Ribbon SBC 1000/2000 V9.0.7 IOT Vodafone SIP Trunk: Interoperability Guide

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Interoperable Vendors

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Document Overview

This document outlines Avaya's configuration best practices involving Ribbon SBC 1000/2000 when deployed with Cisco Unified Communication Manager 12.5. This document also provides the configuration snapshot of the interoperability performed between Ribbon 1000/2000 and Cisco Unified Communication Manager 12.5.

Scope

This document provides configuration best practices for deploying Ribbon's SBC 1000/2000 Cisco Unified Communication Manager 12.5. These are configuration best practices and customers may have unique needs and networks. Ribbon recommends that customers work with network design and deployment engineers to establish the network design which best meets their requirements.

Non-Goals

This document is provided as a starting point to build the SBC configurations in consultation with network design and deployment engineers. It is not intended to provide detailed configurations that will meet the requirements of every customer.

Audience

This technical document is intended for telecommunications engineers with the purpose of configuring the Ribbon 1000/2000 with the Cisco Unified Communication Manager 12.5.

Steps will require navigating the third-party product as well as the Ribbon product using graphical user interface (GUI) or command line interface (CLI). An understanding of the basic concepts of TCP/UDP/TLS, IP/Routing, and SIP/RTP/SRTP is needed to complete the configuration and any necessary troubleshooting.

Pre-Requisites

The interoperability test described in this document requires no special licensing.

Product and Device Details

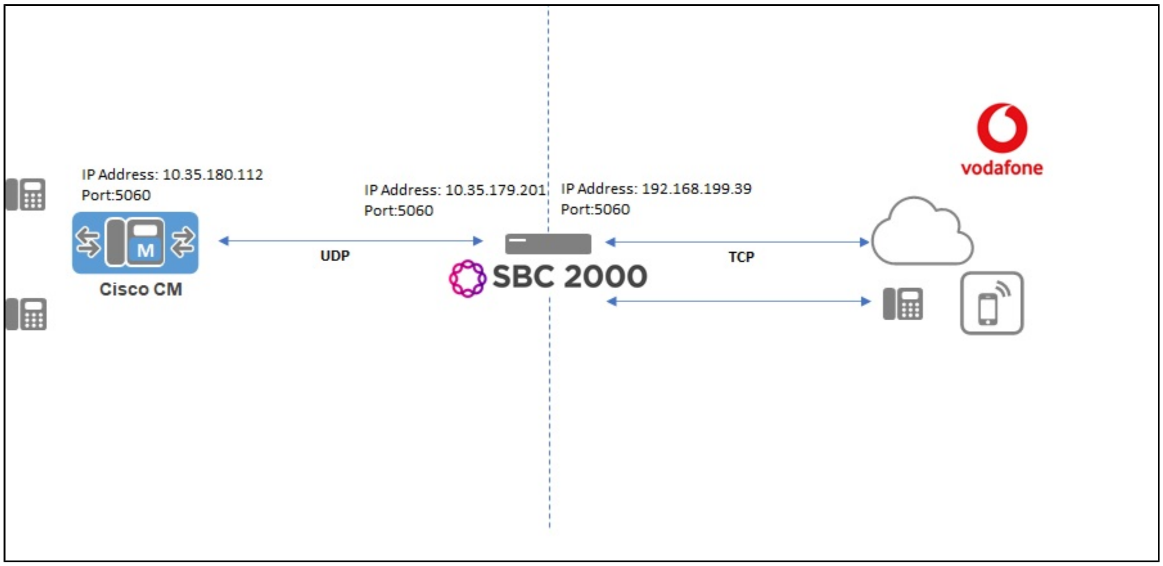
	Equipment/Product	**Software Version**
Ribbon Communications	SBC 2000	V9.0.7
Third-Party Products	Cisco Unified Communication Manager	V12.5
	Cisco IP Communicator	V8.6.2.0
	MicroSIP	V3.20.7

Network Topology Diagram

Deployment Topology

The deployment topology diagram is depicted below.

Figure 1: Deployment Topology



Section-A: SBC 1000/2000 Configuration

The following configuration steps provide an example of how to configure the Ribbon SBC 1000/2000 to interoperate with the Cisco Unified Communication Manager and Vodafone SIP Trunk:

1. SIP Profile
2. SIP Server
3. Media System
4. Media Profiles
5. Media List
6. Signaling Groups
7. Transformation
8. Call Routing Table

1. SIP Profile

SIP Profiles control how the Ribbon SBC 1000/2000 communicates with SIP devices. The profiles control important characteristics such as session timers, SIP Header customization, SIP timers, MIME payloads, and option tags.

Select **Settings > SIP > SIP Profiles** to access the SIP Profile screen.

The following figures show the default SIP profile used for this configuration of the Ribbon 1000/2000.

Figure 2: Vodafone SIP Profile

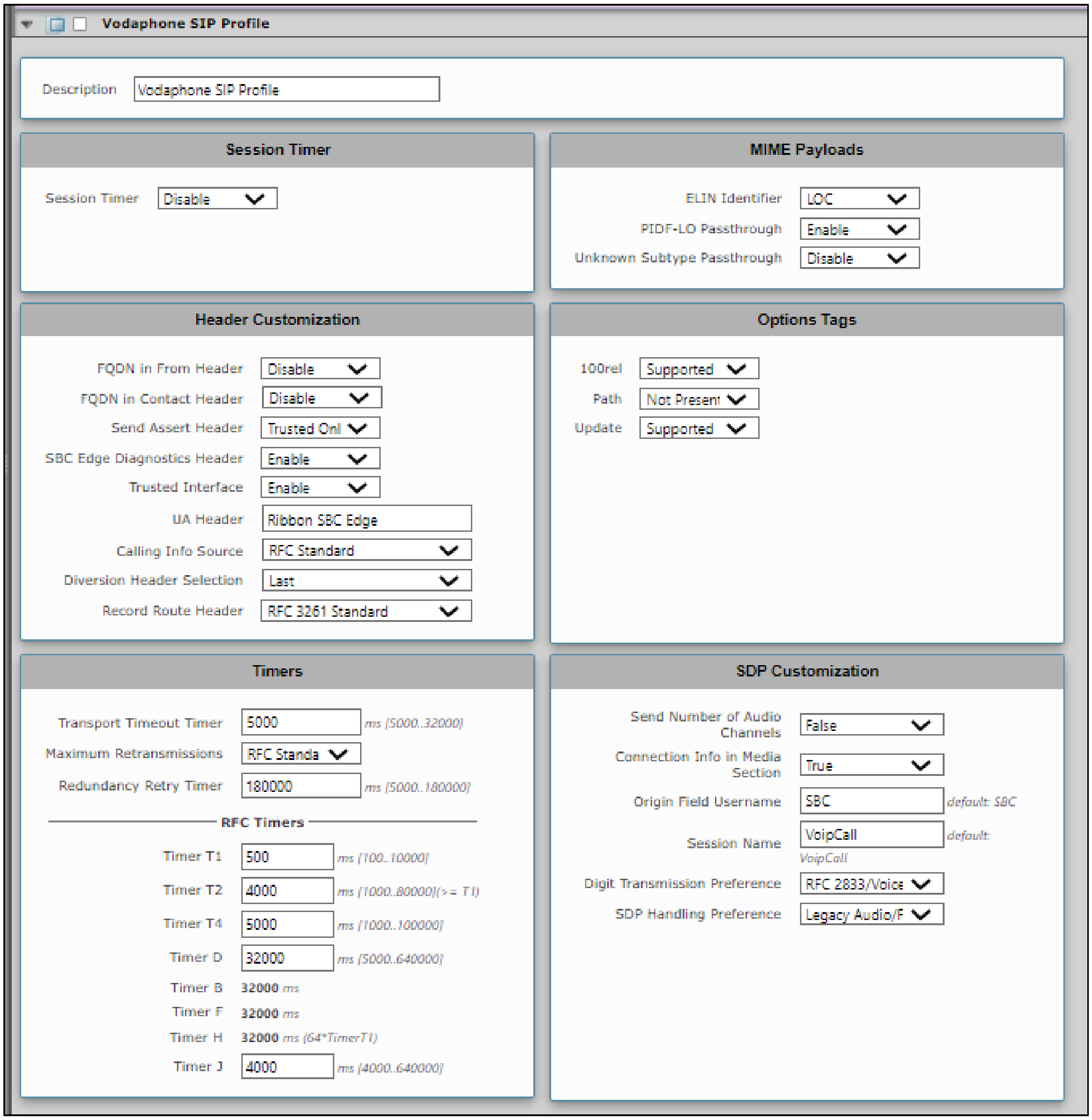
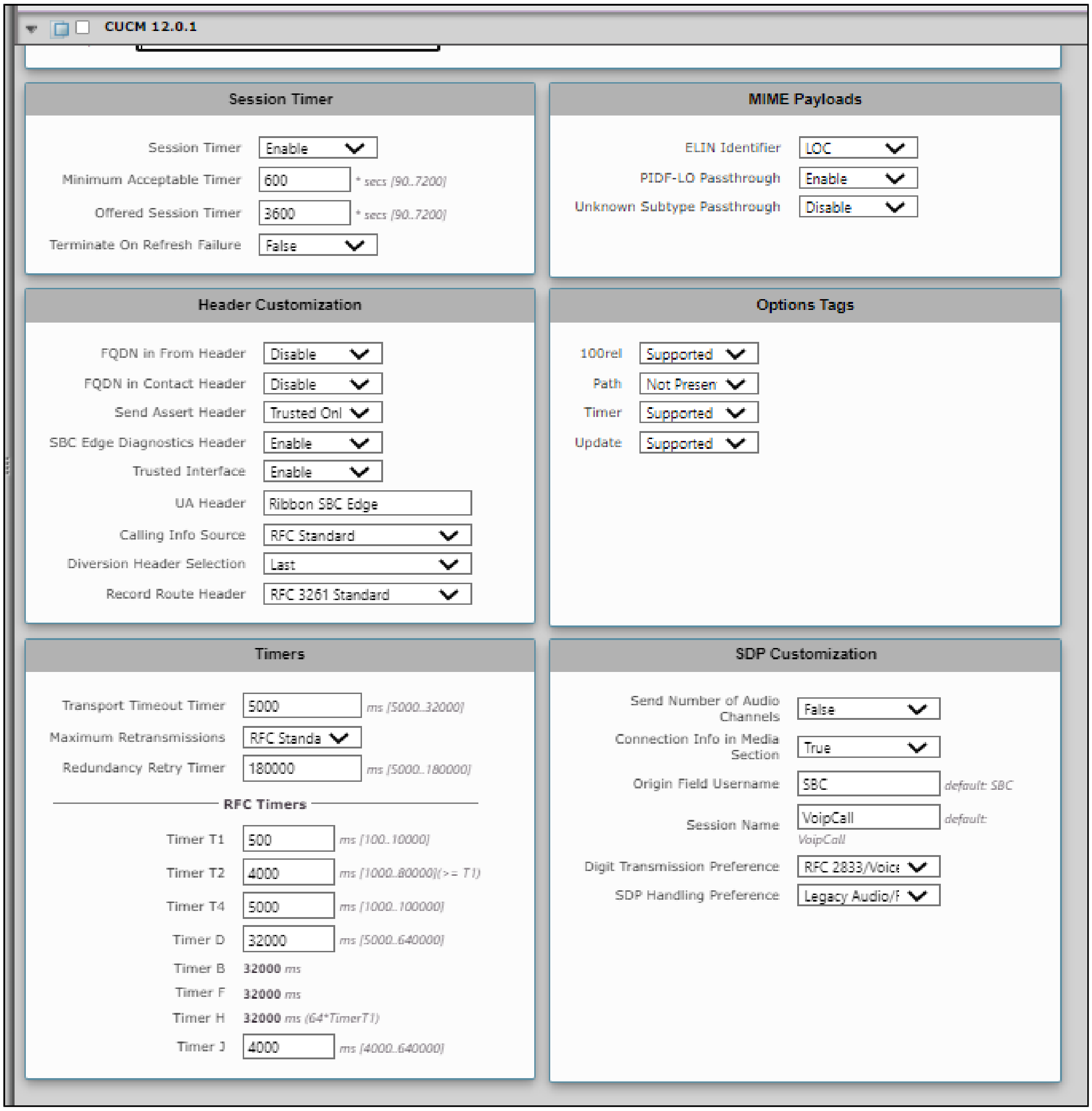


Figure 3: CUCM SIP Profile



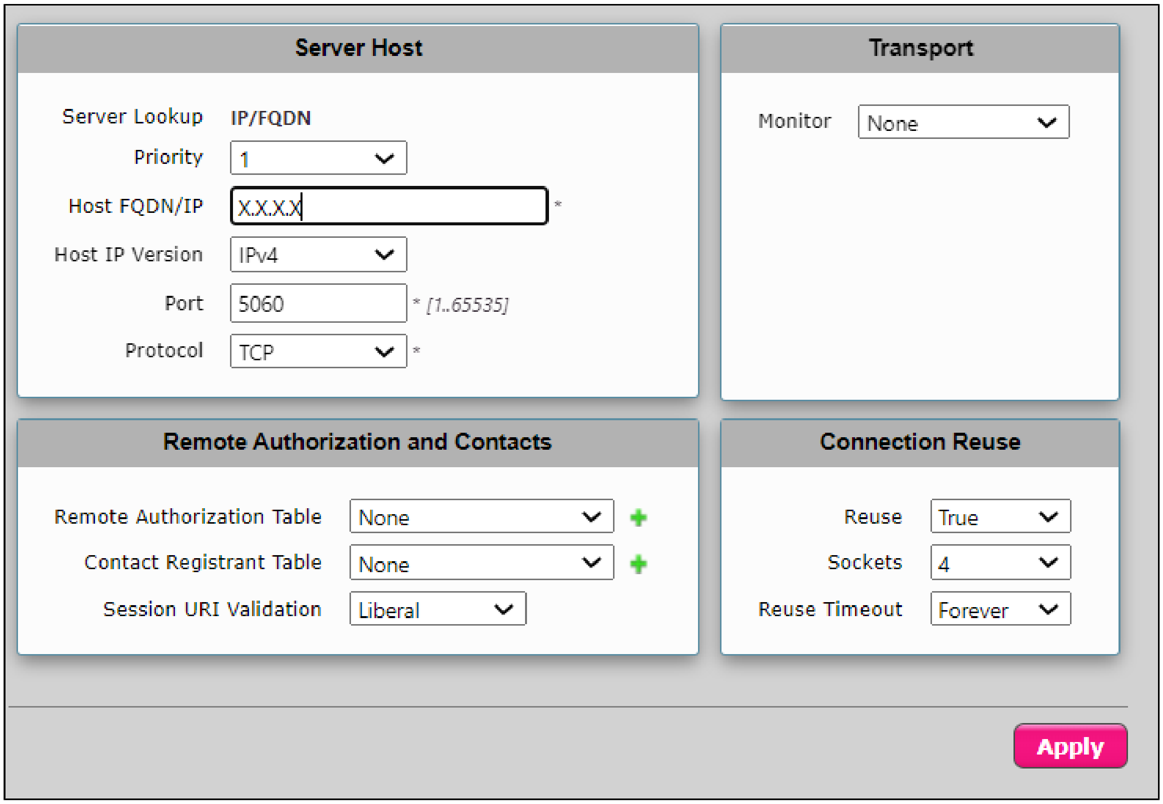
2. SIP Server

SIP Server Tables contain information about the SIP devices connected to the Ribbon SBC 1000/2000.

Select **Settings > SIP > SIP Server Tables** to access the SIP Server Tables screen.

The entries in the tables provide information about the IP addresses, ports, and protocols used to communicate with each SIP server. The entries also contain links to counters that are useful for troubleshooting, as shown in the following figures.

Figure 4: Vodafone SIP Servers



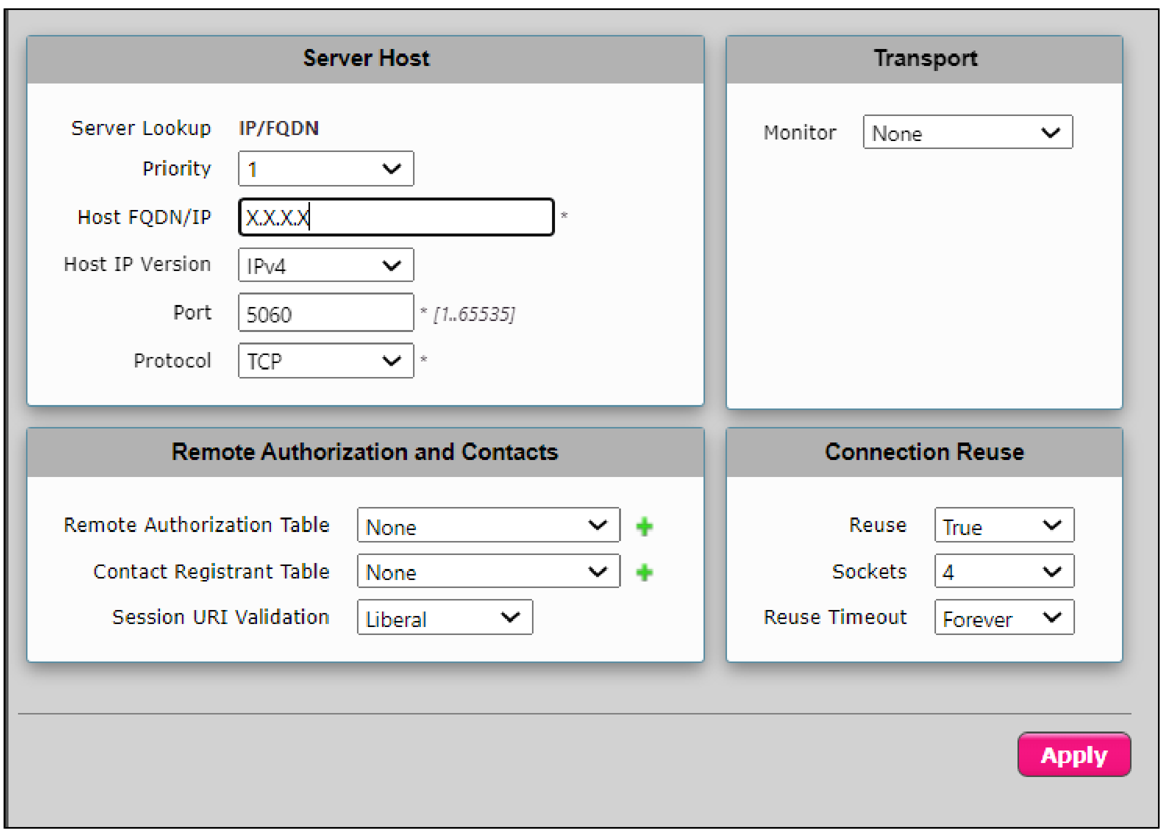
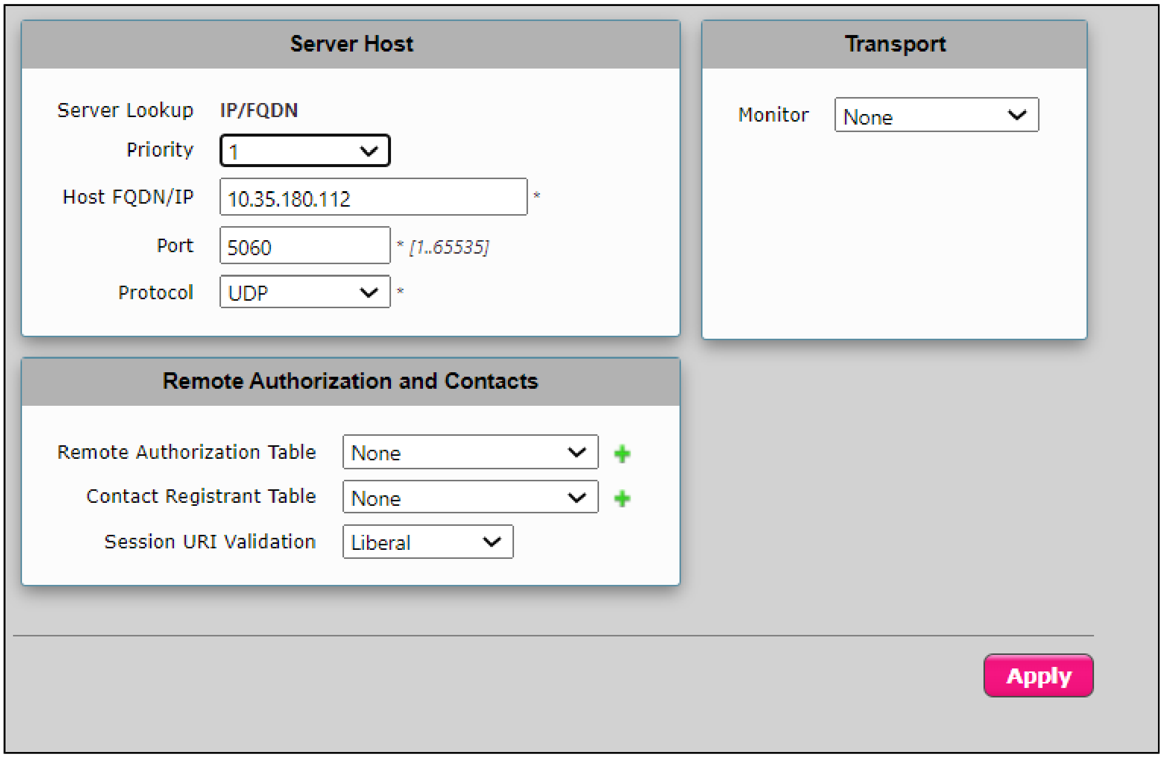


Figure 5: CUCM SIP Servers

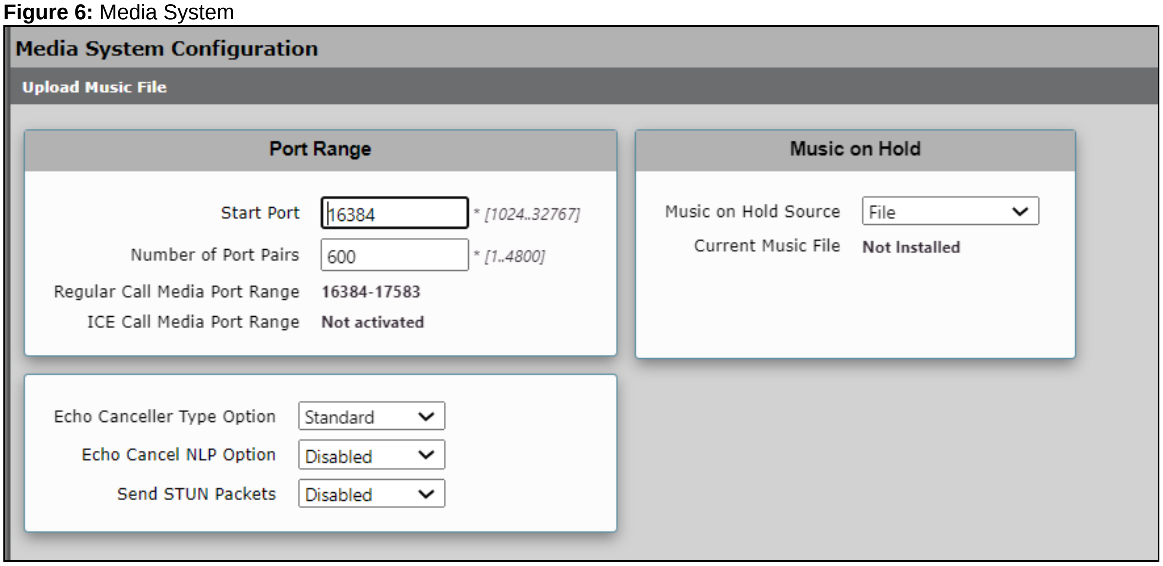


3. Media System

The Media System Configuration contains system-wide settings for the Media System. Configuring the media system means setting the number of RTP/RTCP port pairs and the starting port.

Select **Settings > Media > Media System Configuration** to access the Media System configuration screen.

Figure 6: Media System



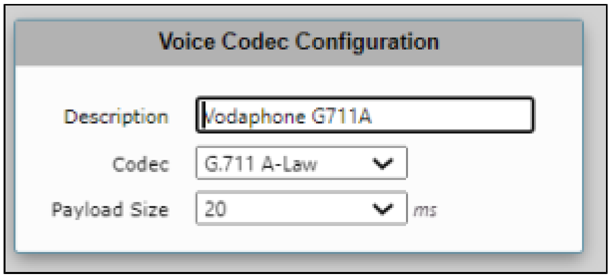
4. Media Profiles

Media Profiles specify the individual voice and fax compression codecs and their associated settings for inclusion into a Media List. Different codecs provide varying levels of compression, allowing the reduction of bandwidth requirements at the expense of voice quality.

Select **Settings > Media > Media Profiles.**

The following figures illustrate possible media profiles of the voice codecs used for the SBC 1000/2000. The examples are for reference only.

Figure 7: Vodafone Media Profile



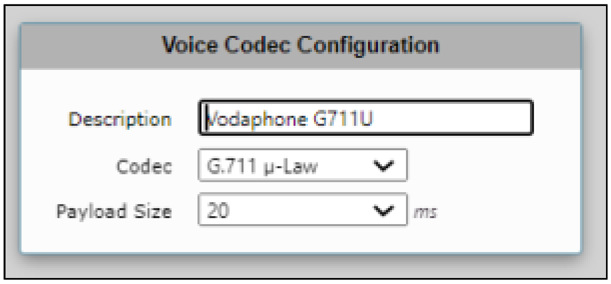
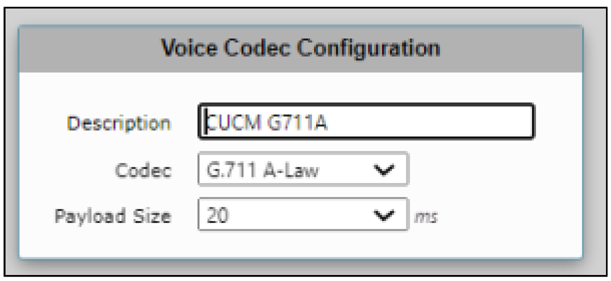
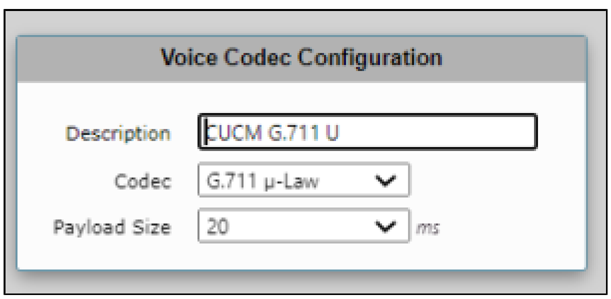


Figure 8: CUCM Media Profile





5. Media List

The Media List shows the selected voice and fax compression codecs and their associated settings.

Select **Settings > Media > Media List** to access the Media List configuration screen.

Figure 9: Vodafone Media List

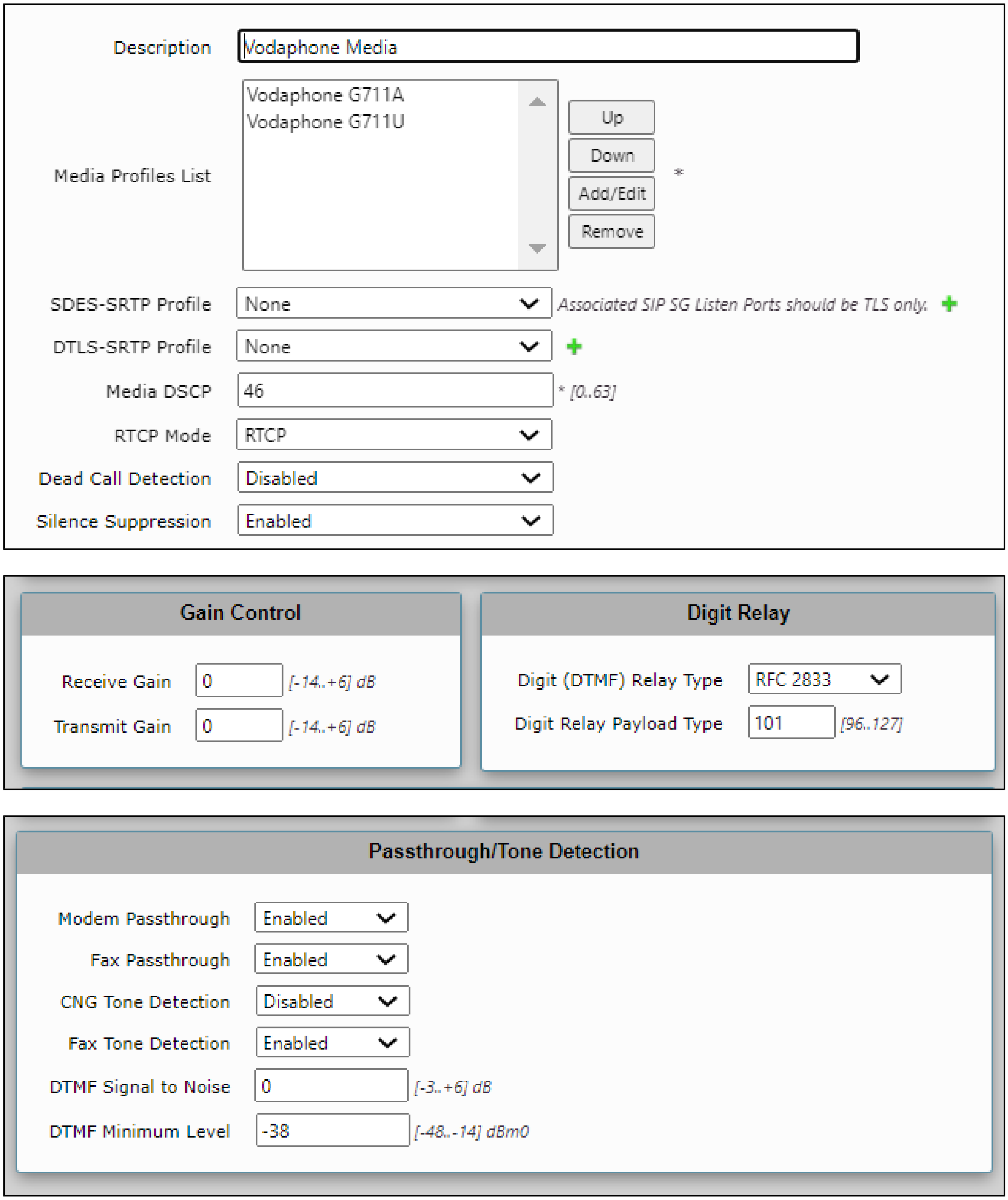
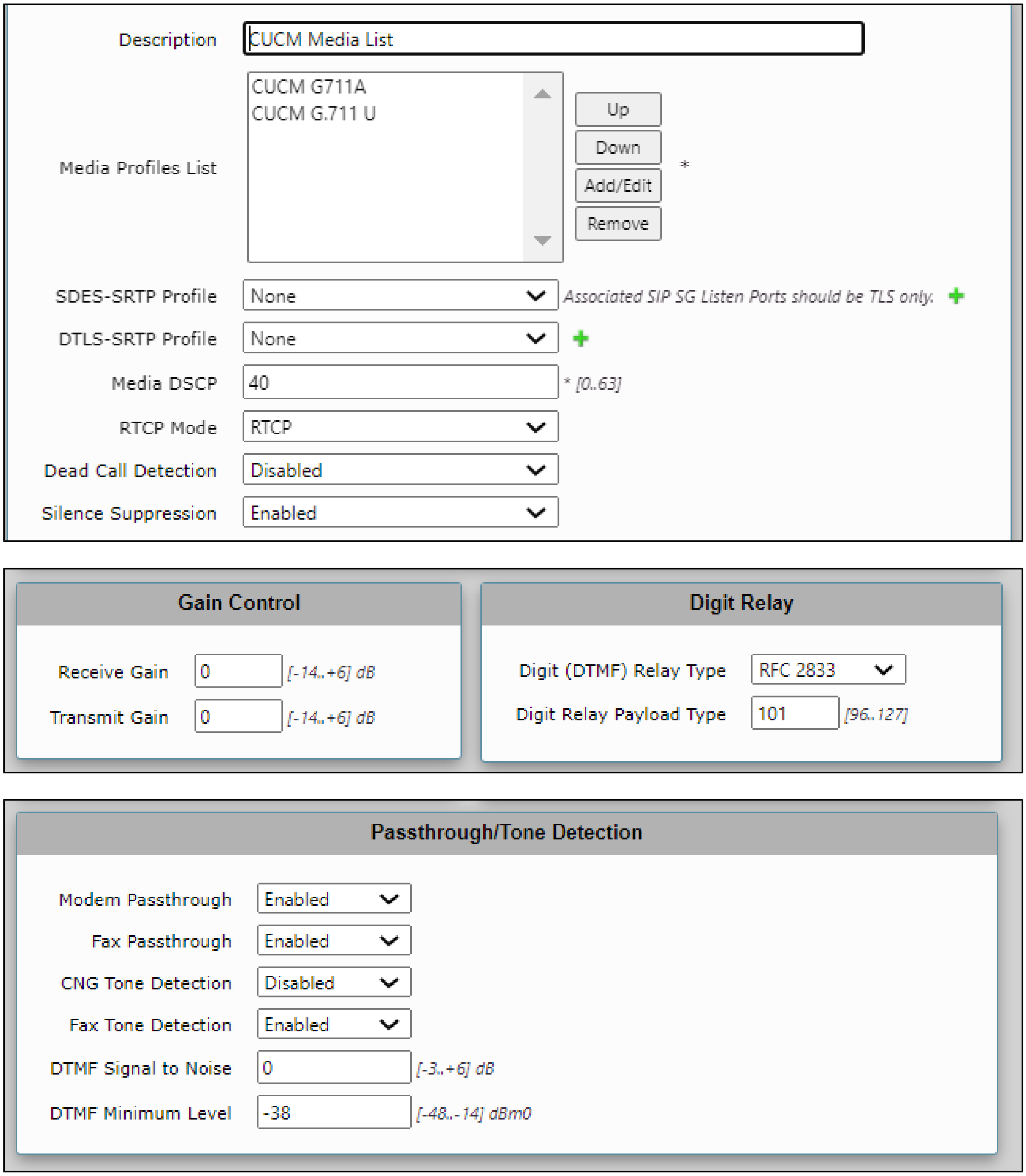


Figure 10: CUCM Media List



6. Signaling Groups

Signaling Groups allow telephony channels to be grouped together for the purposes of routing and shared configurations. These groups are location where calls are routed to, as well as the location from which Call Routes are selected. Tone Tables and Action Sets are also selected here. In the case of SIP, Signaling Groups will specify protocol settings and links to server, media and mapping tables.

Select **Settings > Signaling Groups** to access the Signaling Groups configuration screens.

Figure 11: Vodafone Media Signaling Group

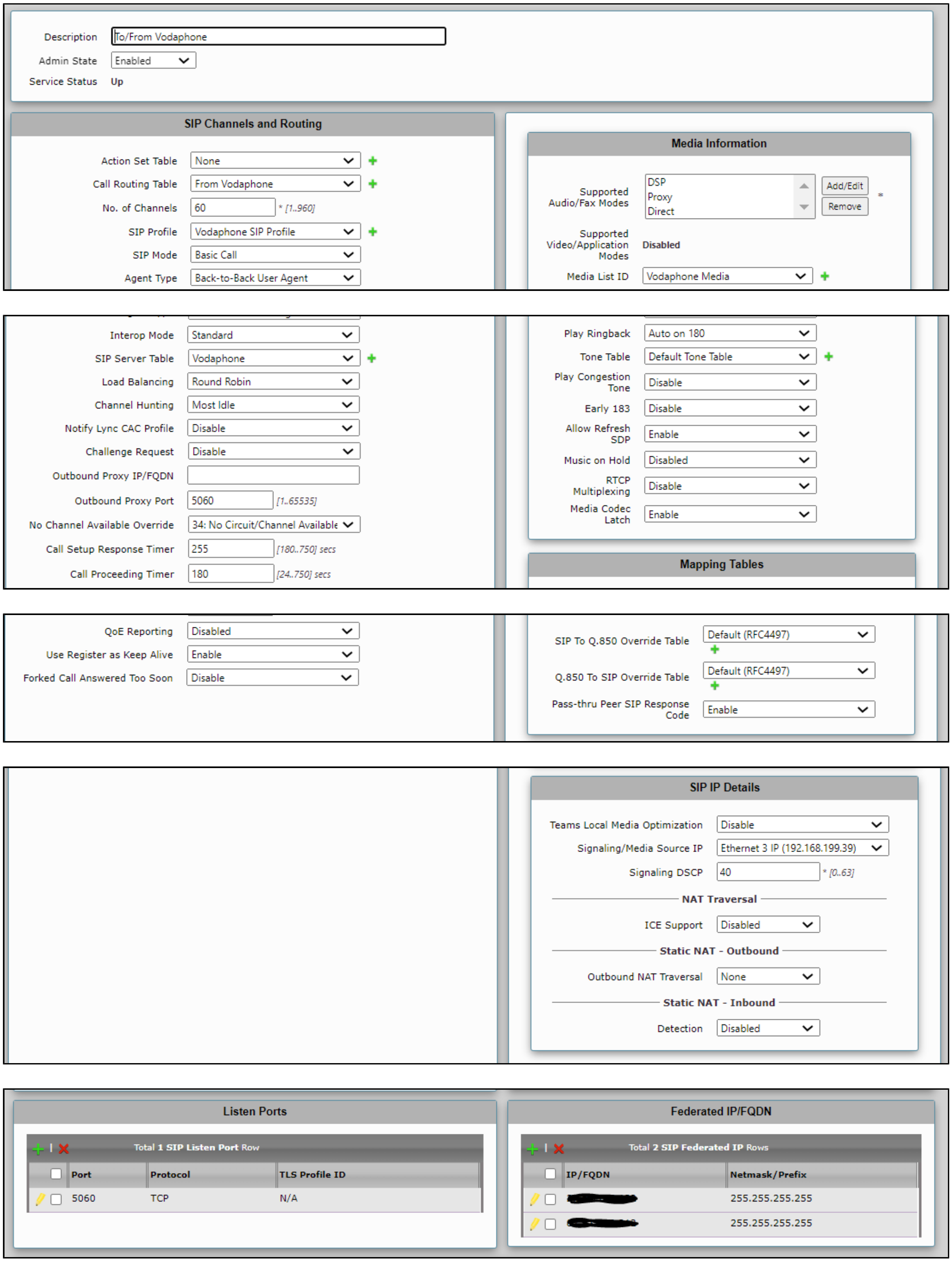
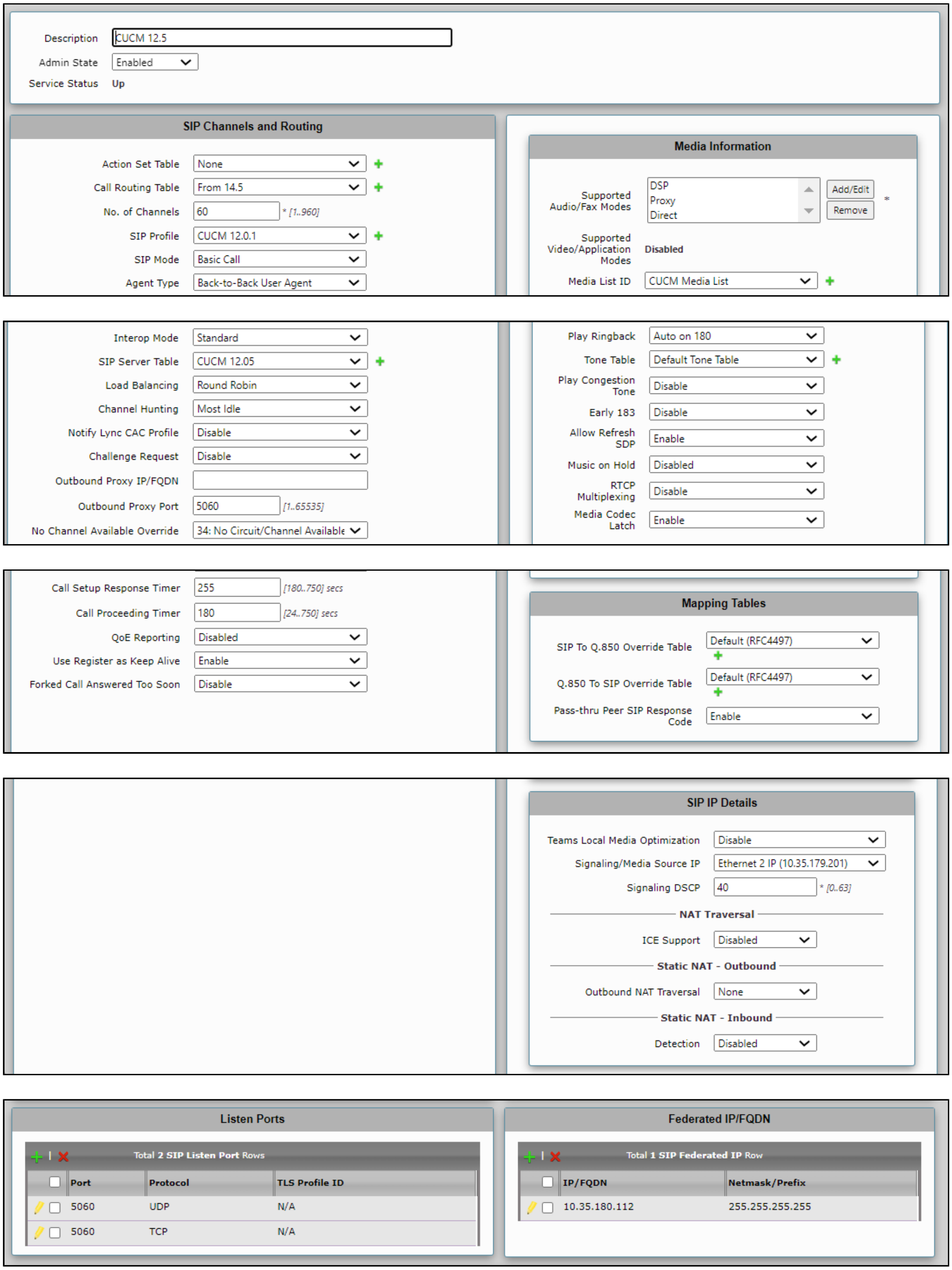


Figure 12: CUCM Media Signaling Group



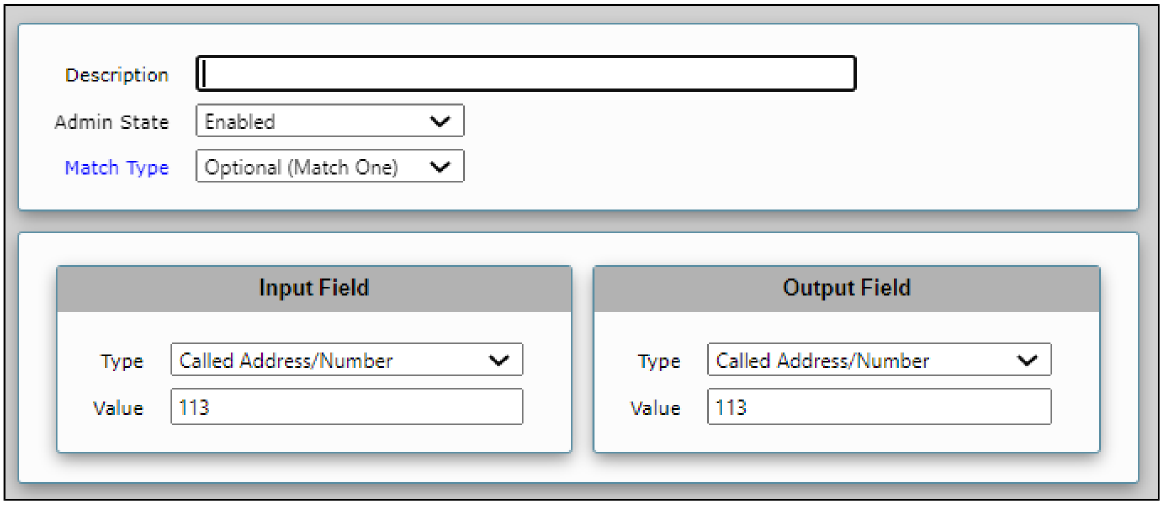
7. Transformation

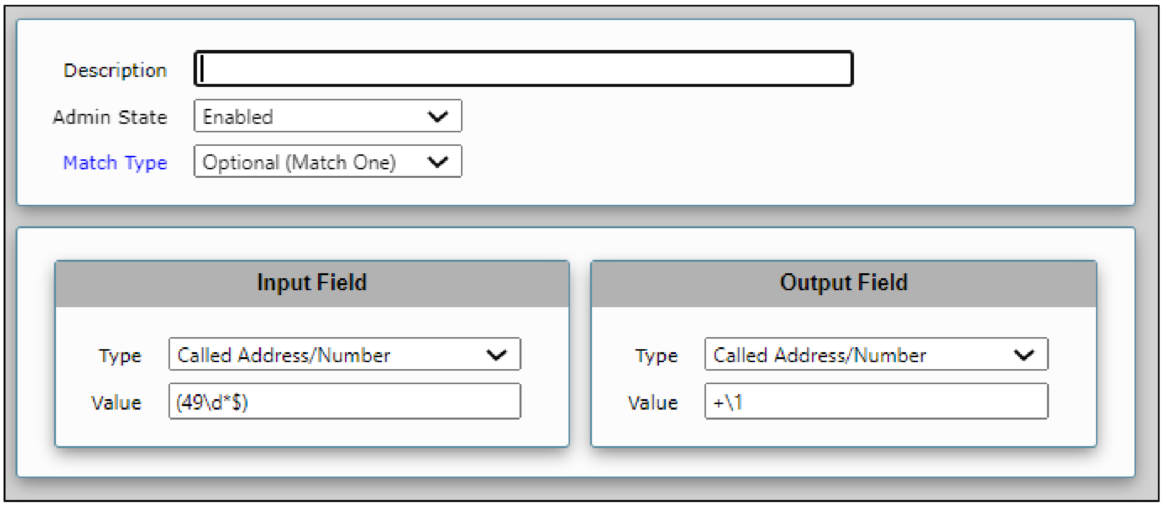
Transformation Tables facilitate the conversion of names, numbers and other fields when routing a call. For example, transformations can convert a public PSTN number into a private extension number, or into a SIP address (URI). Every entry in a Call Routing Table requires a Transformation Table. In addition, Transformation tables will be configurable as a reusable pool by Action Set Table.

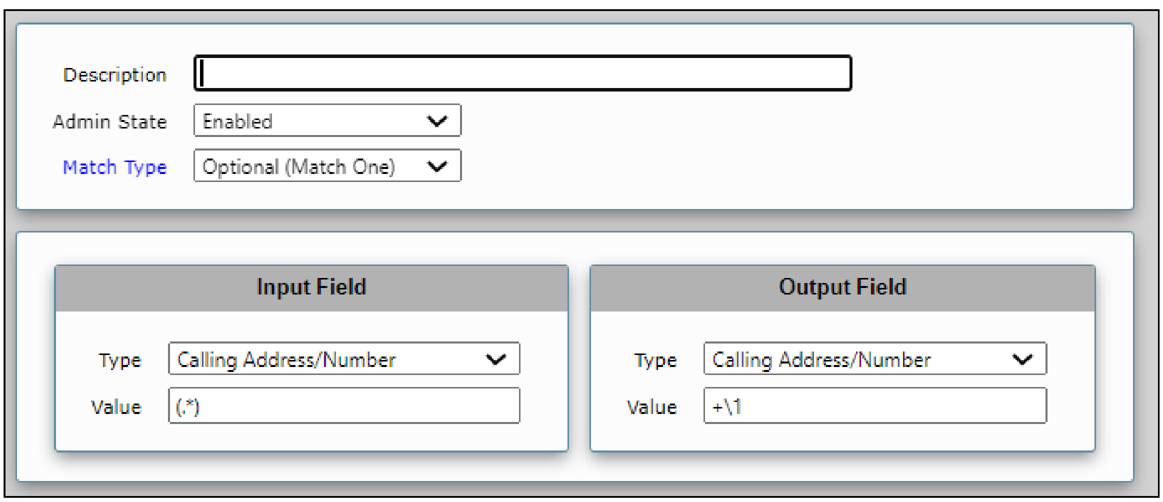
Select **Settings > Transformation** to access the Transformation configuration screen.

Figure 13: Vodafone Media Transformation

Figure 14: CUCM Media Transformation





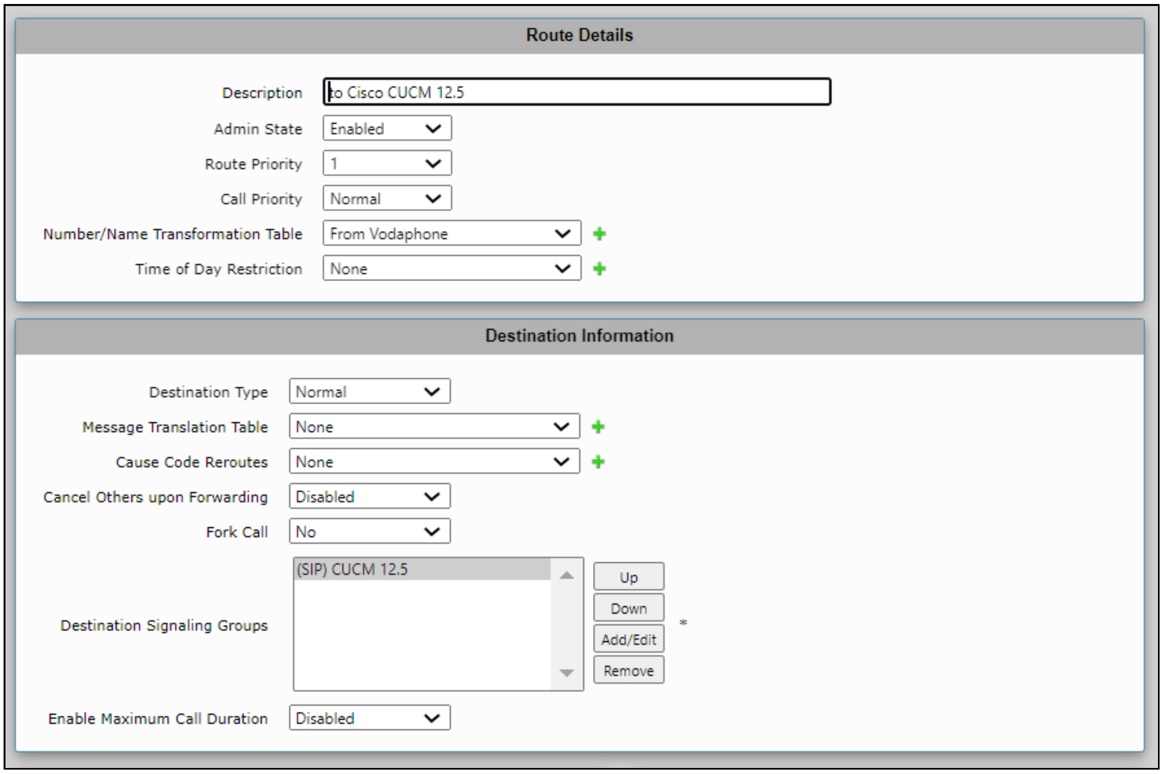


8. Call Routing Table

Call Routing allows calls to be carried between signaling groups, thus allowing calls to be carried between ports, and between protocols (like ISDN to SIP). Call Routing Tables define routes. The use of Call Routing Tables allows for the flexible configuration of calls to be carried, and also how the calls are translated. These tables are one of the central connection points of the system, linking Transformation Tables, Message translations, Cause Code Reroutes, Media Lists and the three types of Signaling Groups (ISDN, SIP and CAS).

Select **Settings > Call Routing Table** to access the Call Routing Table configuration screen.

Figure 15: Vodafone Media Call Routing



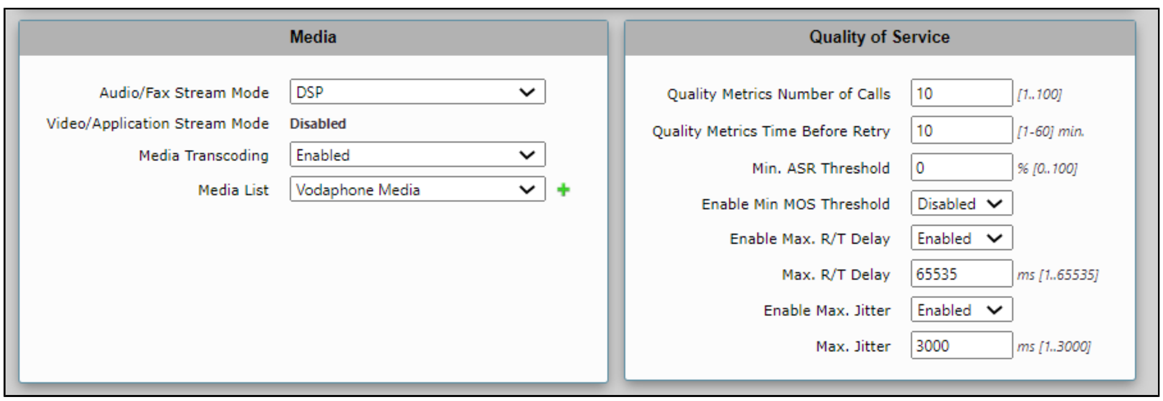
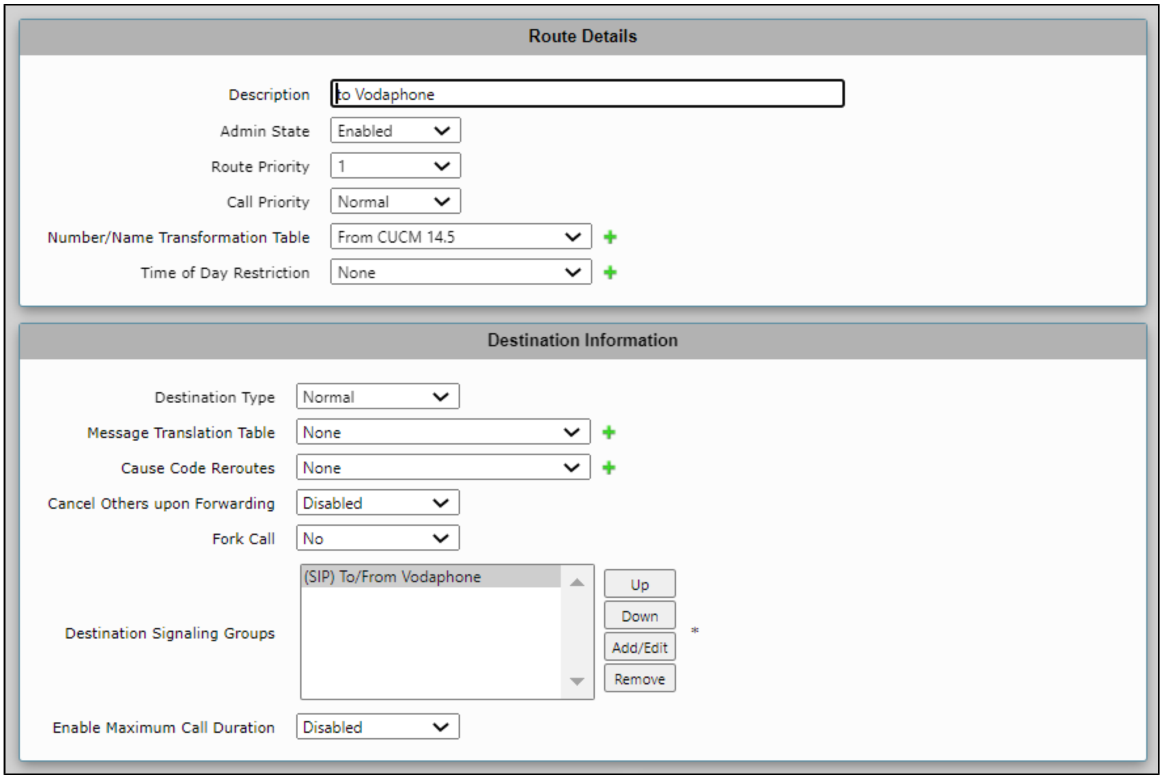
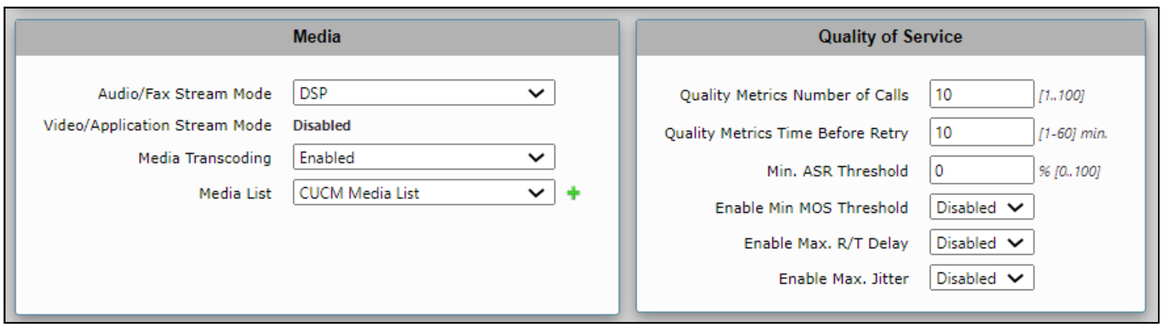


Figure 16: CUCM Media Call Routing





Section-B: Cisco Unified Communication Manager 12.5 Configuration

CUCM Configuration

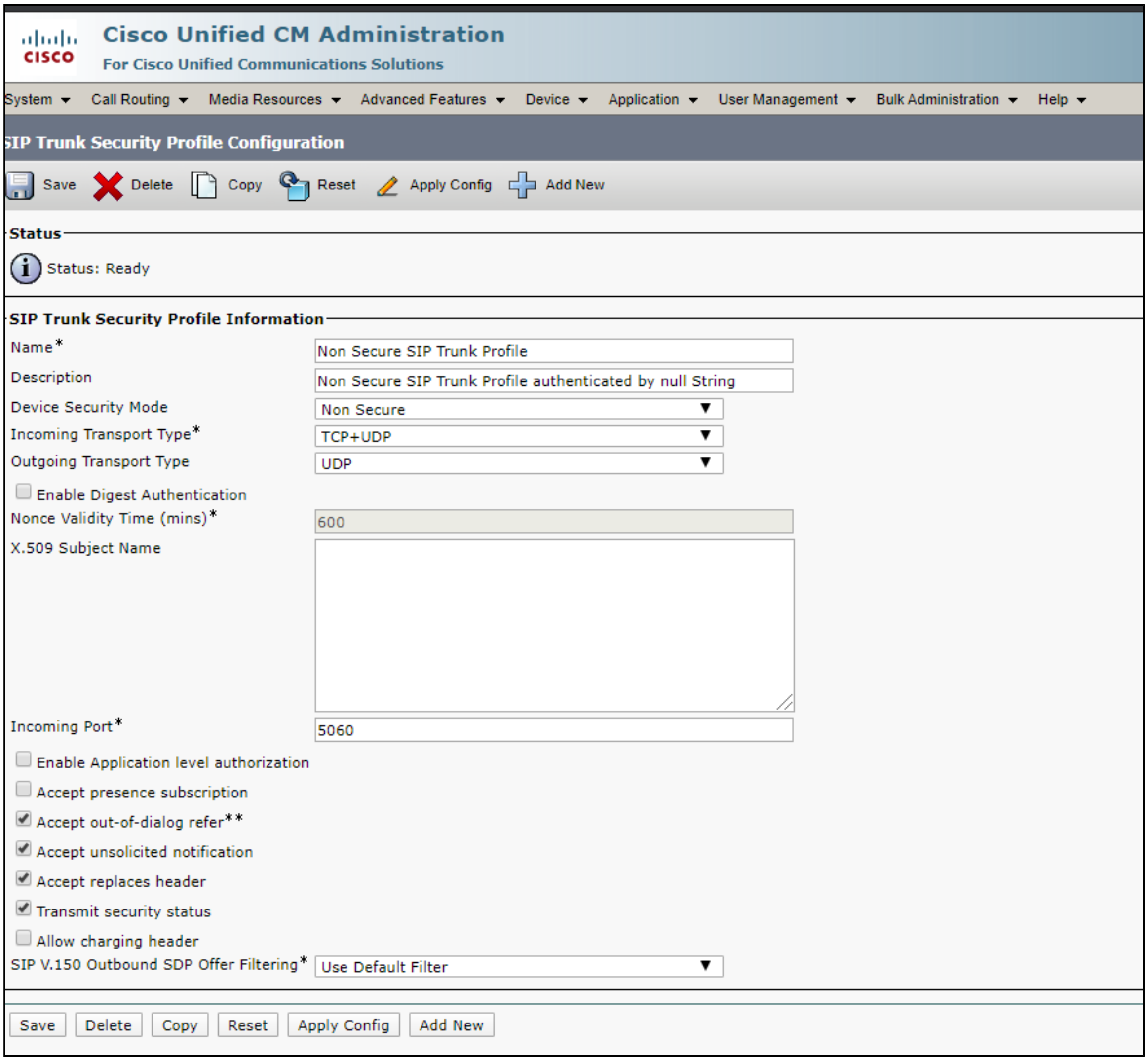
The following new configurations are included in this section:

1. Security Profile
2. SIP Profile
3. SIP Trunk
4. Route Group
5. Route List
6. Route Pattern

1. Security Profile

Select **System > Security > SIP Trunk Security Profile**

Figure 17: SIP Trunk Security Profile



2. SIP Profile

Select **Device > Device Settings > SIP Profile**

Figure 18: SIP Profile

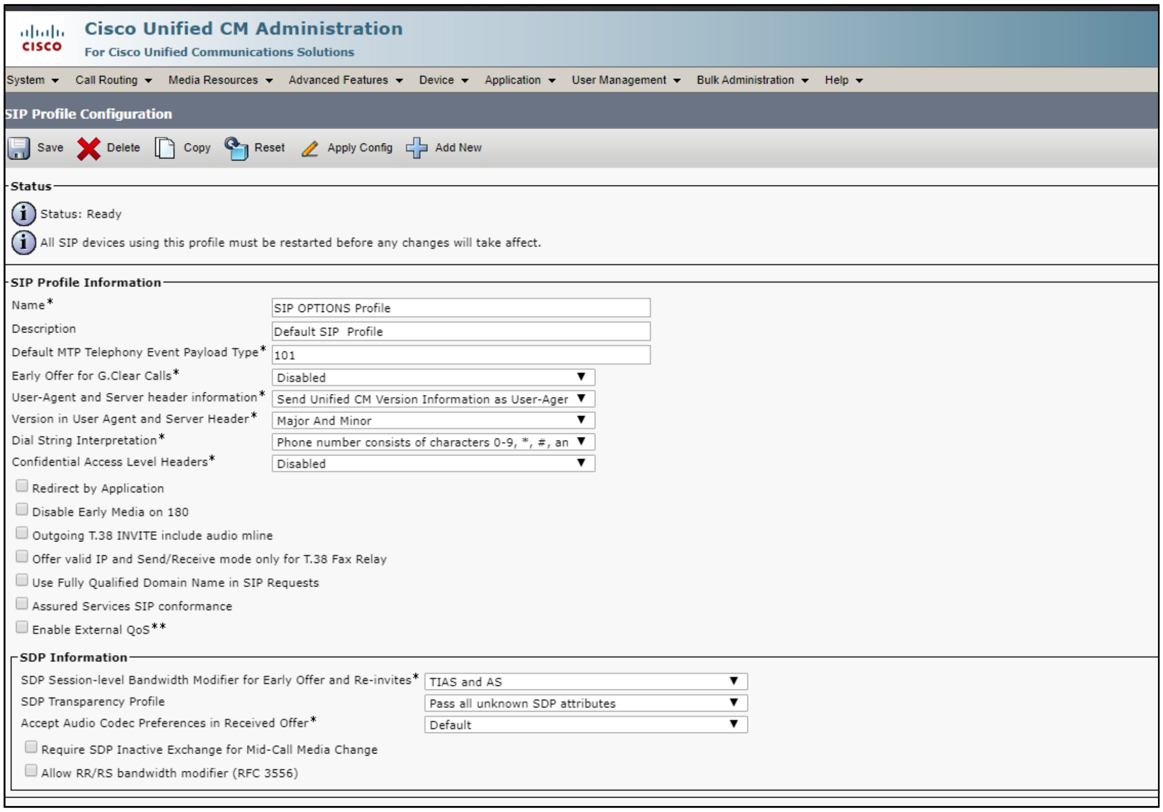


Figure 19: SIP Profile1

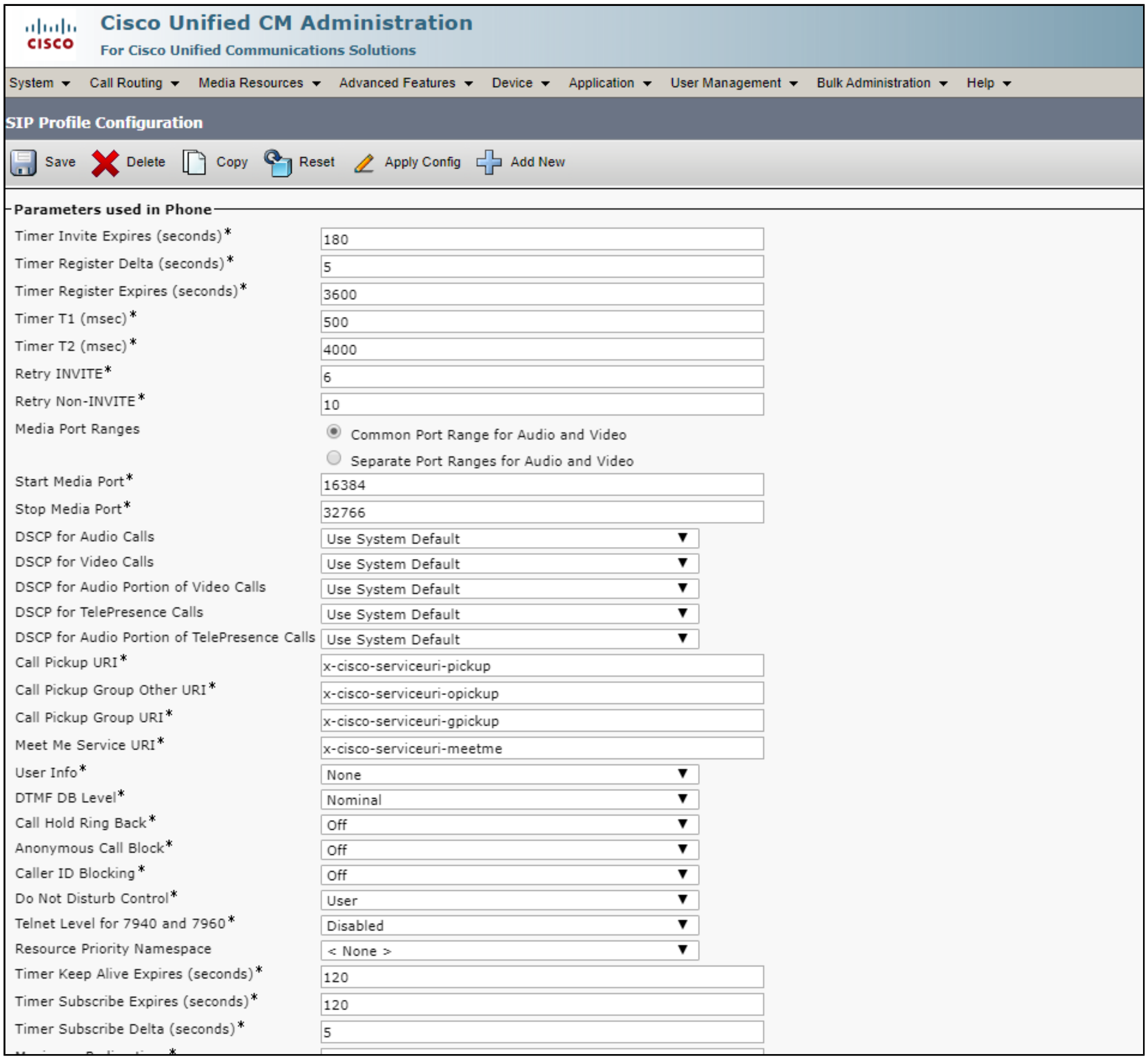


Figure 20: SIP Profile2

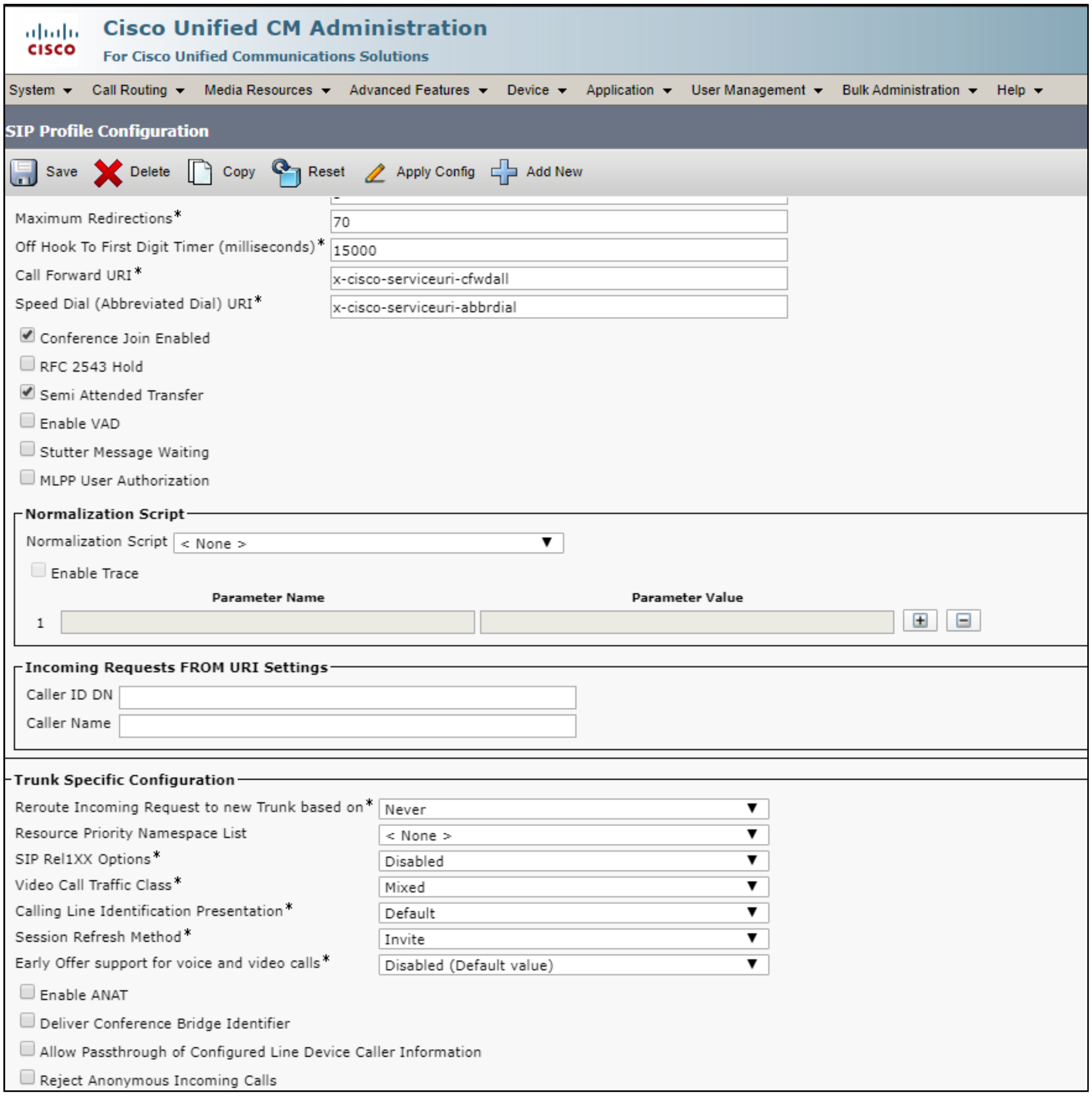
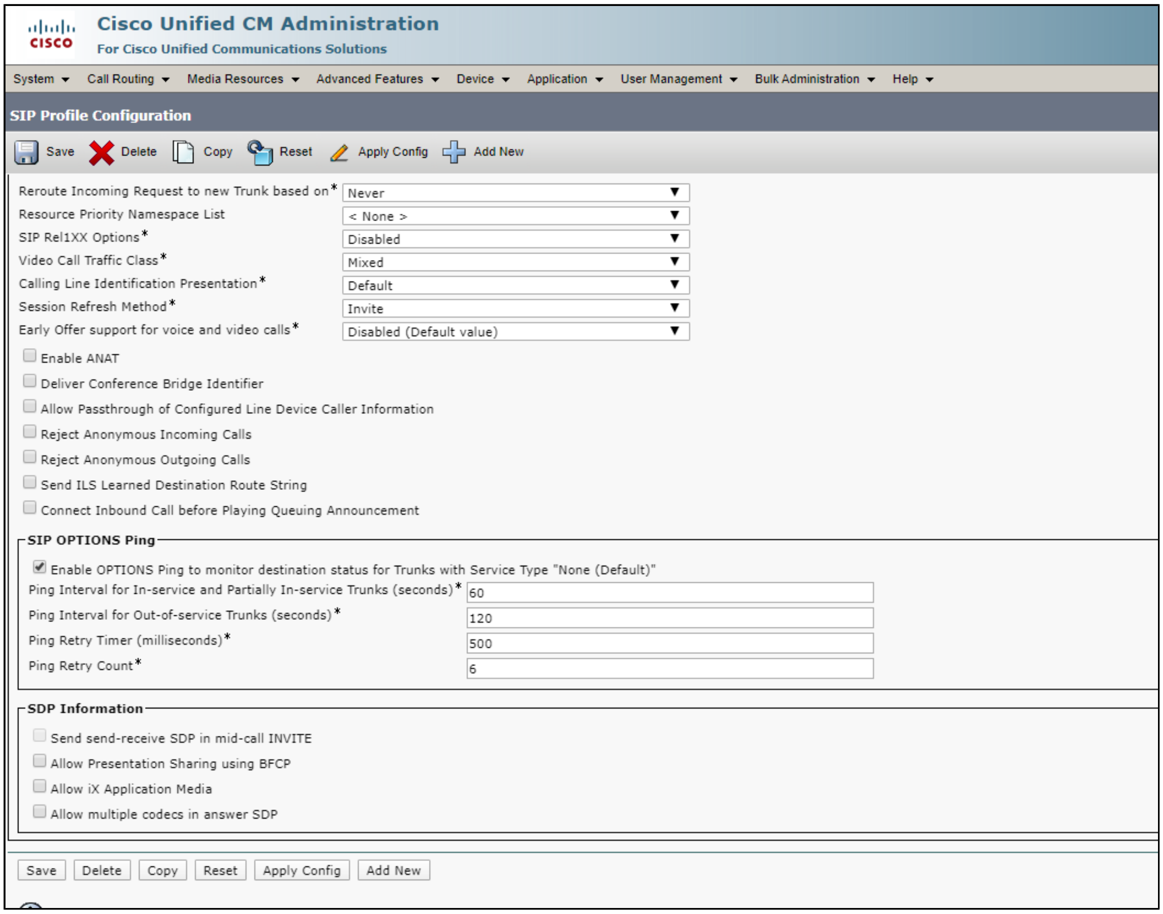


Figure 21: SIP Profile3



3. SIP Trunk

Select **Device > Trunk > Add New**

Figure 22: SIP Trunk

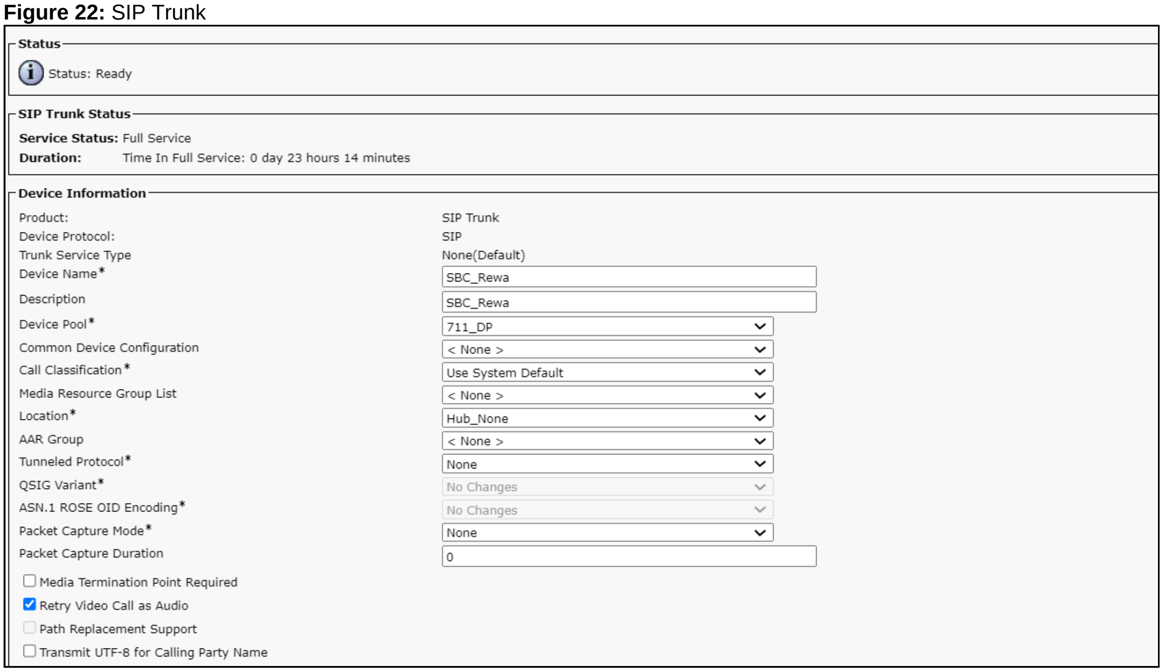


Figure 23: SIP Trunk 1

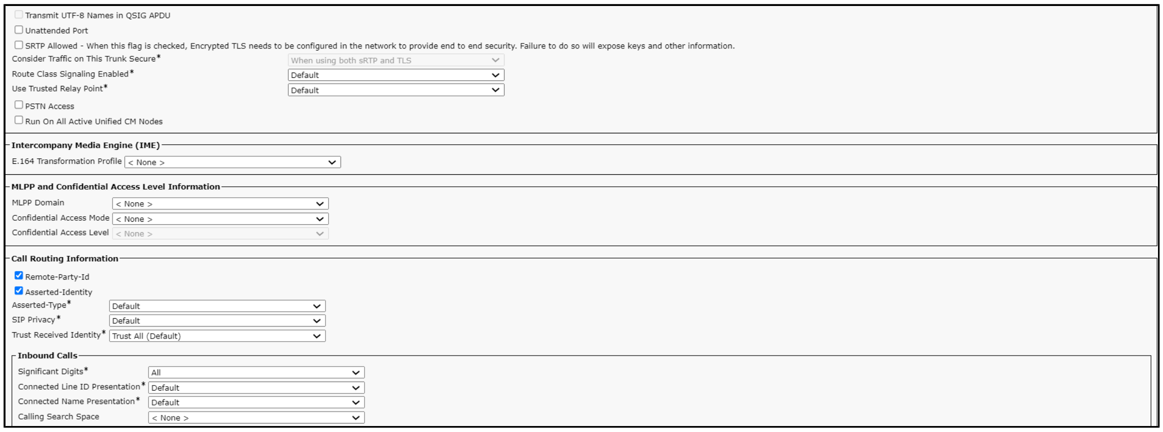


Figure 24: SIP Trunk 2

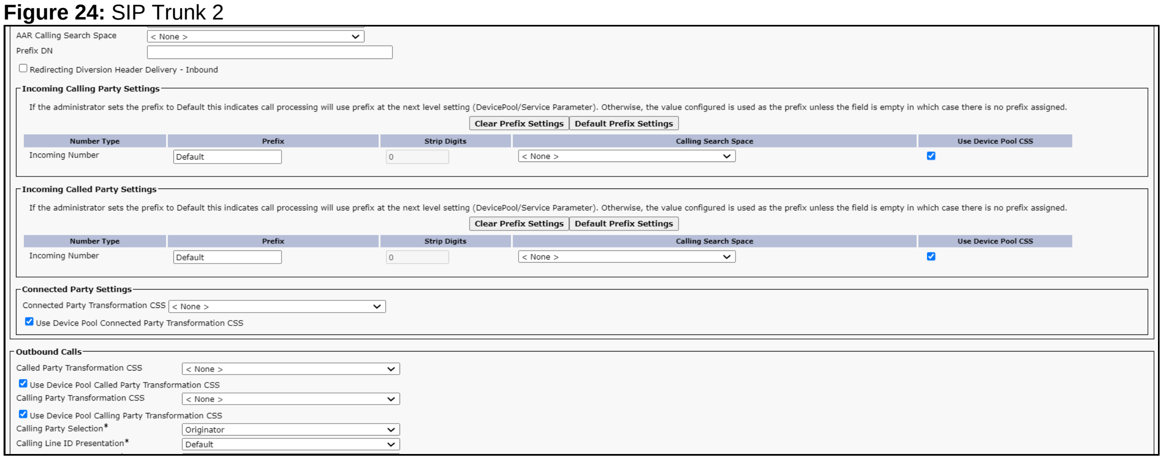


Figure 25: SIP Trunk 3

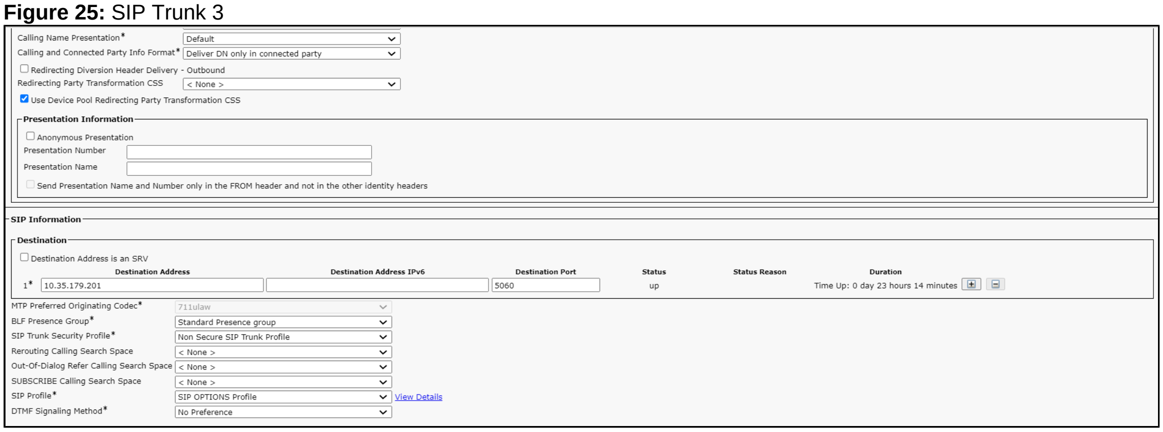
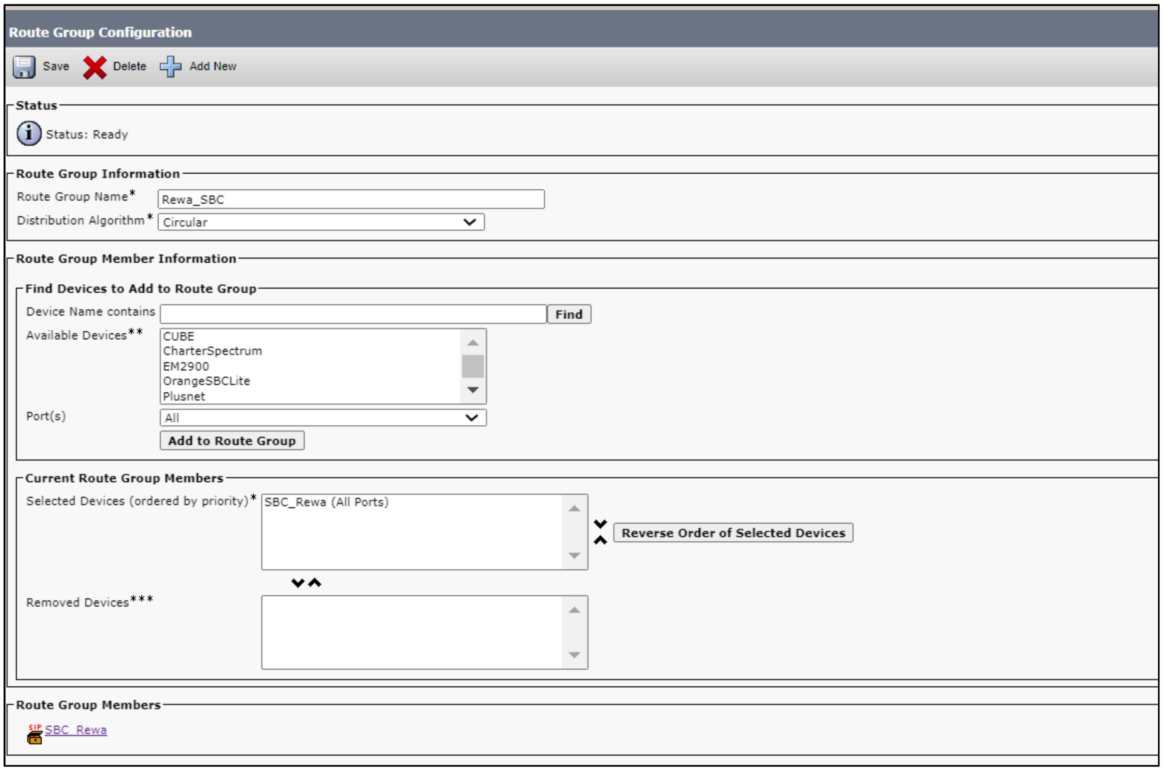


Figure 26: SIP Trunk 4

4. Route Group

Select **Call Routing > Route/Hunt > Route Group > Add New**

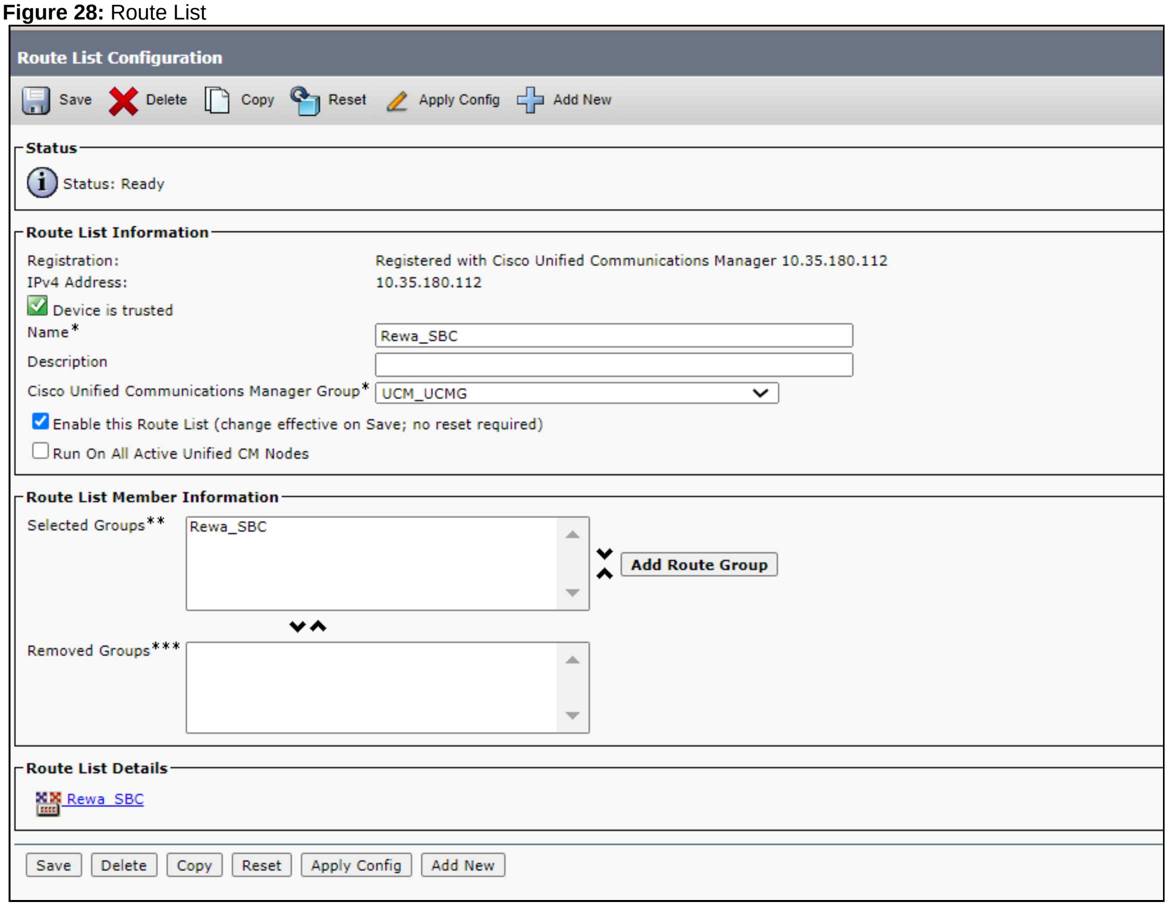
Figure 27: Route Group



5. Route List

Select **Call Routing > Route/Hunt > Route List > Add New**

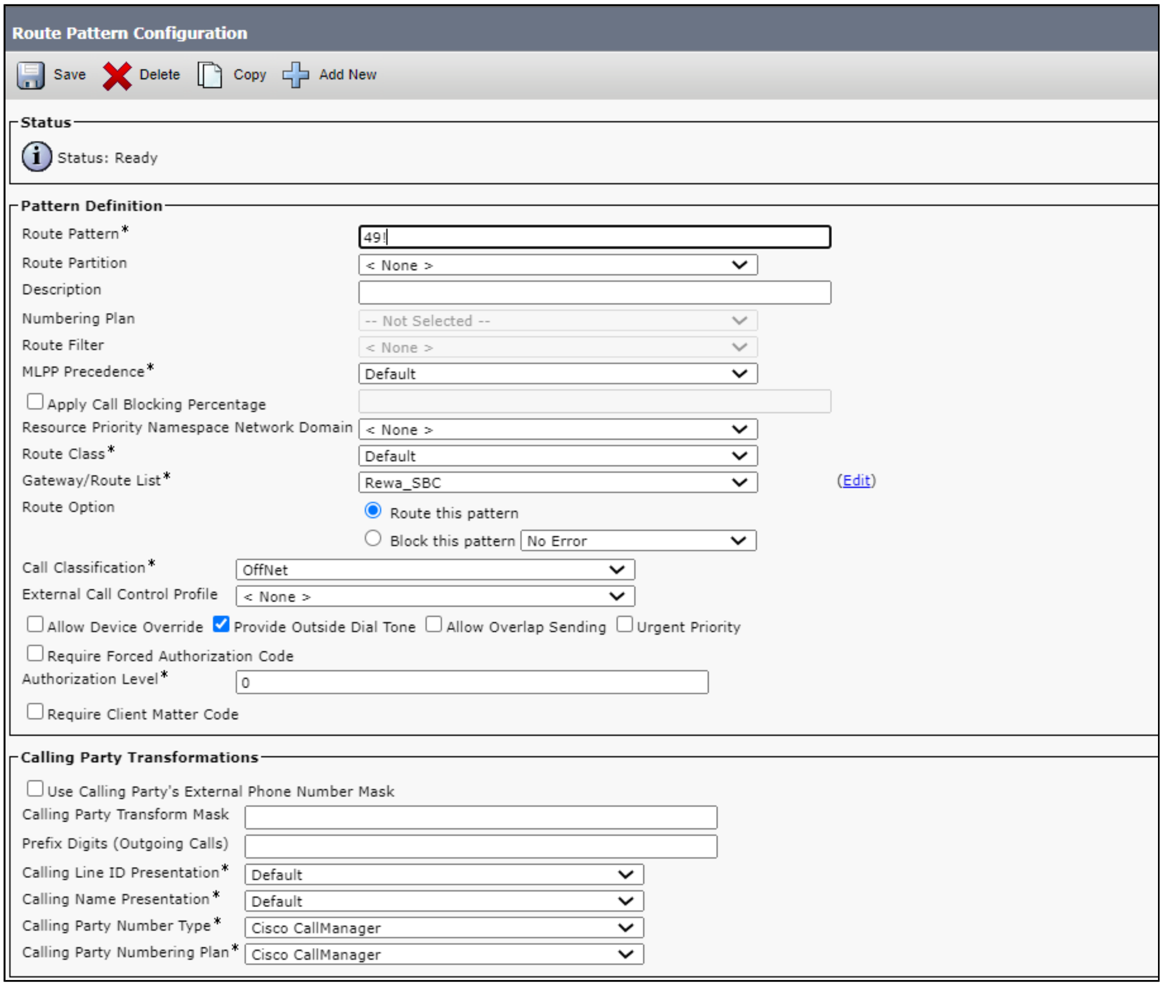
Figure 28: Route List

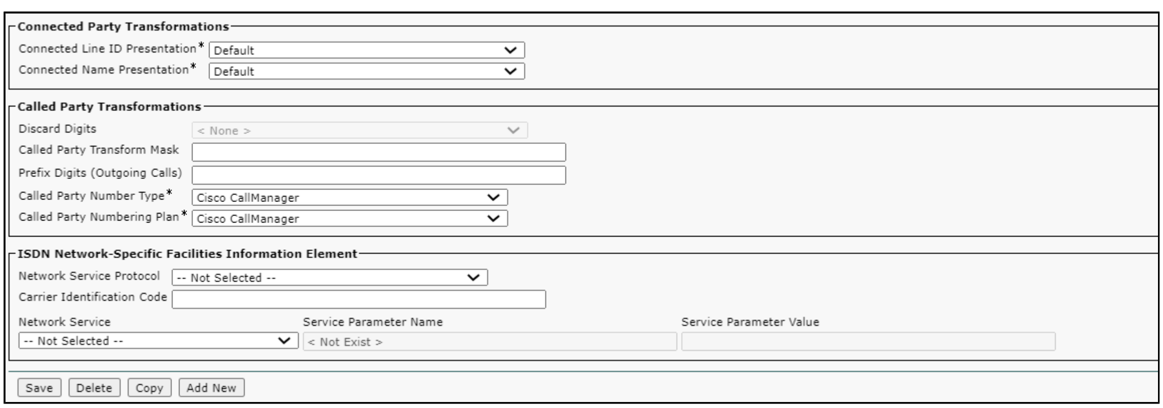


6. Route Pattern

Select **Call Routing > Route/Hunt > Route Pattern > Add New**

Figure 29: Route Pattern





Supplementary Services and Features Coverage

The following checklist identifies the set of supplementary services/features supported through the configuration defined in this Interoperability document.

Sr. No.	Supplementary Services/Features	Supported

1.1	Outgoing call CLIP	✓
1.2	Incoming call CLIP	✓
1.3	Emergency call 113 (Vodafone emergency number) CLIP	✓
1.4	Outgoing existing call: A hangs up	✓
1.5	Outgoing existing call: B hangs up	✓
1.6	Incoming existing call: A hangs up	✓
1.7	Incoming existing call: B hangs up	✓
1.8	Outgoing call: B rejects	✓
1.9	Outgoing call: B does not answer	✓
1.10	Outgoing call: B busy	✓
1.11	Outgoing call: B DND	✓
1.12	Outgoing call: A hangs up	✓
1.13	Incoming call: B rejects	✓
1.14	Incoming call: B does not answer	✓
1.15	Incoming call: B busy	✓
1.16	Incoming call: B DND	✓
1.17	Incoming call: A hangs up	✓
1.18	Outgoing call: A puts B on hold	✓
1.19	Outgoing call: A retrieves B	✓
1.20	Outgoing call: B puts A on hold	✓
1.21	Outgoing call: B retrieves A	✓
1.22	Incoming call: A puts B on hold	✓
1.23	Incoming call: A retrieves B	✓
1.24	Incoming call: B puts A on hold	✓
1.25	Incoming call: B retrieves A	✓
1.26	Call forwarding	✓
1.27	Conference Call	✓
1.28	Outgoing call CLIR	✓
1.29	Incoming call CLIR	✓
1.30	Emergency call 113 (Vodafone emergency number) CLIR	✓
1.31	Outgoing call CLIP No Screening	✓
1.32	Emergency 113 (Vodafone emergency number) CLIP No Sceening	✓

1.33	DTMF outgoing call: from A to B	✔
1.34	DTMF outgoing call: from B to A	✔
1.35	DTMF incoming call: from A to B	✔
1.36	DTMF incoming call: from B to A	✔
1.37	COLP No Screening	✔
1.39	COLR	✔

Legend

Supported	✔
Not Supported	✘

Caveats

The following items should be noted in relation to this Interop document. These are either limitations, untested elements, or useful information pertaining to the Interoperability.

- Not Caveats.

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 Interoperability document describes a successful configuration and interop involving Ribbon SBC 1000/2000 and Cisco Unified Communication Manager 12.5.

All features and capabilities tested are detailed within this document. Any limitations, notes or observations are also recorded to provide the reader with an accurate understanding of what has been covered, and what has not.

Configuration guidance is provided to enable the reader to replicate the same base setup - there may be additional configuration changes required that are specific to the exact deployment environment.