Avaya Solution & Interoperability Test Lab

Application Notes for Configuring 911 Enable Emergency Routing Service with Avaya IP Office - Issue 1.0

Abstract

These Application Notes describe the procedures for configuring the 911 Enable Emergency Routing Service with Avaya IP Office.

The 911 Enable Emergency Routing Service offers an E911 call routing and location provisioning solution for enterprises using both legacy and IP phone deployments. In these Application Notes, Avaya IP Office connects to the Emergency Routing Service via a SIP trunk and ISDN-PRI trunk. The compliance testing focused on placing 911 calls from various endpoint types to verify that their location and call back number could be properly determined.

Testing was performed using Avaya IP Office 500 V2 R8.1, but it also applies to Avaya IP Office Server Edition R8.1 (single site configuration only).

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

These Application Notes describe the procedures for configuring the 911 Enable Emergency Routing Service with Avaya IP Office.

The 911 Enable Emergency Routing Service (ERS) offers an E911 call routing and location provisioning solution for enterprises using both legacy and IP phone deployments. In these Application Notes, Avaya IP Office connects to the Emergency Routing Service via a SIP trunk. The compliance testing focused on placing 911 calls from various endpoint types to verify that their location and call back number could be properly determined.

All 911 emergency calls from the enterprise are routed to the ERS. The calling party number is used to determine the caller's location and call back number. The call back number (CBN) is used by the 911 operator to reach the caller if the emergency call is dropped. The call back number for each extension would be its Direct Inward Dial (DID) number if it has one assigned. However, all internal extensions may not have a DID assigned. In this case, a central number for that location (e.g., attendant or security desk) is used for the call back number.

Calls that reach the ERS without proper location and/or call back information are routed to the 911 Enable Emergency Call Response Center (ECRC) where a trained 911 operator collects the correct information before transferring the call to the Public Safety Answering Point (PSAP) Dispatcher.

2. General Test Approach and Test Results

This section describes the compliance testing used to verify the interoperability of the ERS with Avaya IP Office. The general test approach was to make emergency calls from different endpoints types and verify the location and call back information provided to the ERS.

DevConnect Compliance Testing is conducted jointly by Avaya and DevConnect members. The jointly-defined test plan focuses on exercising APIs and/or standards-based interfaces pertinent to the interoperability of the tested products and their functionalities. DevConnect Compliance Testing is not intended to substitute full product performance or feature testing performed by DevConnect members, nor is it to be construed as an endorsement by Avaya of the suitability or completeness of a DevConnect member's solution.

2.1. Test Results

The ERS passed compliance testing. All test cases were successful.

2.2. Interoperability Compliance Testing

The interoperability compliance test exercised the following features and functionality.

- Emergency calls from all endpoint types were routed successfully to the ERS.
- Proper location information provided for all known locations.
- Calls from unknown locations were routed to the ECRC.
- Calls placed using the provided call back number were routed to the proper extension.

2.3. Support

For technical support on the ERS, contact 911 Enable at www.911enable.com.

3. Reference Configuration

Figure 1 illustrates the test configuration. The test configuration shows an enterprise site connected to the Emergency Routing Service.

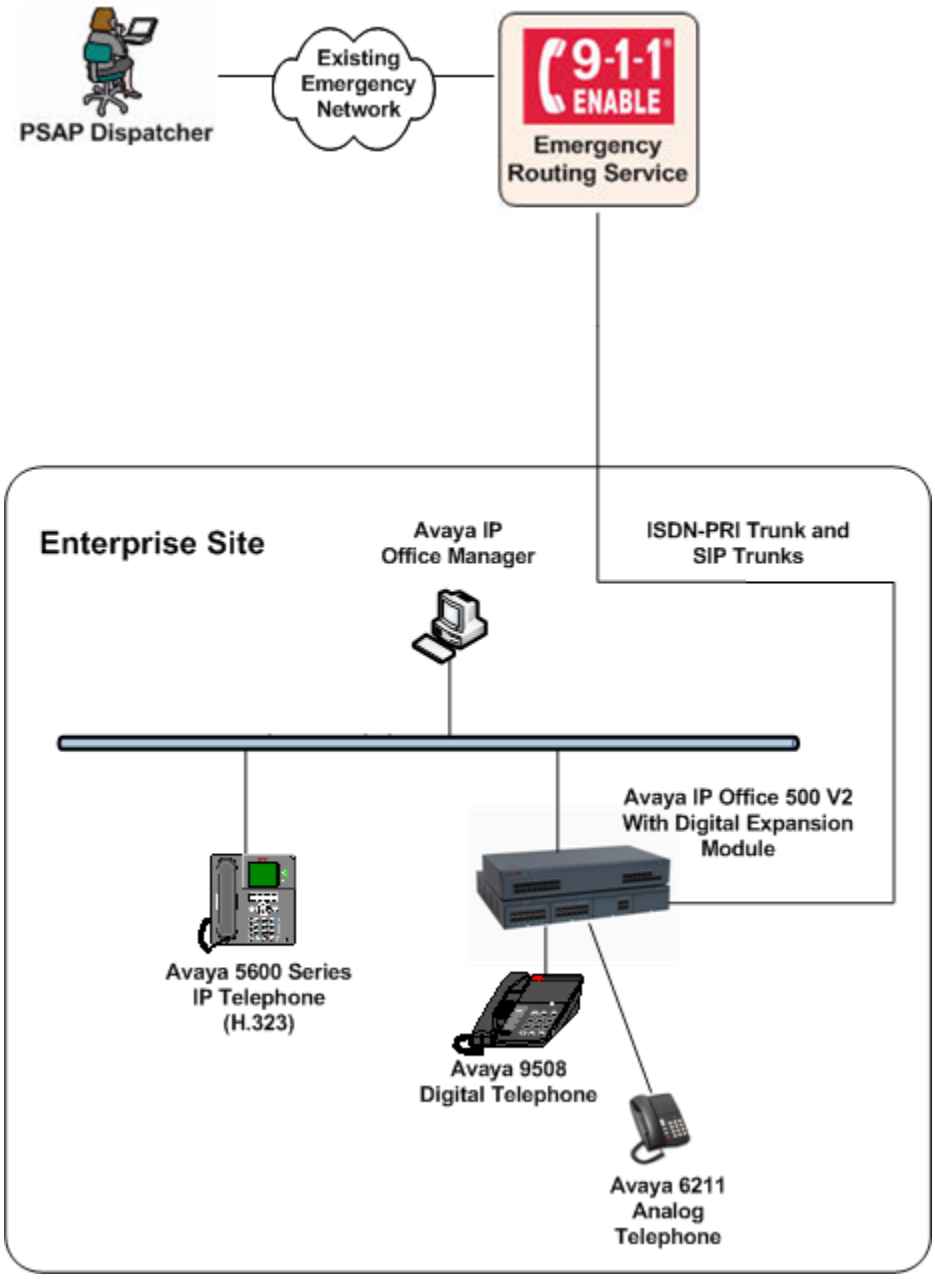


Figure 1: Reference Configuration

4. Equipment and Software Validated

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

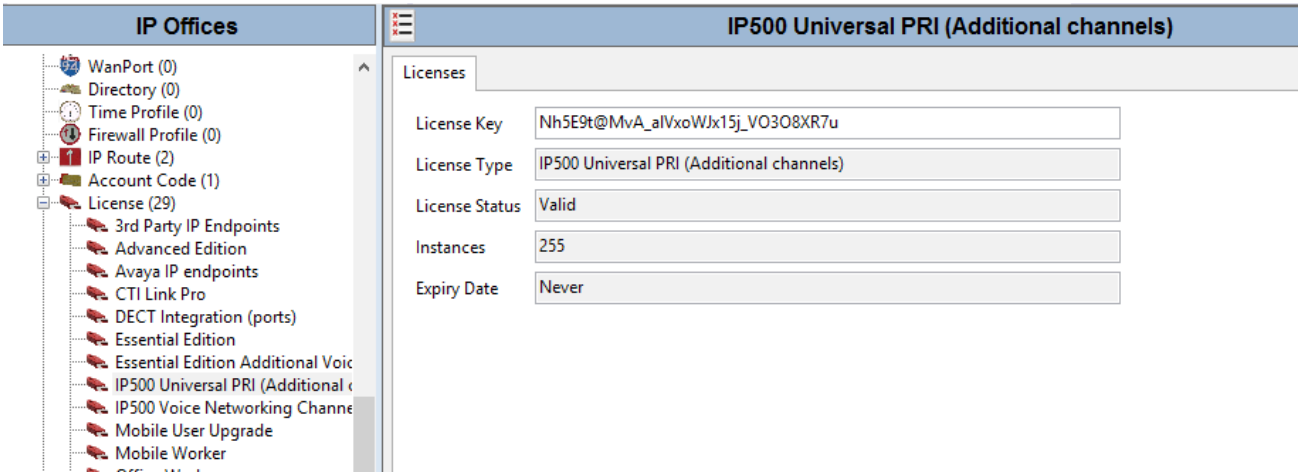
Equipment	Release
Avaya IP Office 500 V2 with Digital Expansion Module	8.1 (52)
Avaya IP Office Manager	10.1 (43)
Avaya 4610SW IP Telephone (H.323)	2.9.1
Avaya 5620 IP Telephone (H.323)	2.9.1
Avaya 5420 Digital Telephone	N/A
Avaya 6211 Analog Telephone	N/A
911 Enable Emergency Routing Service	2.12

5. Configure Avaya IP Office

This section describes Avaya IP Office configuration to support connectivity to the ERS. Avaya IP Office is configured through the Avaya IP Office Manager, a PC desktop application. From a PC running the Avaya IP Office Manager application, select **Start → Programs → IP Office → Manager** to launch the Manager application. Navigate to **File → Open Configuration**, select the proper Avaya IP Office system from the pop-up window, and log in with the appropriate credentials. A management window will appear similar to the one in the next section, showing all the Avaya IP Office configurable components in a configuration tree in the left pane.

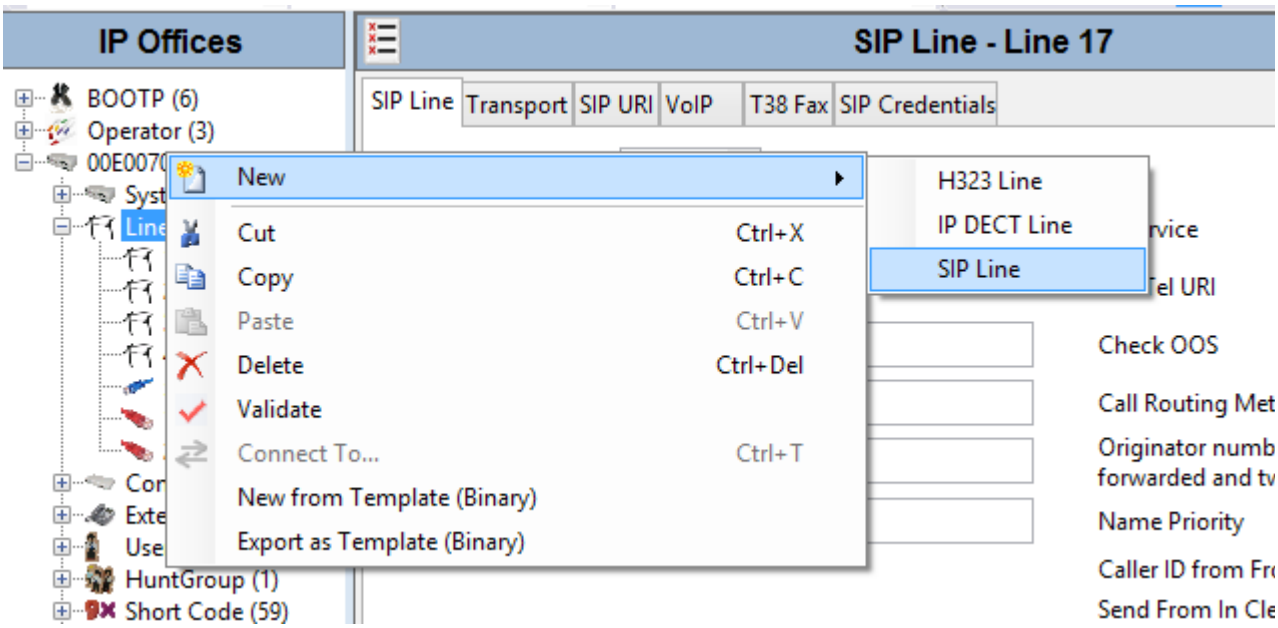
5.1. Licenses

From the configuration tree in the left pane, select **Licenses**. Verify the **License Status** for **IP 500 Universal PRI (Additional Channels)** and **SIP Trunk Channels** are **Valid**. Screen capture below shows an example for **IP 500 Universal PRI (Additional Channels)**

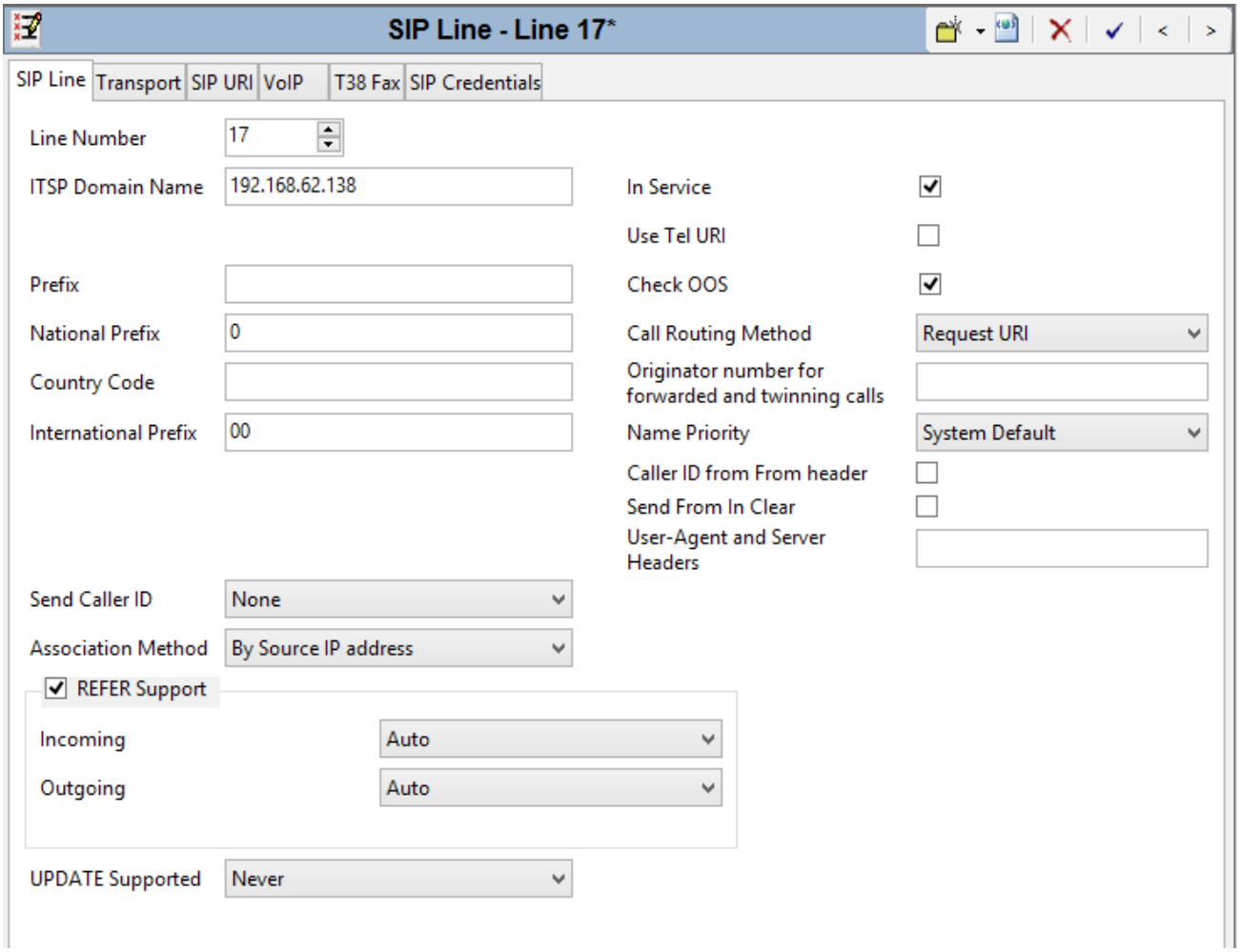


5.2. Administer SIP Line

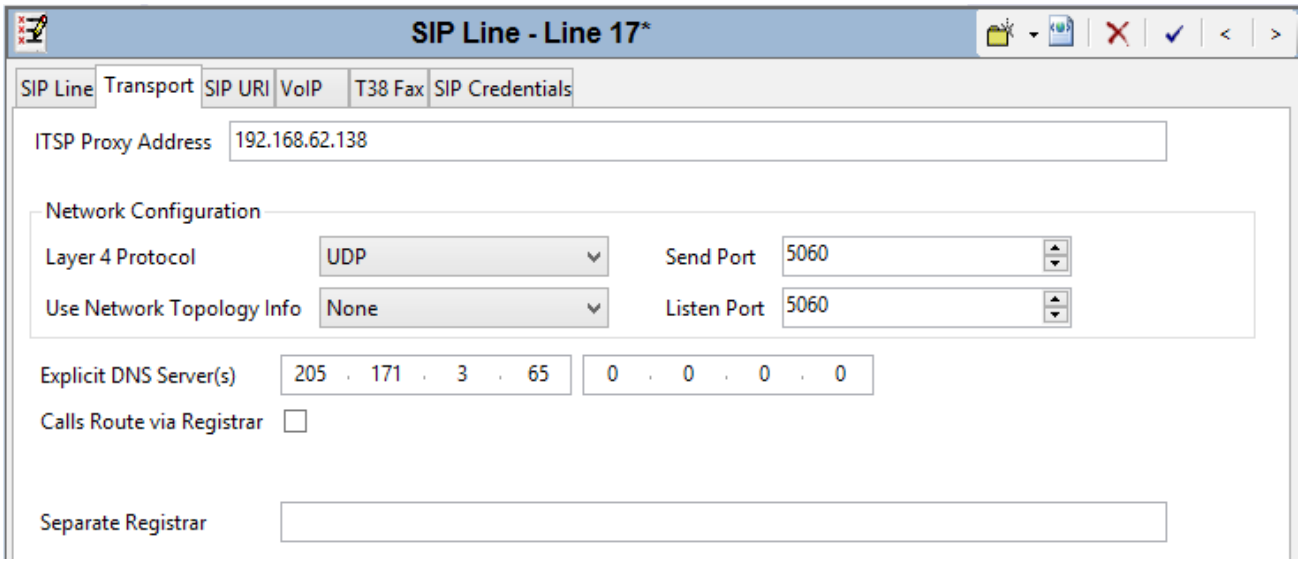
From the configuration tree in the left pane, select **Line.** Right click on **Line → New → SIP Line.**



In the **ITSP Domain Name**, type in the IP Address of 911 Enable ERS.



Select **Transport** tab and type in the IP address of 911 Enable ERS in **ITSP Proxy Address** field.

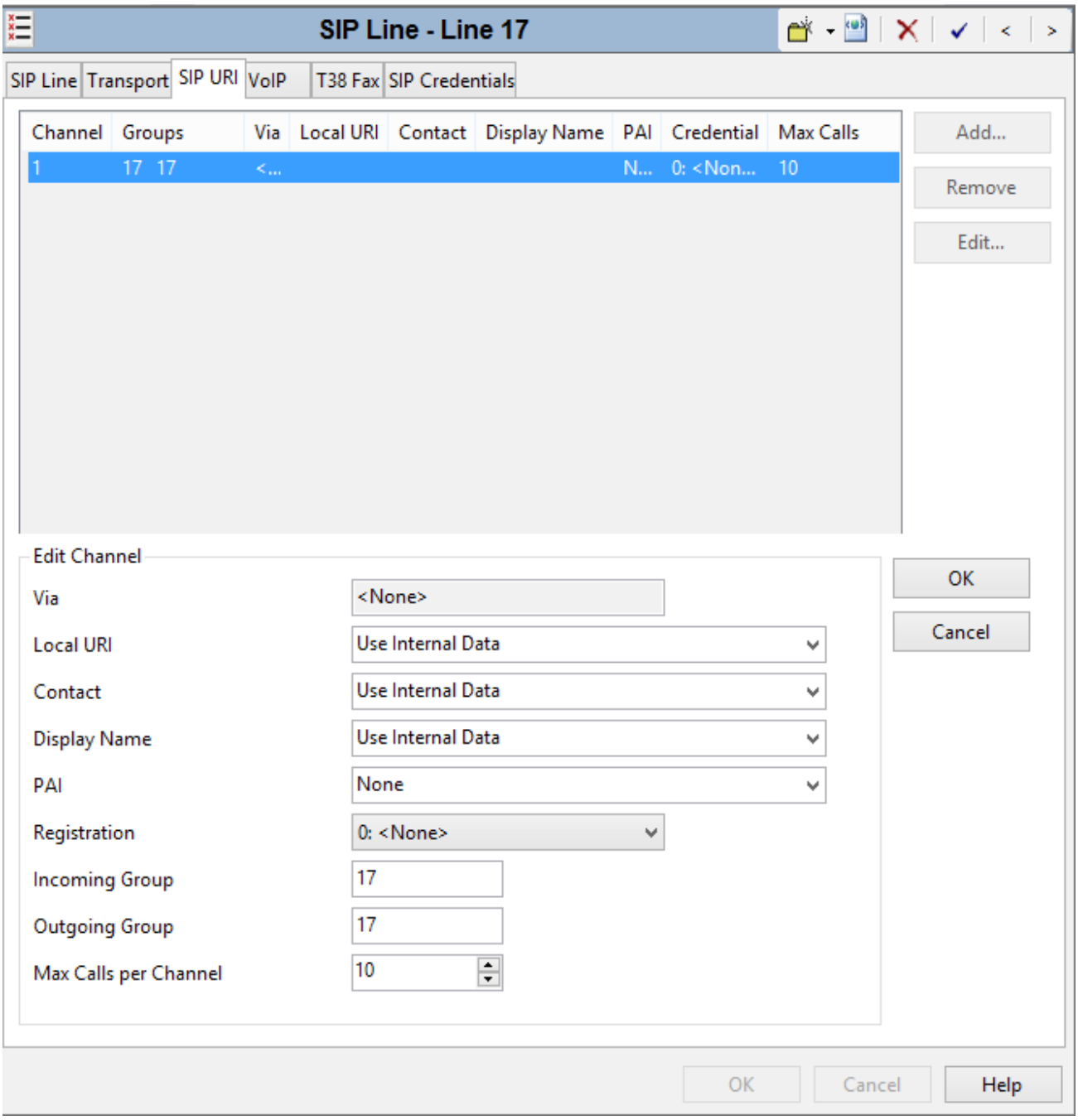


Select **SIP URI** tab and click **Add.**

- Type in the SIP Line number of the line that is being added in **Incoming Group** and **Outgoing Group**, i.e. 17 in this case.
- Type in a value in **Max Calls per Channel**.
- Select **OK**.

At the bottom o the window select **OK** to save configuration.

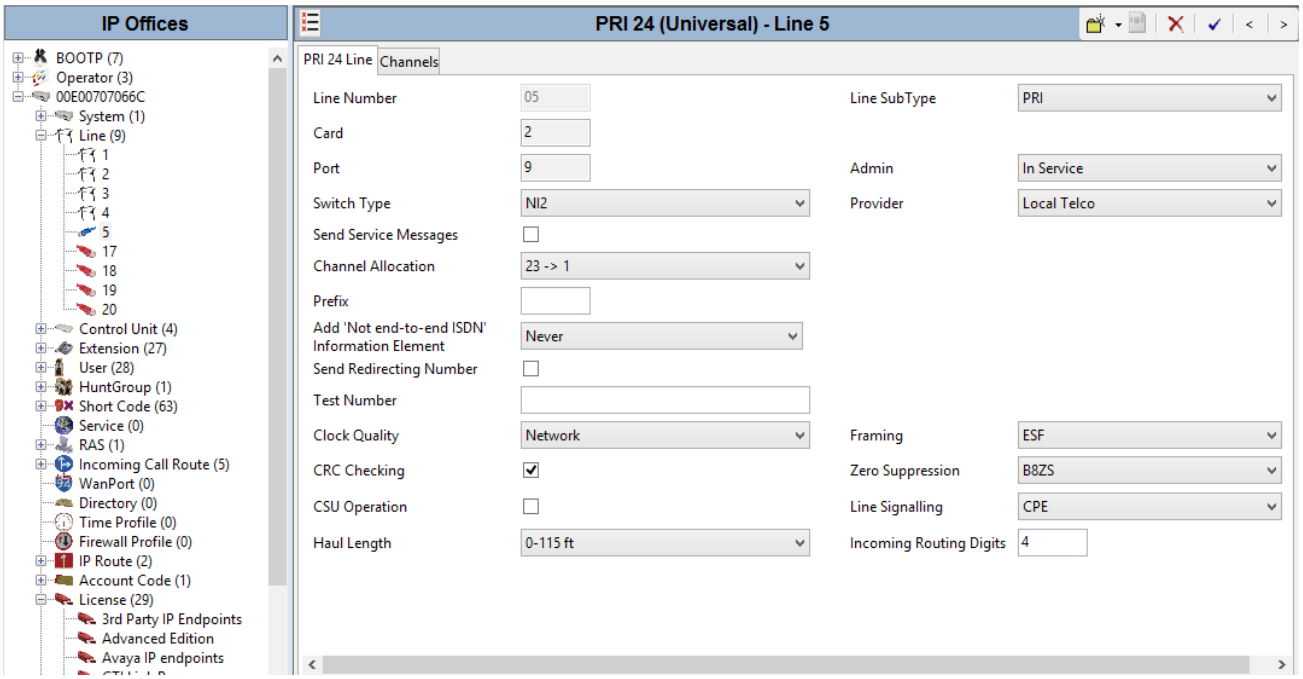
For Compliance another SIP line – Line 20 and ISDN/PRI line – Line 5 was added for failover testing. Repeat this section to add another SIP Line. Configuration for adding ISDN/PRI line can be found in next section.



5.3. Administer ISDN Line

From the configuration tree in the left pane, select **Line 5** and select **PRI 24 Line** tab.

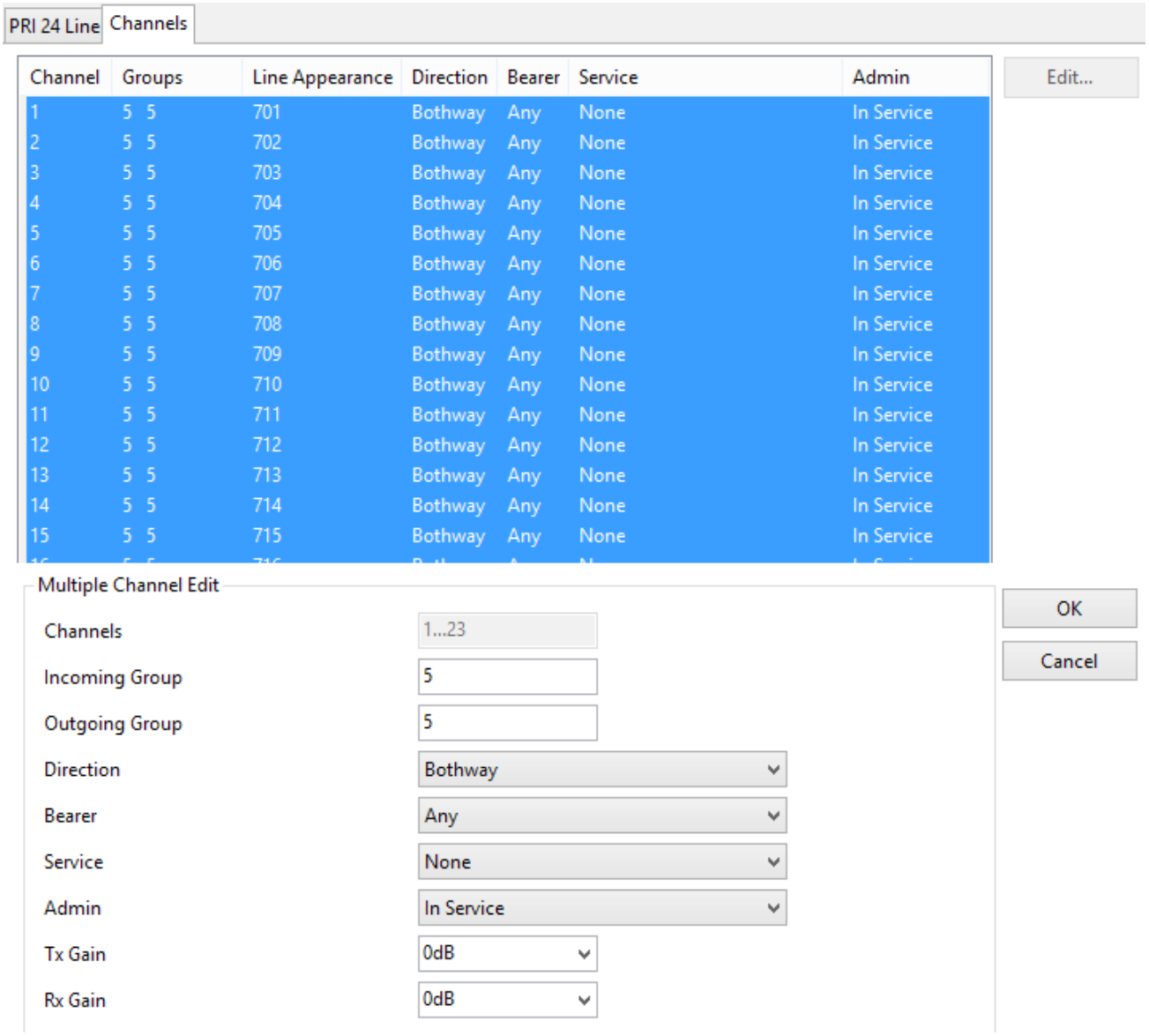
- Select **NI2** for **Switch Type**
- Select **23 -> 1** for **Channel Association**
- Select **ESF** for **Framing**
- Select **B8ZS** for **Zero Compression**
- Select **CPE** for **Line Signaling**



Select **Channels** tab and select all the channels that will be used, and click **Edit.** On the **Multiple Channels Edit** screen:

- Enter the line number, i.e. 5, for **Incoming Group and Outgoing Group**.
- Select **In Service** for **Admin**.

Click **OK** to save**.**

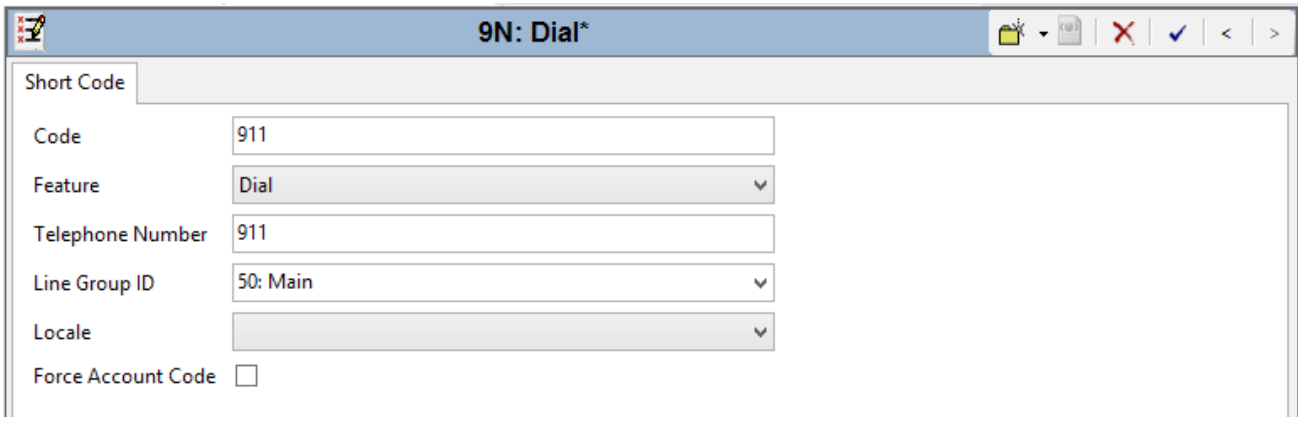


5.4. Administer System Short Code For 911

In times of emergency, users will expect to dial a well known number to contact emergency services. In the United States, 911 is used for this purpose.

From the configuration tree in the left pane, right-click on **Short Code** and select **New** to add a new short code. In the right pane that appears, configure the following:

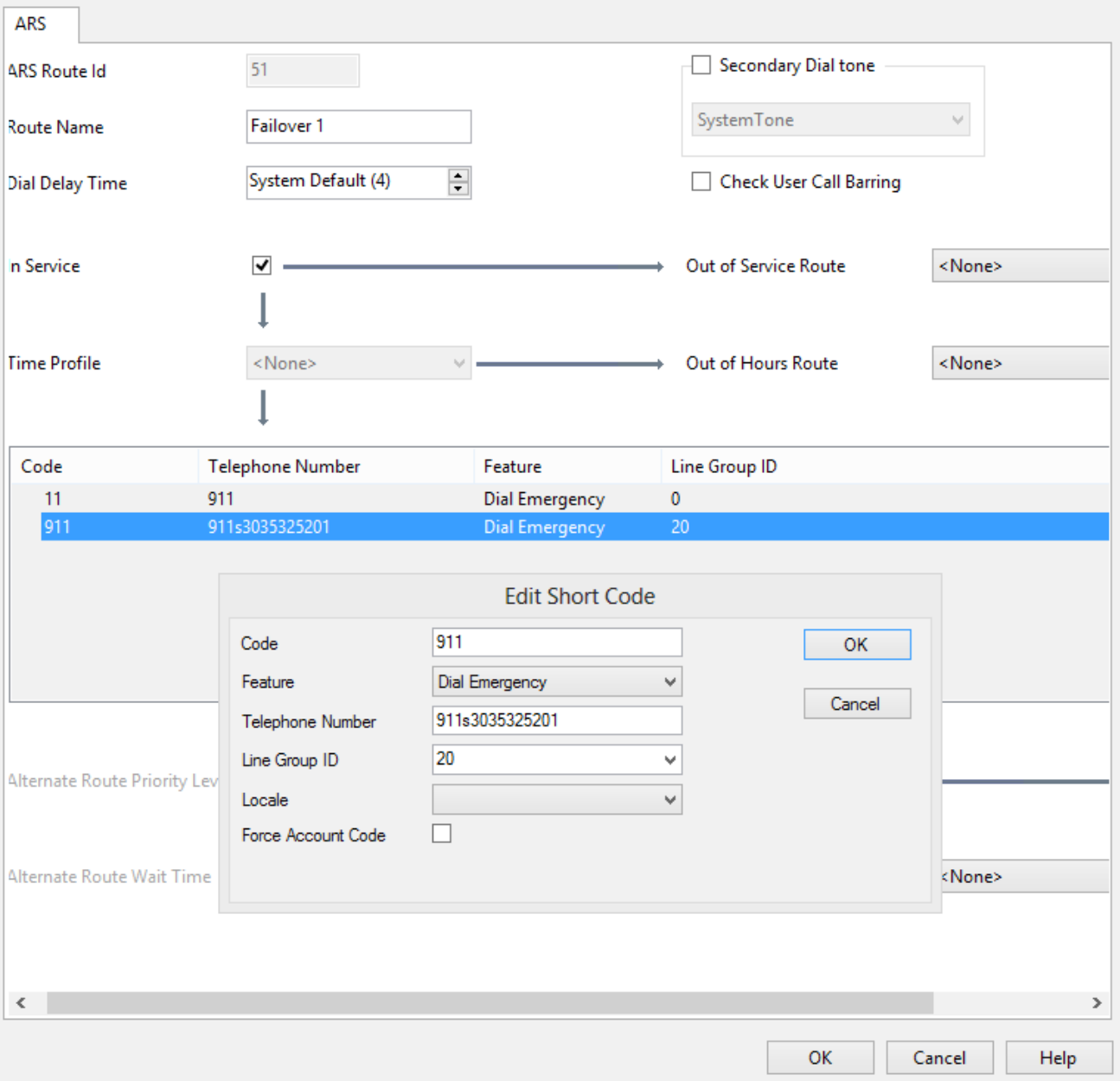
- In the **Code** field, enter the dial string which will trigger this short code. In this case, ***911***.
- Set the **Feature** field to ***Dial*** since the purpose of this short code is to dial a number.
- In the **Telephone Number** field, enter the number the system should dial when the user dials 911.
- Set the **Line Group Id** select ARS route that will be used to route 911 calls.



5.5. Administer ARS Routing for 911 Calls

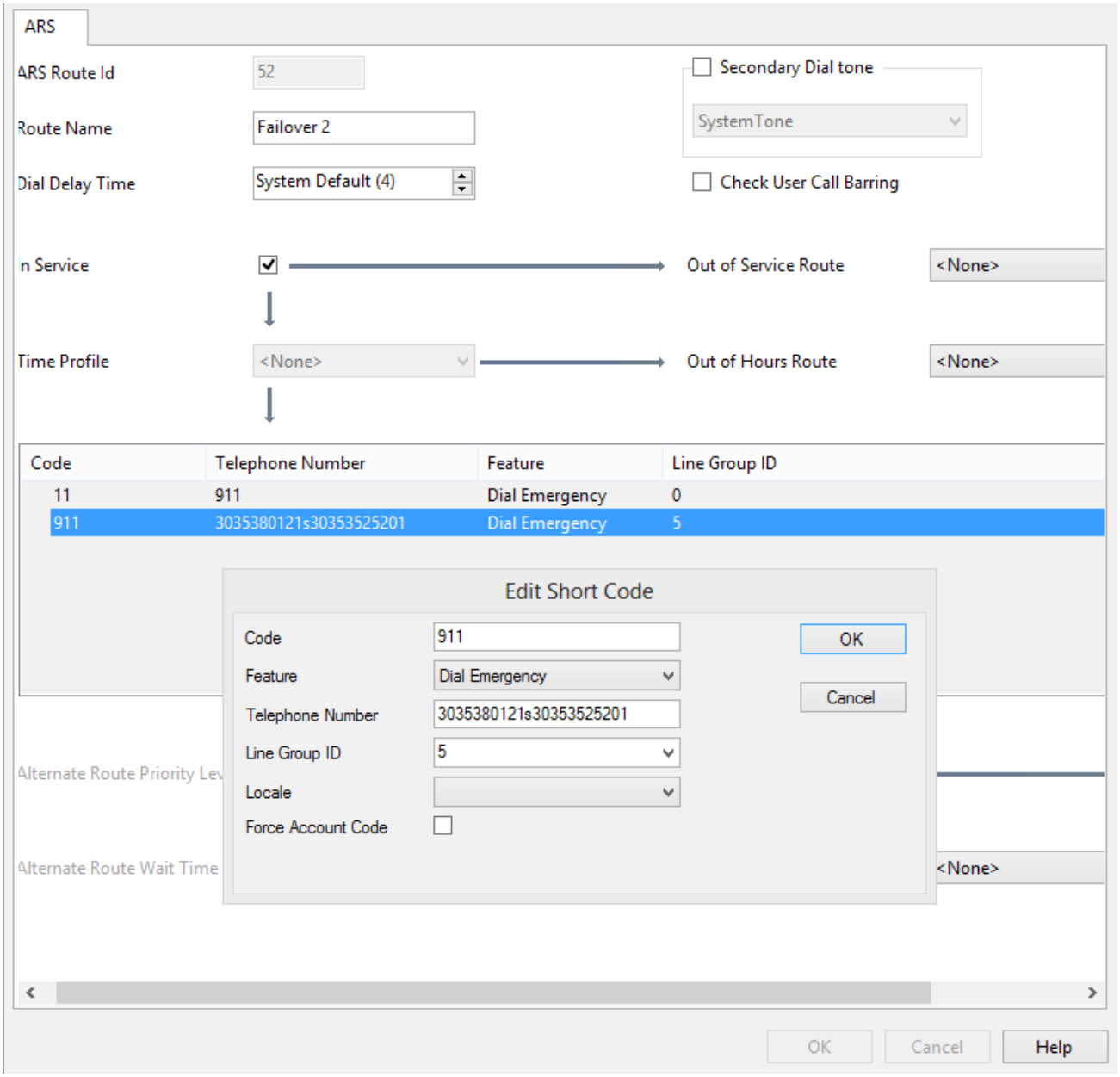
Create failover route 1; from the configuration tree on the left pane, right-click on **ARS** and select **New.**

- In the **Route Name** field, type in a name, i.e. Failover 1.
- Edit the short code for **911,** by double clicking on it. In the **Telephone Number** field, type in **911s<DID>**, where **<DID>** is a valid number that will be used for callback purposes.
- Select a SIP line that was added as a secondary route, line group ID 20.

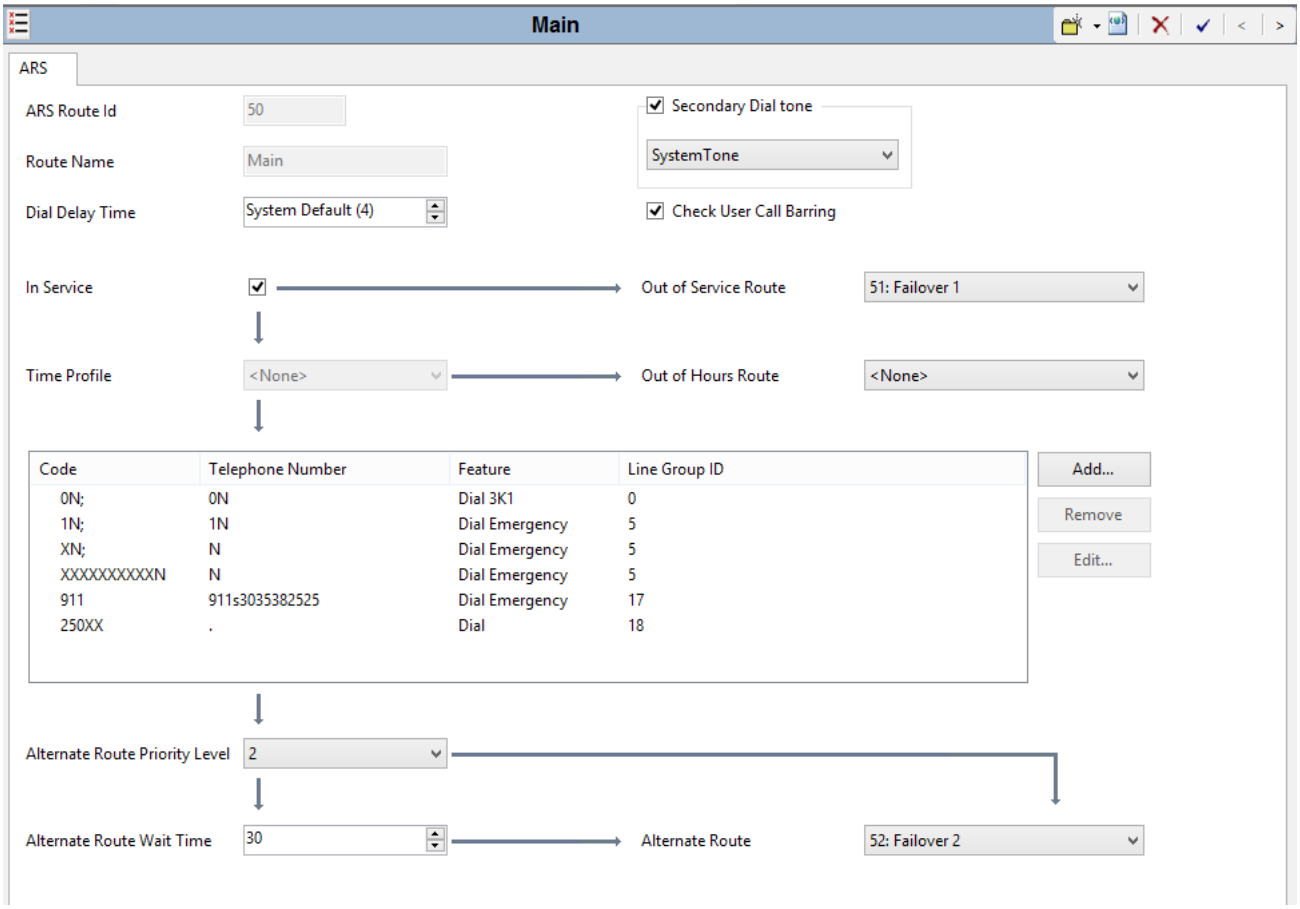


Create failover route 2; from the configuration tree on the left pane, right-click on **ARS** and select **New.**

- In the **Route Name** field, type in a name, i.e. Failover 2.
- Edit the short code for **911,** by double clicking on it. In the **Telephone Number** field, type in **<ECRC>s<DID>**, where **<ECRC> is** a 10 digit Telephone Number (TN) for ECRC and **<DID>** is a valid number that will be used for callback purposes.
- Select a SIP line that was added as a tertiary route, line group ID 5.



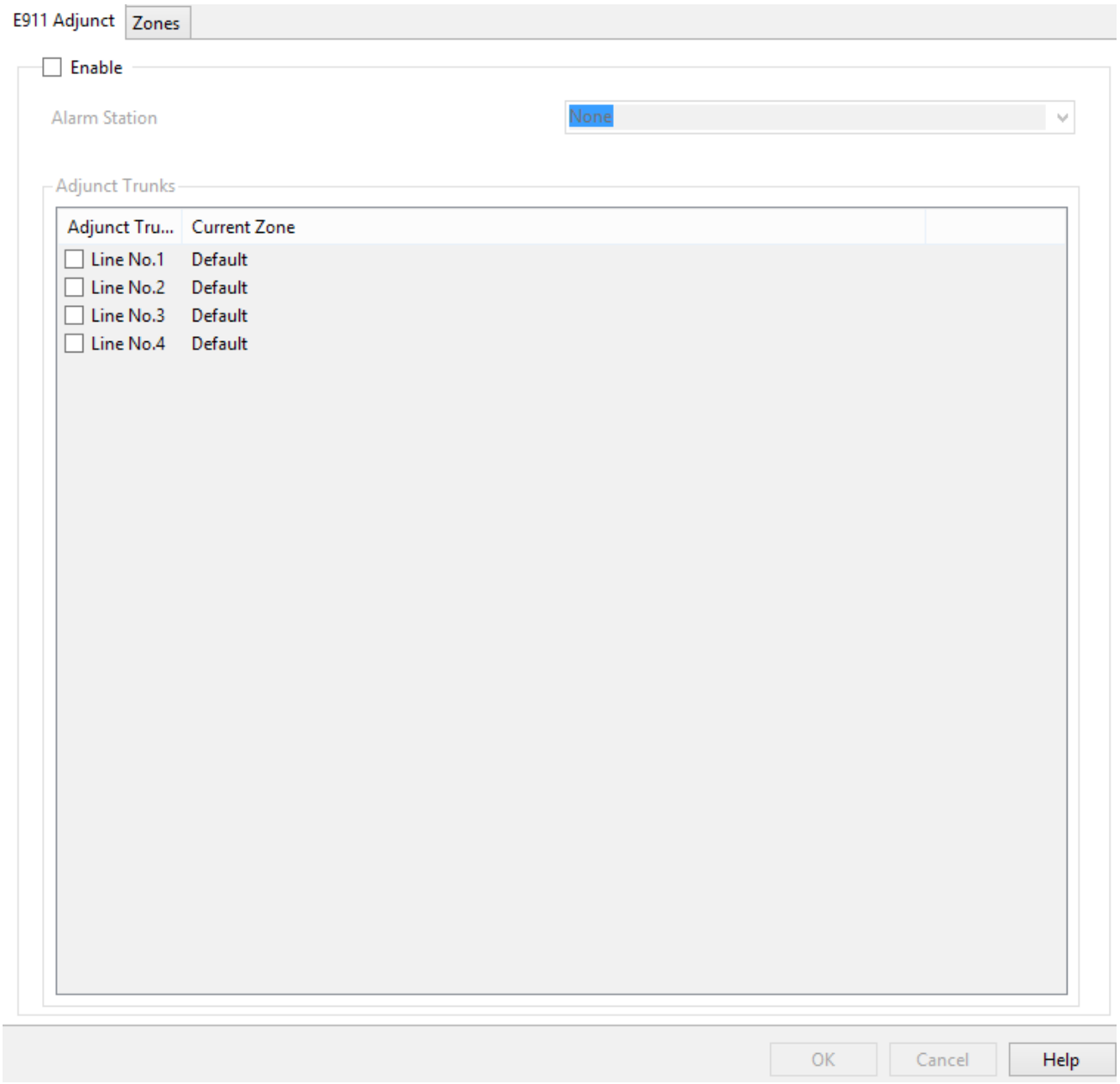
Configure failover routes, for ARS group **Main,** Select **Out of Service Route** as Failover 1. For ARS Group Failover 1, select **Out of Service Route** as Failover 2. Below is a screen capture showing **Out of Service Route** for **Main**; **Out of Service Route** is set to **51: Failover 1**. Screen capture for configuring Out of Service Route for ARS Group Failover 1 is not shown.



5.6. Disable E911 System Adjunct

The ERS does not make use of an E911 adjunct. Thus, this capability must be disabled on Avaya IP Office.

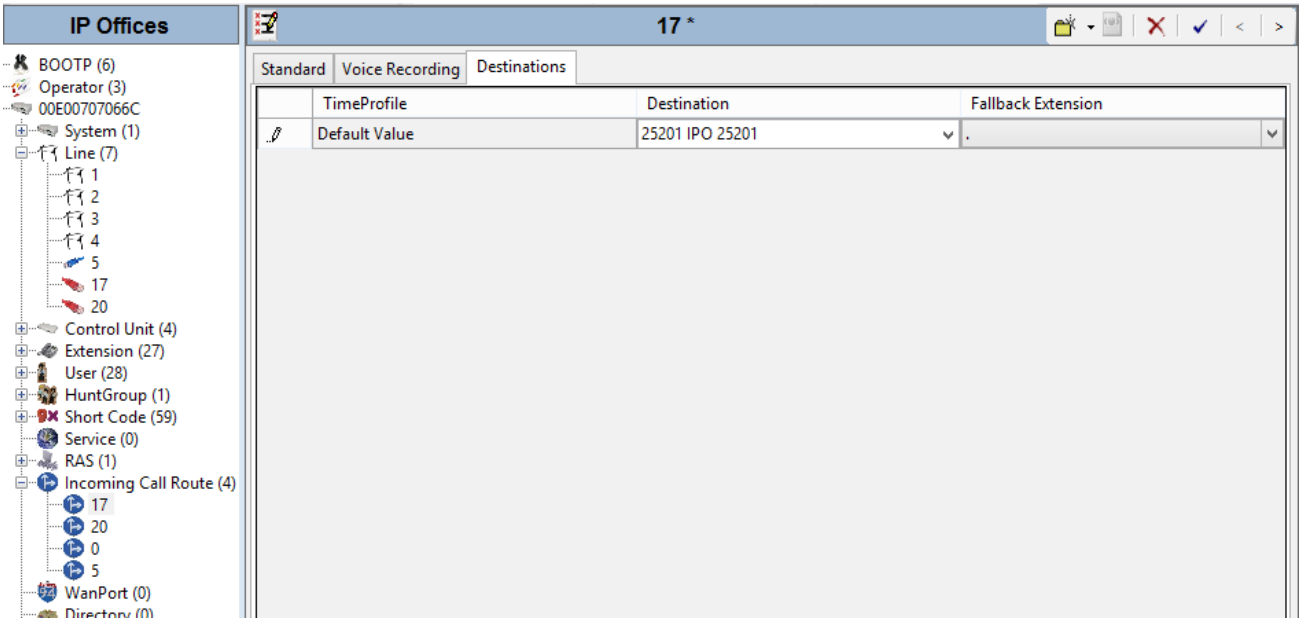
From the configuration tree in the left pane, click on **E911 System**. In the right pane on the **E911 Adjunct** tab, verify the **Enable** box is unchecked.



5.7. View Incoming Call Routes

An incoming call route maps an inbound DID number on a specific line to an internal extension. These DID numbers are sent as the calling party number by the short code defined in **Section 5.5**. These numbers are provided by the local PSTN service provider and would have been provisioned on Avaya IP Office at the time of installation.

To view the incoming call routes, select **Incoming Call Routes** in the configuration tree in the left pane. The list of incoming call routes with DID numbers are displayed. To view the extension mapping, highlight a call route and select the **Destinations** tab in the right pane. The extension is shown in the **Destination** field.



5.8. Save Configuration

Navigate to **File → Save Configuration** in the menu bar at the top of the screen to save the configuration performed in the preceding sections.

6. Configure Emergency Routing Service (ERS)

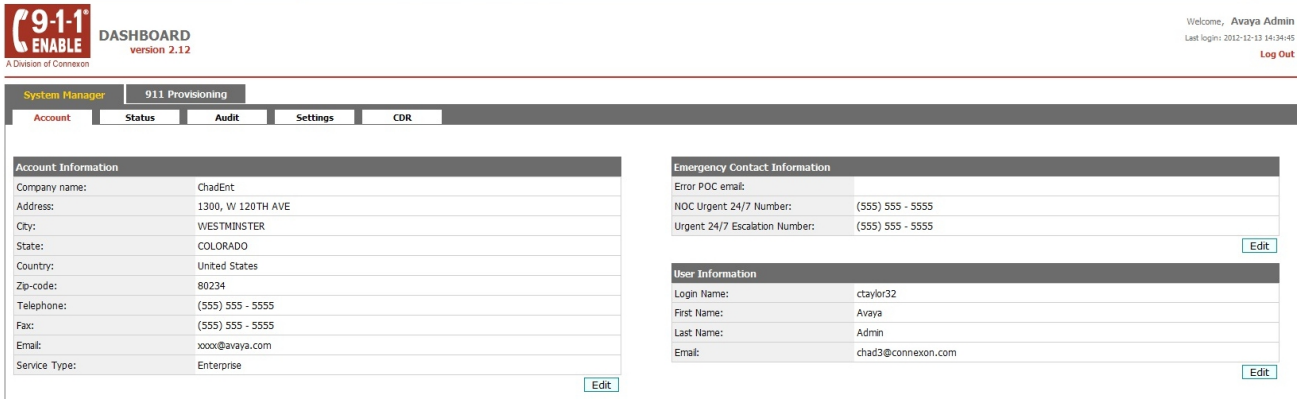
This section describes the configuration of the ERS via the 911 Enable Dashboard web interface.

6.1. Login

Use a web browser to access www.911enable.com. Click the **Dashboard Login** link at the top of the page. The **Dashboard Login** page will appear as shown below. Log in with the proper credentials.

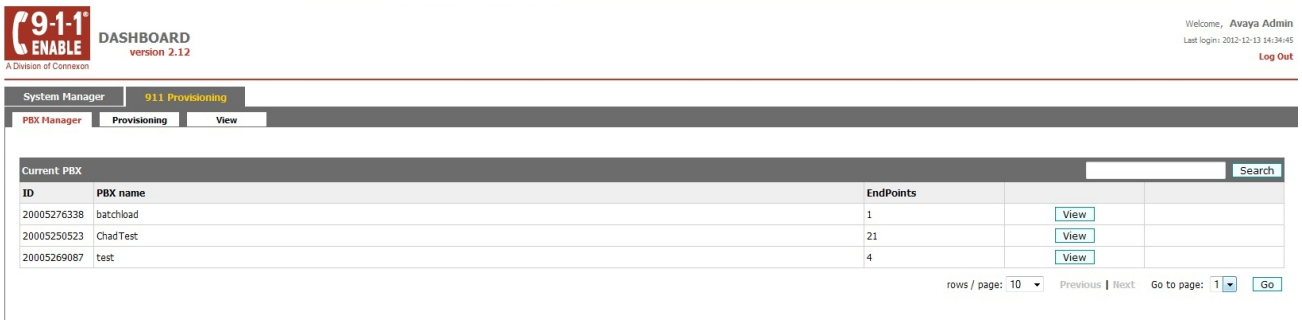
6.2. Account

The dashboard displays the account for this user. The account is set-up by 911 Enable as part of the service set-up. To begin provisioning, select the **911 Provisioning** tab.



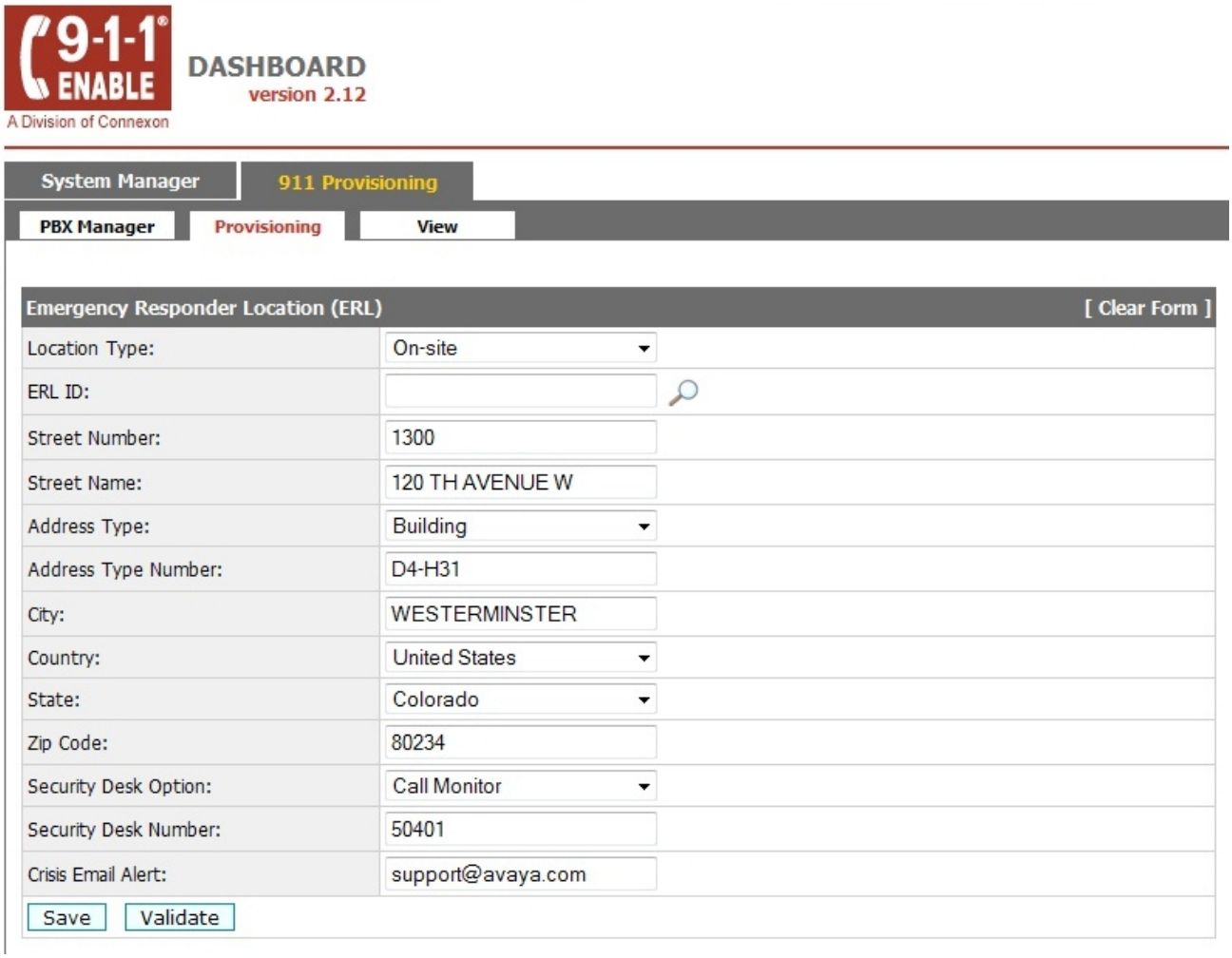
6.3. Provision PBX

The **PBX Manager** tab displays all the PBXs associated with this account. For the compliance test, a single PBX was created. The example below shows the PBX related to this account which was created by 911 Enable.



6.4. Provision ERLs and Endpoints

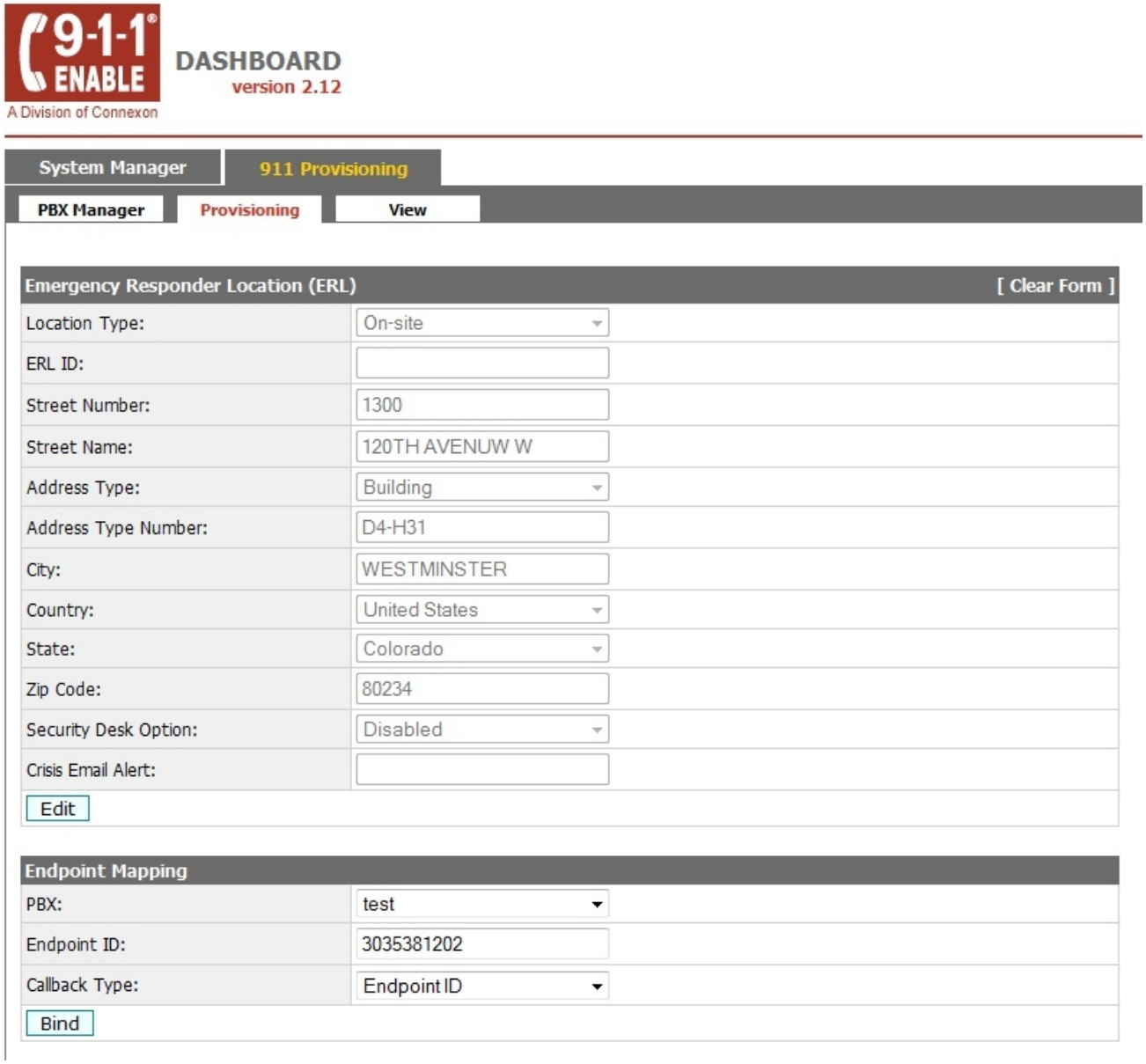
The PBX defined above may have users in multiple locations. These locations are referred to by the dashboard as Emergency Response Locations (ERLs). Create an ERL for each location served by the PBX. Begin by clicking the **Provisioning** tab. Enter the requested information about the location as shown below then click **Validate**.



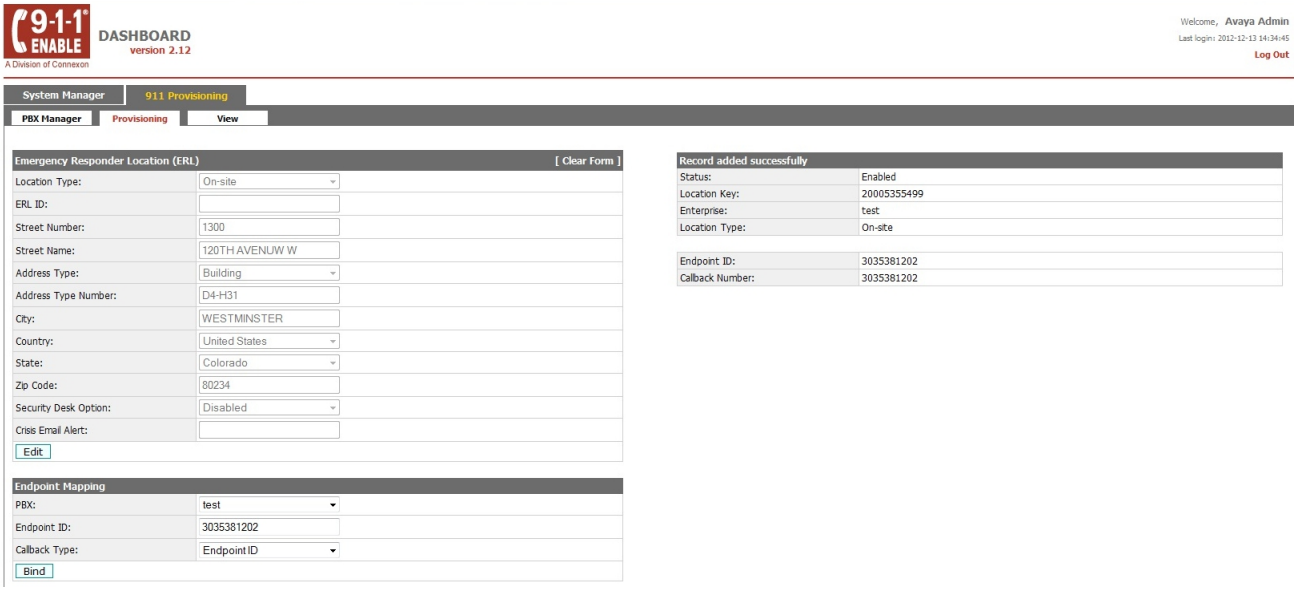
Validation results appear at the right. Click **Save** to save the entered data.

Validation Results	
Position Status:	Full Address
Civic Status:	Full Address
Msag Status:	Found
Routing Status:	Selective Router
Responder Type:	PSAP

The **Endpoint Mapping** section appears at the bottom of the screen. Use this section to map endpoints to this ERL. Enter the PBX name from **Section 5.3** in the **PBX** field. Enter the endpoint DID number as the **Endpoint ID** and enter ***Endpoint ID*** as the **Callback Type**. Click **Bind**.

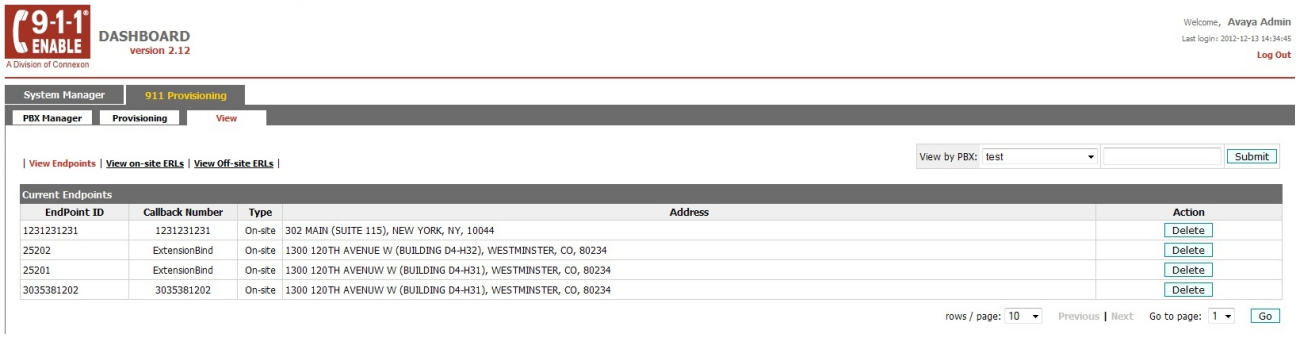


The **Endpoint ID** and **Callback Number** are added to the status on the right. To enter additional endpoints to this ERL, enter the endpoint data in the **Endpoint Mapping** section and click **Bind**. To enter a new ERL, click the provisioning tab again and repeat the steps from the beginning of this section.

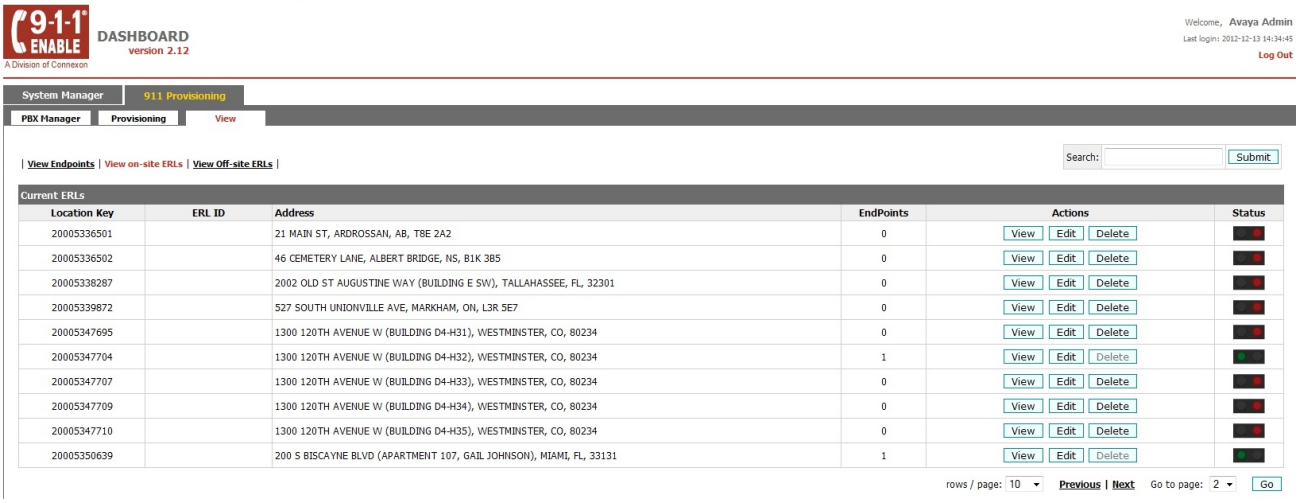


6.5. Summary

To view a summary of the ERL and endpoint provisioning, click the **View** tab. This screen shows all the endpoints.



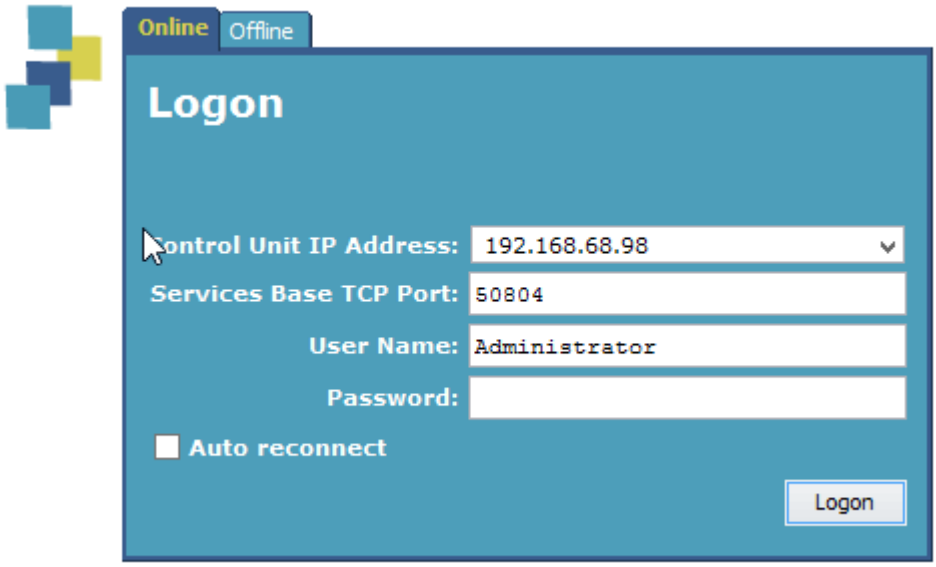
Click the **View on-site ERLs** link to see the ERL summary.



7. Verification Steps

The following steps may be used to verify the configuration:

- From a web browser go to http://<IP_Office_IP_Address>/ and select **System Status** (not shown).
- Fill-in Login information and click **Logon**.



To verify the connectivity to 911 Enable ERS for SIP lines added in this document, navigate to **Trunks → Line *n***, *where* ***n*** is the SIP line number that was added in this document. Verify the **Current State** for all channels is **Idle**.

Line Number:	18
Number of Administered Channels:	20
Number of Channels in Use:	0
Administered Compression:	G729 A, G711 A, G711 Mu, G7231
Small Community Networking:	Not Enabled
Direct Media Path:	On
Enable Faststart:	Off
Silence Suppression:	Off

Channel Number	Call Ref	Current State	Time in State	R...	Co...	Conne...	Caller ID or Dial...	Other Party on Call	Direction of Call	Round Trip D...	Receive Jitter	Receive Packet...	Transmit Jitter	Transmit Packet...
1		Idle	1 day 00:33:19											
2		Idle	1 day 01:51:50											
3		Idle	1 day 01:51:50											
4		Idle	1 day 01:51:50											
5		Idle	1 day 01:51:50											
6		Idle	1 day 01:51:50											
7		Idle	1 day 01:51:50											
8		Idle	1 day 01:51:50											
9		Idle	1 day 01:51:50											
10		Idle	1 day 01:51:50											
11		Idle	1 day 01:51:50											
12		Idle	1 day 01:51:50											
13		Idle	1 day 01:51:50											
14		Idle	1 day 01:51:50											
15		Idle	1 day 01:51:50											
16		Idle	1 day 01:51:50											
17		Idle	1 day 01:51:50											
18		Idle	1 day 01:51:50											
19		Idle	1 day 01:51:50											
20		Idle	1 day 01:51:50											

8. Conclusion

911 Enable Emergency Routing Service passed compliance testing. These Application Notes describe the procedures required to configure the connectivity between Avaya IP Office and the 911 Enable Emergency Routing Service as shown in **Figure 1**.

9. Additional References

Product documentation for Avaya products may be found at http://support.avaya.com.
Product documentation for the Emergency Routing Service is available from 911 Enable.

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya DevConnect Program at devconnect@avaya.com.