Na | me Administrator | |
| Service User Pa | ssword | |
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4. Configure Avaya Communication Manager

For brevity, this section will assume the reader of these Application Notes has a basic understanding of Avaya IP Telephony and will not cover details regarding the configuration of Avaya Communication Manager. See the additional references in **Section 8** for further information.

5. Configure Avaya SIP Enablement Services

Listed below are the steps used to configure the Avaya SES Server as a SIP proxy for integration with the Avaya IP Office 500. These Application Notes assume the proper licensing as well as initial setup for Home and Edge configuration for Avaya SES Server has been provisioned.

1. Using a web browser, enter http://<a.b.c.d> at a web browser where a.b.c.d is the IP address of the Avaya SES Server. At the prompt, enter valid login credentials in the **Logon ID** and **Password** fields. Click **Logon** when finished to display the administration and maintenance web interface.

| AVAYA | Integrated Management 🔗 Standard Management Solutions |
|-------|--|
| Help | |
| • | Logon ID admin Password |
| | © 2006 Avaya Inc. All rights reserved. |
| | |

2. Click **Launch Administration Web Interface** to open the SIP Server Management window containing the options for Avaya SES Server administration.



3. At the SIP Server Management window, click on **System Properties** under the **Server Configuration** menu to view the SES configuration. If it is not populated, enter the domain name used by the SIP environment in the **SIP Domain** field. Leave the remaining fields at default settings and click the **Update** button. Click the **Continue** button at the update confirmation screen. (*not shown*)



4. At the SIP Server Management window, click on **List** under the **Hosts** menu to view hosts configured on the Avaya SES Server. Click the **Map** link to display the list of address map statements for the administered host.



5. At the List Host Address Map window, click on **Add Map In New Group** to create a host address map statement for redirecting calls to the Avaya IP Office 500.

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| AVAYA | | Integrated Manage SIP Server Manage | ment |
| Help Exit | | Server | : ses-hq |
| Top • Users | 🖡 List Host Addre | ss Map | |
| Conferences Media Server Extensions | Host 30.1.1.25 | | |
| Emergency Contacts Hosts Media Servers | Commands Name Edit Delete To-RS1-IPO | <u>Commands</u> <u>Contact</u> | |
| Adjunct Systems Services | Add Another Map | Add Another Contact | Delete |
| • Server Configuration | Edit Delete Do-store2 | | Group |
| Certificate Management IM Logs | | Edit Delete sip:\$(user) @22.1.1.20:5061;transport=tls | |
| | Add Another Map | Add Another Contact | Delete Group |
| Trace Logger Export/Import to ProVision | | | |

6. At the Add Host Address Map window, enter a descriptive name for identifying the address map statement in the **Name** field. In the **Pattern** field, enter the map string used to match SIP URI messages for the Avaya IP Office 500. The values for the matching pattern should be consistent with the dialing digits for the Avaya IP Office extension configured in Step 20 of Section 3. Place a check mark in the **Replace URI** box to indicate this pattern will be forwarded by the **Host** shown. Click the **Add** button when finished to return to the List Host Address Map window.

Use the Linux regular expressions below for the syntax of the host address map pattern:

| ۸ | Match position in the SIP URI field |
|-------|-------------------------------------|
| sip: | Indicates the protocol used |
| 0–9 | Match a specific digit |
| [0–9] | Match any digits |
| * | Indicates any digit and length |

| 🗿 Add Host Address Map - Micro | soft Internet Explorer | |
|---|---|-------------------|
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| Address 🗃 https://ses-hq/impress/do/e | iditaddressmap/addgroup?sid=nodeid3 🛛 💽 Go 😒 S | inagIt 🛃 |
| avaya | Integrated Manage SIP Server Manage | ment [^] |
| Help Exit | Server | :ses-hq |
| Top Users Conferences Media Server Extensions Emergency Contacts Hosts Media Servers Adjunct Systems Services Server Configuration Certificate Management IM Logs Trace Logger Export/Import to ProVision | Add Host Address Map Host 30.1.1.25 Name* To-RS4-IP500 Pattern* ^sip:7[0-9]* Replace URI Image: Compare the second seco | |
| | 🔒 😒 Local intran | iet , |

7. At the List Host Address Map window, click on **Add Another Contact** under **Commands** to add the Avaya IP Office 500 as the destination contact for the corresponding host address map.

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| Adjunct Systems | | Edit Delete @11.1.1.1:5060;transport=tcp | p |
| | | | D 1 1 |
| Services Server Configuration | Add Another Map | Add Another Contact | Delete Group |
| Services Server Configuration Certificate Management | Add Another Map Edit Delete To-RS4-IP500 Add Another Map | Add Another Contact | Delete Group Delete |
| Services Server Configuration Certificate Management IM Logs Trace Logger | Add Another Map Edit Delete To-RS4-IP500 Add Another Map Edit Delete Do-store2 | Add Another Contact Add Another Contact | Delete Group Delete Group |
| Services Server Configuration Certificate Management IM Logs Trace Logger Export/Import to ProVision | Add Another Map Edit Delete To-RS4-IP500 Add Another Map Edit Delete Do-store2 | Add Another Contact Add Another Contact Edit Delete sip:\$(user) @22.1.1.20:5061;transport=tl | Delete Group Delete Group |
| Services Server Configuration Certificate Management IM Logs Trace Logger Export/Import to ProVision Update | Add Another Map Edit Delete To-RS4-IP500 Add Another Map Edit Delete Do-store2 Add Another Map | Add Another Contact Add Another Contact Edit Delete sip:\$(user) @22.1.1.20:5061;transport=tl Add Another Contact | Delete Group Delete Group |



9. Open a telnet session to the Avaya SES Server and access the Linux shell using administrative login credentials. At the Linux shell prompt, enter the **trustedhost** command to configure the Avaya IP Office 500 as a trusted host on the Avaya SES Server. As a trusted host, the Avaya SES Server will not issue authentication challenges for incoming SIP requests from the Avaya IP Office 500. Use the following arguments for the **trustedhost** command to add the Avaya IP Office 500:

- -a : Add new third party trusted host
- -c : Optional comment when adding a third party trusted host
- -n : SES host IP address trusted host

```
admin@hq-ses> trustedhost -a 44.1.1.1 -n 30.1.1.25 -c ipo500
```

| List Host Address Map - Mic File Edit View Favorites Too | rosoft Internet Explorer Is Help | | |
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| Help Exit | | SIP Serve | Server: ses-hq |
| Top © Users © Conferences | | ess Map | |
| • Media Server Extensions | HUSL 50.1.1.25 | | |
| Emergency Contacts | Commands Name | <u>Commands</u> <u>Contact</u> | |
| Update All List | Edit Delete 10-RS1-IPO | Edit Delete sip:\$(user) @11.1.1.1:5060;transport=tcp | |
| Migrate Home/Edge | Add Another Map | Add Another Contact | Delete Group |
| Media Servers Adjunct Systems Services | Edit Delete To-RS4-IP500 | Edit Delete sip:\$(user) @44.1.1.1;5060:transport=tcp | Ę |
| Server Configuration | Add Another Map | Add Another Contact | Delete Group |
| System Properties | Edit Delete Do-store2 | | |
| License | | Edit Delete sip:\$(user) @22.1.1.20:5061;transport=tls | |
| SNMP Configuration | Add Another Map | Add Another Contact | Delete Group |
| Certificate Management IM Logs Trace Logger Export/Import to ProVisio | Add Map In New Group | | |

6. Verification

These Application Notes confirmed the functionality of the ARS feature in Avaya IP Office 500 using the procedures listed in the subsequent sections below. Each section will describe the verification steps used to determine system status of the Avaya IP Office 500 and operation of the ARS feature.

6.1. Avaya IP Office Verification

1. Open the Avaya IP Office System Status application. From Avaya IP Office System Status, enter the IP address of the Avaya IP Office 500 in the **Control Unit IP Address** field and enter valid credentials in the **Username** and **Password** fields. Click the **Logon** button to display the opening page of the Avaya IP System Status application.

| AVAVA | IP Offic | e System Status | |
|-----------------|-------------------------|-----------------|--|
| | | e oystem status | |
| Help Exit About | | | |
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| | | Logon | |
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2. From the Avaya IP Office System Status application, click the extension created in Step 20 of Section 3 on the Avaya IP Office 500 under the **Extensions** drop-down menu. Verify the functional status of the configured extension.

| Help Snapshot LogOff Exit About | | | | | - | | | |
|--------------------------------------|--|-----------------|----------|---------------|----------------|----------------|-----------|---------------------|
| ∎ System | | | | | Friday air - O | | | |
| 🖿 🎂 Alarms (12) 🗏 Extensions (18) | | | | | Extension S | เอเมร | | |
| 204 | Extensio | n Number: | | 7012 | | | | |
| 203 | IP address: | | | 44.1.1.4 | | | | |
| 205 | MAC address: | | | 00-09-6E-10 | I-A7-B0 | | | |
| 206 | Telephone Type: | | | 5610 | | | | |
| 207 | Current Liser Extension Number: | | | 7012 | | | | |
| 208 | Current User Name: Forwarding: Twinning: | | | Extp7012 | | | | |
| 209 | | | | Extin/012 | | | | |
| 210 | | | | Off | | | | |
| 211 242 | | | | Off | | | | |
| 212 | Do Not D | Do Not Disturb: | | Off | | | | |
| 214 | Message | e Waiting: | | On | | | | |
| 215 | Number | of New Mess | ages: | 1 | | | | |
| 7008 | Phone M | anager Type: | | None | | | | |
| 7009 | | | | | | | | |
| 7010 | Button | Button | Call Ref | Current State | Time in State | Calling Number | Direction | Other Party on Call |
| 7011 | Number | Type | | | | lor Called | | |
| + Trupke (11) | | CA | | Idle | 05:39:26 | | | |
| Active Calls | 2 | CA | | Idle | | | | |
| Resources | 3 | CA | | Idle | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | Trace | Trace A | ll Pau | ise Ping | Back | Call Details | Print | Save As |

3. Place a call from the extension configured in Step 20 of Section 3 on the Avaya IP Office 500 to an extension configured on Avaya Communication Manger at the Main location. Verify two-way audio and voice quality is acceptable. Click the line number configured for the SIP trunk in Steps 5 and 6 of Section 3 under the **Trunks** drop-down menu. Verify channel seizure of the SIP trunk for the extension configured in Step 20 of Section 3 on the Avaya IP Office 500.



4. Remove the connection from the Cisco 2811 Router providing WAN access for the Avaya IP Office 500. Place a call from the extension configured in Step 20 of Section 3 on the Avaya IP Office 500 to an extension configured on Avaya Communication Manger at the Main location. Verify two-way audio and voice quality is acceptable. Click the line number configured for the ISDN-PRI trunk in Steps 7 and 8 of Section 3 under the **Trunks** drop-down menu. Verify channel seizure of the ISDN-PRI trunk for the extension configured in Step 20 of Section 3 on the Avaya IP Office 500.

| Status U | tilization Su | ımmary Aları | ms Digita | I Trunk Sum | many | | | |
|-------------------|---|---|--|---|---|---|---|--|
| Line: 4 Cla | Line: 1 Slot: 1 Port: 1 | | | | | | | |
| Line: 1 Sio | t: 1 Port: 1 | | T1PRI | | | | | |
| Line Subty | pe: | | Local | | | | | |
| Number of | Channels: | | 23 | | | | | |
| Number of | Administer | ed Channels: | 23 | | | | | |
| Number of | Channels ir | n Use: | 1 | | | | | |
| Channel Number | Call Ref | Current State | Time in State | Routing Digits | Caller ID or Dialed Digits | Other Party on Call | Direction of Call | |
| 1 | 158 | Connected | 00:00:12 | | 3330010 | Extn 7012, Extn7012 | Outgoing | ^ |
| 2 | | Idle | 03:53:20 | | | | | |
| 3 | | Idle | 03:53:20 | | | | | = |
| 4 | | Idle | 03:53:20 | | | | | |
| 5 | | Idle | 03:53:20 | | | | | _ |
| 6 | - | Idle | 03:53:20 | | | | | - |
| 7 | - | Idle | 03:53:20 | | | | | - |
| 8 | | Idle | 03:53:20 | | | | | - |
| 9 | | Idle | 03:53:20 | _ | | | | |
| | | | 03:53:20 | | | | 1 | |
| Trace | Trace A | .II Call Deta | ails Print | Save As. | | | | |
| | Line: 1 Slo Line Type: Line Subty Number of Number of Number 1 2 3 4 5 6 7 7 8 9 10 | Line: 1 Slot: 1 Port: 1 Line Type: Line Subtype: Number of Channels: Number of Administer Number of Channels in Channel Call Number Ref 1 158 2 3 3 4 4 5 5 6 6 7 7 8 9 10 10 | Line: 1 Slot: 1 Port: 1 Line Type: Line Subtype: Number of Channels: Number of Administered Channels: Number of Channels in Use: Channel Call Current State Number Ref Current State Number Ref Connected 2 Idle 3 Idle 4 Idle 5 Idle 6 Idle 7 Idle 8 Idle 9 Idle 10 Idle | Digita Line: 1 Slot: 1 Port: 1 Line Type: T1PRI Line Subtype: Local Number of Channels: 23 Number of Administered Channels: 23 Number of Channels in Use: 1 Channel Current State Tme in State Number of Call Current State 00:00:12 1 158 Connected 00:00:12 2 Idle 03:53:20 3 Idle 03:53:20 4 Idle 03:53:20 5 Idle 03:53:20 6 Idle 03:53:20 7 Idle 03:53:20 8 Idle 03:53:20 9 Idle 03:53:20 10 Idle 03:53:20 10 Idle 03:53:20 | Digital Trunk Sum Line: 1 Slot: 1 Port: 1 Line Type: T1PRI Line Subtype: Local Number of Channels: 23 Number of Administered Channels: 23 Number of Channels in Use: 1 1 158 Connected 00:00:12 2 Idle 3 Idle 4 Idle 03:53:20 1 5 Idle 6 Idle 7 Idle 03:53:20 1 8 Idle 03:53:20 1 | Digital Trunk Summary Line: 1 Slot: 1 Port: 1 Line Type: T1PRI Line Subtype: Local Number of Channels: 23 Number of Administered Channels: 23 Number of Channels in Use: 1 Channel Caller ID or Dialed Diales Number of Channels in Use: 1 Channel Caller ID or Dialed Diales 1 158 Connected 00:00:12 3330010 2 Icile 03:53:20 1 4 Icile 03:53:20 1 4 Icile 03:53:20 1 5 Icile 03:53:20 1 6 Icile 03:53:20 1 7 Icile 03:53:20 1 9 Icile 03:53:20 1 10 Icile 03:53:20 1 | Digital Trunk Summary Line: 1 Slot: 1 Port: 1 Line: Type: T1PRI Line Subtype: Local Number of Channels: 23 Number of Administered Channels: 23 Number of Channels in Use: 1 Channel Caller ID or Dialed Diales Other Party on Call Number of Channels in Use: 1 Channel Caller ID or Dialed Diales Other Party on Call 1 158 Connected 00:00:12 3330010 Extn 7012, Extn7012 2 Idle 03:53:20 | Digital Trunk Summary Line: 1 Slot: 1 Port: 1 Line: Type: T1PRI Line Subtype: Local Number of Channels: 23 Number of Administered Channels: 23 Number of Channels in Use: 1 Channel Call Call Current State Number of Channels 1 Channel Call Current State Time in State Number of Channels 1 Channel Call Quarther Ref Outconcid 330010 Extin 7012, Extn7012 Outgoing 2 Idle 03:53:20 3 Idle 03:53:20 4 Idle 03:53:20 5 Idle 03:53:20 6 Idle 03:53:20 7 Idle 03:53:20 9 Idle 03:53:20 10 Idle 03:53:20 10 Idle 03:53:20 10 Idle 03:53:20 10 Idle <td< td=""></td<> |

5. Remove the connection from the Cisco 2811 Router providing WAN access and the ISDN-PRI connection from the Avaya IP Office 500. Place a call from the extension configured in Step 20 of Section 3 on the Avaya IP Office 500 to an extension configured on Avaya Communication Manger at the Main location. Verify two-way audio and voice quality is acceptable. Click the line number configured for the analog trunk in Steps 9 and 10 of Section 3 under the **Trunks** drop-down menu. Verify line seizure of the analog trunk for the extension configured in Step 20 of Section 3 on the Avaya IP Office 500.

| Help Snapshot LogOff Exit About System Status Line: 1 Analog Trunk Summary Line: 1 Line: 2 Line: 5 Number of Trunks: 4 Line: 5 Number of Trunks in Use: 1 Active Calls Resources Call Current State Time in State Caller ID or Other Party Direction 9 Line: 9 Stot: 3 Port. Loop Start CL 161 Connected 00.00:11 3330010 Extn 7012, Extn 701 | ΑνΑγΑ | IP Office System Status | | | | | | | |
|---|--------------------------------|-------------------------|--------------------|-------------|----------------|---------------|-------------------------------|------------------------|----------------------|
| * System * Anams (1) * Extensions (18) * Trucks (11) Line: 1 Line: 2 Line: 3 Line: 5 * Line: 8 * Line: 8 * Line: 9 Line: 10 Line: 10 Line: 10 Line: 10 Line: 11 Line: 12 Status Line: 13 Line: 14 Line: 15 Status Line: 15 Line: 16 Line: 17 Line: 12 | Help Snapshot LogOff Exit Abou | t 1 | | | | | | | |
| Extensions (18) Analog Trunk Summary Ine: 1 Ine: 2 Line: 5 Vumber of Trunks: 4 Vumber of Administered Trunks: 4 Number of Trunks in Use: 1 Active Calls 1 Resources 1 9 Line: 9 Slot: 3 Port Loop Start CLI 161 9 Line: 9 Slot: 3 Port Loop Start CLI 161 10 Line: 10 Stot: 3 Po Loop Start CLI 161 11 Line: 11 Slot: 3 Po Loop Start CLI 161 12 Line: 12 Slot: 3 Po Loop Start CLI 161 12 Line: 12 Slot: 3 Po Loop Start CLI 161 12 Line: 12 Slot: 3 Po Loop Start CLI 161 12 Line: 12 Slot: 3 Po Loop Start CLI 161 12 Line: 12 Slot: 3 Po Loop Start CLI 161 13 Line: 12 Slot: 3 Po Loop Start CLI 161 14 Line: 12 Slot: 3 Po Loop Start CLI 161 15 Line: 12 Slot: 3 Po Loop Start CLI 161 14 Extension Save As | ± System ± å Alarms (13) | Status Utilization St | ımmary Alarms | 1 | | | | | |
| E Trunks (1) Line: 1 Line: 2 SlotModule: Line: 5 Mumber of Trunks: J Lines: 1-12 Lines: 1-16 Active Calls Resources Port Line: 9 Slot: 3 Port Loop Start CLI 10 Line: 10 Slot: 3 Port Loop Start CLI 11 Line: 11 Slot: 3 Port Loop Start CLI 12 Line: 12 Slot: 3 Port Loop Start CLI 14 Line: 12 Slot: 3 Port Loop Start CLI 15 Line: 12 Slot: 3 Port Loop Start CLI 16 Connected 00:00:11 17 Line: 12 Slot: 3 Port Loop Start CLI 18 days 02:30 19 Line: 12 Slot: 3 Port Loop Start CLI 10 Line: 12 Slot: 3 Port Loop Start CLI 11 Line: 12 Slot: 3 Port Loop Start CLI 12 Line: 12 Slot: 3 Port Loop Start CLI 112 Line: 12 Slot: 3 Port Loop Start CLI 12 Line: 12 Slot: 3 Port Loop Start CLI 112 Line: 12 Slot: 3 Port Loop Start CLI 12 Line: 12 Slot: 3 Port Loop Start CLI 132 Line: 12 Slot: 3 Port Loop Start CLI 144 Save A | ± Extensions (18) | Analog Trunk Summary | | | | | | | |
| Line: 1 Line: 5 Line: 5 Line: 5 Line: 5 Line: 12 Line: 13 - 16 Active Calls Resources Port Line Line Type Call Current State Time in State Caller ID or Other Party Direction on Call 9 Line: 9 Slot: 3 PortLoop Start CLI 161 Connected 00:00:11 3330010 Extn 7012, Extn7(Outgo 10 Line: 10 Slot: 3 PortLoop Start CLI 161 Connected 00:00:04 10 11 Line: 11 Slot: 3 PorLoop Start CLI 161 8 days 02:30 12 Line: 12 Slot: 3 PorLoop Start CLI 161 8 days 02:30 | Trunks (11) | | | | Hilding Trains | Saminary | | | |
| Line: 5 Image: S - 12 Lines: 13 - 16 Active Calls Resources Port Line Une: 9 Slot: 3 Port Loop Start CLI 161 Connected 00:00:11 3330010 Extra 11 Stor: 3 Port Loop Start CLI 161 Connected 00:00:11 3330010 Extra 11 Stor: 3 Port Loop Start CLI 161 Connected 00:00:11 3330010 Extra 2012 Stor: 3 Port Loop Start CLI 161 Output Ine: 10 Slot: 3 Port Loop Start CLI 161 00:03:04 10 Line: 11 Slot: 3 Po Loop Start CLI 161 8 days 02:30 12 Line: 12 Slot: 3 Po Loop Start CLI 161 8 days 02:30 12 Line: 12 Slot: 3 Po Loop Start CLI 161 8 days 02:30 12 Line: 12 Slot: 3 Po Loop Start CLI 161 8 days 02:30 | Line: 1 | Slot/Module: | Slot: | 3 | | | | | |
| Number of Administered Trunks: 4 Number of Trunks in Use: 1 Active Calls Port Line Line Type Call Current State Time in State Caller ID or Other Party Direction 9 Line: 9 Slot: 3 Port Line Time Image: 10 Other Party Direction on Call of Call 9 Line: 9 Slot: 3 Port Loop Start CLI 161 Connected 00:00:11 3330010 Extn 7012, Extn7(Outgoin 10 Line: 10 Slot: 3 Port Loop Start CLI Idle 00:03:04 Image: 10 Image: 12 Image: 12 Slot: 3 Port Line: 12 Slot: 3 Port Line: 12 Image: 12 Image: 12 Slot: 3 Port Line: 12 Image: 12 Slot: 3 Port Line: 12 Image: 12 Image: 12 Slot: 3 Port Line: 12 Image: 12 Image: 12 Slot: 3 Port Line: 12 Image: | Line: 5 | Number of Trunks: | 4 | | | | | | |
| Lines: 13 - 16 Active Calls Resources Port Line Line Type Call Current State Time in State Caller ID or Other Party Directio 9 Line: 9 Stot: 3 PortLoop Start CLI 161 Connected 00:00:11 3330010 Extn 7012, Extn7(Outgot 10 Line: 10 Stot: 3 PorLoop Start CLI Idle 00:00:11 3330010 Extn 7012, Extn7(Outgot 11 Line: 10 Stot: 3 PorLoop Start CLI Idle 8 days 02:30: Idle Idle 00:03:04 Idle Idle Idle Idle 8 days 02:30: Idle Idle 8 days 02:30: Idle Idle 8 days 02:30: Idle Idle Idle 8 days 02:30: Idle | Lines: 9 - 12 | Number of Administer | ed Trunks: 4 | | | | | | |
| Active Calls Resources Port Line Line Type Call Current State Time in State Caller ID or Dialed Diats Other Party on Call Directio of Call 9 Line: 9 Slot: 3 Port Loop Start CLI 161 Connected 00:00:11 3330010 Extn 7012, Extn7(Outgoing 10 Line: 10 Slot: 3 Por Loop Start CLI 1dle 00:03:04 | Lines: 13 - 16 | Number of Trunks in L | Jse: 1 | | | | | | |
| 9 Line: 9 Stot: 3 Port Loop Start CLI 161 Connected 00:00:11 3330010 Extn 7012, Extn70 Outgot 10 Line: 10 Stot: 3 Po Loop Start CLI Idle 00:03:04 0 | Active Calls Resources | Port Line | Line Type | Call Ref | Current State | Time in State | Caller ID or Dialed Digits | Other Party on Call | Direction of Call |
| 10 Line: 10 Stot: 3 Po Loop Start CLI Idle 00:03:04 Idle I | | 9 Line: 9 Slot: 3 P | ort Loop Start CLI | 161 | Connected | 00:00:11 | 3330010 | Extn 7012, Extn7 | Outgoing |
| 11 Line: 11 Start CLI Idle 8 days 02:30: 12 Line: 12 Stot: 3 Po Loop Start CLI Idle 8 days 02:30: Idle 8 days 02:30: | | 10 Line: 10 Slot: 3 I | Po Loop Start CLI | | ldle | 00:03:04 | | | |
| 12 Line: 12 Slot: 3 Po Loop Start CLI Idle 8 days 02:30: Image: Trace Image: Trace All Call Details Print Save As | | 11 Line: 11 Slot: 3 I | Po Loop Start CLI | | ldle | 8 days 02:30: | | | |
| Trace All Call Details Print Save As | | 12 Line: 12 Slot: 3 I | Po Loop Start CLI | | Idle | 8 days 02:30: | | | |
| Trace All Call Details Print Save As | | | | | | | | | |
| | | Trace Trace A | Call Details | Pt | rint Save | e As | | | |

6. Open the Avaya IP Office System Monitor application and start a logging session with the Avaya IP Office 500. Capture the live events during Step 4 of this section and view the log results in the Avaya IP Office System Monitor. Verify ARS operation of the outgoing call and confirm the ARS entry submitted for the ISDN-PRI trunk is activated.

```
769238714mS CMARS:MOVE TO ALTERNATE FORM: retail-pstn769238714mS CMARS:FORM: retail-pstn - Received Number: 3330010769238714mS CMARS:FOUND A SHORT CODE - short_code: 333N; - Tel: 333N -Called_Party: 3330010 - Line Group Id: 1769238714mS CMARS:769238714mS CMARS:CMARSHandler::FindActiveARSByGroupID GroupID=1769238714mS SipDebugInfo:SIPTrunks: Make Target voip, line group id is 1 andip of 1e010119769238714mS SipDebugInfo:769238715mS CMCallevt:0.1667.0 -1 BaseEP: NEW CMEndpoint f58dd5e8 TOTALNOW=4 CALL_LIST=1FOUND LINE - Line Id: 1 - using line group id: 1 -769238716mS CMARS:FOUND LINE - Line Id: 1 - using line group id: 1 -
```

7. Capture the live events during Step 5 of this section and view the log results in the Avaya IP Office System Monitor. Verify ARS operation of the outgoing call and confirm the ARS entry submitted for the analog trunk is activated.

```
769333234mS CMARS:MOVE TO ALTERNATE FORM: retail-analog769333234mS CMARS:FORM: retail-analog - Received Number: 333001076933234mS CMARS:FOUND A SHORT CODE - short_code: 333N; - Tel: 333N -Called_Party: 3330010 - Line Group Id: 976933234mS CMARS:76933234mS CMARS:CMARSHandler::FindActiveARSByGroupID GroupID=976933234mS SipDebugInfo: SIPTrunks: Make Target voip, line group id is 9 andip of 1e01011976933234mS SipDebugInfo: SIPTrunks cannot find a suitable SIP URI to dial out76933235mS CMCallevt:0.1673.0 -1 BaseEP: NEW CMEndpoint f58dd5dc TOTALNOW=4 CALL_LIST=176933236mS CMARS:FOUND LINE - Line Id: 9 - using line group id: 9 -Called Number: 3330010 - Calling Number: 7012
```

6.2. Avaya SIP Enablement Services Verification

1. Open a telnet session to the Avaya SES Server and access the Linux shell using administrative login credentials. At the Linux shell prompt, enter the **trustedhost** -L command to list all trusted hosts currently configured on the Avaya SES Server. Verify the IP address of the Avaya IP Office 500 is displayed as a trusted host in the command output.

7. Conclusion

These Application Notes illustrate the procedures required for configuring the Alternate Route Selection feature on the Avaya IP Office to provide redundancy through the PSTN when WAN access is unavailable. System options were successfully provisioned in Avaya IP Office for SIP trunking and establishing PSTN connectivity using ISDN-PRI and analog trunks. These Application Notes also describe some administrative steps performed for Avaya SIP Enablement Services related to the configuration of the Avaya IP Office 500. The Avaya IP Office 500 at the Branch location was able to communicate with Avaya Communication Manager at the Main location through the WAN using SIP trunking. As a result of the ARS configuration, the Avaya IP Office 500 at the Branch location through the PSTN using ISDN-PRI and analog trunks.

8. References

The following references below can be found at http://support.avaya.com:

- Avaya IP Office 4.0 Manager: 01. Using Manager, Issue 19k, January 2007
- Avaya IP Office 4.0 Manager: 02. Configuration Settings, Issue 19k, January 2007
- Avaya IP Office 4.0 Manager: 03. Short Codes, Issue 19k, January 2007
- Avaya IP Office 4.0 Manager: 04. Telephony Features, Issue 19k, January 2007
- Avaya IP Office 4.0 System Status Application User Guide, Issue 1, January 2007
- Installing and Administering SIP Enablement Services Release 3.1.2, Issue 2.1, March 2007
- SIP Support in Release 3.1.2 of Avaya Communication Manager Running on the Avaya S8300, S8500, S8500B, S8700, and S8710 Media Server, Issue 6.1, March 2007
- Administration for Network Connectivity for Avaya Communication Manager, Issue 12, February 2007

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