KBS - EdgeMarc 2900A Interop with Avaya IP Office

Interoperable Vendors

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Document Overview

This document provides the configuration snapshot of the interoperability performed between Ribbon's EdgeMarc 2900A and Avaya IPO.

- For additional information on Avaya IPO, refer to https://www.avaya.com/en/products/unified-communications/voip
- For additional information on Ribbon EdgeMarc, refer to https://ribboncommunications.com/products/service-provider-products/session-border-controllers/EdgeMarc-2900-series

Section-A : Ribbon EdgeMarc 2900A Configuration

- This section provides the steps required to configure Ribbon EdgeMarc 2900A with Avaya IP Office and KBS (Kandy Business Solution).

Section-B : Avaya IP Office Configuration

- This section provides the steps required to configure Avaya IP Office with Ribbon EdgeMarc 2900A.

Scope/ Non-Goals

This document provides configuration best practices for deploying Ribbon's EdgeMarc 2900 with the Avaya IP Office. These configuration suggestion are best practices and each customer may have unique needs and networks. Use this guide as a starting point and build the SBC configurations in consultation with network design and deployment engineers.

Audience

This is a technical document intended for telecommunications engineers with the purpose of configuring both the Ribbon EdgeMarc 2900 and the third-party product.

You need to navigate the third-party product as well as the Ribbon product using the graphical user interface (GUI) or command line interface (CLI).
You need an understanding of the basic concepts of TCP/UDP/TLS, IP/Routing, and SIP/RTP/SRTP to complete the configuration and any necessary troubleshooting.

Prerequisites

Before proceeding with Ribbon EdgeMarc 2900A & Avaya IP Office you require:

- Public IP Connectivity: Ribbon EdgeMarc 2900A requires connectivity with KBS. Make sure the device is reachable from the public network. If Ribbon EdgeMarc 2900A is behind the firewall, make sure that the firewall supports SIP ALG.
- FXS Connectivity: Make sure FXS connections coming from Ribbon EdgeMarc 2900A are connected to the correct ports on Avaya IP Office.

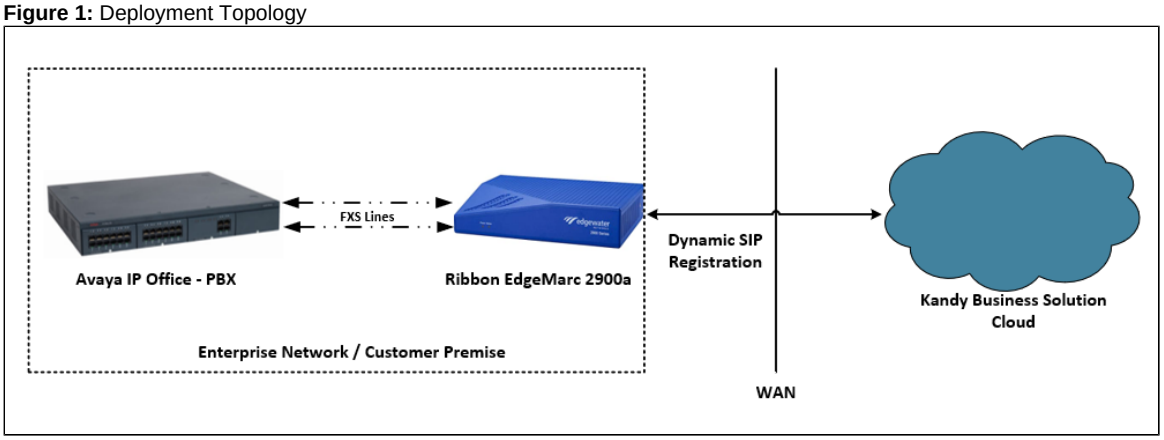
Product and Device Details

	Equipment/ Product	Software Version
Ribbon Communications	Ribbon EdgeMarc 2900	15.5.0
	Kandy Business Solution (KBS)	43.3
Third-Party Products	Avaya IP Office 500v2	10.1.2 Build-2

Network Topology Diagram

Deployment Topology

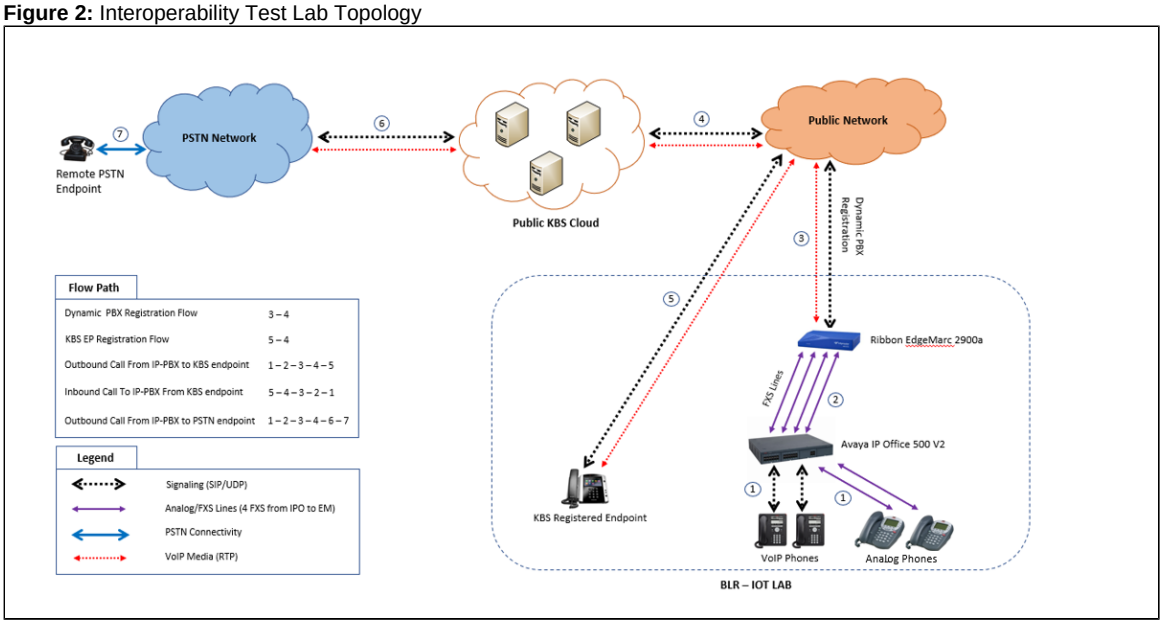
Figure 1: Deployment Topology



Interoperability Test Lab Topology (Call Flow Diagram)

IOT high level architecture covering call flows & overall topology is depicted below.

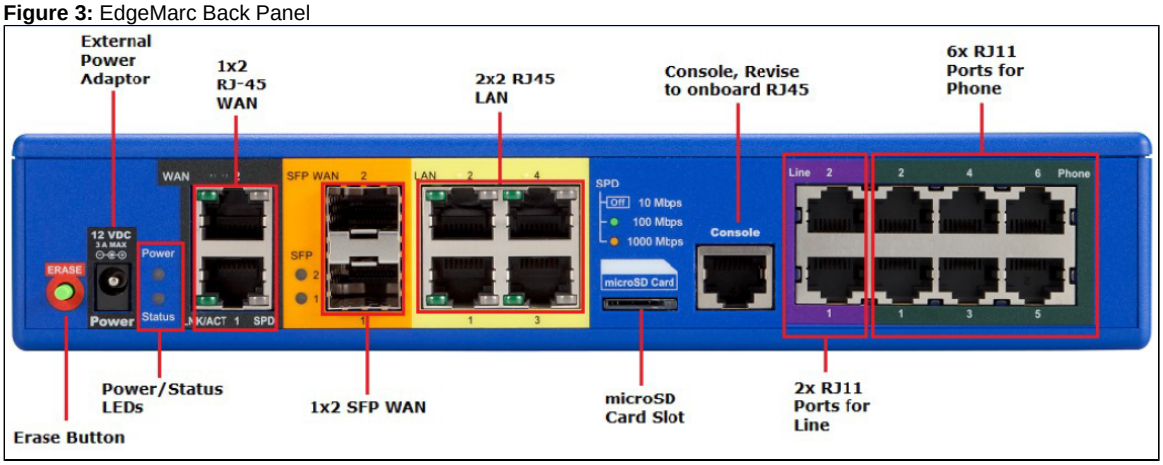
Figure 2: Interoperability Test Lab Topology



Section-A : EdgeMarc 2900A Configuration

Connectivity

Figure 3: EdgeMarc Back Panel



Hardware Specifications

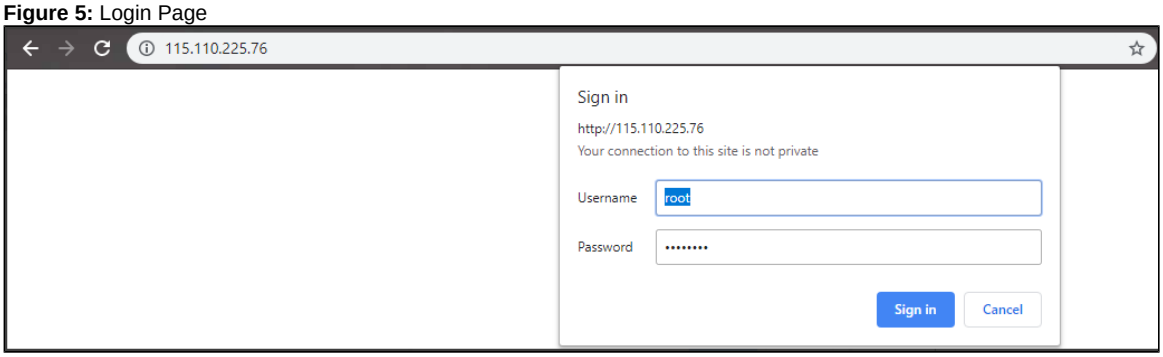
Figure 4: Hardware Specification

	EdgeMarc 2900a
Ports	
WAN 1Gb/s Ethernet (RJ-45)	2
Optical WAN 1 Gb/s ports (SFP)	2
LAN 1 Gb/s Ethernet (RJ-45)	4
FXO (RJ-11)	2
FXS (RJ-11)	6
Micro SD (SDXC) slot	1
Console (RJ-45)	1

Configuration for Ribbon EdgeMarc 2900A Towards KBS

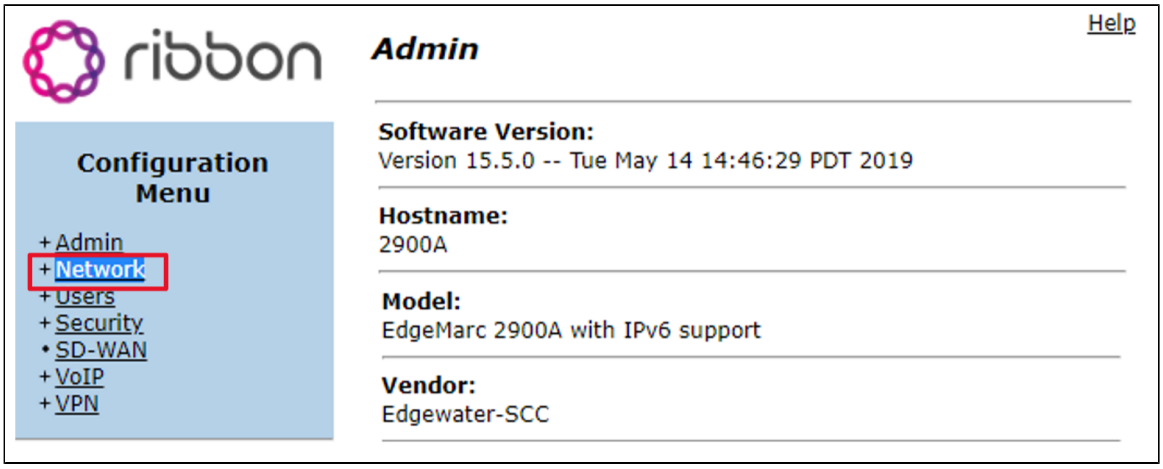
Login to EdgeMarc 2900A.

Figure 5: Login Page

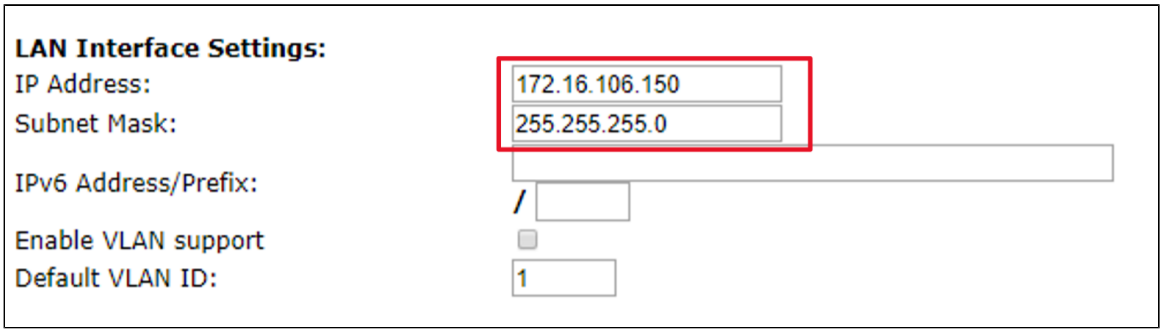


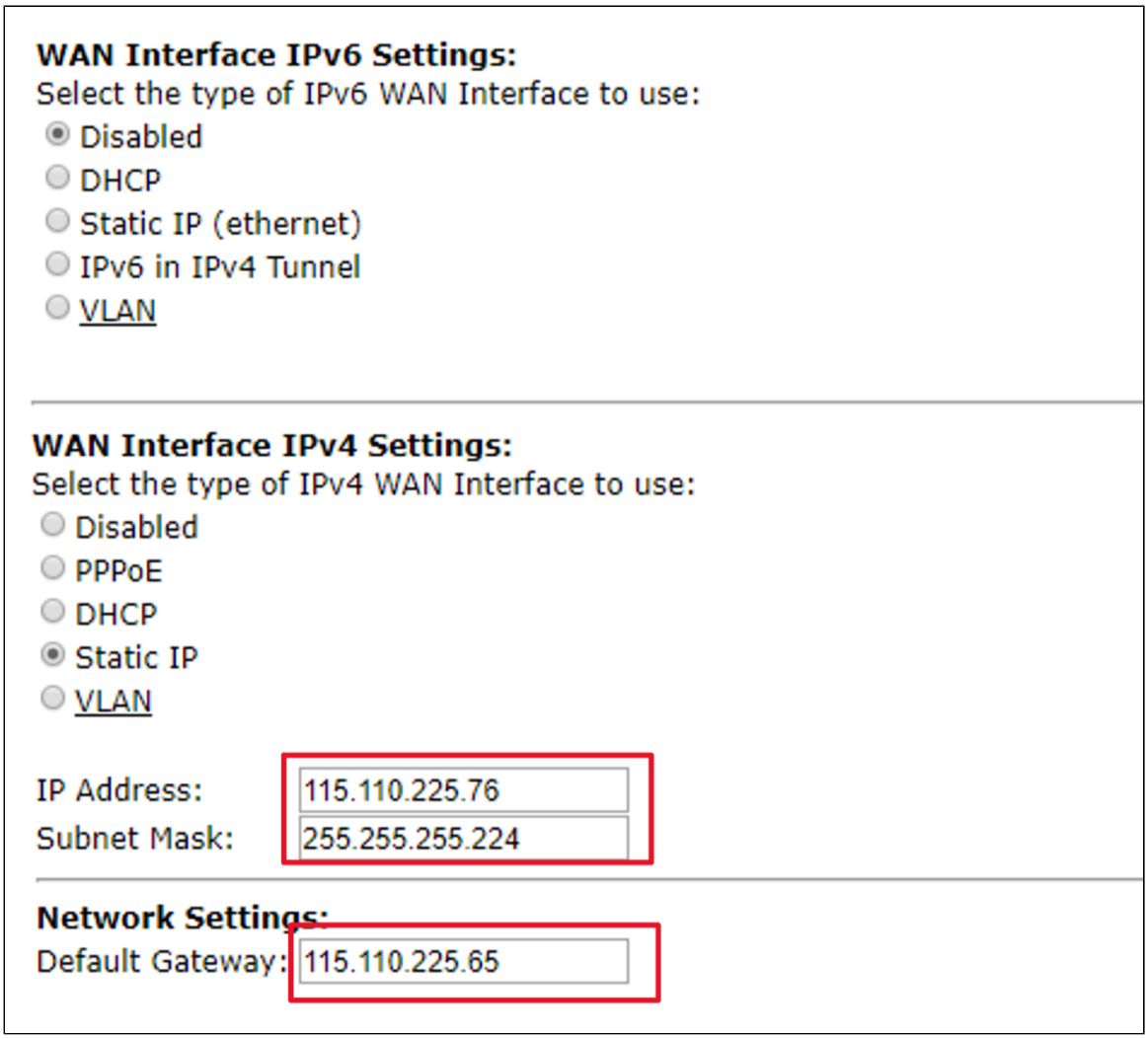
Network Configuration

Click on "Network" under the "Configuration Menu" on the left panel.

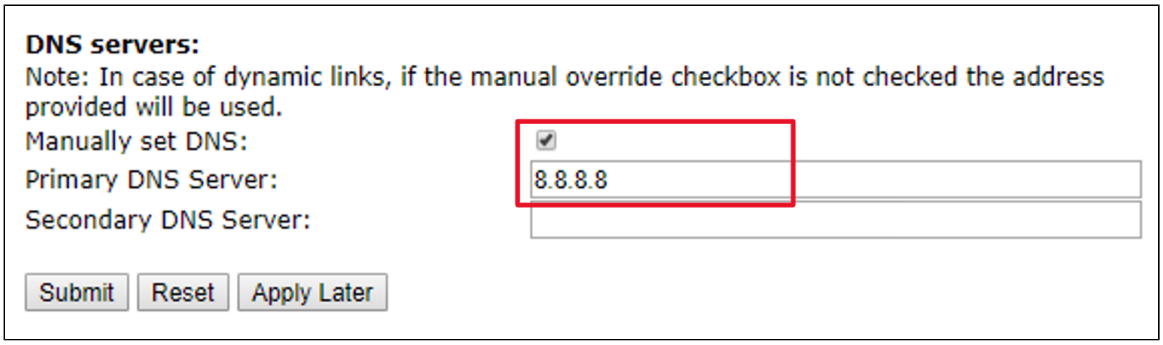


Provide the network details of LAN, WAN, Subnet, and Gateway IP address.





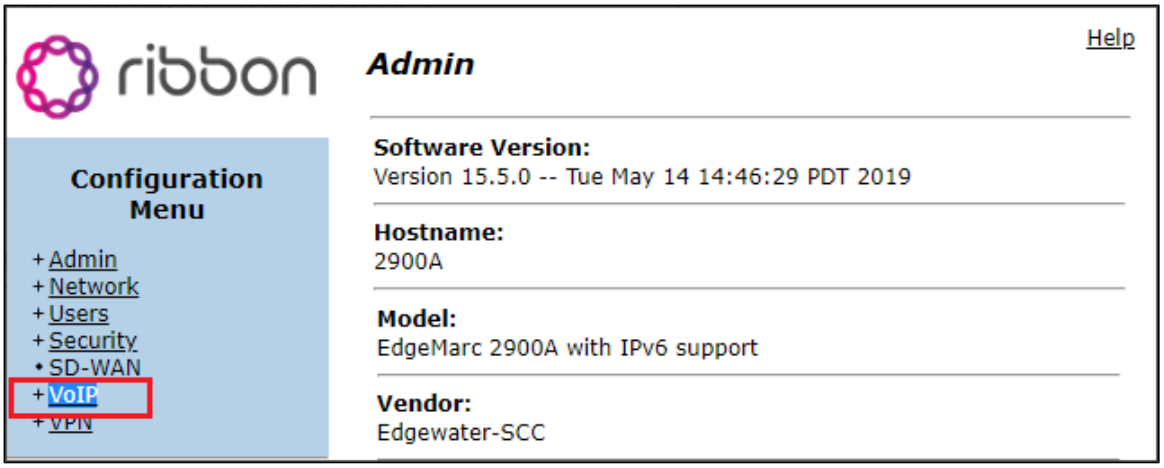
Add the DNS Server Details



VoIP Configuration

Click on "VoIP" under the "Configuration Menu" on the left panel.

Figure 6: VoIP Page

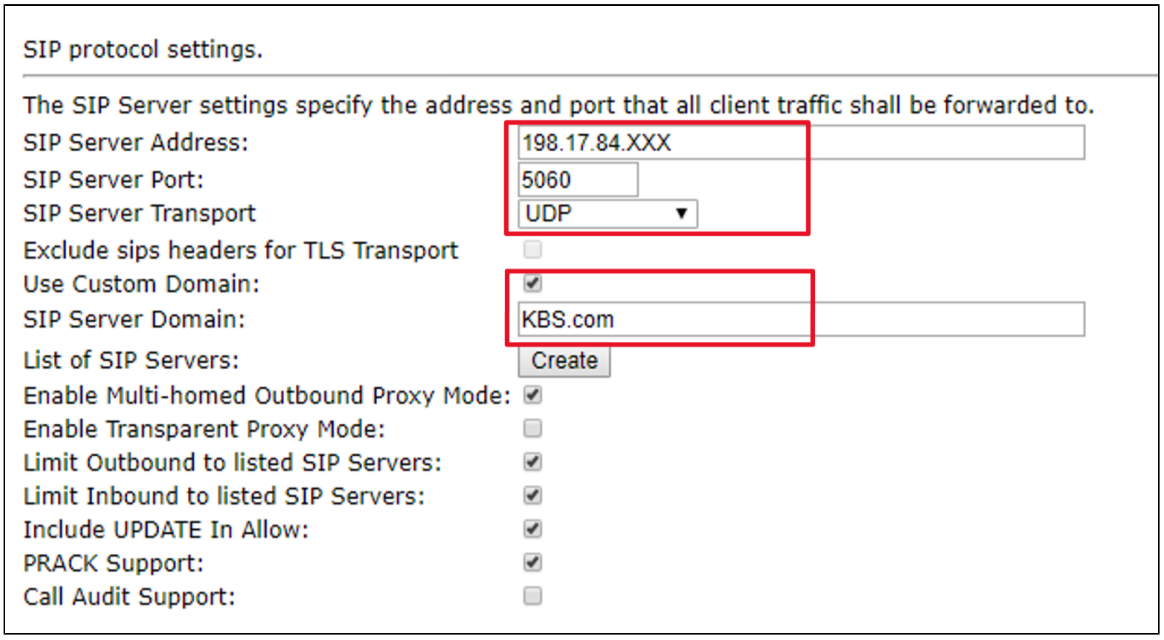


SIP Server Configuration

Under VoIP SIP

Configure the SIP server address, port, transport protocol, and domain name.

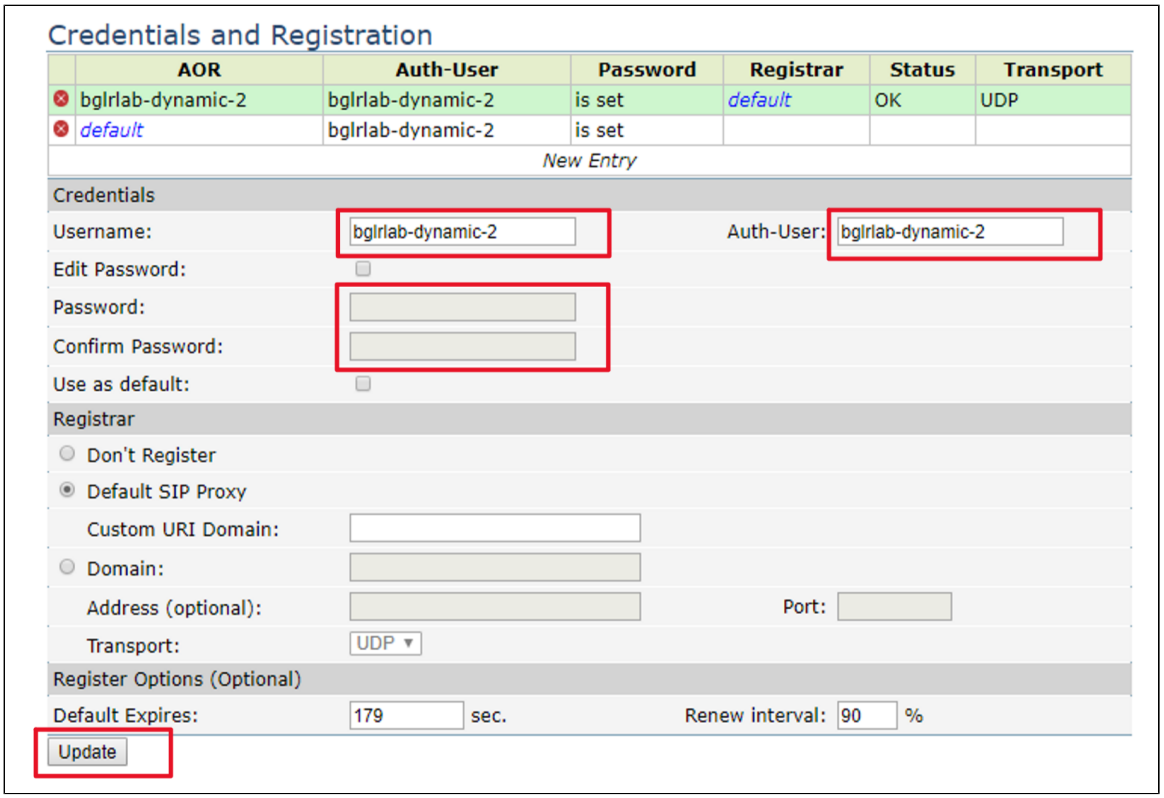
> For security reasons, the SIP server domain and IP have been changed.



Credentials and Registration

Under the Configuration Menu, go to **VoIP --> SIP --> B2BUA**

Dynamic PBX Registration - As PBX does not support SIP registration, EdgeMarc performs Dynamic Registration with KBS.



Header Modification Rules (SMM)

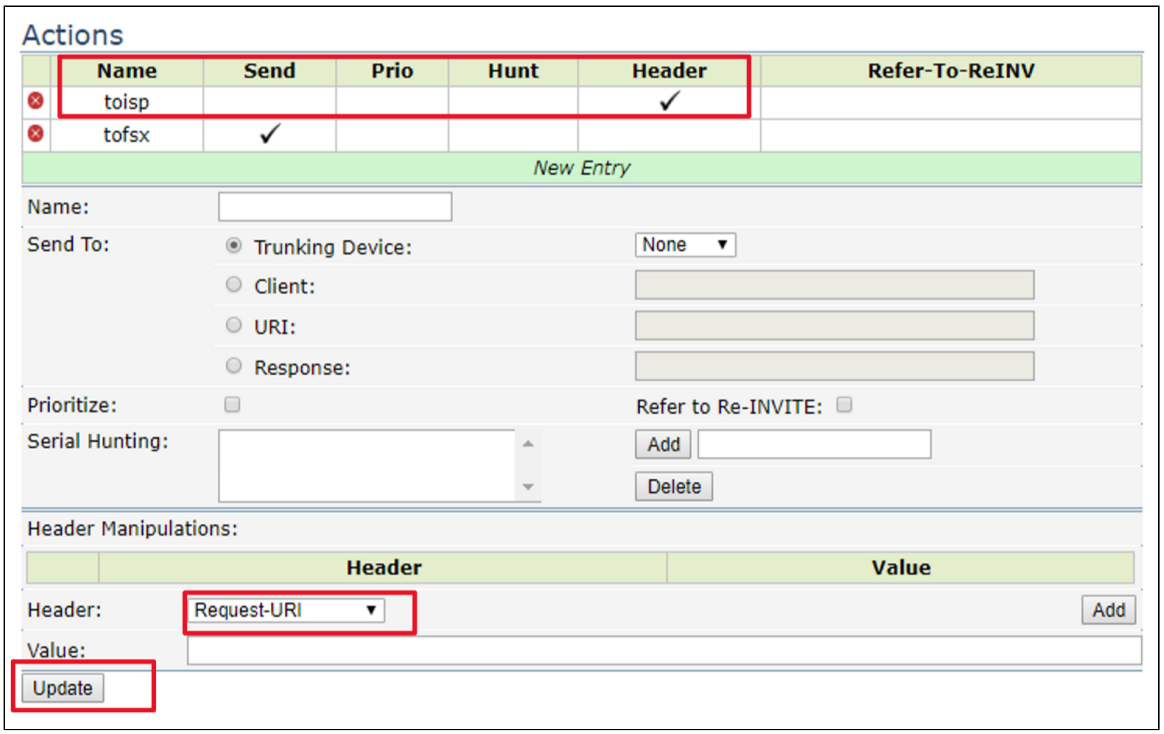
SBC needs to send all Requests to the KBS, which accepts the request in a standard SIP URI format. E.g. *"INVITE sip:9722653XXXX@contoso.com:5060 SIP/2.0"*. To modify the message apply the following rules.

The Configuration Menu, go to **VoIP --> SIP --> B2BUA**

Go to the **"toisp"** action and add a new **Request-URI** header with the following string values.

```
'sip:' + $to.uri.user + '@contoso.com:' + $env.target_port
```

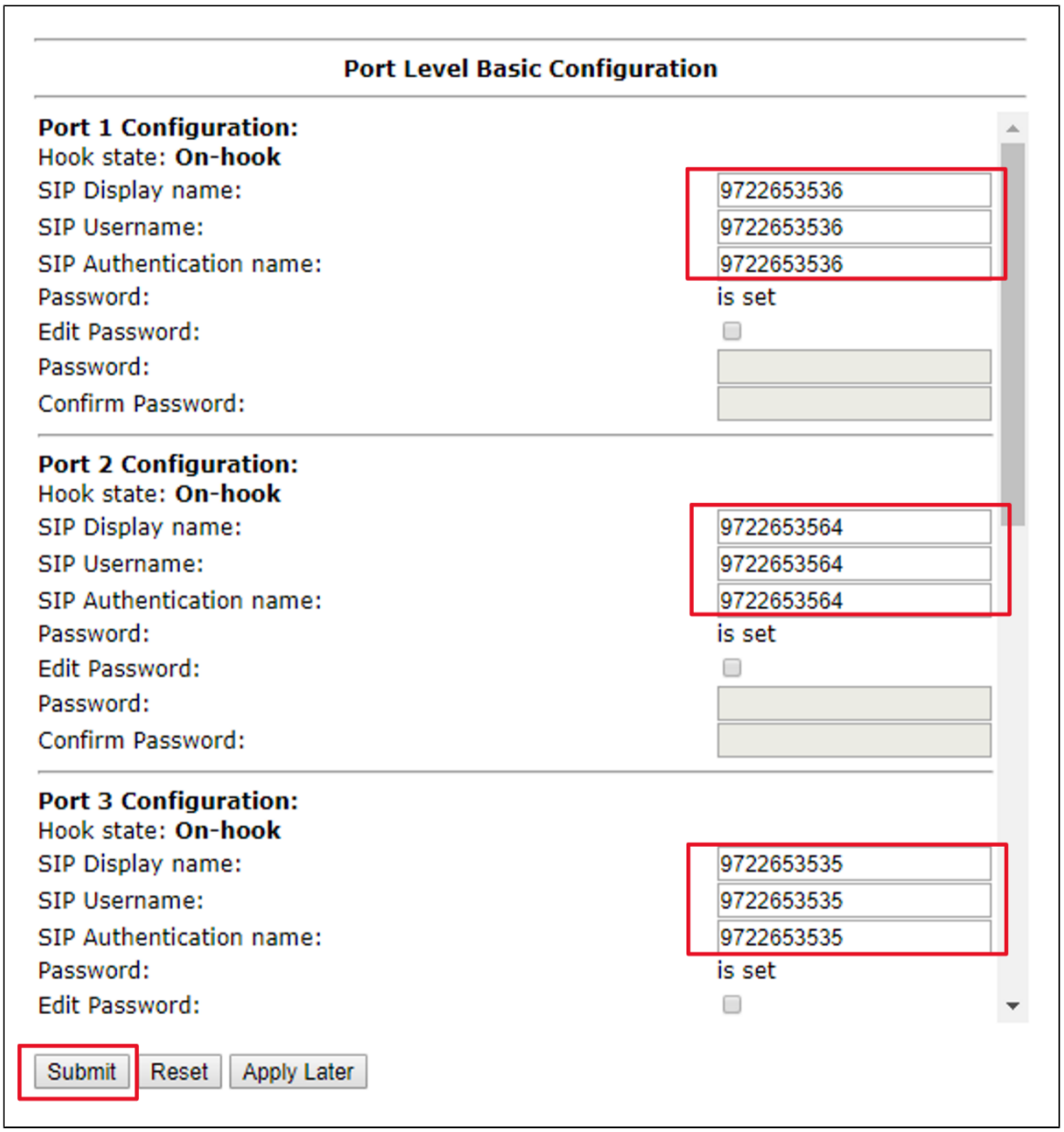
Click **Add Submit**



Phones and Port Settings

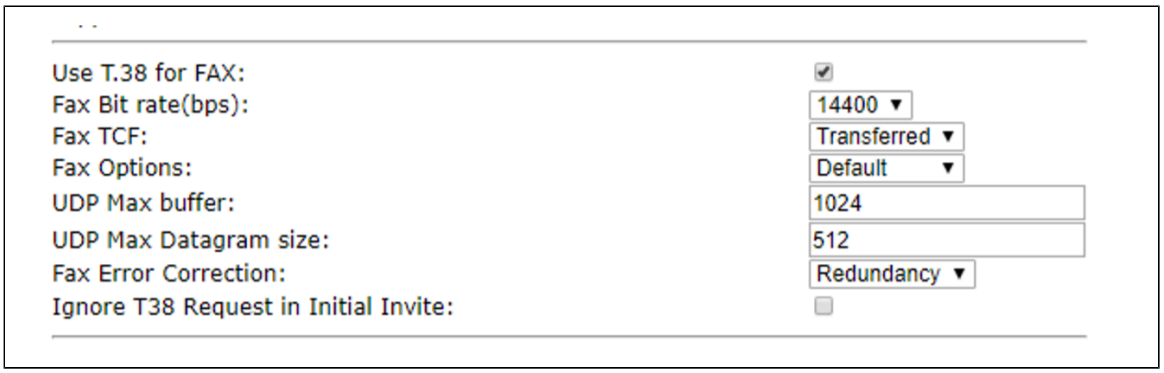
Under the Configuration Menu, go to **VoIP --> SIP --> SIPUA**

The DIDs listed as part of port configuration. The DIDs are not registered to KBS as EdgeMarc performs Dynamic Registration on behalf of the DIDs.



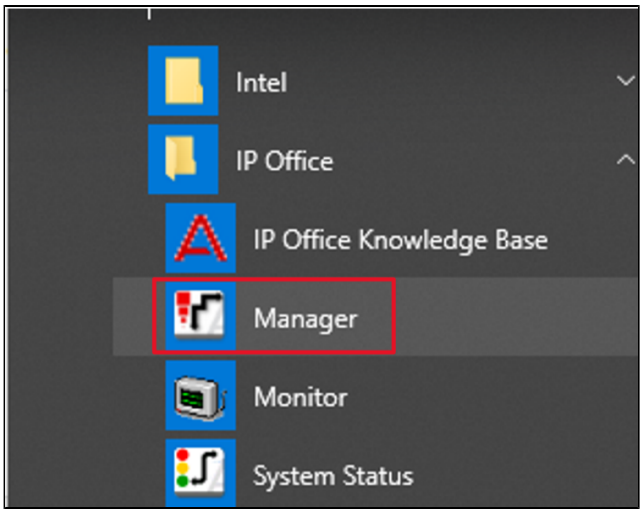
FAX Settings

Under the Configuration Menu, go to **VoIP --> SIP --> SIPUA --> Fax**

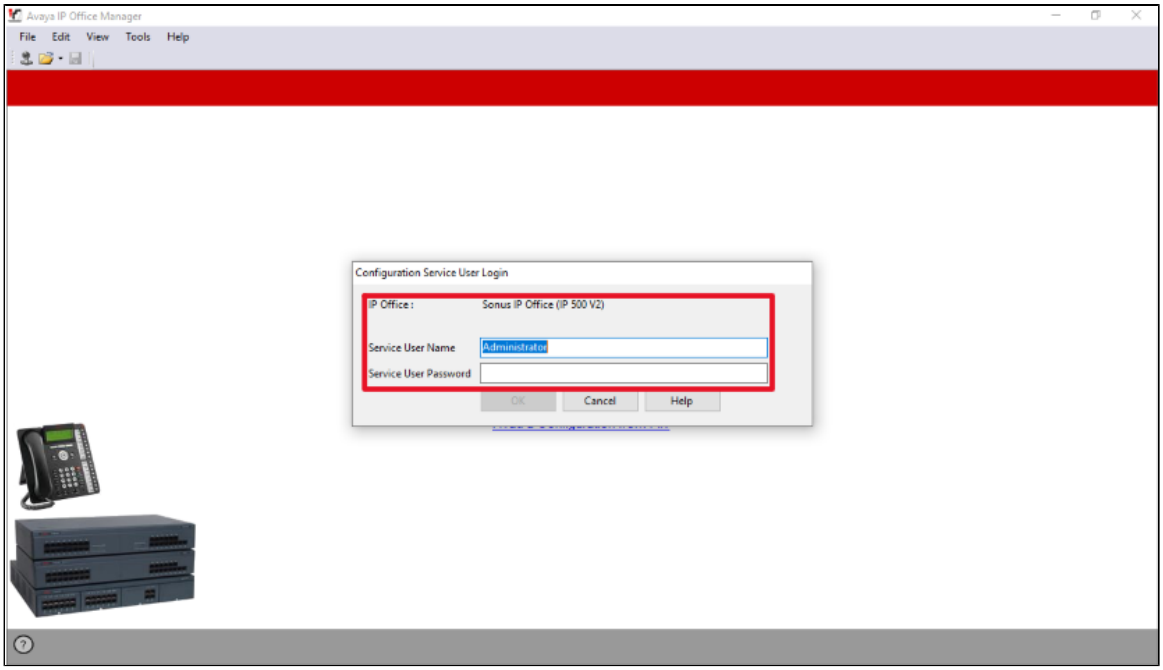


Section-B : Avaya IP Office Configuration

Connect to the Avaya IP Office using "**IP Office Manager**" software.

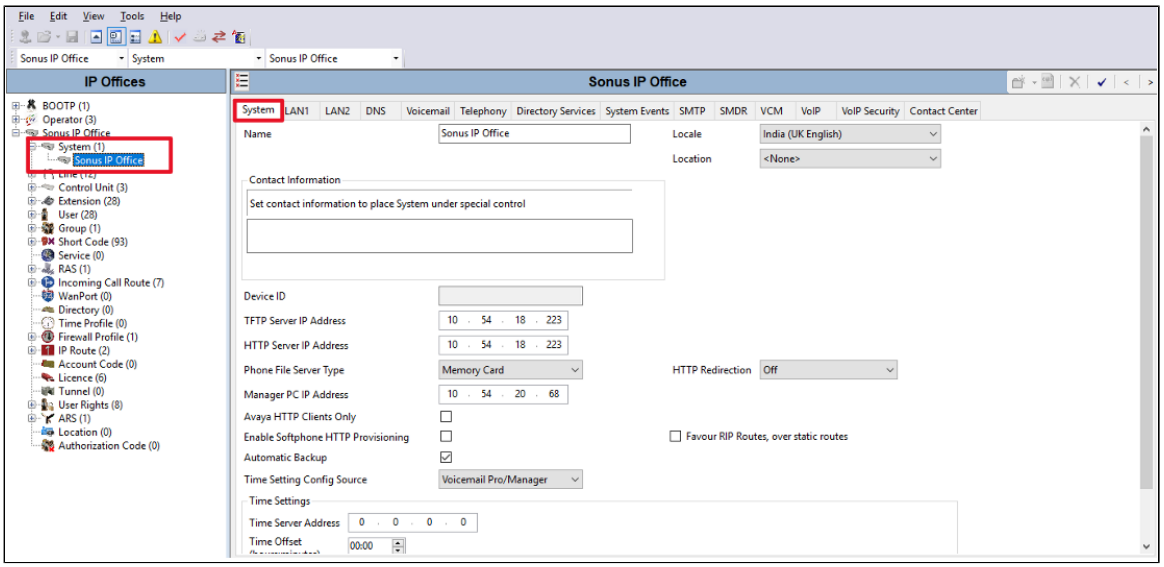


Login to IP Office Manager



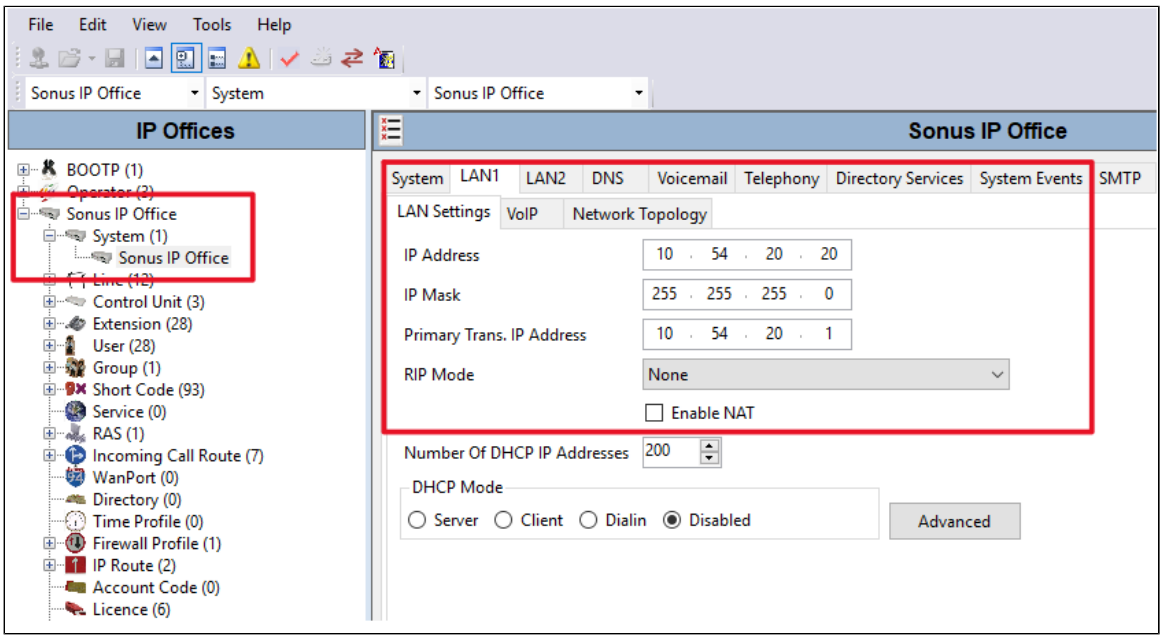
System Settings

To access the System settings, click the name of the IP Office system. Select **Sonus IP Office > System > system name "Sonus IP Office"** an d then click the **System** tab.



LAN1

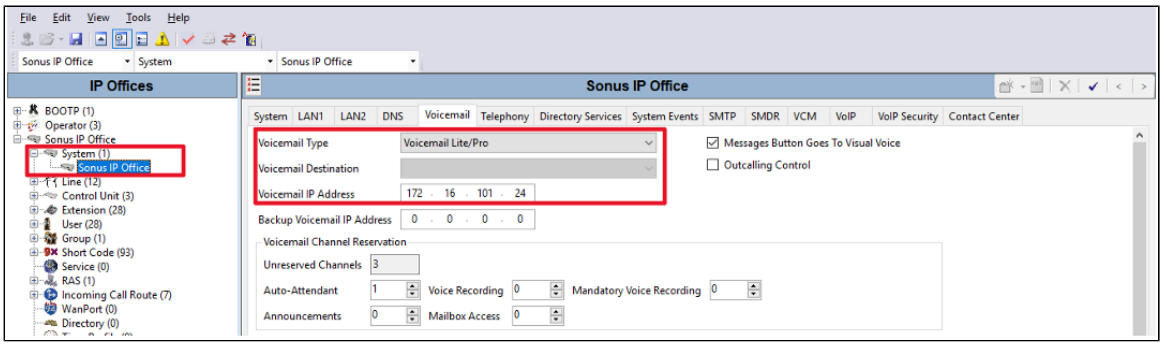
Access to the IP Office was gained through the LAN side of the PBX (LAN1). The SIP PBX phones are also registered through the LAN side of the PBX.
To access the LAN1 settings, click the name of the IP Office system. Select **Sonus IP Office > System > system name "Sonus IP Office"** and then click the **LAN1** tab.



Voicemail

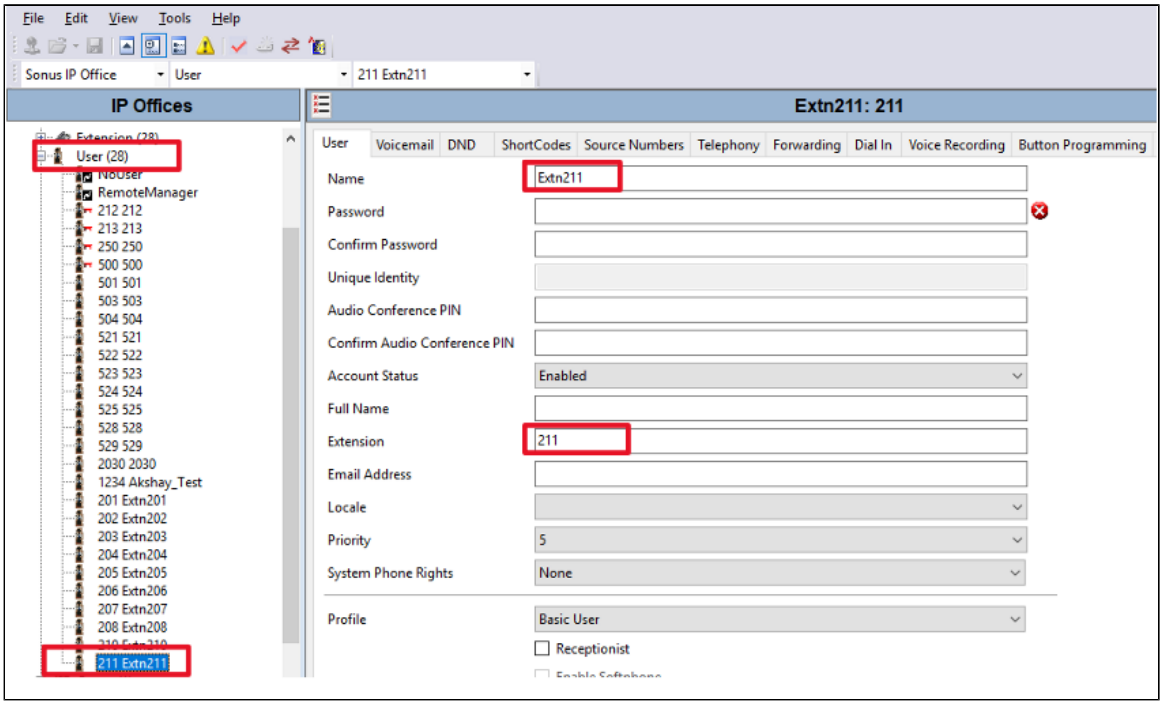
To access the Voicemail settings, click the name of the IP Office system. Select **Sonus IP Office > System > system name "Sonus IP Office"** a nd then click the **Voicemail** tab.

> ⚠ Voicemail pro was installed on the Enterprise network and was integrated with the IPO PBX. The voicemail server was hosted with IPO.



User Configuration

These are the end user profiles and can be associated with the DID. Supplementary services (Example. call forwarding, voicemail etc) for a user can be configured under the different sections.

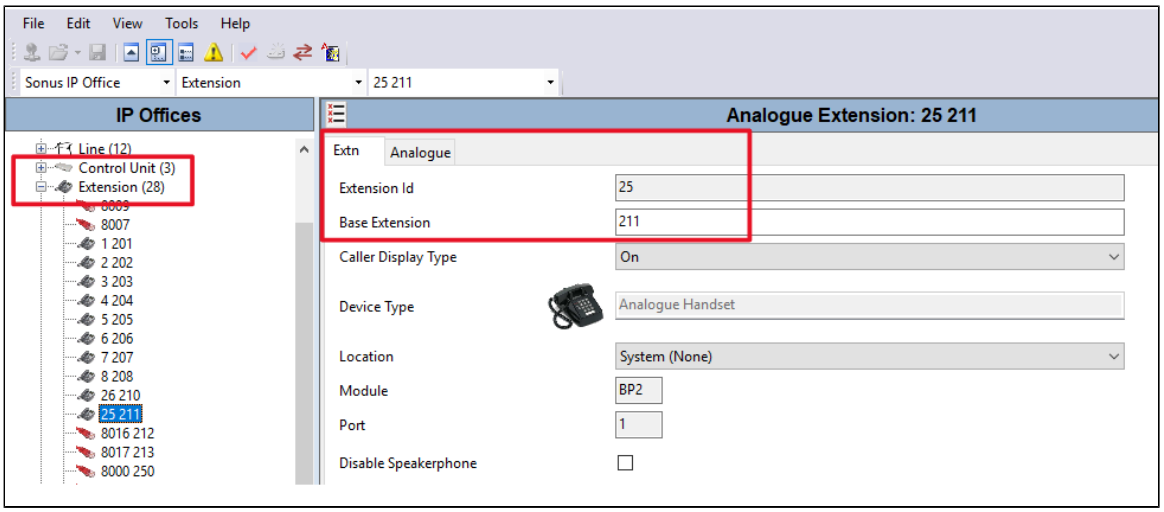


Extension Configuration

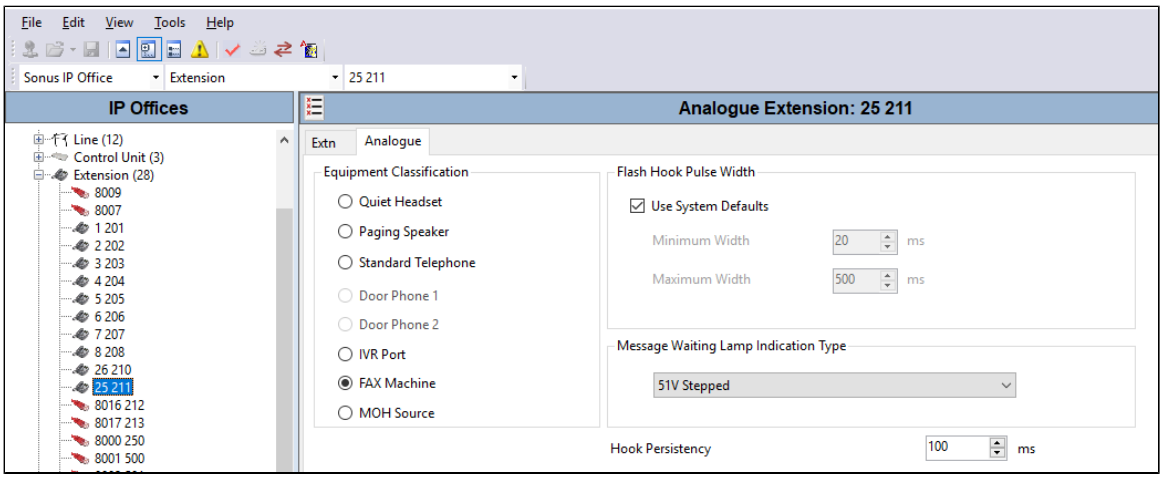
Analog Extension

These PBX extensions are configured with "Extension id" and "Base Extension" number. The base extension number will be allocated to the analog phone. For Example. In this case extension 211

Ensure the analog phone is connected to the Avaya IPO on port number listed below. For Example, in this case, port 1.

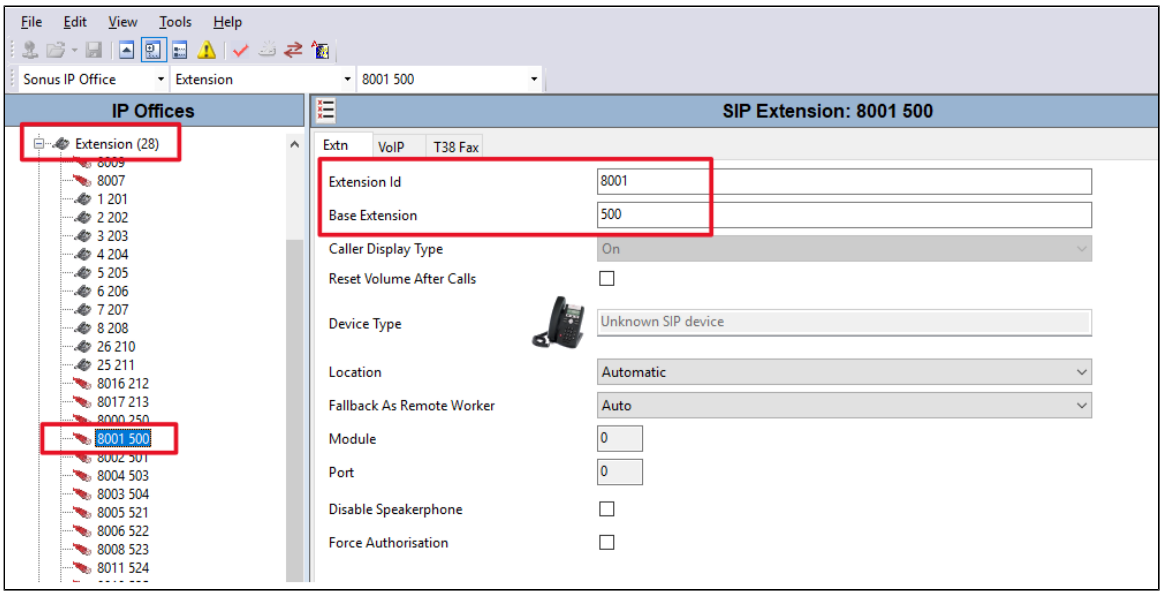


Ensure "FAX Machine" under the Analogue Extension is checked for using FAX devices.

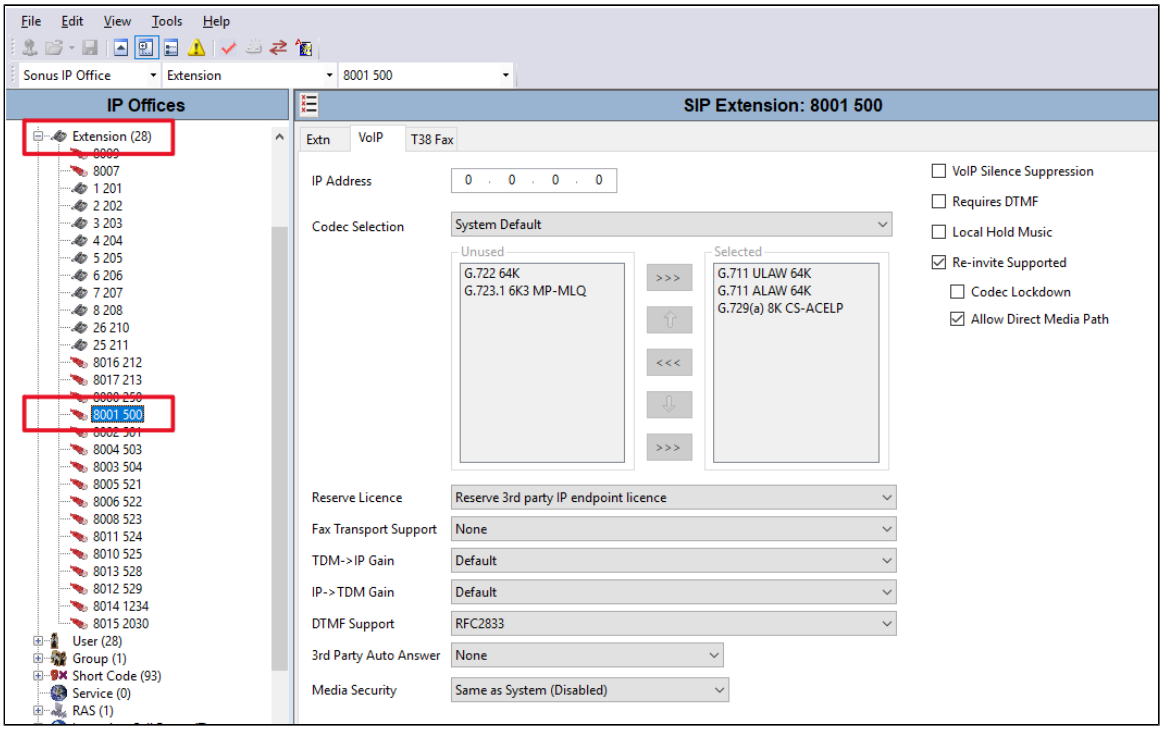


SIP Extension

The following example shows a SIP extension with a SIP-supported IP phone with a base extension of 500.

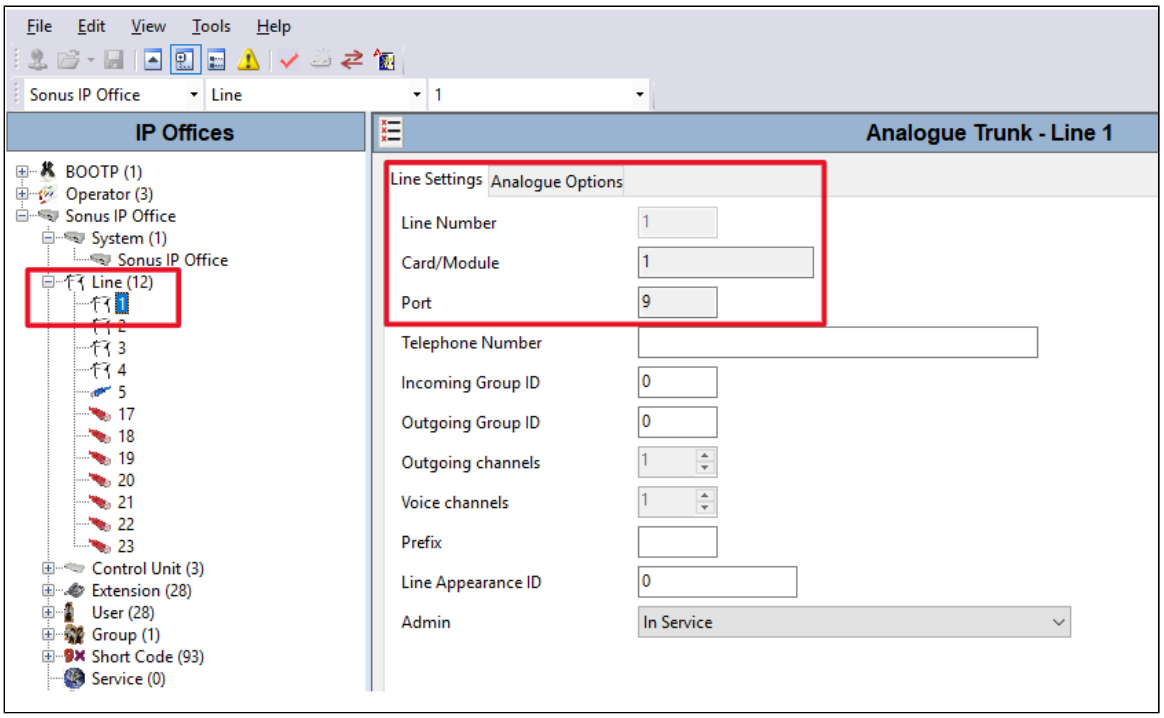


The following example shows a SIP extension with selected codecs.

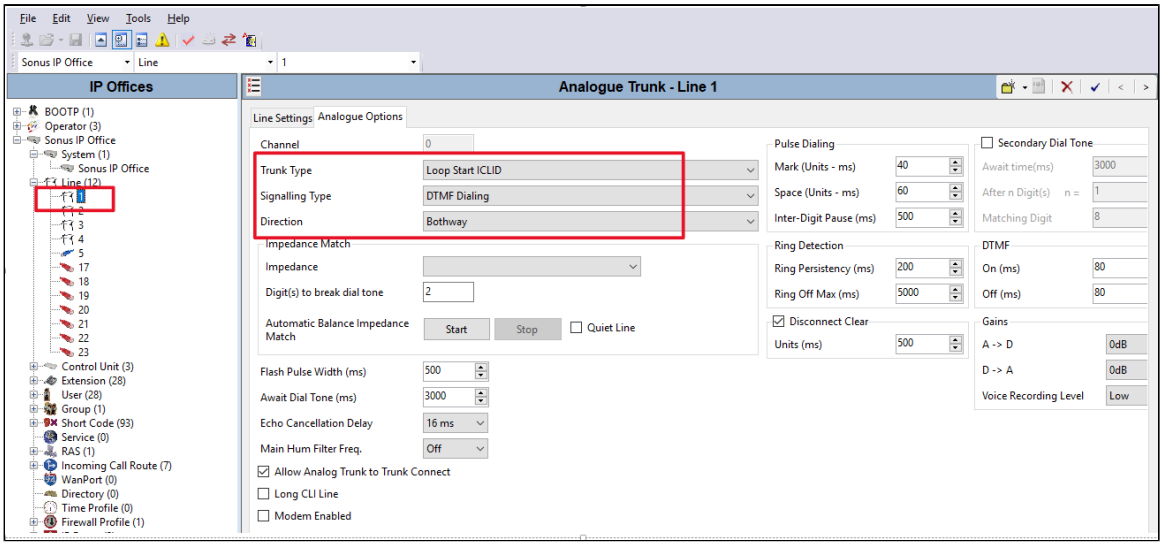


Analog Trunk Configuration

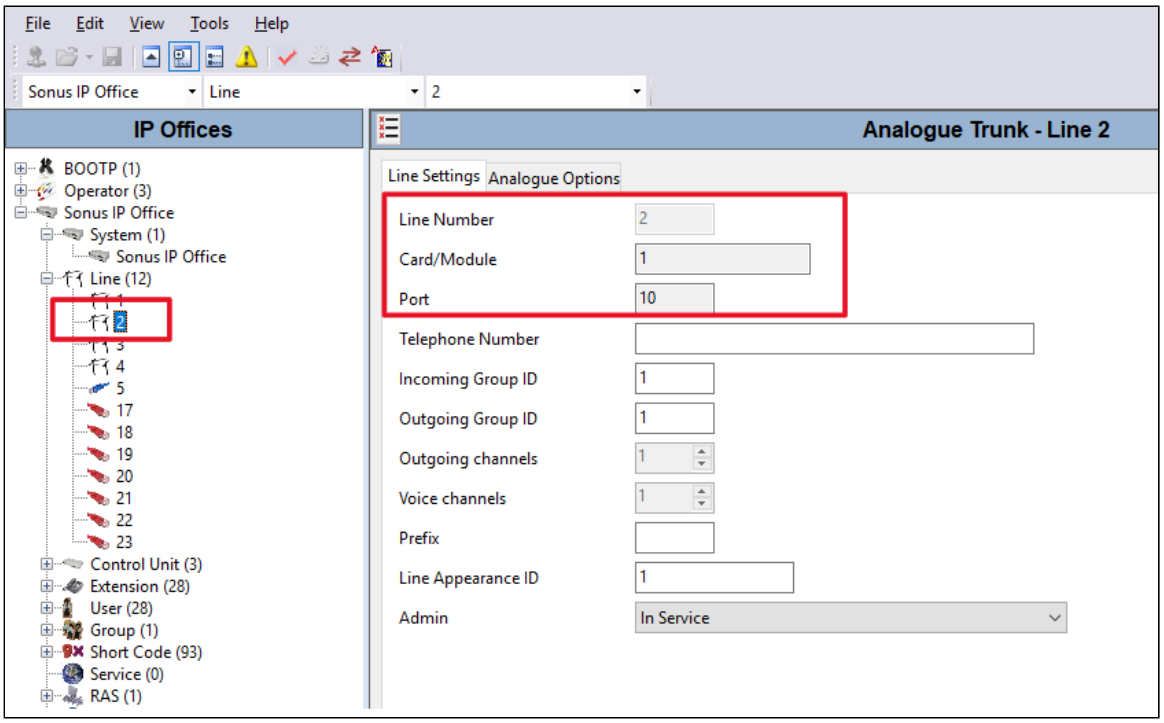
Analog trunk line is configured on "Line Number 1" *(same Line group ID will be used for the outing call using short code)* and "Port 9" as shown below. Ensure that your analog cable connects with EdgeMarc 2900a FXS port. For Example. In this case, analog from EdgeMarc was connected on port number 9 on the Avaya IPO.

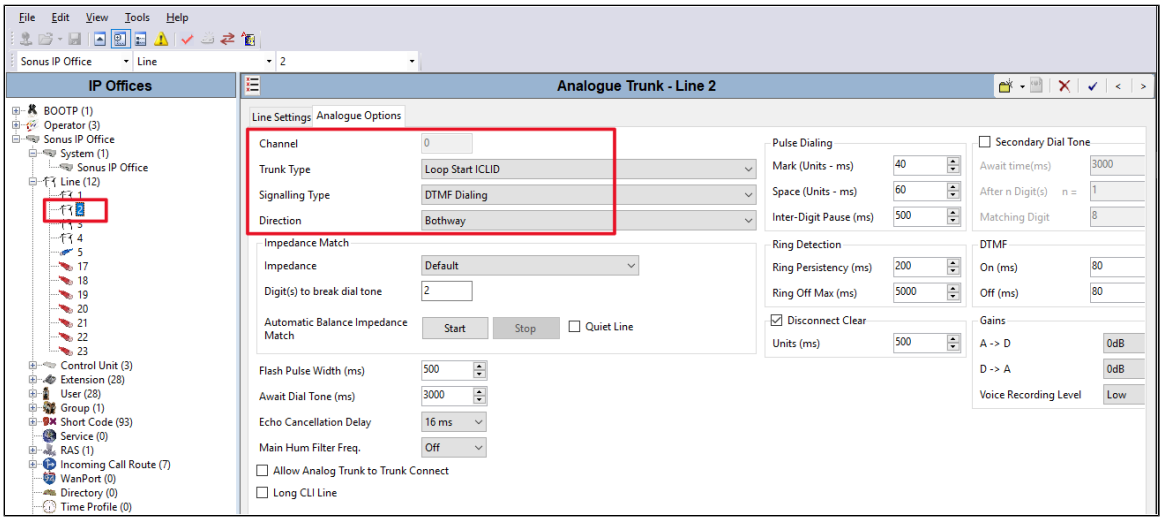


Ensure that "Direction" is set to "Bothway" for incoming & outing calls.



For multiple trunks connect multiple ports of Avaya IPO with EdgeMarc 2900a FXS ports. The following example shows an addition analog trunk on port number 10 of the Avaya IPO for Interop purposes.

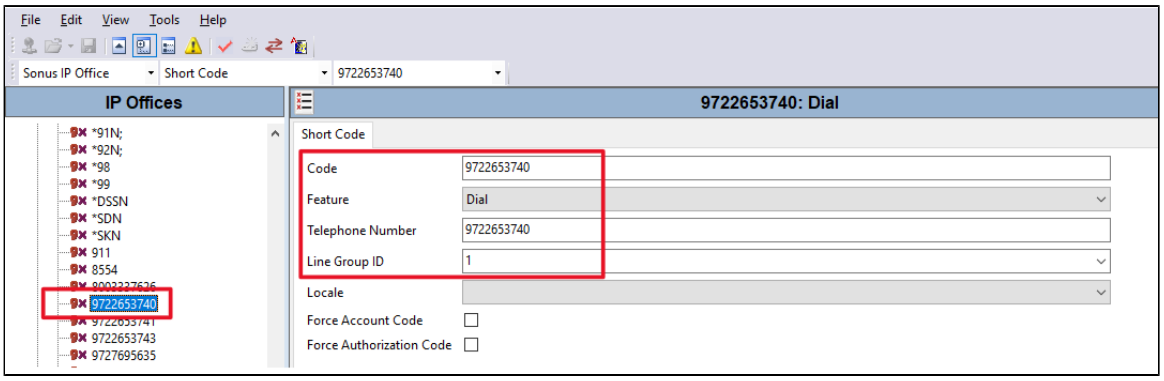




Short Code

Short codes are used for call routing of outing calls from Avaya IPO.

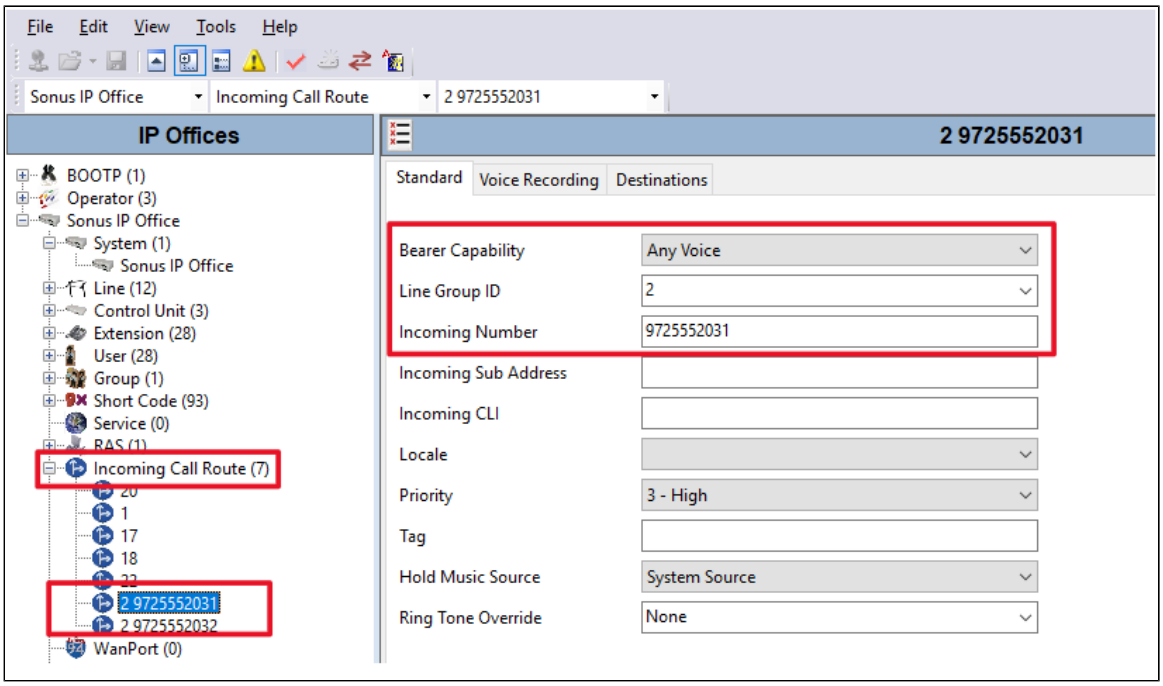
The following example shows a short code for dial pattern "**9722653740**" which is mapped to "**line Group Id 1**". Refer to Analog trunk configuration where the line group id is already defined with a FXS port number.

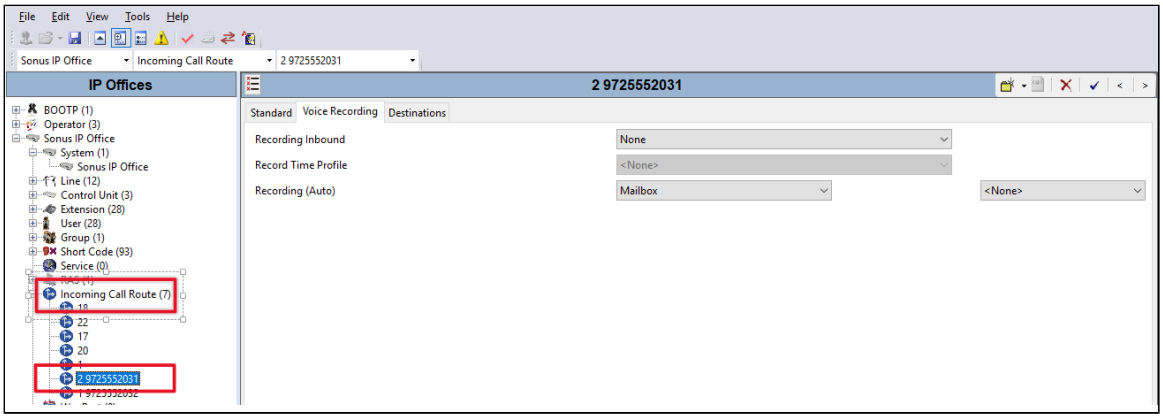


Repeat the above steps for creation of another Short code for other dial pattern "**9722653741**" which is mapped to "**line Group Id 2**". Refer t the Analog trunk configuration where the line group id 2 is already defined with a FXS port number.

Incoming Route

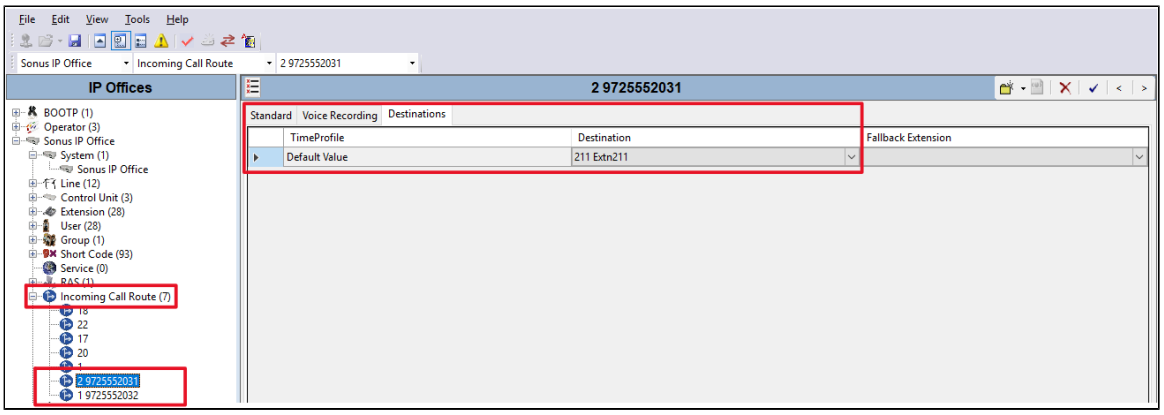
Incoming call route defines the incoming call patterns mapped to the **"line group ID**

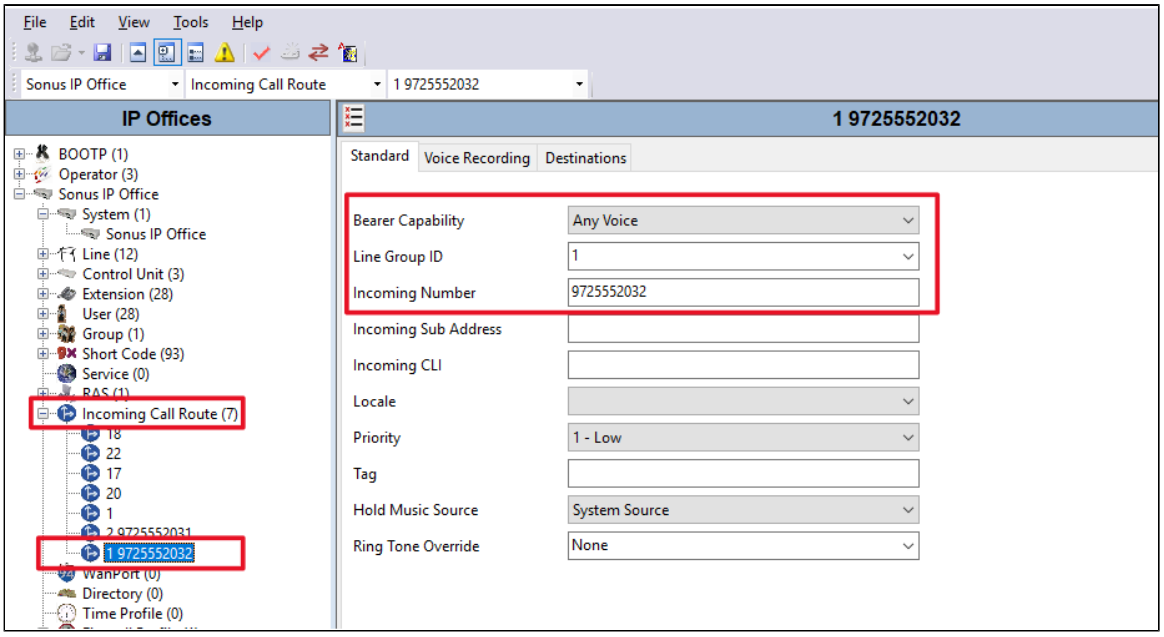




Inside incoming call routes, the line group Id has been mapped to the PBX local user extension. For Example. *In the following example, dialed incoming number 9725552031 (DID) has been mapped to the local PBX extension 211 phone.*

> ⚠ If you wish to use DIDs directly on analog pbx phones line then internal mapping to local extension is not required.





Supplementary Services & Features Coverage

The following checklist lists the set of services/features covered through the configuration defined in this Interop Guide.

Sr. No.	Supplementary Services/ Features	Coverage
01.	IP PBX User To PSTN	✔
02.	PSTN to IP PBX User	✔
03.	Cancel Call	✔
04.	Voice Mail Deposit	✔
05.	Early Media	✔
06.	DTMF Using RFC2833	✔
07.	Call Forward No Answer	✔
08.	Call Forward Unconditional	✔
09.	Call Forward Busy	✔
10.	Blind Transfer To PSTN	✔
11.	Attendant Transfer To PSTN	✔

12.	Meet-Me Conference	✓
13.	Long Duration	✓
14.	Hold And Resume	✓
15.	Fax With T.38	✓
16.	Fax With G711	✓
17.	Conference	✓
18.	Music On Hold	✓

Legend

Supported	✓
Not Supported	✗

Support

For any support related queries about this guide, please contact your local Ribbon representative, or use the details below:

- Sales and Support: 1-833-742-2661
- Other Queries: 1-877-412-8867
- Website: https://ribboncommunications.com/about-us

References

For detailed information about Ribbon products & solutions, please visit:

https://ribboncommunications.com/products

Conclusion

This configuration guide provides an approach for successfully configuring EdgeMarc SBC with Avaya IPO and KBS. This configuration is applicable to almost all major supplementary services and call flows.