Ribbon SBC Edge SWe Lite R9.0 Interop with Anywhere365 and Microsoft Teams Direct Routing : Interoperability Guide

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Interoperable Vendors

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Document Overview

This document depicts the configuration details for Ribbon's SBC SWe Lite interworking & compliance with Anywhere365 and Microsoft Teams.

About Ribbon SBC SWe Lite

The Ribbon Session Border Controller Software Edition Lite (SBC SWe Lite) provides best-in class communications security. The SBC SWe Lite dramatically simplifies the deployment of robust communications security services for SIP Trunking, Direct Routing, and Cloud UC services. SBC SWe Lite operates natively in the Azure and AWS Cloud as well as on virtual machine platforms including Microsoft Hyper-V, VMware and Linux KVM.

About Anywhere365

Anywhere365 Contact Center and Enterprise Dialogue Management is able to leverage the capabilities ofMicrosoft Teams to route calls to Teams powered agents with all the rich features of Anywhere365, such as:Call recording, Real-time Translation, IVR, Supervisor, Reporting, Wallboards and many more.

Scope

This document provides configuration best practices for deploying Ribbon SBC SWe Lite when connecting with Anywhere365 and Microsoft Teams. Note that these are configuration best practices, and each customer may have unique needs and networks. Ribbon recommends that customers work with network design and deployment engineersto establish the network design which best meets their requirements.

Non-Goals

It is not the goal of this guide to provide detailed configurations that will meet the requirements of every customer. Usethis 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 SBC and the third-party product. Navigating the third-party product as well as the Ribbon Ribbon SBC Edge GUI is required. Understanding the basic concepts of TLS/TCP/UDP, IP/Routing, SIP/RTP and SIP/SRTP is also necessary to complete the configuration and any required troubleshooting.

Prerequisites

The following aspects are required before proceeding with the interop:

- Ribbon SBC SWe Lite on VMware
- SBC SWe Lite License
- Public IP Addressesand Port
- Anywhere365SIP trunks
    - Contact Anywhere365 for Domain, IP and Port information
- TLSCertificatesfor SBC SWe Lite

- For details refer "License and TLS Certificates"section in the document

> **Note**
> During this interop, the SIP trunk between Anywhere365 and Ribbon SBC SWe Lite has been configured with TLS and SRTP

Product and Device Details

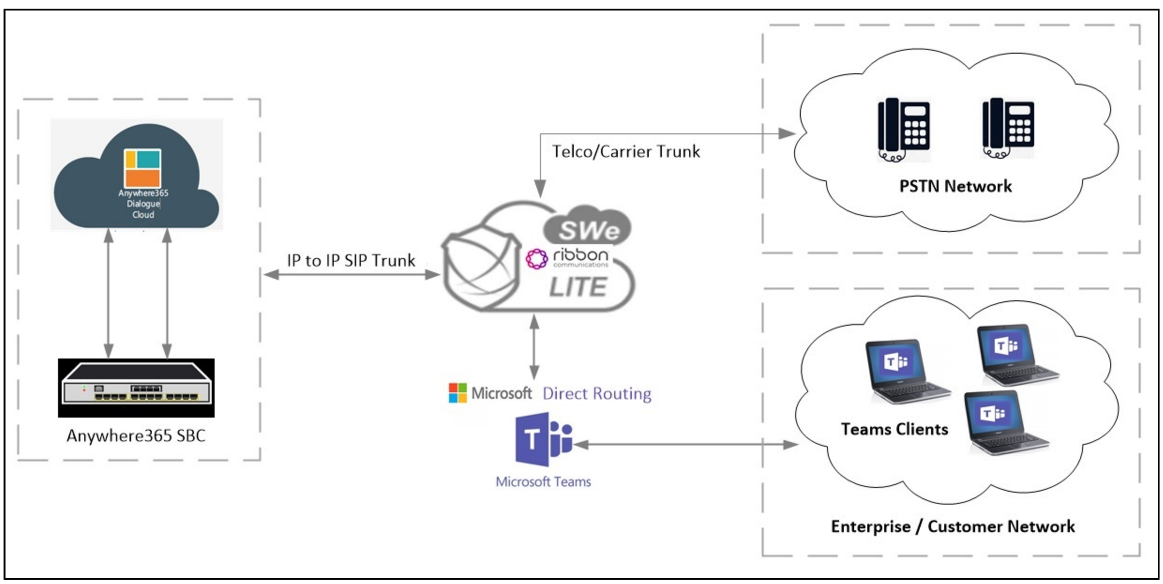
The configuration uses the following equipment and software:

Table 1: Requirements

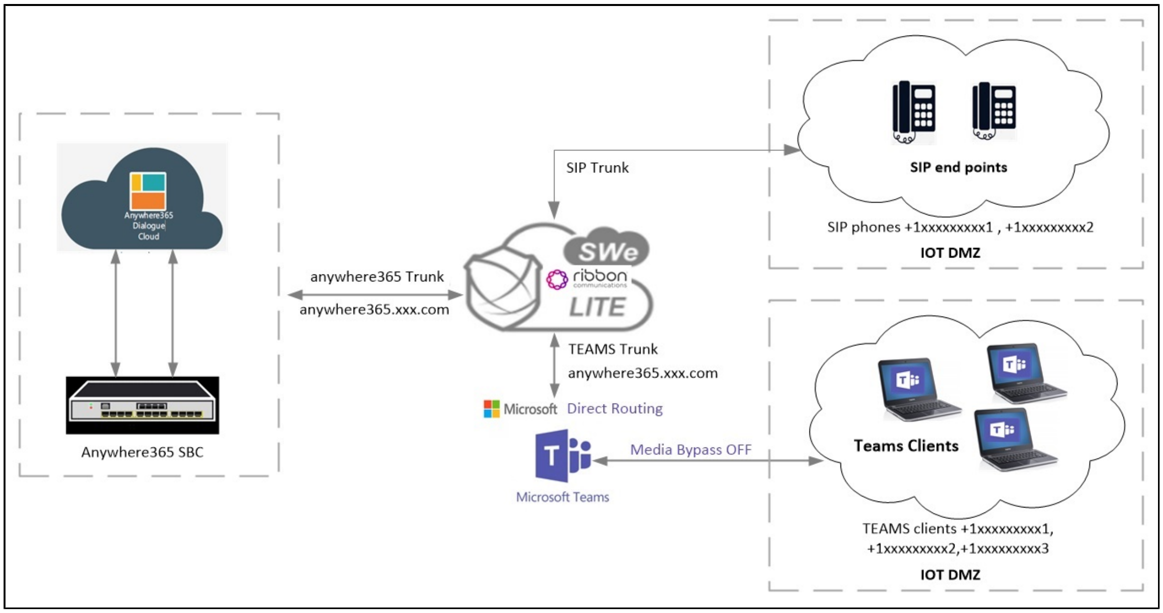
Product	Equipment/ Devices	Software/ Firmware Version
Ribbon Communications	Ribbon SBC SWe Lite	9.0.1
Microsoft Corporation	Microsoft Teams ClientDesktop app	1.4.00.11161
	Microsoft Teams ClientMobile app	1416
Third Party Phones	Kapanga Softphone	1.00
	Phonerlite	2.93
Anywhere365	Anywhere365SIP trunks	NA
Administration and Debugging Tools	Wireshark	3.2.7
	LX Tool	2.1.0.6

Network Topology

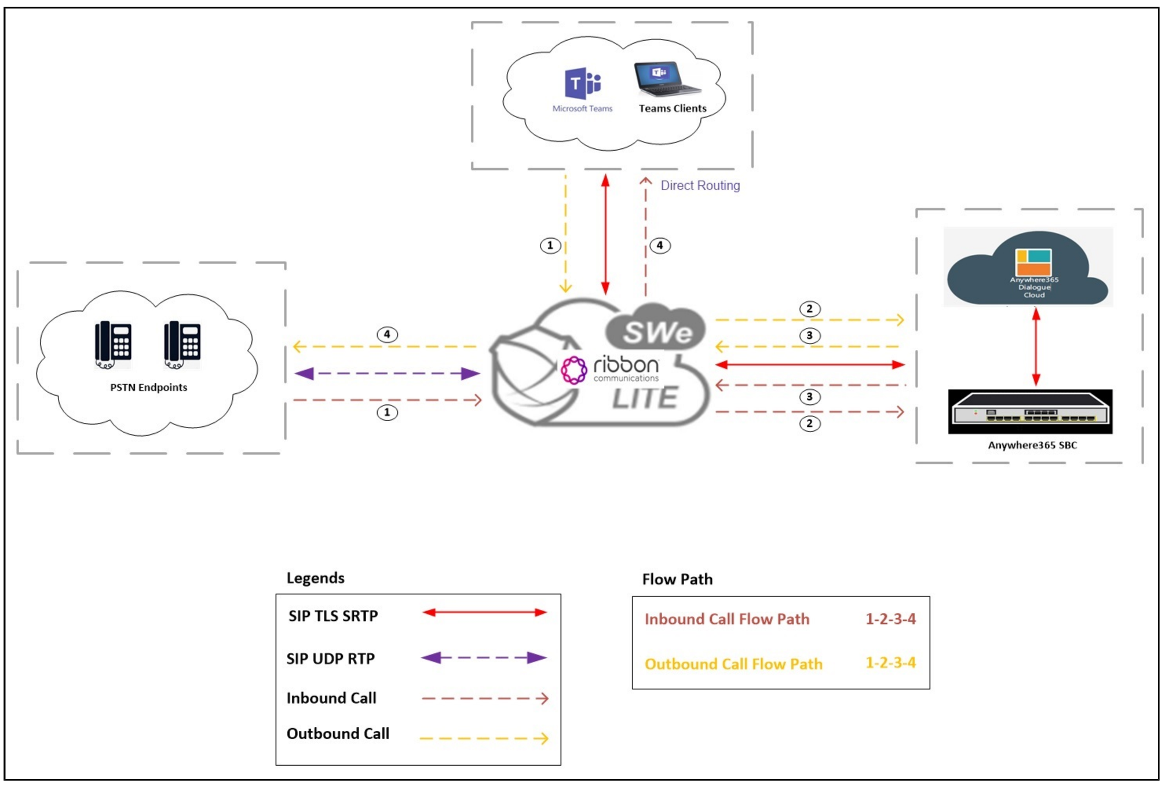
Deployment Topology



IOT Lab Topology

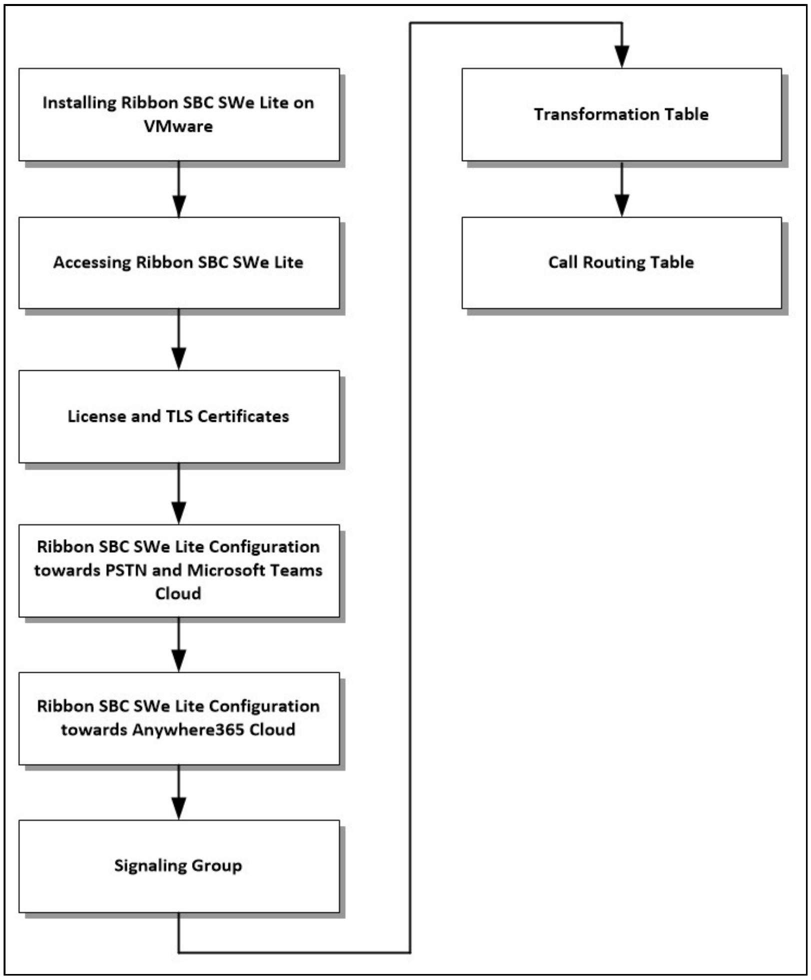


Signaling and Media Flow



Document Workflow

The sections in this document follow the sequence below. The reader is advised to complete each section for the successful configuration.



Section A: Ribbon SBC SWe Lite Configuration

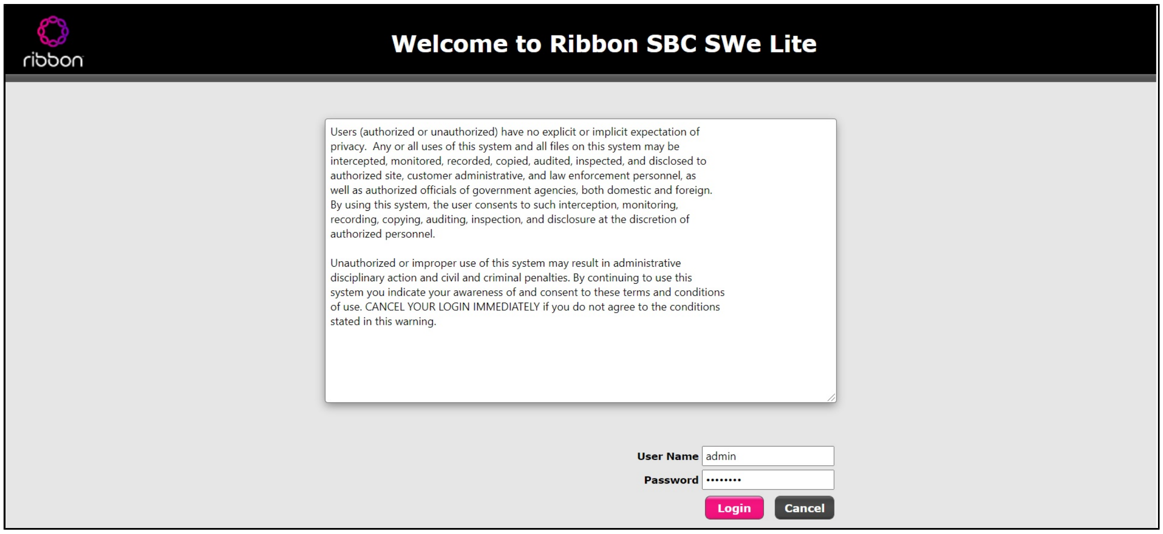
Installing Ribbon SBC SWe Lite on VMware

The SBC SWe Lite is available for deployment on VMware. To deploy an SBC SWe Lite instance, refer tohttps://doc.rbbn.com/display/UXDOC90/Installing+SBC+SWe+Lite+on+VMware+ESXi. Once SWe Lite instance is successfully created on VMware, retrieve the allocated NAT Public IPs, Ethernet IPs and Management IP. For more details, visit the link given in the References section.

Accessing Ribbon SBC SWe Lite

Open any browser and enter the SBC IP address.

Click**Enter**and log in with a valid User ID and Password.

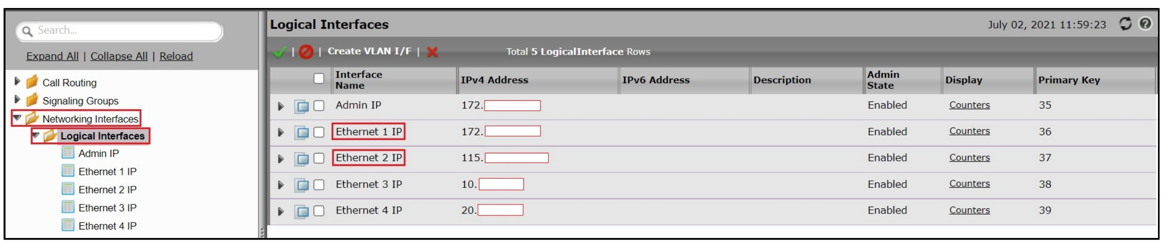


Networking Interfaces Information

The Ribbon SBC SWe Lite supports five system created logical interfaces (known as**Administrative IP**,**Ethernet 1 IP**,**Ethernet 2 IP**,**Ethernet 3 IP**, and**Ethernet 4 IP**). In addition to the system created logical interfaces, the Ribbon SBC SWe Lite supports user-created VLAN logical sub-interfaces.

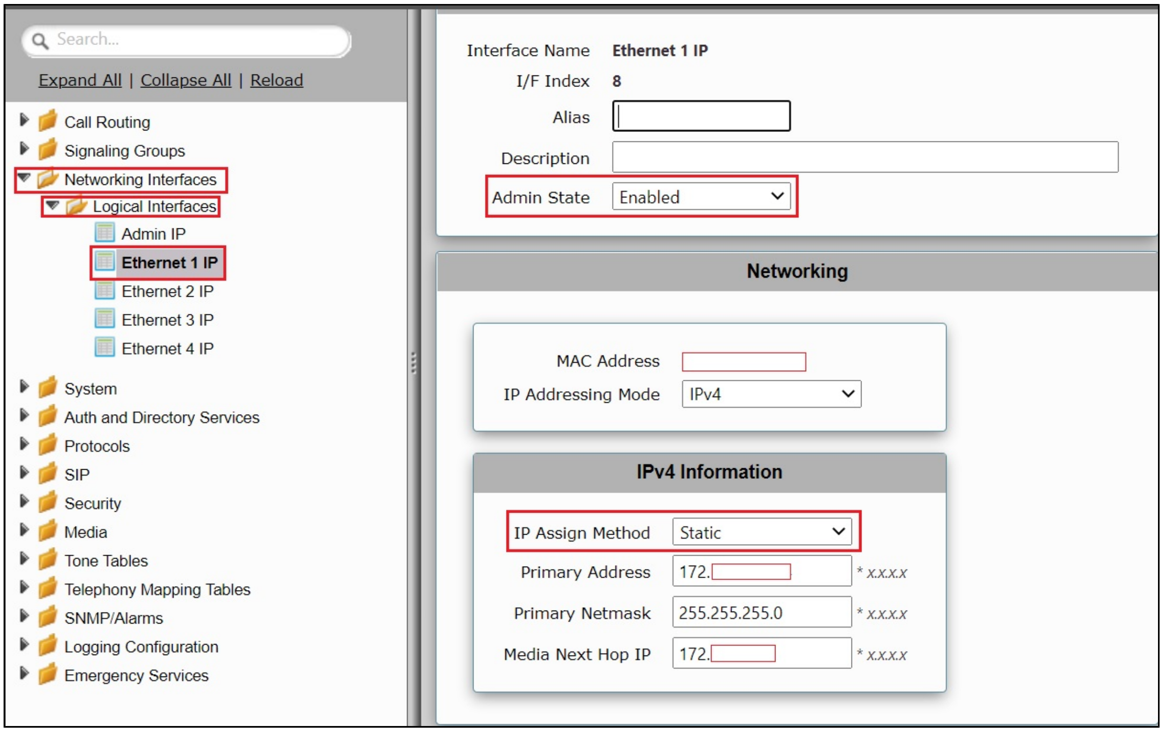
Ethernet 1 IP,Ethernet 2 IP are used for this interop.

From the **Settings**tab, navigate to**Networking Interfaces > Logical Interfaces.**



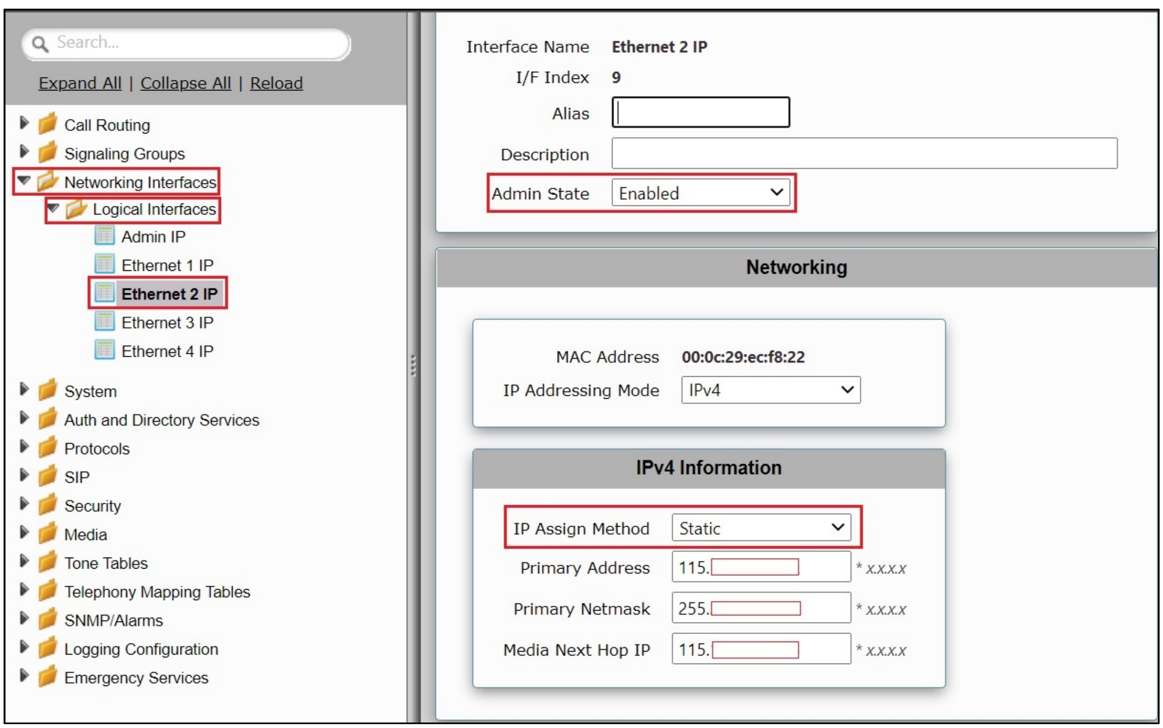
Ethernet 1 IP

Ethernet 1 IPis assigned an IP address used for transporting all the VOIP media packets (for example, RTP, SRTP) and all protocol packets (for example, SIP, RTCP, TLS). In the default software,**Ethernet 1 IP**is enabled, and an IPv4 address is acquired through a connected DHCP server or you can assign a static IP as well.



Ethernet 2 IP

Configure this Ethernet 2 interface as follows as per the requirement. This interface will face the Anywhere365 and Microsoftteams interface.



Configure Static Routes

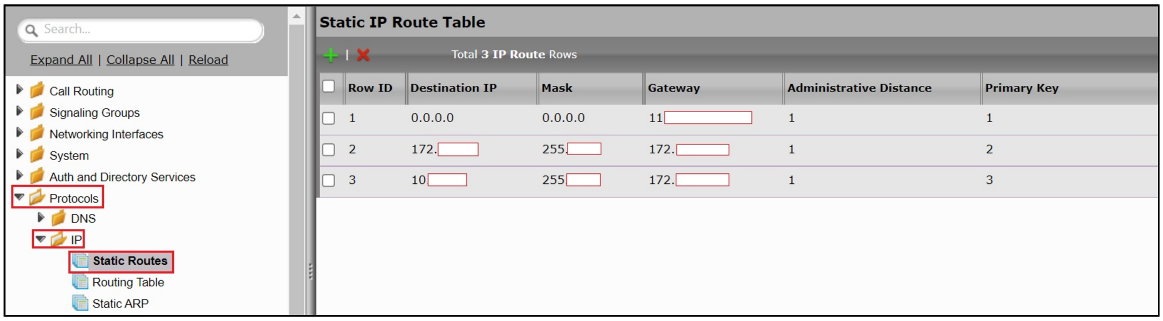
Static routes are used to create communication to remote networks. In a production environment, static routes are mainly configuredfor routing from a specific network to another network that you can only access through one point or one interface (single path access ordefault route).

Destination IP
Specifies the destination IP address.

Mask
Specifies the network mask of the destination host or subnet. If the 'Destination IP Address' field and 'Mask' field are both 0.0.0.0, the static route is called the 'default static route'.

Gateway
Specifies the IP address of the next-hop router to use for this static route.

Metric
Specifies the cost of this route, and therefore indirectly specifies the preference of the route. Lower values indicate more preferred routes. The typical value is 1 for most static routes, indicating that static routes are preferred to dynamic routes.

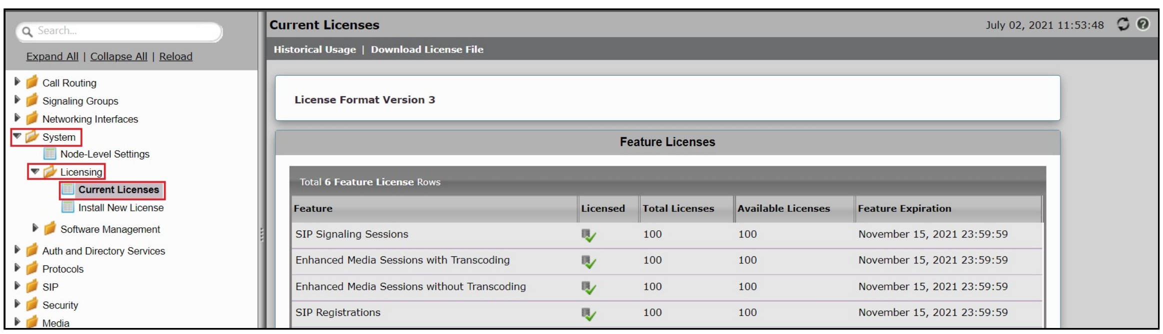


License and TLS Certificates

View License

This section describes how to view the status of each license along with a copy of the license keys installed on your SBC.The**Feature Licenses**panel enables you to verify whether a feature is licensed, along with the number of remaining licenses available for a given feature at run-time.

From the **Settings**tab, navigate to**System > Licensing > Current Licenses.**

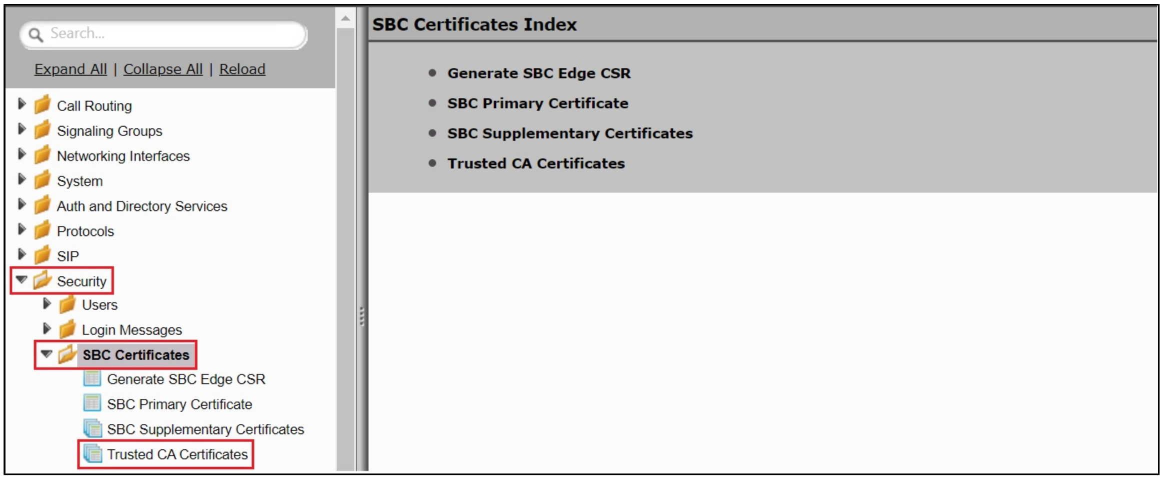


For more details on Licenses, refer toRibbon SBC SWe Lite Licenses.

Import Trusted Root CA Certificates

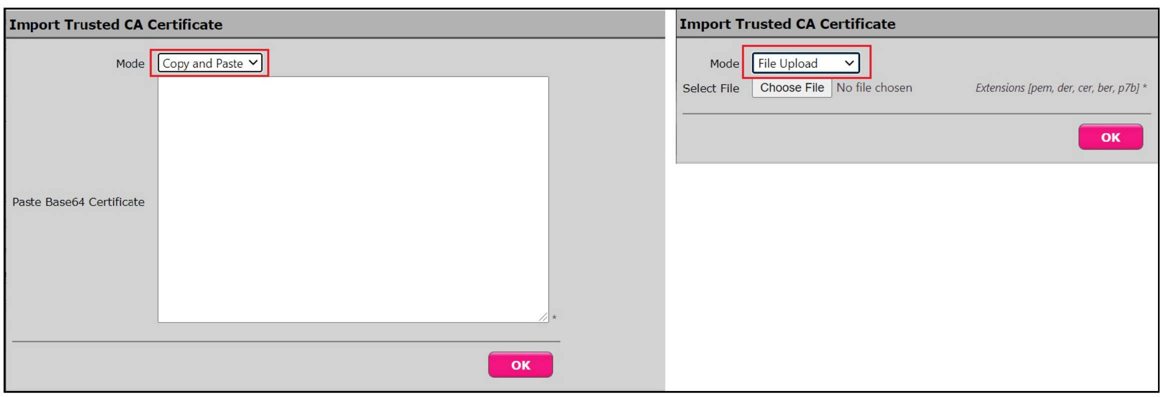
A Trusted CA Certificate is a certificate issued by a trusted certificate authority. Trusted CA Certificates are imported to the SBC SWe Lite to establish its authenticity on the network.

From the**Settings**tab, navigate to**Security > SBC Certificates > Trusted CA Certificates.**



This section describes the process of importing Trusted Root CA Certificates, using either theFile UploadorCopy and Pastemethods.

1. To import a Trusted CA Certificate, click the Import Trusted CA Certificate ( ) Icon.
2. Select eitherCopy and PasteorFile Uploadfrom the**Mode**menu.
3. If you choose**File Upload**, use the**Select File**button to find the file.
4. Click**OK**.



Follow the steps above to import certificates for this interop.

> **Note**
> Anywhere365 certificates:https://sectigo.com/resource-library/sectigo-root-intermediate-certificate-files
>
> For this interop certificateshas been downloaded using the link above.

For the root chain, see the following information:

- **Intermediate 1:**
  CN = Sectigo RSA Domain Validation Secure Server CA
  Serial number: 7d5b5126b476ba11db74160bbc530da7
- **Intermediate 2:**
  CN = USERTrust RSA Certification Authority
  Serial number: 3972443af922b751d7d36c10dd313595
- **RootCa:**
  CN = AAA Certificate Services
  Serial number: 01

For more details on Certificates, refer toWorking with Certificates.

> **Note**
> When the**Verify Status**field in the Certificate panel indicates Expired or Expiring Soon, replace the Trusted CA Certificate. You must delete the old certificatebefore importing a new certificate successfully.

> **Note**
> Most Certificate Vendors sign the SBC Edge certificate with an intermediate certificate authority. There is at least one, but could be several intermediate CAs in the certificate chain. When importing the Trusted Root CA Certificates, import the root CA certificate and all Intermediate CA certificates. Failure to import all certificates in the chain causes the import of the SBC Edge certificate to fail. Refer toUnable To Get Local Issuer Certificatefor more information.

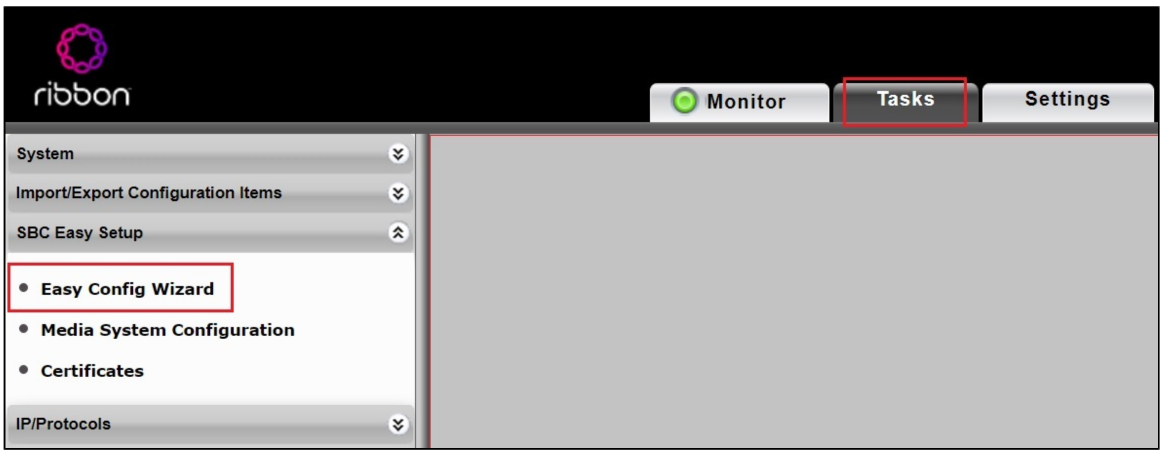
Ribbon SBC SWe Lite Configuration towards PSTN and Microsoft Teams Cloud

This configuration uses web-based Easy Configuration Wizard for quick start provisioning towards the PSTN/carrier network as well as towards Microsoft Teams cloud.

Access the Easy Configuration Wizard

1. In the WebUI, click the**Tasks**tab.
2. In the left navigation pane, navigate to**SBC Easy Setup > Easy Config Wizard.**The Easy Configuration screen opens.

The SBC SWe Lite WebUI provides a built-in Easy Configuration wizard that lets you quickly and easily deploy the SBCfor operation with provider endpoints (SIP trunk, ISDN PSTN trunk, or IP PBX trunk) and user endpoints (Microsoft Teams, Microsoft On Premises - Skype for Business/Lync, IP Phones, or ISDN PBX or IP PBX).



Navigating the Wizard

As the wizard runs, it directs you through three configuration steps:

Step 1: Set the following parameters to describe the topology for the telephony service provider and user ends of the scenario.

- **Application**:Click the drop-down arrow, then select the Service Provider and user endpoint types that theSBCis to connect to.
- **Scenario Description**: Type up to32 characters to describe the connectivity scenario.
- **Telephone Country**: Click the drop-down arrow, then select the country where the telephone services operate.
- **Emergency Services**: Choose**ELIN Identifier**,**E911/E112**, or**None**as the emergency services type.
- **SIP Sessions**: Type a number from 1-960 to indicate the SIP sessions to allocate for the scenario.

Step 2: Configure the items required for the endpoints selected, fields display based on the endpoint selection in Step 1.

Step 3: The Easy Config validates the final parameters and displays a read-only summary of the configuration that the wizard will apply when you click **Finish**at Step 3. Before you click**Finish**, you can return to previous steps to make adjustments to the data summarized.

The wizard displays the following buttons for navigation:

- **Previous**: Moves back to the previous step.
- **Next**: Advances to the next step when the current step is validated and complete.
- **Finish**: Submits the data to theSBC.
- **Cancel**:Cancels the Easy Configuration data entered and redirects to the main WebUI.

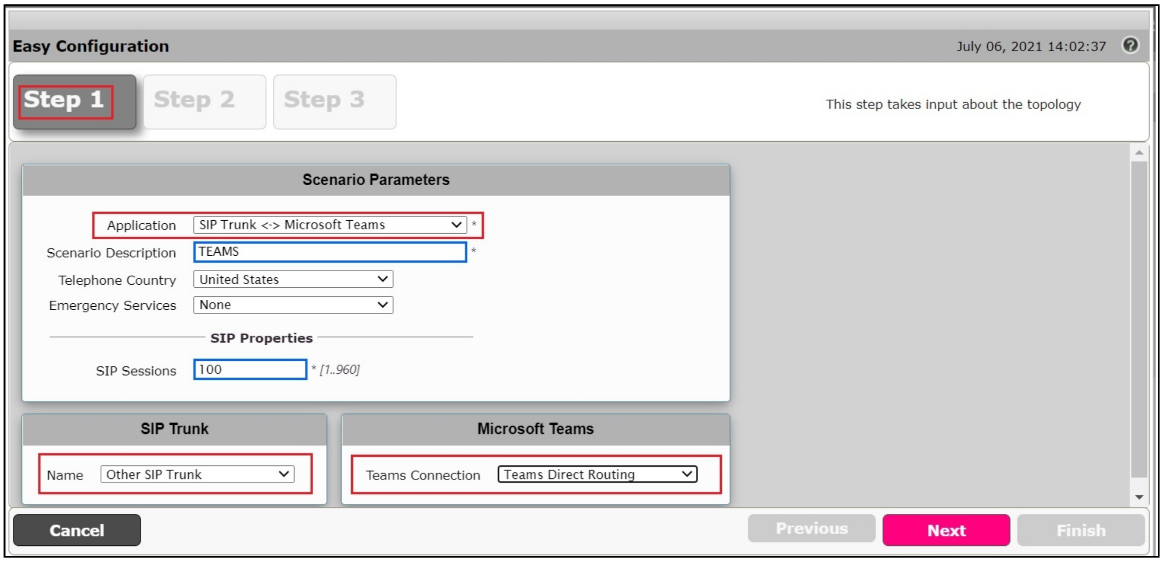
Configure SBC SWe Litefor SIP Trunk and for Microsoft Teams

During this interop:

- Multi-legged approach was used to configure PSTN SIP Trunk and Microsoft Teams (Application: SIP Trunk Microsoft Teams).

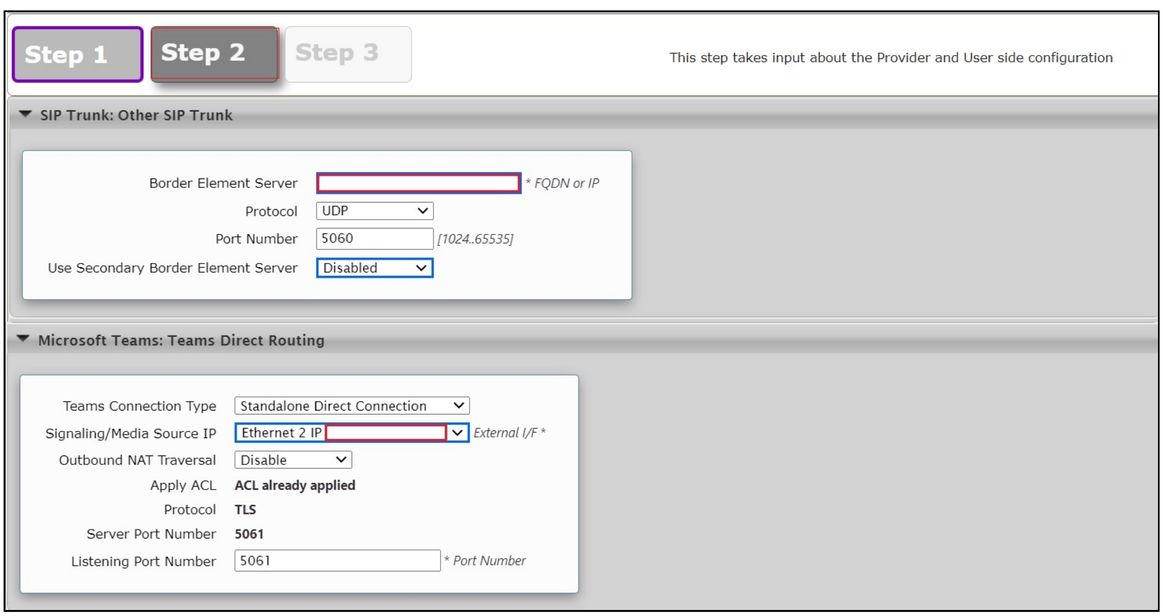
Step 1: Configure SIP trunk along with Microsoft Teams using Multi-legged approach by following the steps below:

1. Choose**SIP Trunk Microsoft Teams**from the Application dropdown.
2. Provide the Description.
3. Select**United States**in the**Telephone Country**field.
4. Type a number from 1-960 against**SIP Sessions**field.
5. Select SIP Trunk Name as **Other SIP Trunk** for SIP Trunk and Microsoft Teams Connection as **Teams Direct Routing**.
6. Click**Next**.



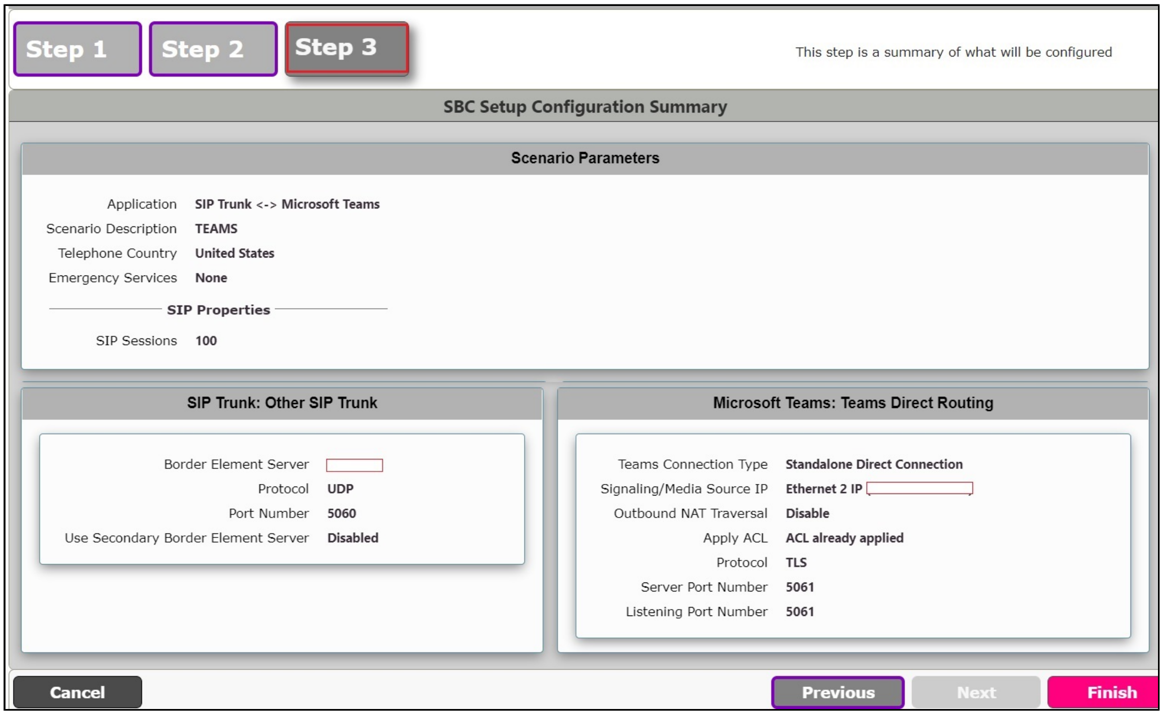
Step 2: After selecting the scenario in Step 1, the following template displays. Complete this step by performing the below actions:

1. Provide the FQDNs for Primary Element servers. The traffic is sent to these FQDNs from the SBC SWe Lite.
2. Use UDP with port number 5060 for SIP trunk configuration.
3. For MS Teams configuration, select the**External interface**(in this case Ethernet 2). After selecting Signaling/Media source IP. Check if the IP is correct and proceed by clicking**Next**.



Step 3: This step displays a read-only summary of the configuration.

1. Check if the information entered in the previous steps is correct. If the information entered is wrong, return to the previous step by clicking**Pre vious**and modify the required field.
2. Click**Finish**to complete the configuration.

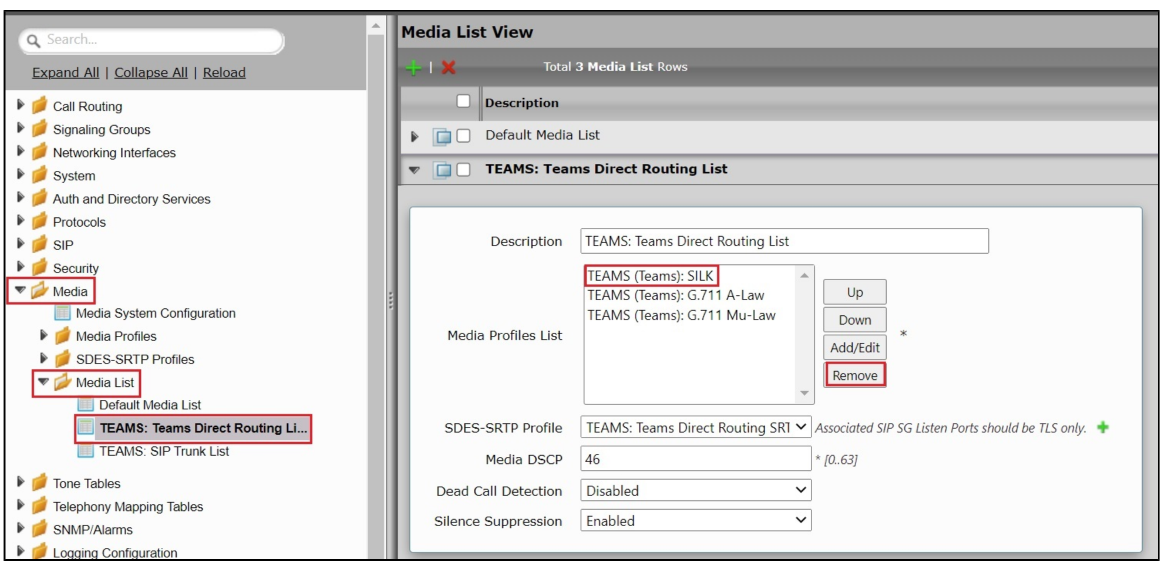


- A pop up window appears once all the 3 steps are completed. Click**OK**to continue.
- Wait for the configuration to complete and click**OK**on the next window. This will complete the configuration of SIP Trunk and Microsoft Teams.

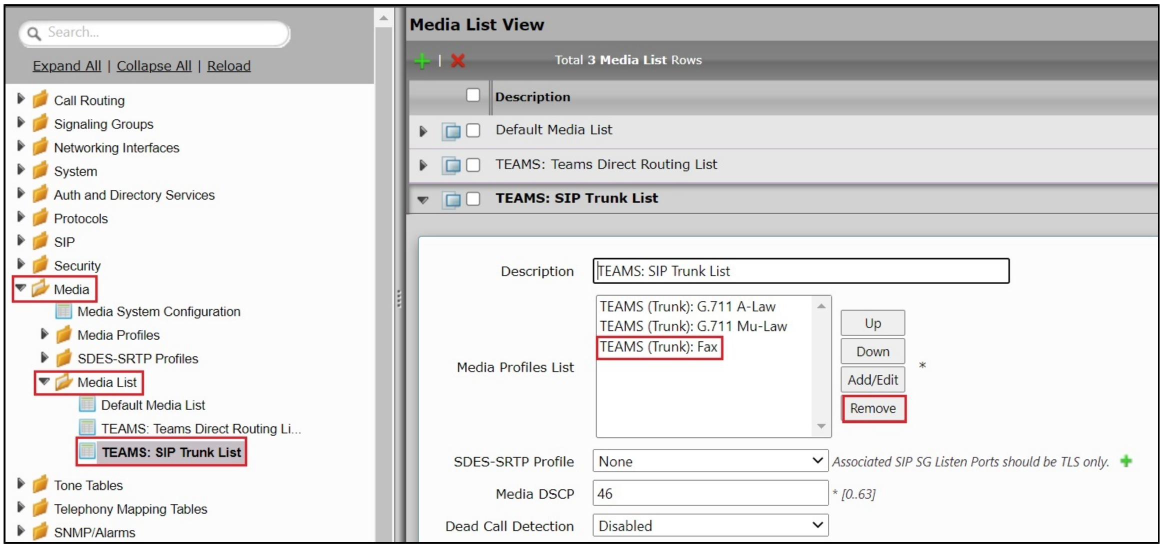
Modify Media List

Modify the media list that was created using easy wizard configuration.

Select **Settings > Media > Media List >TEAMS: Teams Direct Routing List** and remove SILK media profile and apply.



Select **Settings > Media > Media List >TEAMS: SIP Trunk List**and remove Fax media profile and apply.



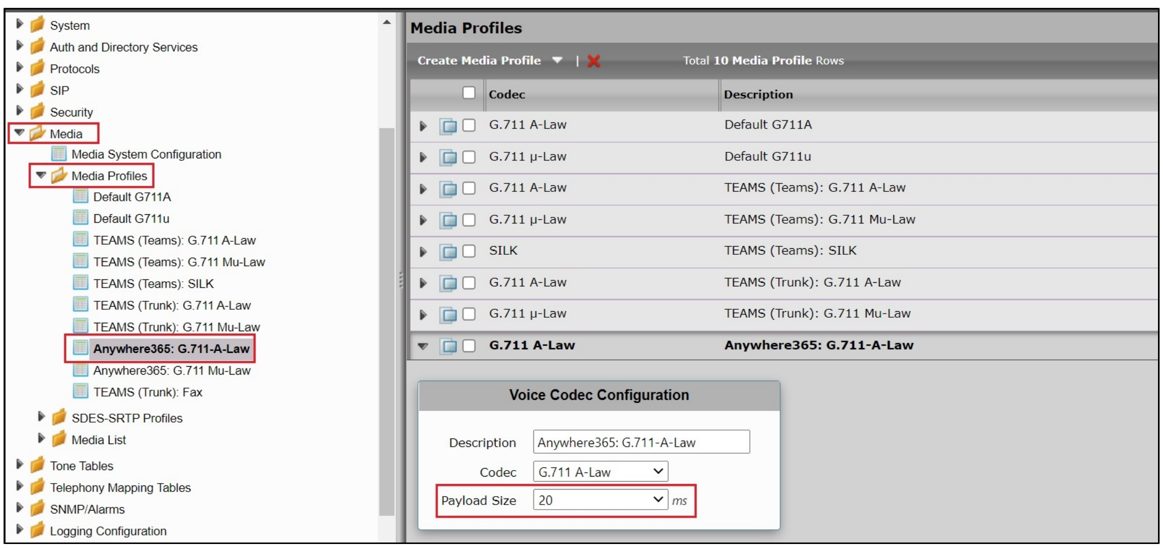
Ribbon SBC SWe Lite Configuration towards Anywhere365 Cloud

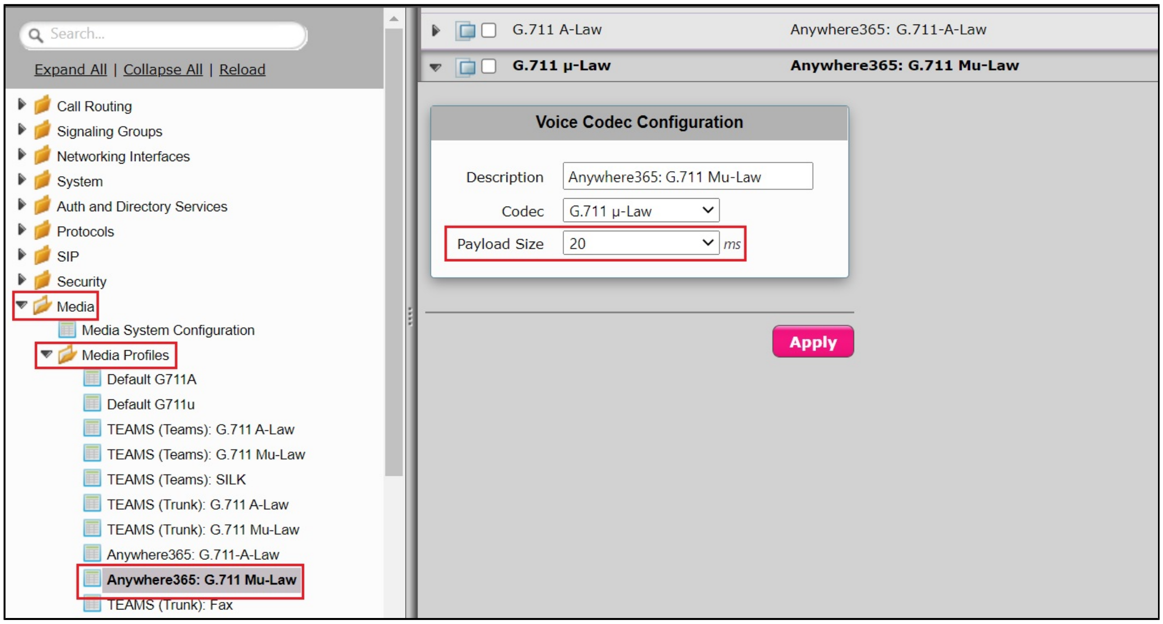
This section describes the steps to configure the SBC SWe Lite with TLS/SRTP towardsAnywhere365.

Media Profile

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

- Select Create Media Profile > Voice Codec Profile.
- Create a Media profile with description **"Anywhere365: G.711-A-Law"** and **"Anywhere365: G.711 Mu-Law"** with **G.711-A-Law** and **G.711-Mu-Law** codec. Since dialogue cloud supports G.711 codec only.





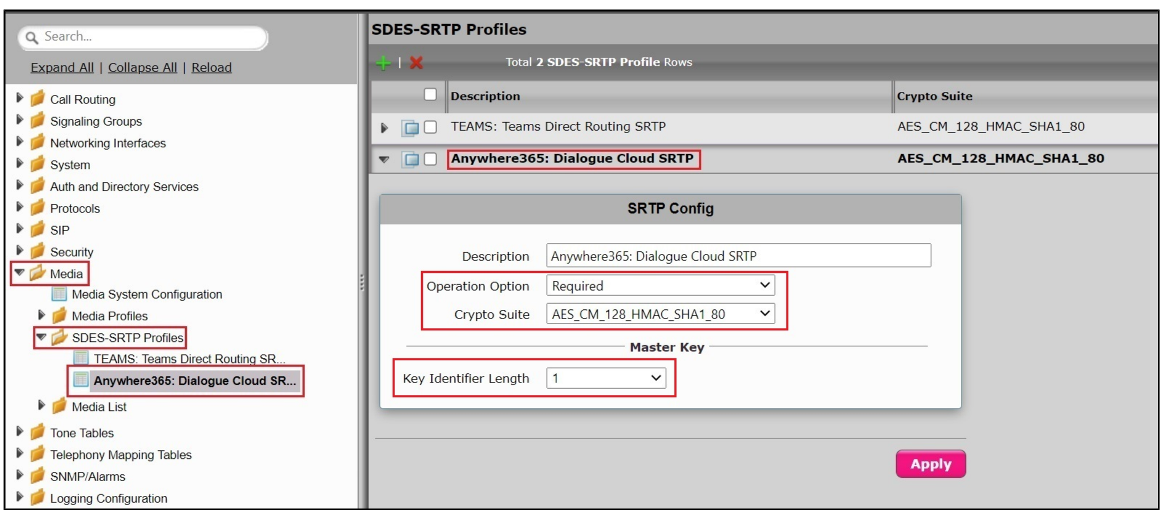
It is recommended to use a maximum packet time (max pTime) of 20ms for all Voice Codecs.

Create SRTP Profile

SDES-SRTP Profilesdefine a cryptographic context that is used inSRTPnegotiation.SDES-SRTP Profilesrequired for enabling encryption andSRTPare applied to Media Lists.SDES-SRTP Profileswas previously named Media CryptoProfiles.

From the**Settings**tab, navigate to**Media > SDES-SRTP Profiles.**

- Click the iconto create a new SRTP profile with description **"Anywhere365: Dialogue Cloud SRTP".**



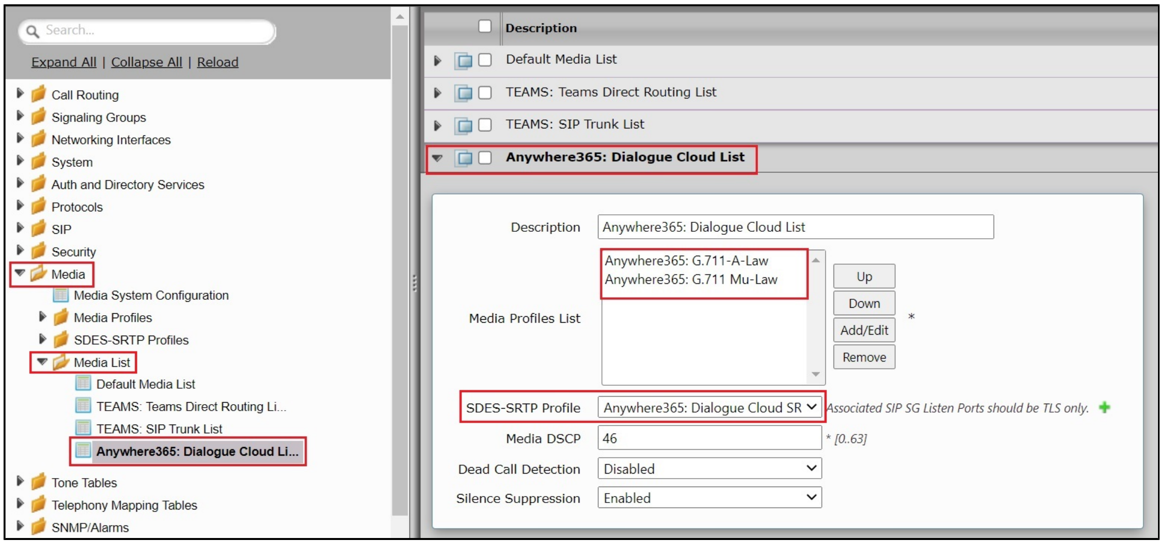
Follow the steps below to complete the configuration:

1. Provide the desired description for the profile.
2. Set Operation Option as "Required". This setting permits call connections only if you can use encryption for the call. If the peer device does not support SRTP (Secure Real Time Protocol) for voice encryption over the IP network, the call setup will fail.
3. Attach the Crypto suite "AES_CM_128_HMAC_SHAI_80" -A crypto suite algorithm that uses the 128 bit AES-CM encryption key and a 80 bit HMAC_SHA1 message authentication tag length.
4. Key Identifier Length set to "1".
5. Click**OK**.

Media List

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.

- Select **Settings > Media > Media List**.
- Create a media list with desired description **"Anywhere365: Dialogue Cloud List"**, add the media profile List and attach the SDES-SRTP Profile**"Anywhere365: Dialogue Cloud SRTP".**

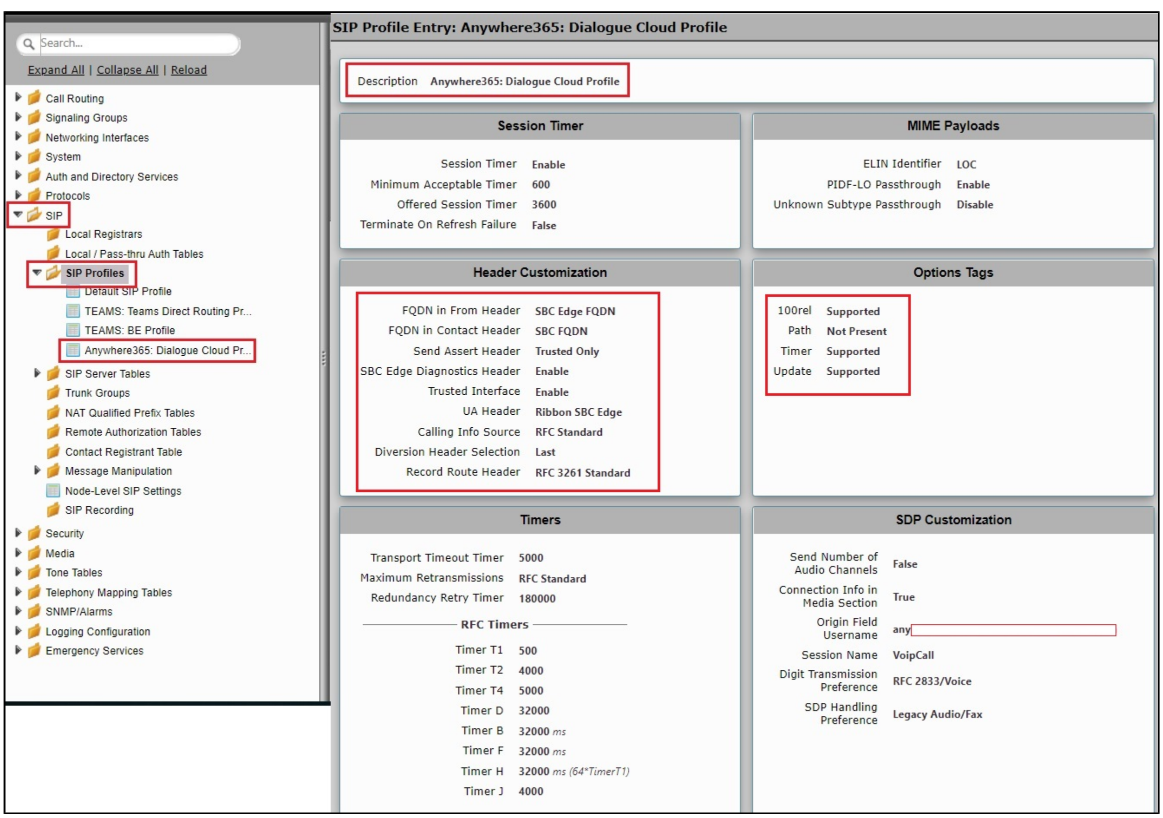


SIPProfile

SIP Profiles control how the SBC SWe Lite communicates with SIP devices. The SIP Profile controls important characteristics, such as the following: session timers, SIP header customization, SIP timers, MIME payloads, and option tags

Select **Settings > SIP > SIP Profiles**.

- Create a new SIP profile with desired name **"Anywhere365: Dialogue Cloud Profile"** and with the session timer enabled. The Minimum Acceptable Timer is 600, and the Offered Session Timer is 3600.
- Configure the required fields as shown in the screenshot below.

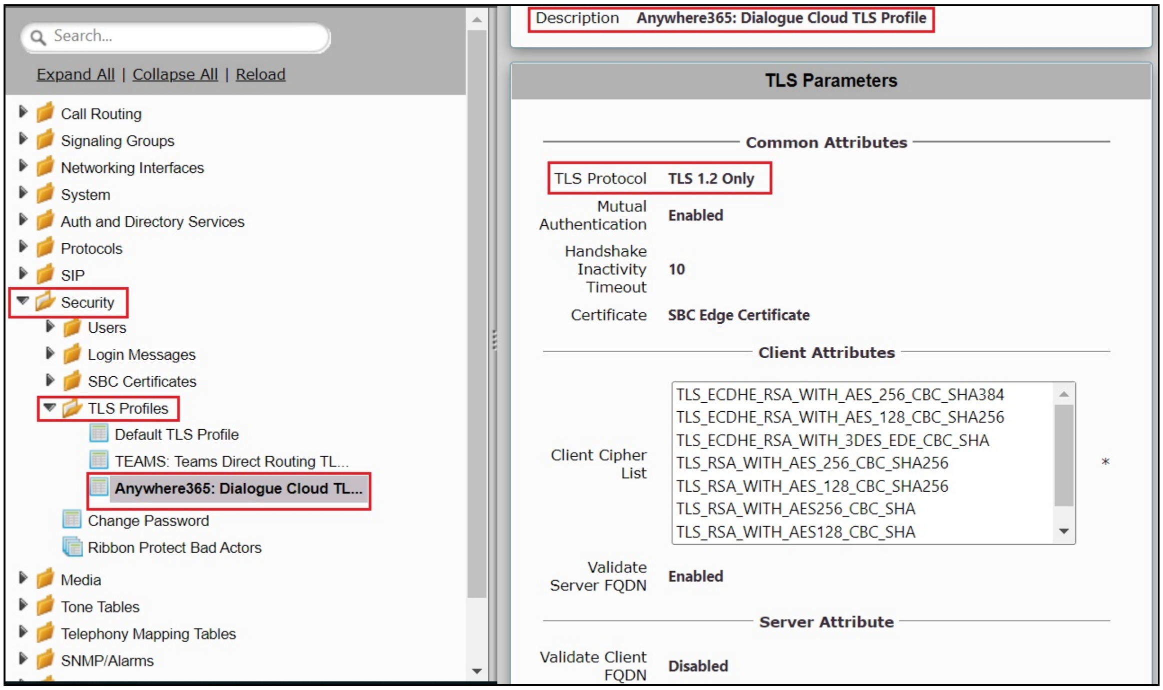


TLS Profile

The TLS profile defines the crypto parameters for the SIP protocol.

Select**Settings** >**Security**>**TLS Profile.**Click the iconto create a new TLS profile.

- Create a profile with desired name **"Anywhere365: Dialogue Cloud TLS Profile"** and Set TLS Protocol to TLS 1.2 Only.
- Select the correct valid public certificate from the drop down menu andFinally, ensure Validate Client FQDN is Disabled.

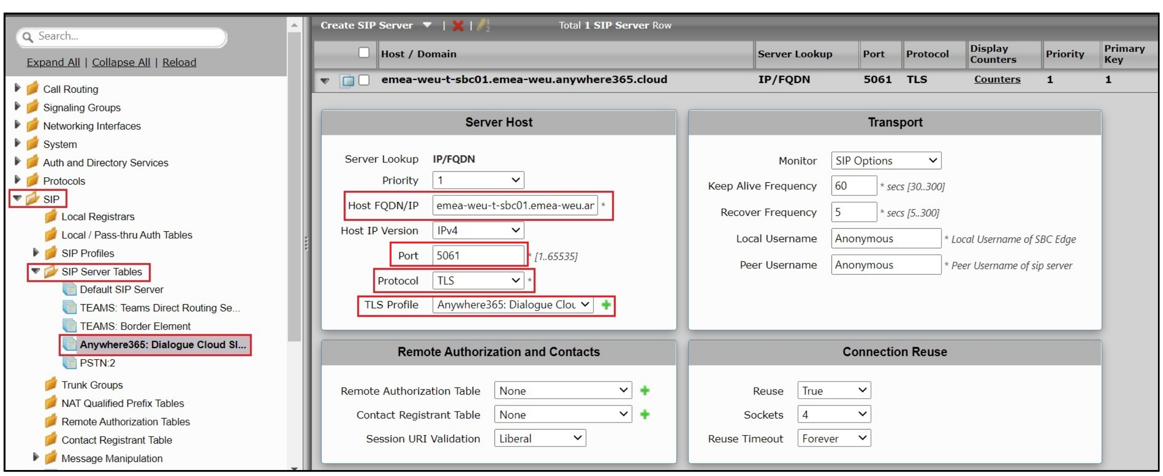


SIP Server Table

SelectSettings > SIP > SIP Server Tables

SIP Server Tables contain information about the SIP devices connected to the SBC SWe Lite. The entries in the tables provide information about the IP Addresses, ports, and protocols used to communicate with each server. The table entries also contain links to counters that are useful for troubleshooting.

- Create a SIP Server Table with desired name **"Anywhere365: Dialogue Cloud SIP Servers"**
- Add domain name provided by the Anywhere365.
- Enter the correct signaling port number this will be 5061 for TLS or 5060 for TCP/UDP.
- Select the signaling protocol you require. The TLS is shown.
- For TLS, you will need to select the TLS Profile you created earlier.



Enable OPTIONS

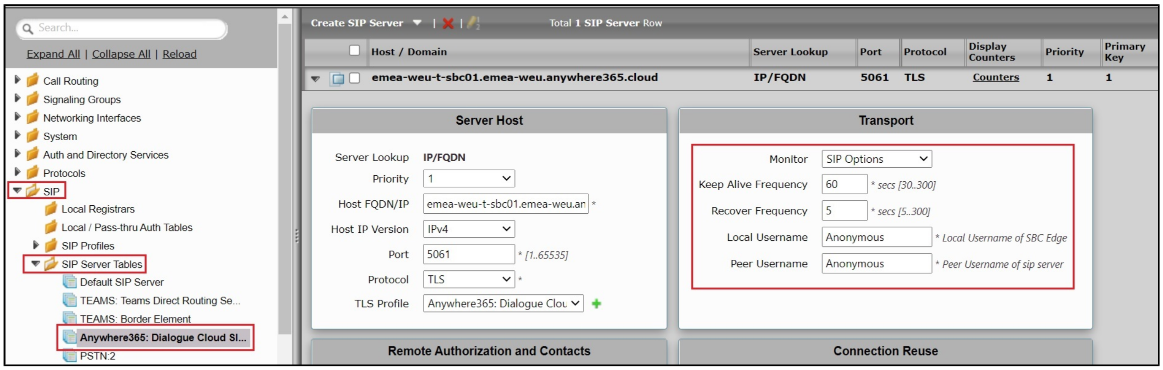
An OPTIONS message is sent to the server. When this option is selected, additional configuration items are displayed:

Keep Alive Frequency
Specifies how often, in seconds, theSBC Edge queries the server with an OPTIONS message to determine the server's availability. Visible only whenSIP Optionsis selected from theMonitorfield. If the server does not respond, theSBC Edge marks the Signaling Group as down. When the server begins to respond to the OPTIONS messages again, it is marked as up.In this case, Keep Alive Frequency is set to 30 seconds.

Recover Frequency
Specifies frequency in seconds to check server to determine whether it has become available.Recovery Frequency is set to 5 seconds for this interop.

Local Username
Local user name of theSBC Edge system. Default entry:**Anonymous**. Visible only when**SIP Options**is selected from the**Monitor**field.

Peer Username
User name of the SIP Server. Visible only when**SIP Options**is selected from the**Monitor**field. The user can changeLocal and Peer Usernames according to their wishes.



Note
Enable OPTIONS if required for the other SIP Server Tables.

Message Manipulation

The Message Manipulation feature work in concert to modify and add SIP messages. The Message Manipulation examples below are used to save /store the headers and add to the request.

The SMM performs the following actions:

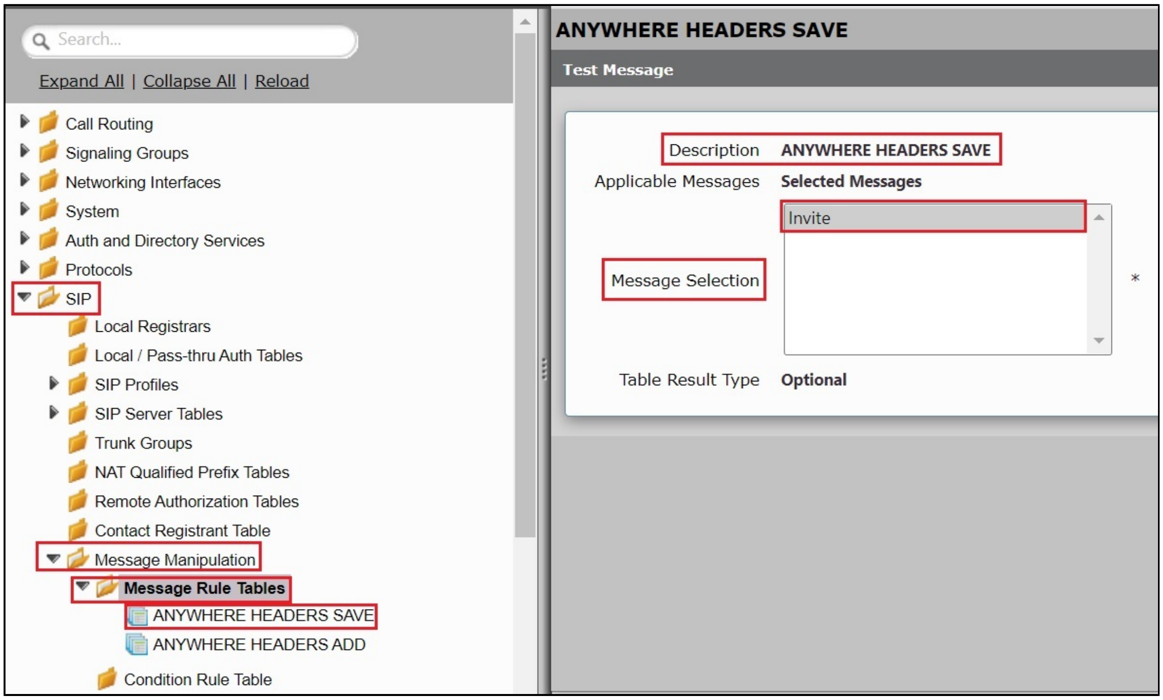
Saves the following headers of the inbound SIP messages.

- **A365-AgentHunt**
- **A365-TenantId**
- **X-MS-RoutingPolicies**

SelectSettings >SIP > Message Manipulation > Message Rule Table

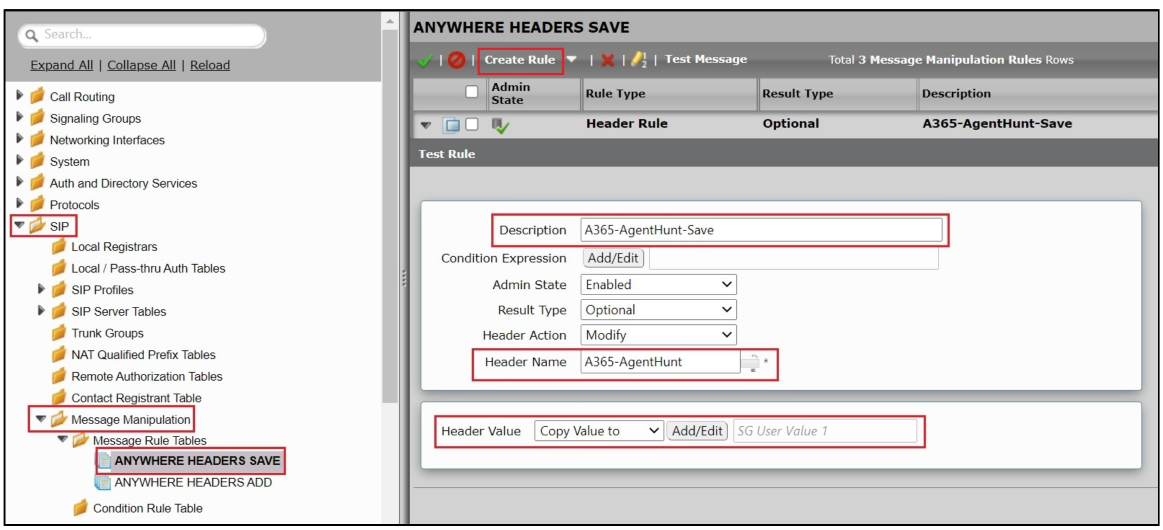
Click theCreate Message Rule Table (+) icon.

- Provide the desired name**"ANYWHERE HEADERS SAVE"**
- Apply the SMM only for the Selected messages and choose Invite from the Message Selection list.
- Click**OK**.

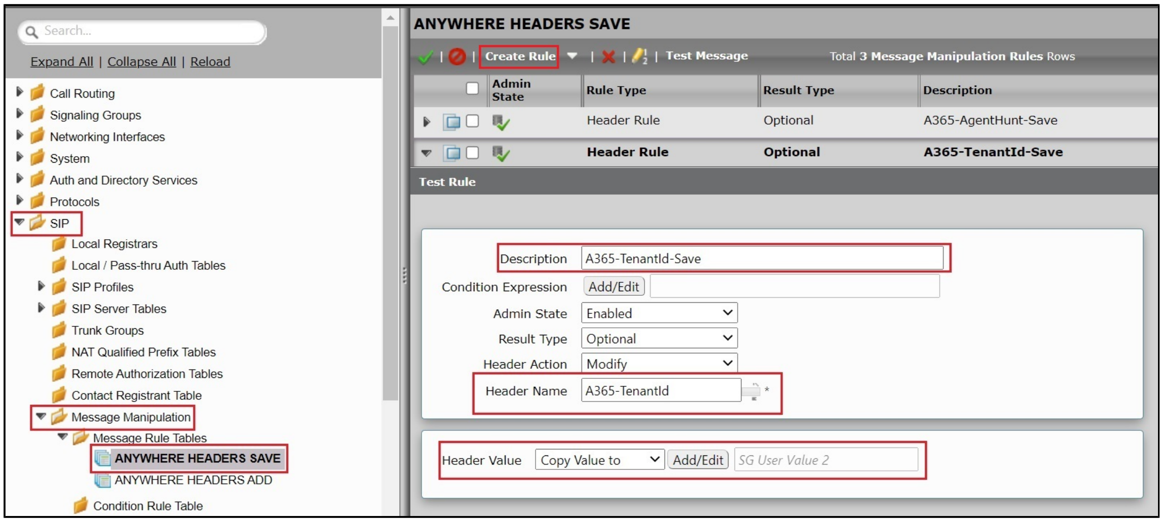


Message Manipulation - Create three header rules for the newly created rule table"ANYWHERE HEADERS SAVE"

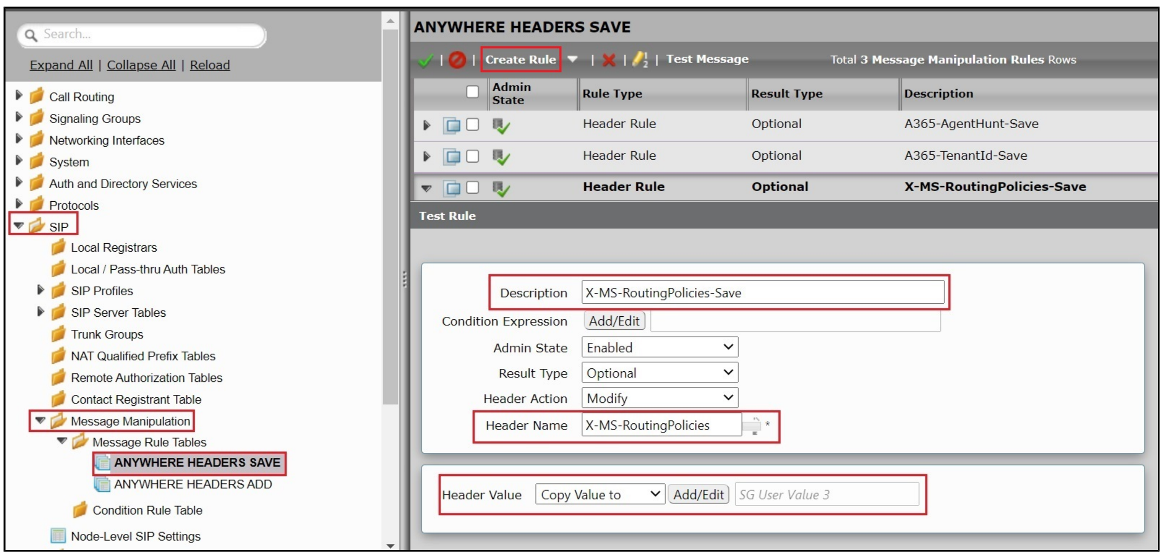
- Click the**expand**( )icon next to the Rule Table entry created.
- From the Create Rule drop down box, select Header Rule.
- Provide a description as required **"A365-AgentHunt-Save".**
- Header Action **"Modify".**
- Header Name **"A365-AgentHunt".**
- Header value **'Copy value to'** with **SG User Value 1** and apply.



- From the Create Rule drop down box, again select Header Rule.
- Provide a description as required**"A365-TenantId-Save".**
- Header Action **"Modify".**
- Header Name **"A365-TenantId".**
- Header value **'Copy value to'** with **SG User Value 2** and apply.



- From the Create Rule drop down box, again select Header Rule.
- Provide a description as required**"X-MS-RoutingPolicies-Save".**
- Header Action **"Modify".**
- Header Name **"X-MS-RoutingPolicies".**
- Header value **'Copy value to'** with **SG User Value 3** and apply.



The SMM performs the following actions:

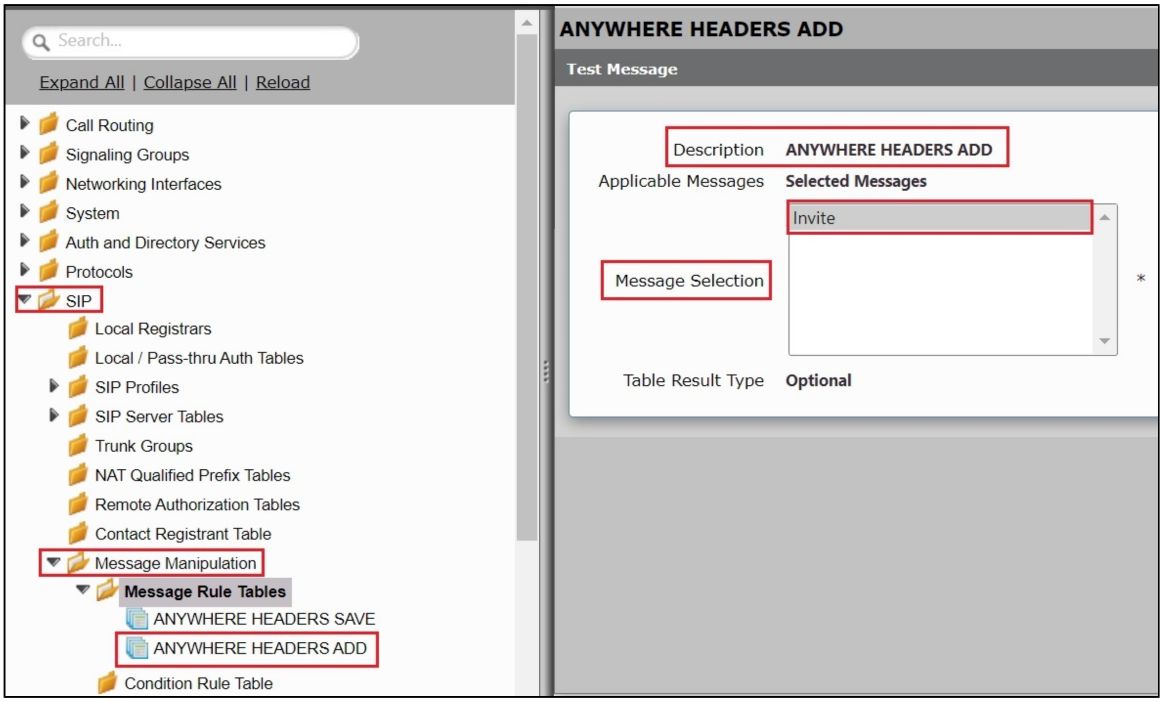
Adds the following headers to the outbound SIP messages.

- **A365-AgentHunt**
- **A365-TenantId**
- **X-MS-RoutingPolicies**

SelectSettings >SIP > Message Manipulation > Message Rule Table

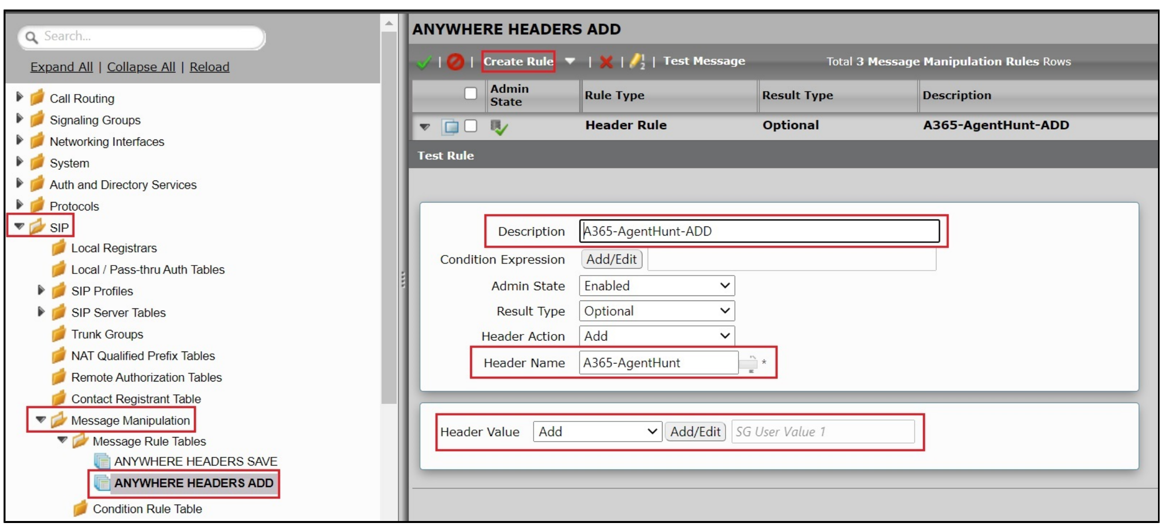
Click theCreate Message Rule Table( ) icon.

- Provide the desired name**"ANYWHERE HEADERS ADD".**
- Apply the SMM only for the Selected messages and choose Invite from the Message Selection list.
- Click **OK.**

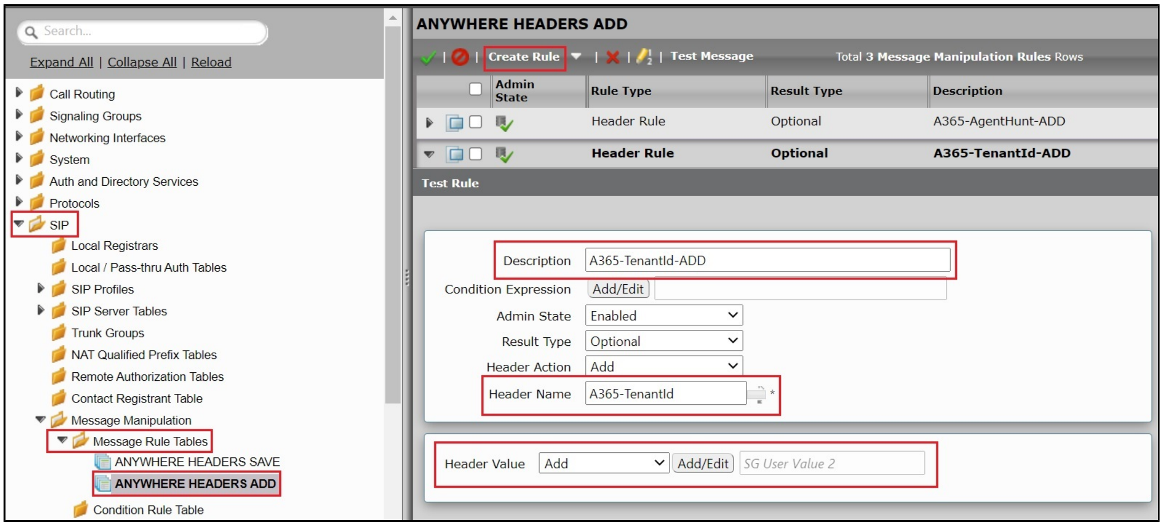


Message Manipulation - Create three header rules for the newly created rule tablesay "ANYWHERE HEADERS ADD"

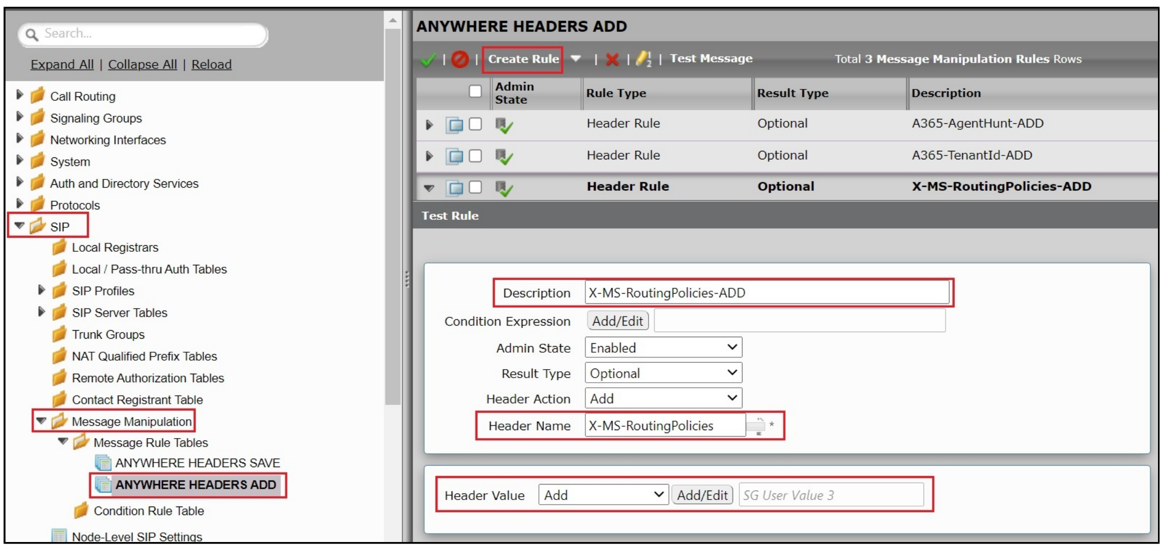
- Click the**expand**( )icon next to the Rule Table entry created.
- From the Create Rule drop down box, select Header Rule.
- Provide a description as required**"A365-AgentHunt-ADD".**
- Header Action **"Add".**
- Header Name **"A365-AgentHunt".**
- Header value **'Add'** with **SG User Value 1** and apply.



- From the Create Rule drop down box, again select Header Rule.
- Provide a description as required**"A365-TenantId-ADD".**
- Header Action **"Add".**
- Header Name **"A365-TenantId".**
- Header value **'Add'** with **SG User Value 2** and apply.



- From the Create Rule drop down box, again select Header Rule.
- Provide a description as required**"X-MS-RoutingPolicies-ADD".**
- Header Action **"Add".**
- Header Name **"X-MS-RoutingPolicies".**
- Header value **"Add"**with **SG User Value 3** and apply.



Signaling Group

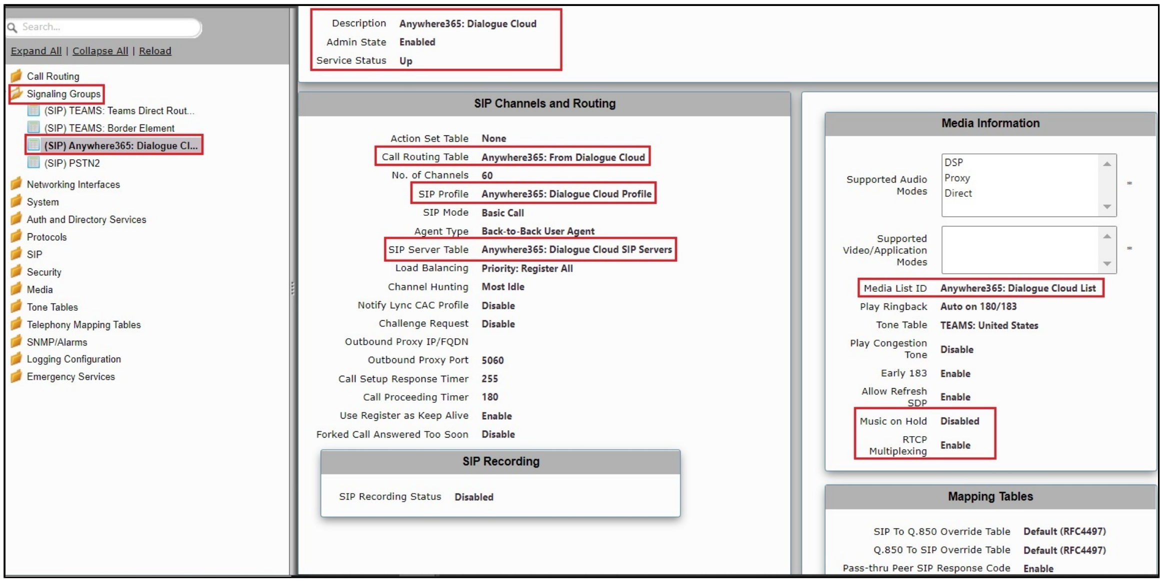
Signaling Groups allow grouping telephony channels together for the purposes of routing and shared configuration. They are the entity where calls are routed, as well as the location that the Call Routes are selected.

SelectSettings > Signaling Groups

- Create an entry in signaling group named **"Anywhere365: Dialogue Cloud"**.
- Choose **"Anywhere365: Dialogue Cloud Profile"** under Sip Profile.
- Choose Call Routing as **"Anywhere365: From Dialogue Cloud"**.

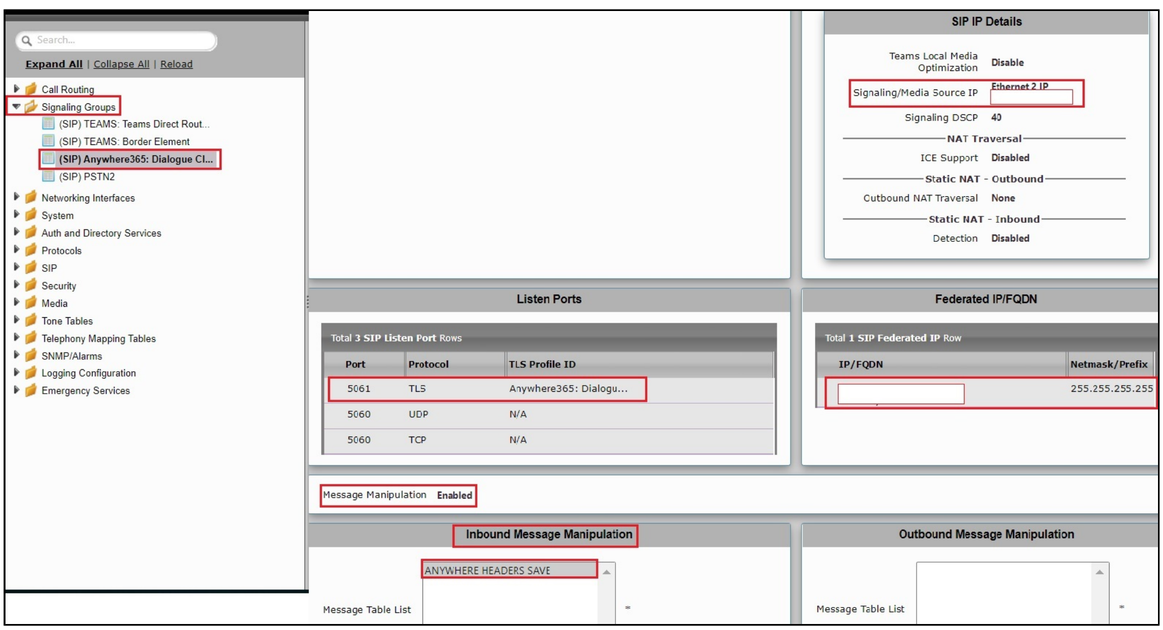
> Initially choose Default call Route. Create the Route, as shown in the call Routing section, and then update the call Route to **"Anywhere365: From Dialogue Cloud"**.

- Choose Agent type as "Back-to-Back user agent" and media list as **"Anywhere365: Dialogue Cloud List"**.
- Choose SIP Server Table as **"Anywhere365: Dialogue Cloud SIP Servers"**.



- Update the Federated IP/FQDN, i.e. the FQDN of the anywhere365 as provided by anywhere365 .
- Add a listening port for TLS.
- Add message manipulation under the inbound section that we created earlier to save headers.

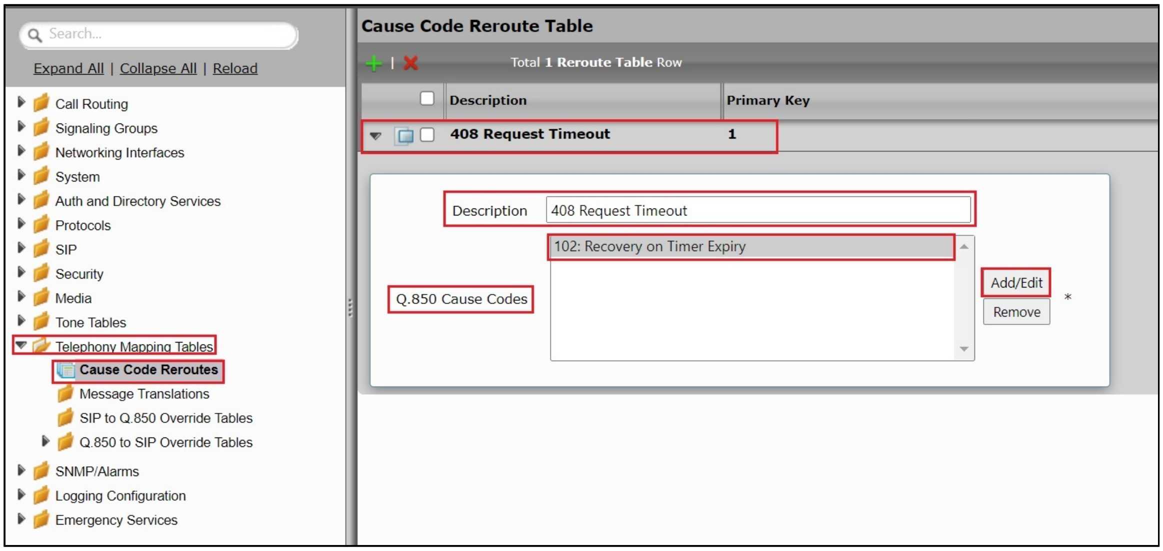
- Enable Message Manipulation.
- Click **Add/Edit**on Inbound Message Manipulation.
- This displays a drop-down list of available message tables. Select an entry and click**Apply**.



Cause Code Reroutes

Select **Telephony Mapping Tables** >**Cause Code Reroutes.**

- Click the Cause Code Reroute table ( ) iconfor new entry creation.
- Provide the required description.
- Add the **Q.850 Cause Codes** as '102: Recovery on Timer Expiry'.
- Click **Apply.**

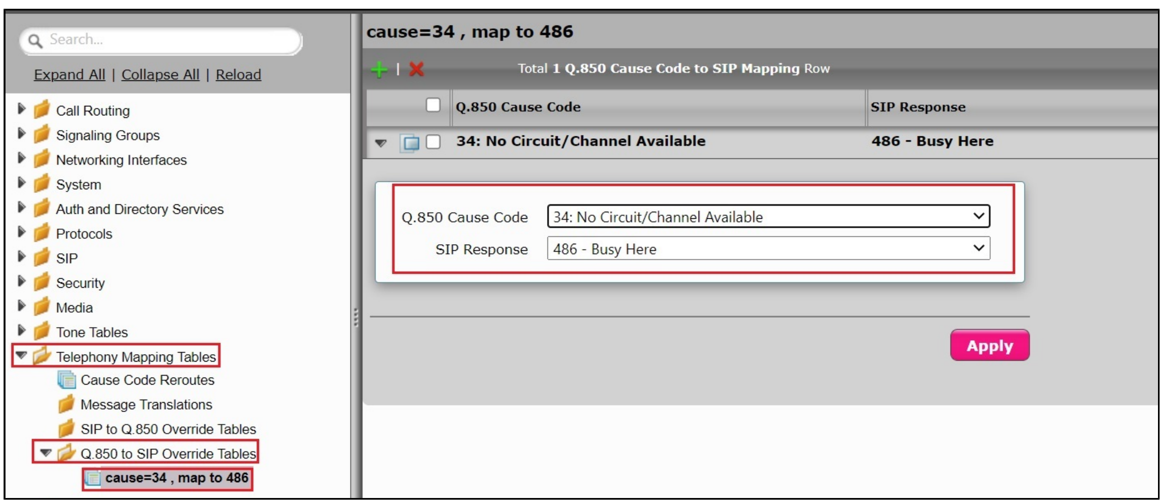


> ⚠ Cause code reroute must be used in the call routing table **"TEAMS: From SIP Trunk"** and **"TEAMS: From Microsoft Teams Direct Routing"** to reroute call when receiving**"408 Request Timeout"** response from dialogue cloud.

Q.850 to SIP Override Tables

Select **Telephony Mapping Tables** >**Q.850 to SIP Override Tables.**

- Click the Q.850 to SIP Override tables (+) iconfor new entry creation.
- Provide the required description.
- Click **OK.**
- Select the entry and update **Q.850 Cause Code** from the drop down list '34: No Circuit/Channel Available'.
- Select **SIP Response** from drop down as '486 - Busy Here'.
- Click **Apply.**

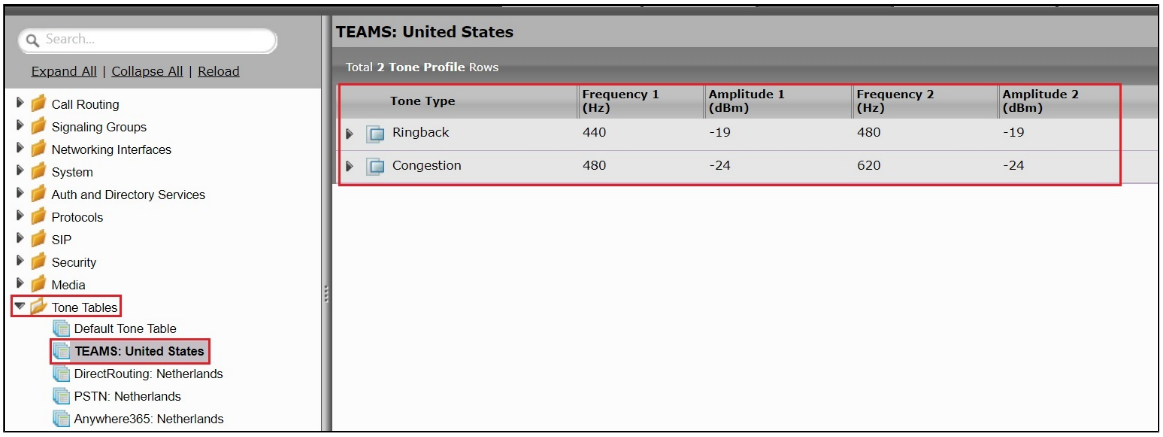


> ⚠ In order to avoid multiple REFER from TEAMS, choose the "Q.850 to SIP Override Tables" record for transfer reject scenario when we get '486 response' for reject from PSTN. Update theQ.850 to SIP Override Table in"**TEAMS: Teams Direct Routing"** signaling group.

Tone Table (Optional)

When using the Easy Config Wizard, we get **"TEAMS: United States"** record.

- **Click theTone Table(+) icon** for any new creation if required**.**Signaling group can be attachedwith the tone table.

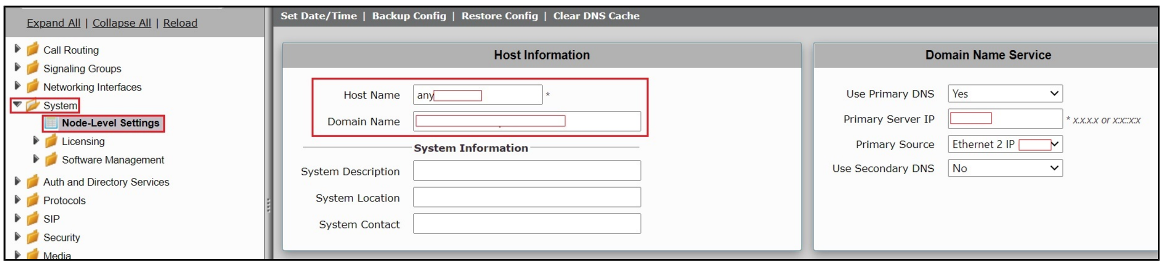


Node level Settings

In the Sip profile (Anywhere365: Dialogue Cloud Profile), we have "FQDN in From Header" and "FQDN in Contact Header" configured as "SBC Edge FQDN" and "SBC FQDN". As a result, Node level settings need to be configured.

From the**System**> **Node-Level Settings**

- Usingthe FQDN update the **"Host name"** and **"Domain Name"**.



Signaling Group

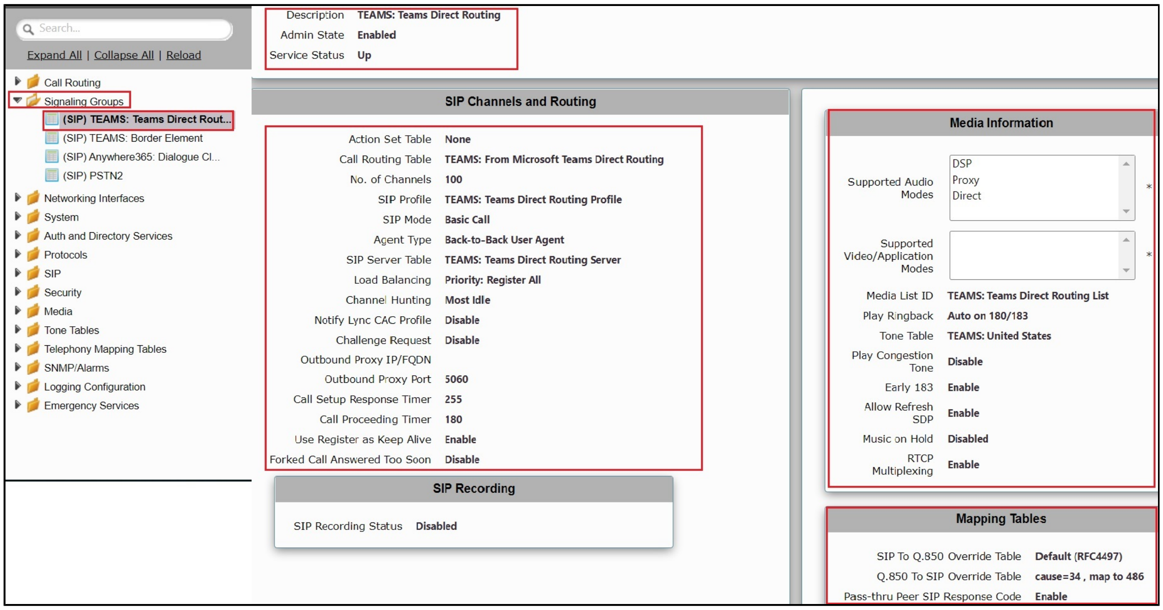
Signaling Groups allow grouping telephony channels together for the purposes of routing and shared configuration. They are the entity to which calls are routed, as well as the location from whichCall Routes are selected.

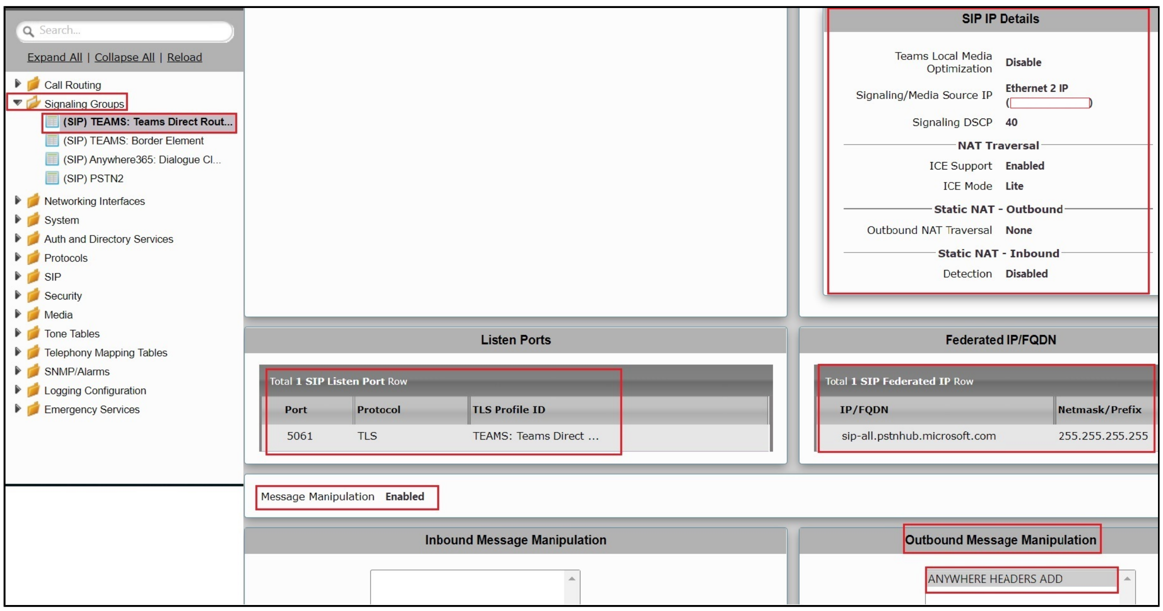
Update Signaling Group

Update the signaling group which was created using easy wizard configuration.

Settings>**Signaling Groups.**Click theexpand( ) icon next to the entry.

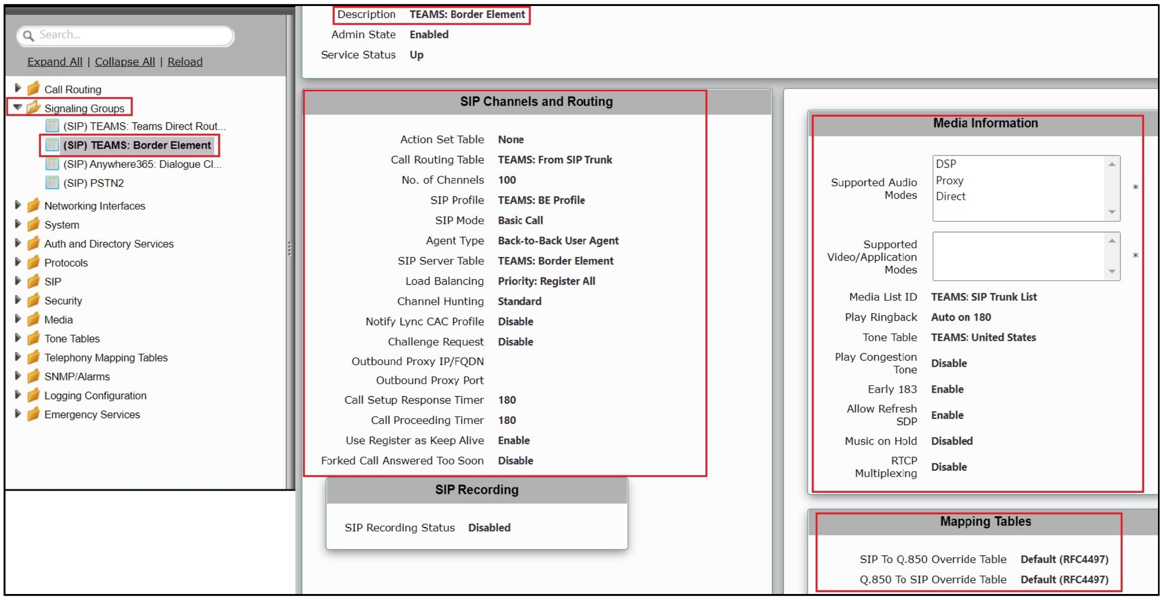
- Update the signalinggroup **"TEAMS: Teams Direct Routing".**
- Enable **"Message Manipulation"** and attach the rule **"ANYWHERE365_HEADERS_ADD"** rule to outbound Message Manipulation.
- Update the **"Q.850 to SIP Override"** with the rule created.
- Verify all the required changes has been taken care as per the snap for **"TEAMS: Teams Direct Routing"**signalinggroup.
- Click**Apply**.

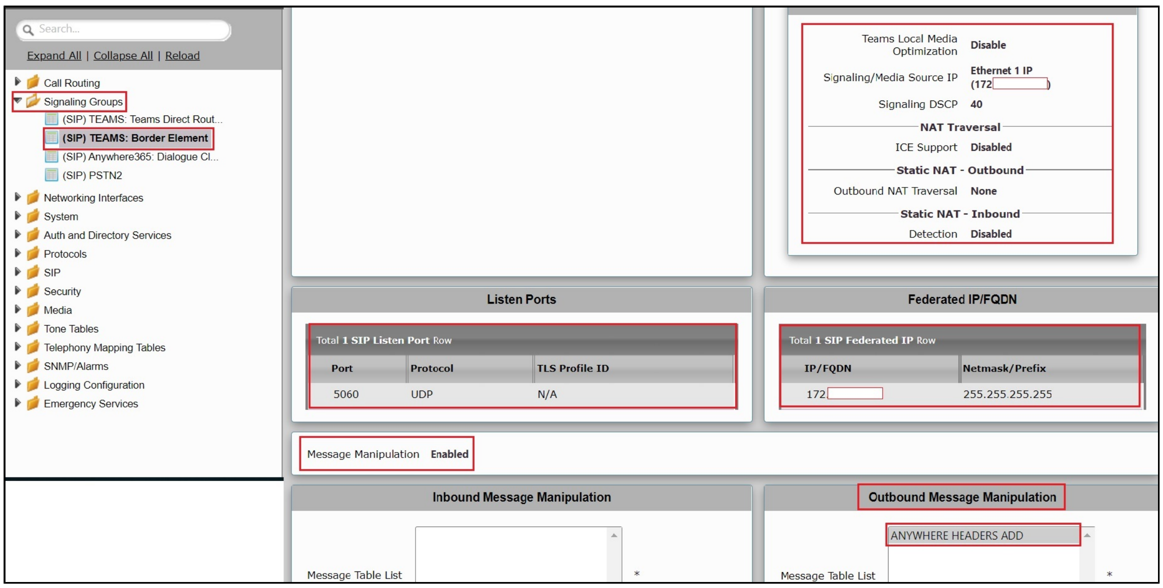




Settings>**Signaling Groups.**Click theexpand( ) icon next to the entry.

- Update the signaling group **"TEAMS: Border Element".**
- Enable **"Message Manipulation"** and attach the rule **"ANYWHERE365_HEADERS_ADD"** rule to outbound Message Manipulation.
- Enable **"Early 183".**
- Verify all the required changes has been taken care as per the snap for **"TEAMS: Border Element"**signalinggroup.
- Click**Apply**.





Transformation Table

Transformation Tables facilitate the conversion of names, numbers and other fields when routing a call. They can, for example, convert a public PSTN number into a private extension number, or into a SIP address (URI). Every entry in aCall Routing Tablerequires a Transformation Table, and they are selected from there. In addition, Transformation tables are configurable as a reusable pool thatAction setscan reference.

From the**Settings**> **Call Routing** >**Transformation.**

Create Transformation Table

Each Transformation Table contains a list ofentriesconsidered as routing rules to execute on. Each rule is executedin order until the end of the table is reached or when aMandatory entryfails to execute.

- Create transformation table as**"To Dialogue Cloud".**

Follow the procedure described below to configure Transformation Tables and the Entries.

1. Click the**Create**( ) icon.
2. Enter a descriptive name in the**Description**text field.
3. Click**OK**.

- Creating an Entry to a Message Transformation Table.

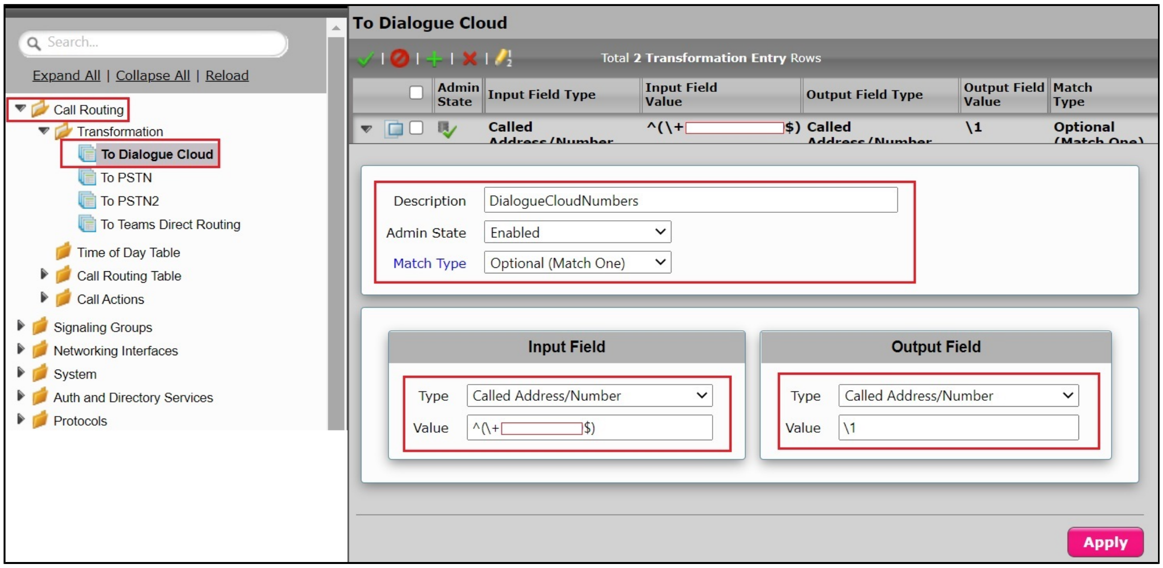
For this interop, the entries are created based on the numbers associated with each endpoint. Users arefree to select their own variables or Regular expressions.UCC prime number can be configured.

1. Click the**Create( )**iconnext to the table created in the previous step.
2. Provide the below details:

   Admin State:
   Enabled-The default state isEnabled.

   Match Type:
   Optional:Optional entries must match at least one of that Input Field type.
   When a call arrives at a Transformation Table, the incoming message contains a number of Informational Elements (IEs). These IEs include important call information such as: Called Address/Number, Called Extension, Calling Name, Redirecting Number and others.
   Each Informational Element is processed row by row in the Transformation Table.

   Value (Input/Output):
   Specifies the value to match against for the selected type. Depending on the type selected, values are free-form or selected from a menu.
3. Click **Apply**.



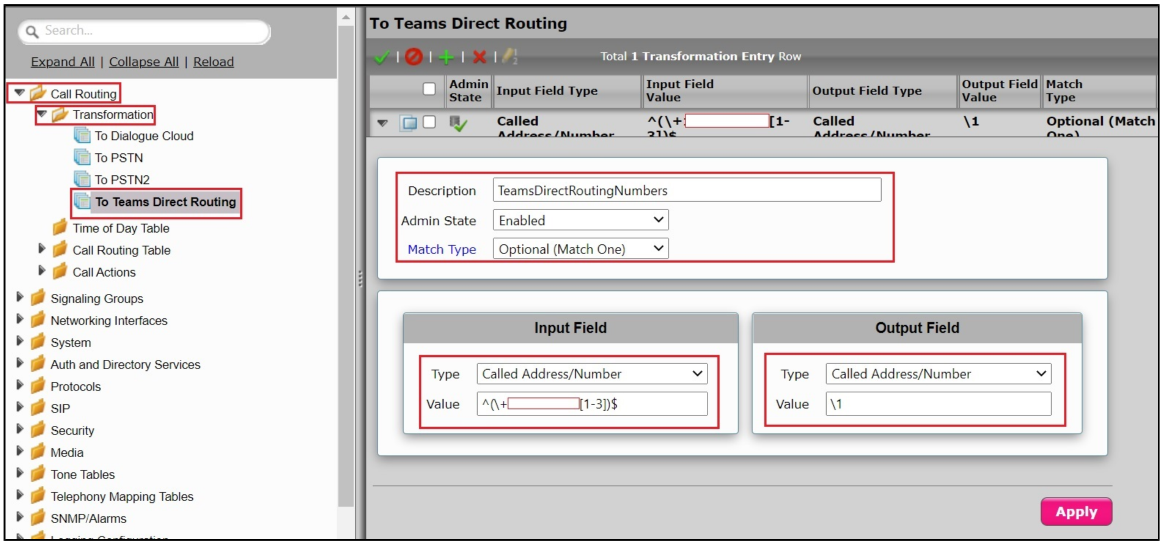
For details on Transformation Table Entry configuration, refer toCreating and Modifying Entries to Transformation Tables.For call digit matching and manipulation through the use of regular expressions, refer toCreating Call Routing Logic with Regular Expressions.

Modify Transformation Table

The Transformation Tables created for MS Teams and SIP Trunk through Easy Config Wizard are to be modified.

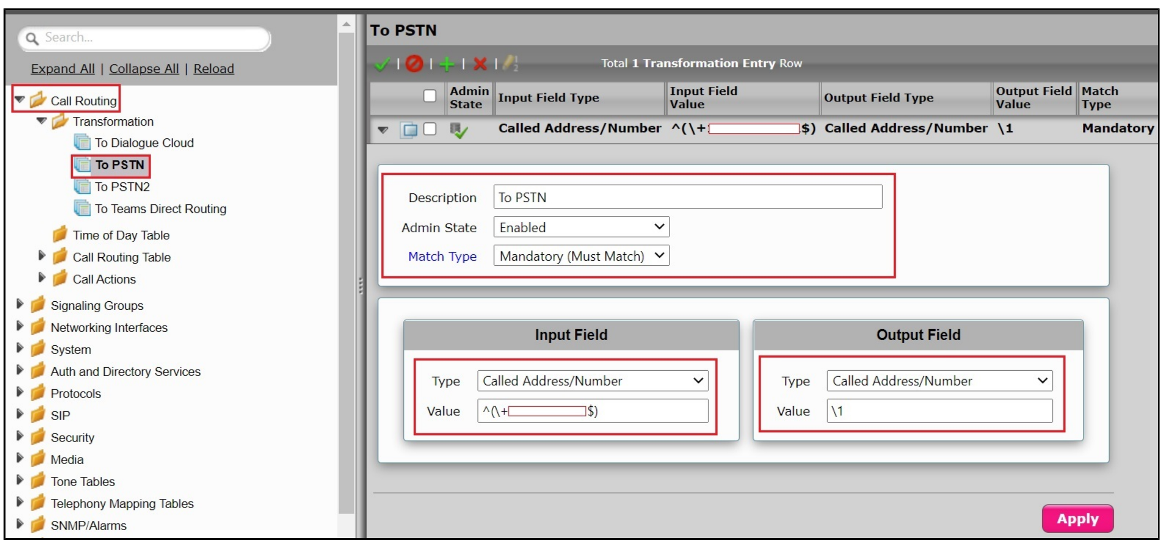
- Modify transformation table for **"TEAMS: From Microsoft Teams Direct Routing: Passthrough"** as**"To Teams Direct Routing".**
- TEAMS user agent numbers can be configured as required.

1. Click the**expand**( ) icon next to the entry you wish to modify.
2. Modify the table's**Description**as desired.
3. Modify the Values from**Input field**and**Output field**as required.
4. Set the Match Type as**Optional (Match one)**.
5. Click**OK**.



- Modify transformation table for **"TEAMS: From SIP Trunk: Passthrough"** as**"To PSTN".**
- PSTN user numbers can be configured as required.

1. Click the**expand**( ) icon next to the entry you wish to modify.
2. Modify the table's**Description**as desired.
3. Modify the Values from**Input field**and**Output field**as required.
4. Set the Match Type as**Mandatory(Must Match)**.
5. Click**OK**.



While modifying the transformation table, description and the entries as been modified as required

Call Routing Table

Call Routing allows carrying of calls between Signaling Groups. Routes are defined by Call Routing Tables, which allow for a flexible configuration that calls carry, and how to translate them.

Select**Settings** >**Call Routing**>**Call Routing Table.**

Create Call Routing Table

Call Routing Tablesare one of the central connection points of the system, linkingTransformation Tables,Message Translations, Cause Code Reroute Tables, Media Lists and the three types of Signaling Groups (ISDN, SIP and CAS).

- Create Call Routing table as **"Anywhere365: From Dialogue Cloud"**

In the SBC SWe Lite, call routing occurs between**Signaling Groups**.

In order to route any call to or from a call system connected to the SBC, you must first configure a Signaling Group to represent that device or system. The following list illustrates the hierarchical relationships of the various Telephony routing components of a SBC call system:

- Signaling Group describes the source call and points to a routing definition known as a Call Route Table
- Call Route Table contains one or more Call Route Entries
- Call Route Entries points to the destination Signaling Group(s)

Each call routing entry describes how to route the call and also points to a Transformation Table that defines the conversion of names, numbers and other fields when routing a call.

To create an entry:

1. Click the**Create Routing Entry**( ) icon.
2. Set the following fields:

   Admin State:

   Enabled - Enables the call route entry for routing the call, displays in configuration header as .

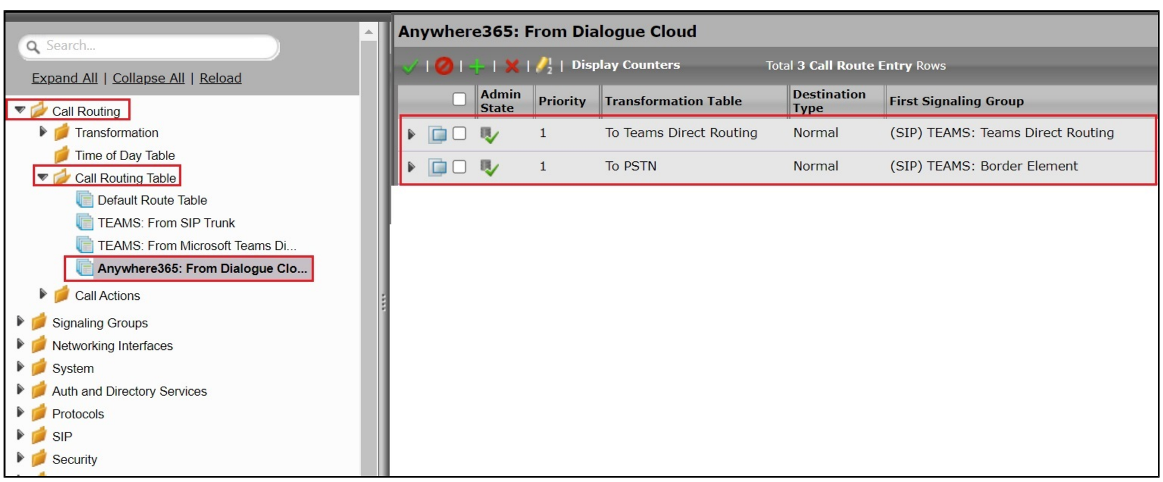
   Route Priority:
   Priority of the route from 1 (highest) to 10 (lowest). Higher priority routes are matched against before lower priority routes, regardless of the order of the routes in the table.

   Number/Name Transformation Table:
   Specifies the Transformation Table to use for this routing entry. This drop-down list is populated from the entries in the Transformation Table.

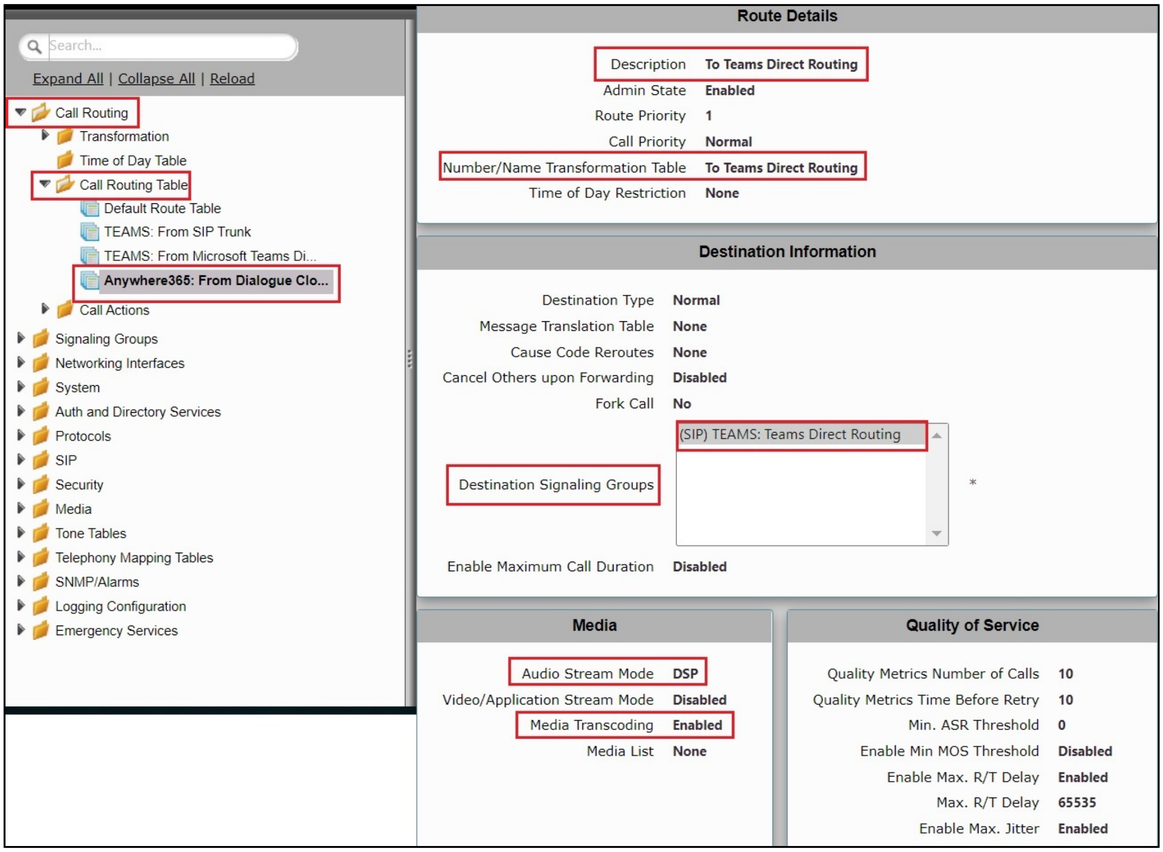
   Destination Signaling Groups:
   Specifies the Signaling Groups used as the destination of calls.The first operational Signaling Group from the list is chosen to place the call. Click the **Add/Edit** button to select the destination signaling group.

   Audio Stream Mode:
   DSP(default entry): The SBC uses DSP resources for media handling (transcoding), but does not facilitate the capabilities/features between endpoints that are not supported within the SBC (codec/capability mismatch). When the DSPis configured, the Signaling Groups enabled to supportDSPare attempted in order.

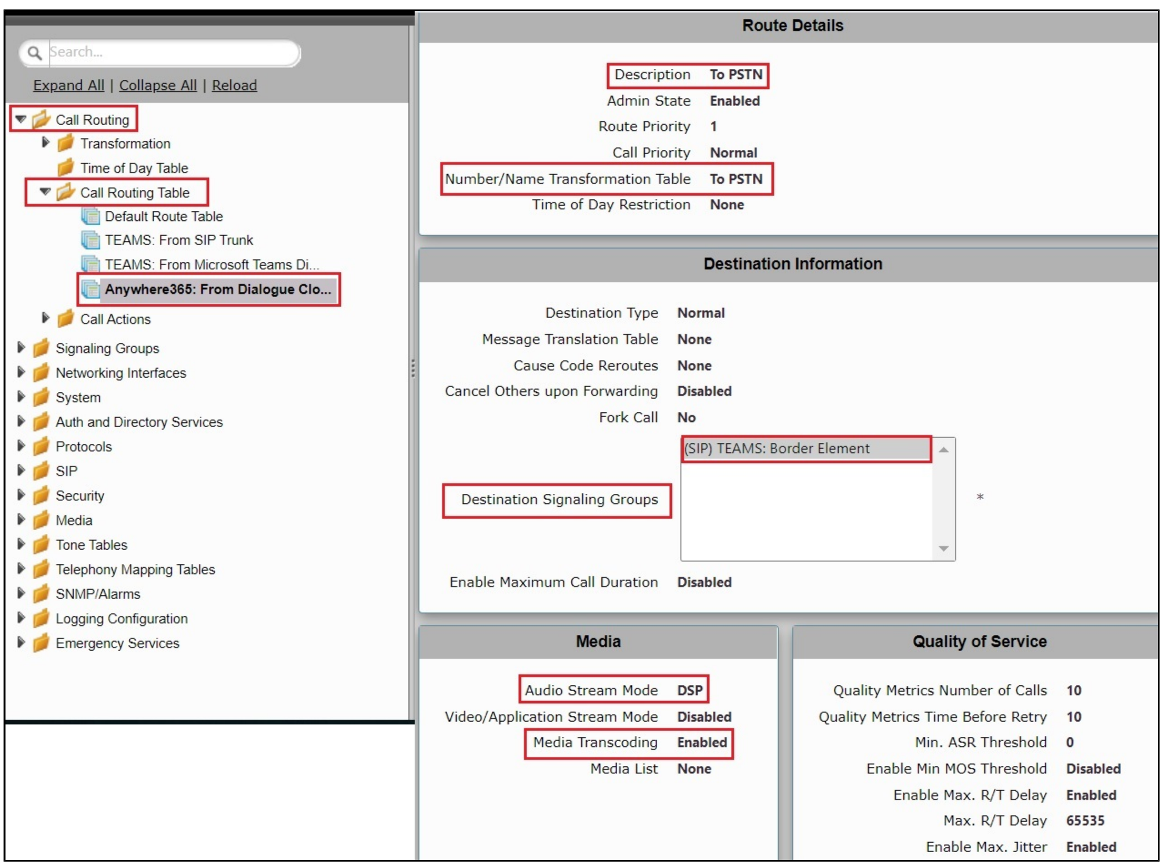
   Media Transcoding:
   Enabled: Enable Transcoding on SIP-to-SIP calls.
3. Click**Apply**.



Route1 details: Number/Name Transformation Table with "To Teams Direct Routing" and Destination Signaling Groups with "TEAMS: Teams Direct Routing".



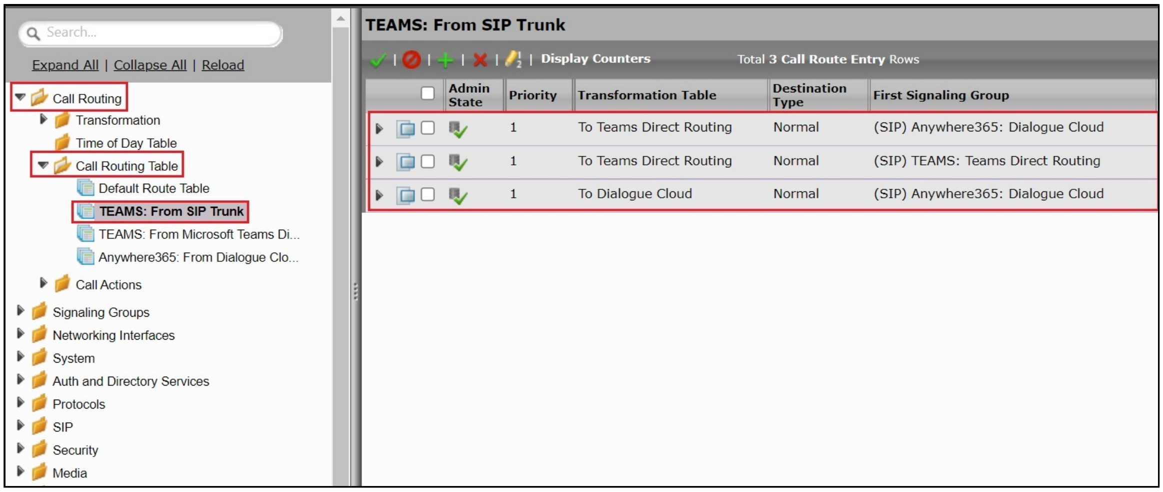
Route2 details: Number/Name Transformation Table with "To PSTN" and Destination Signaling Groups with "TEAMS: Border Element".



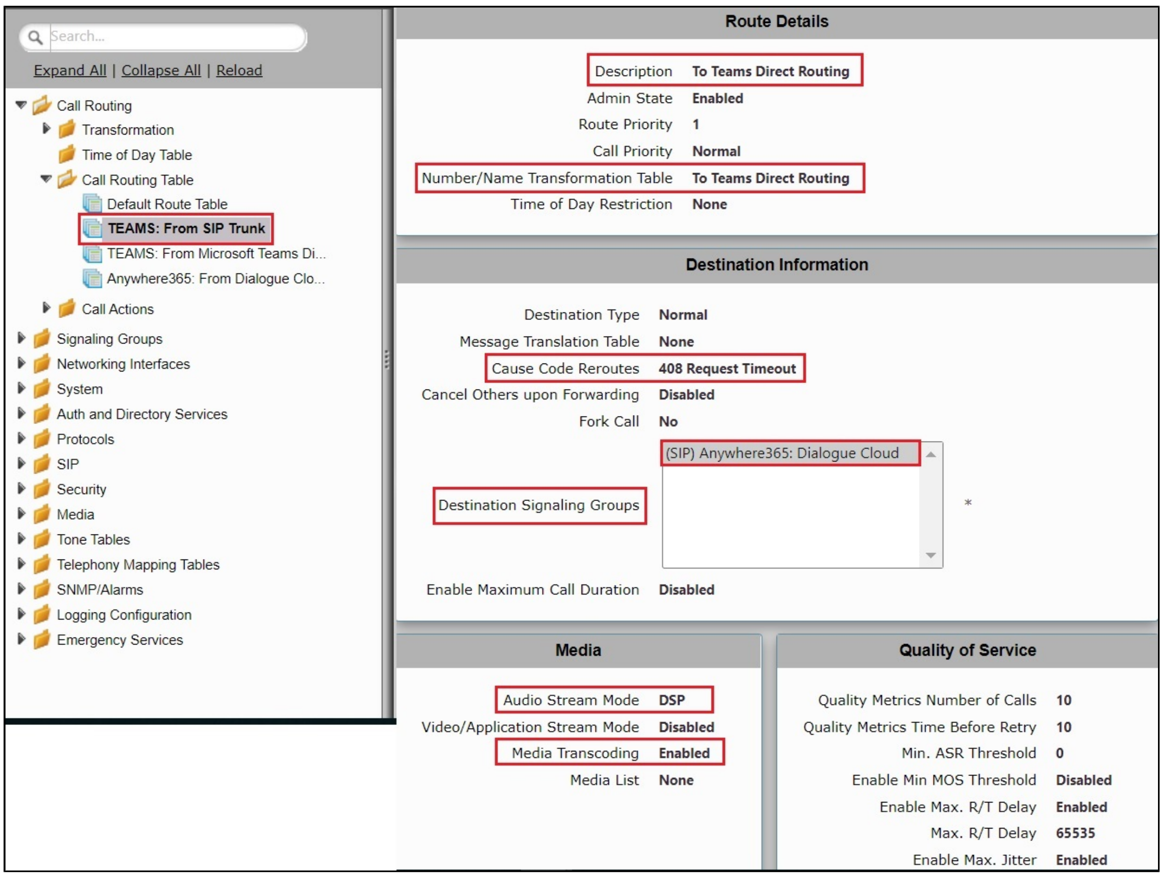
Modify Call Routing Table

The Call routing Tables created for MS Teams and SIP Trunk through Easy Config Wizard are to be modified.

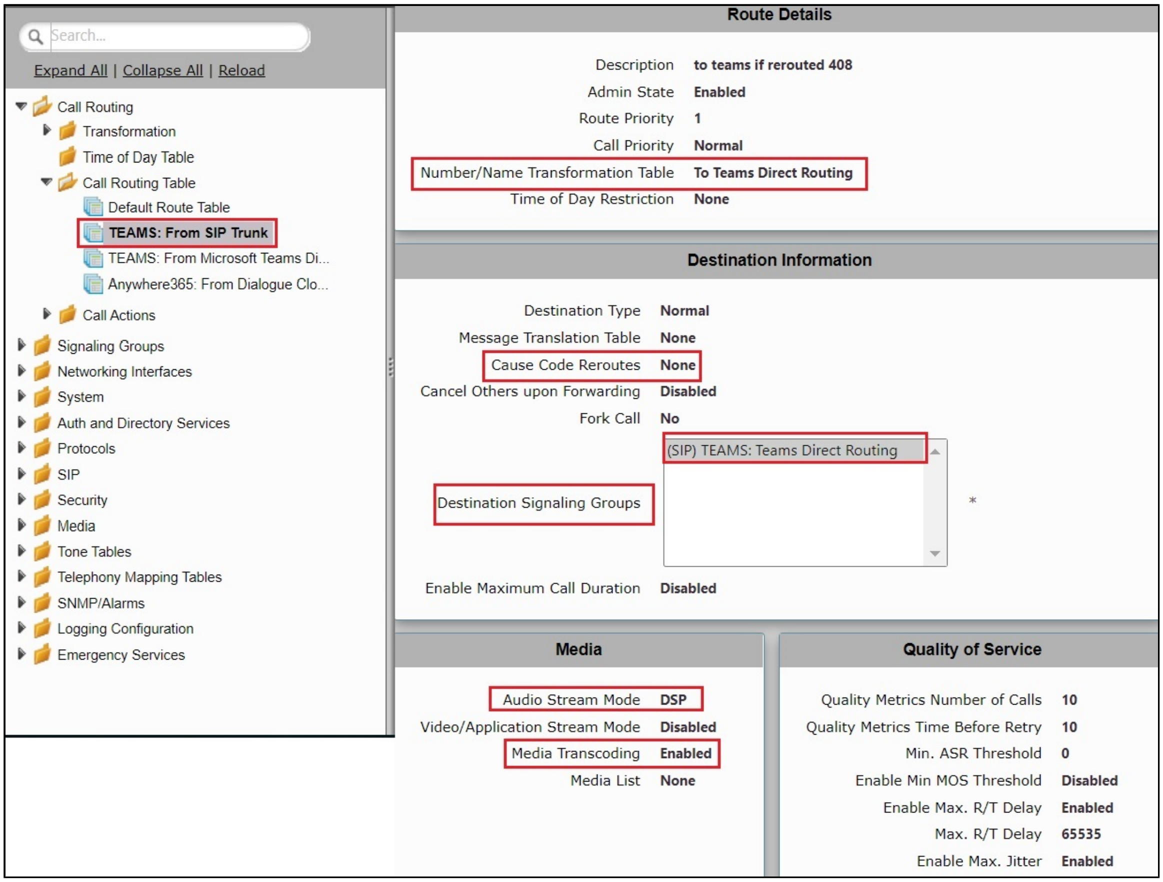
- Modify Call Routing table for **"TEAMS: From SIP Trunk"**.



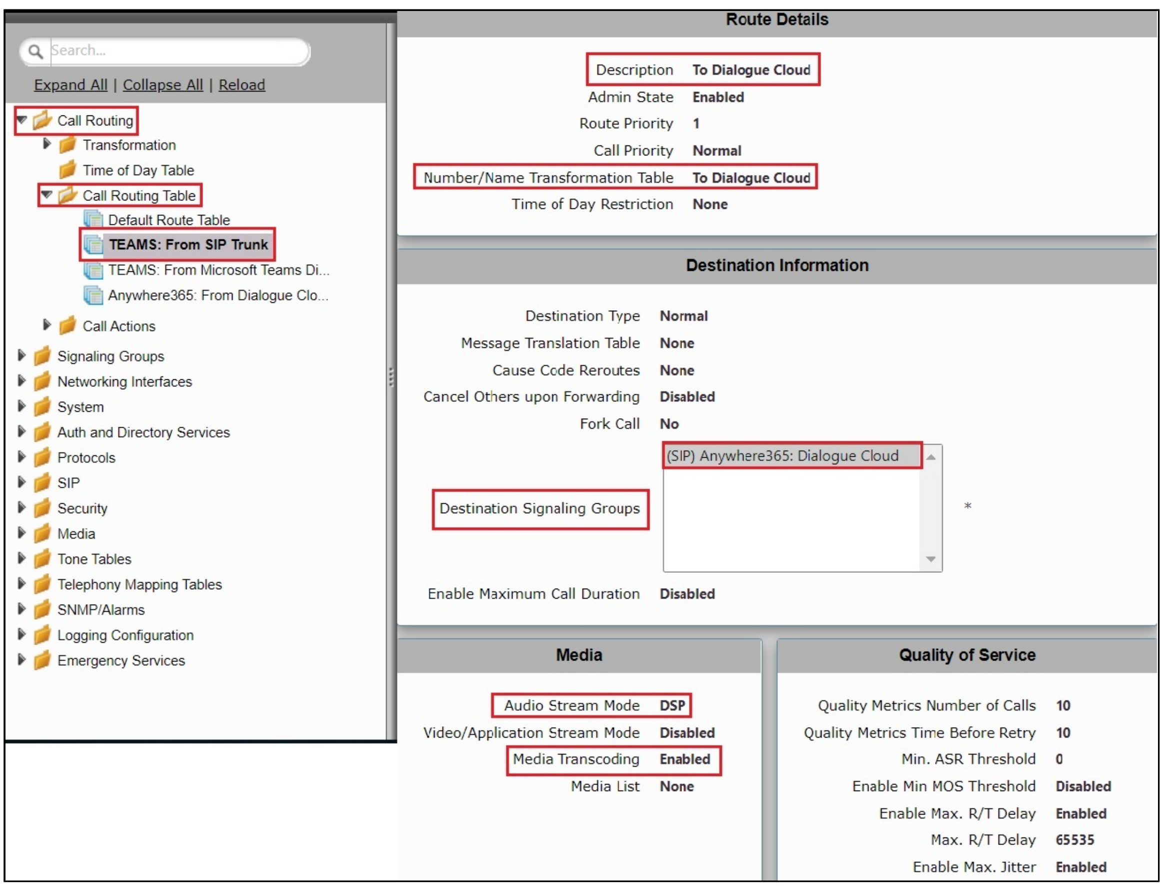
Route1 details: Number/Name Transformation Table with "To Teams Direct Routing" and Destination Signaling Groups with "Anywhere365: Dialogue Cloud", cause code reroute configured.



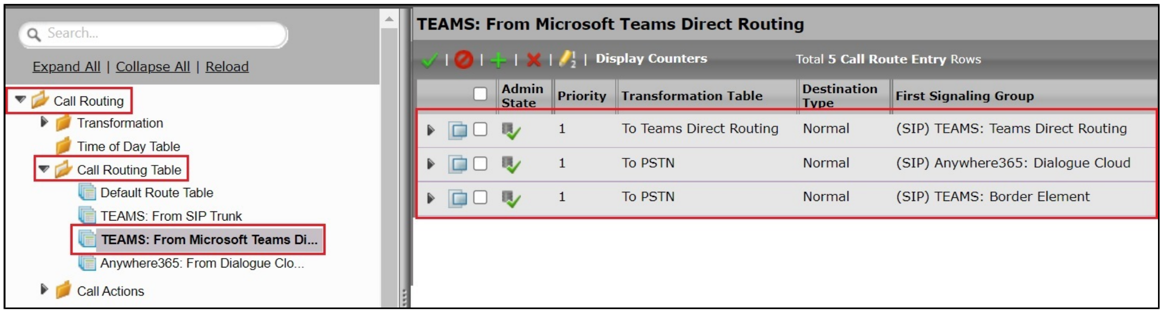
Route2 details: Reroute the call based on 408 response to (TEAMS: Teams Direct Routing) signaling group.



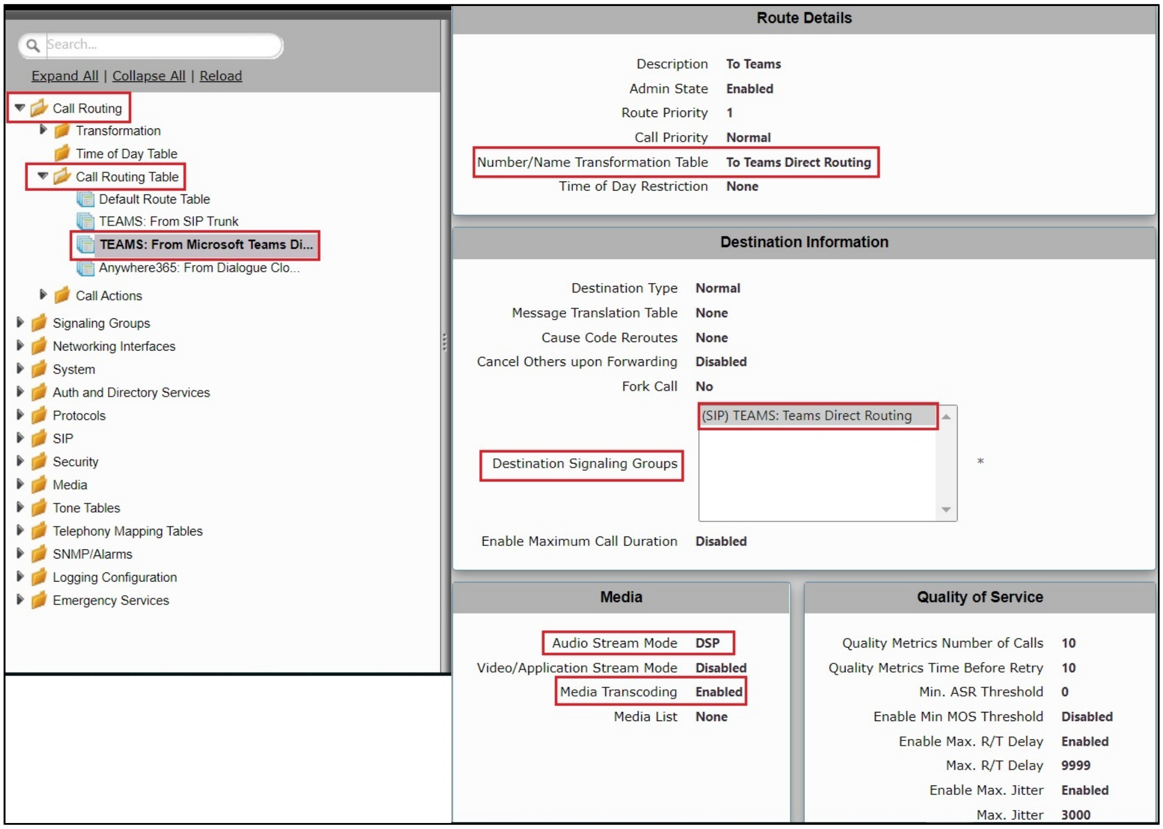
Route3 details: Number/Name Transformation Table with "To Dialogue Cloud" and Destination Signaling Groups with "Anywhere365: Dialogue Cloud".



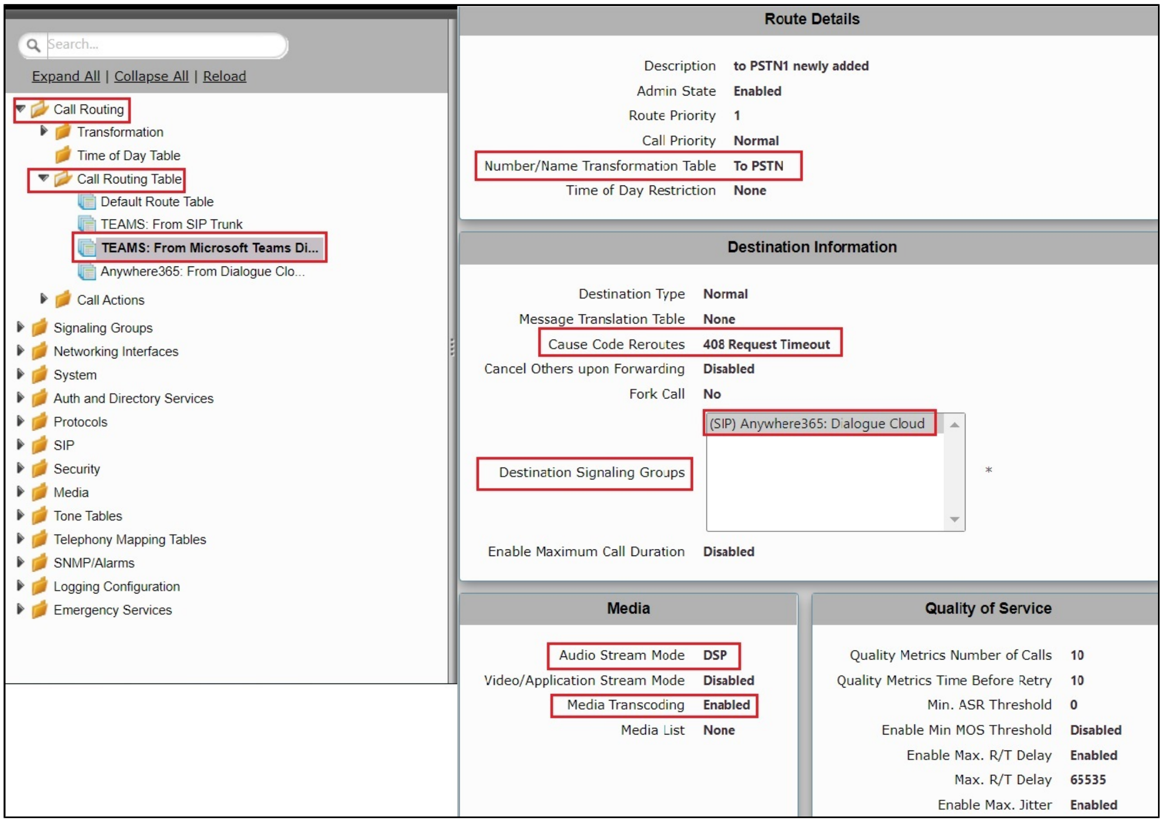
- Modify Call Routing table for **"TEAMS: From Microsoft Teams Direct Routing"**.



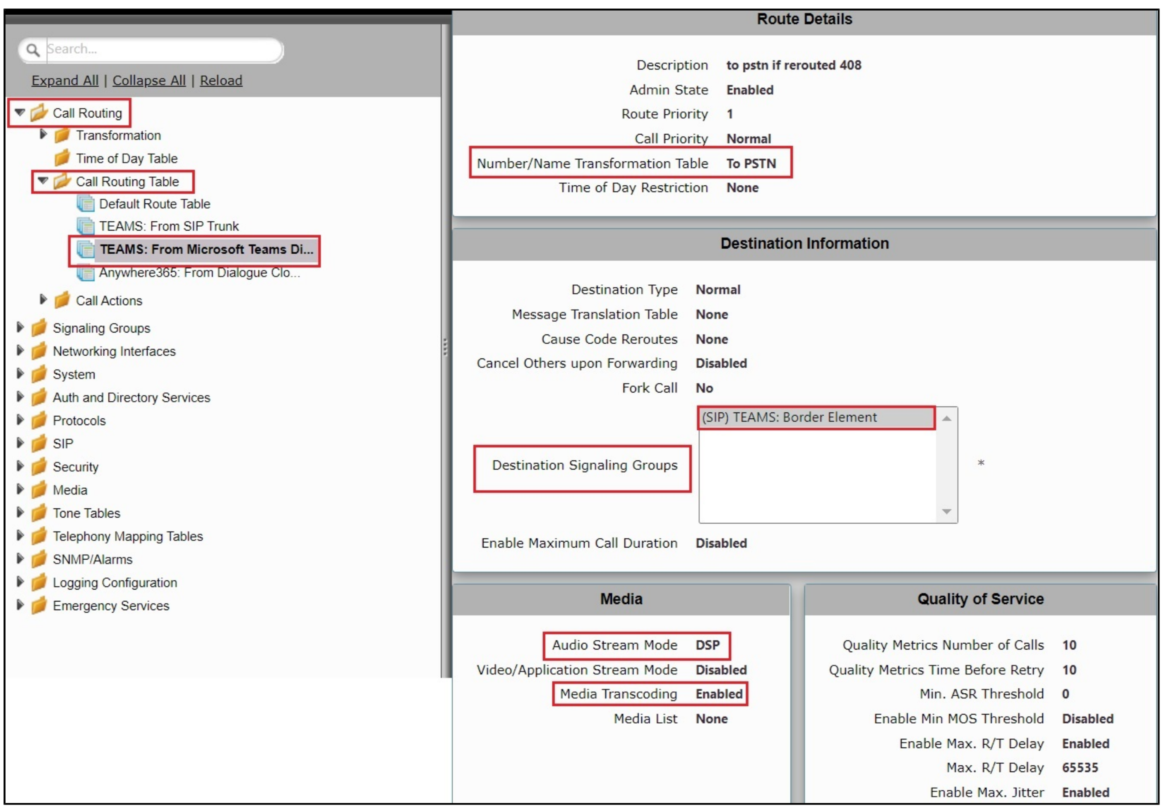
Route1 details: Number/Name Transformation Table "To Teams Direct Routing" and Destination Signaling Groups "TEAMS: Teams Direct Routing".



Route2 details: Number/Name Transformation Table with "To PSTN" and Destination Signaling Groups with "Anywhere365: Dialogue Cloud", cause code reroute configured.



Route3 details: Based on 408 response reroute to (TEAMS: Border Element) signaling group.



Section B: Anywhere365 Configuration

For anywhere365 relatedconfigurations and queries, please contact the Anywhere365 technical support team.

Supplementary Services and Features Coverage

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

Sr. No.	Supplementary Services/ Features	Coverage
1	Call Setup and Termination over TLS	✓
2	Call Transfer (Blind/Unattended/Cold)	✓
3	Call Transfer (consultative/Attended/Warm)	✓
4	Supervisor actions	✓
5	Quality Management using DTMF	✓
6	Call hold and Resume (with MOH enable)	✓
7	Call hold and Resume (without MOH enable)	✓
8	AnonymousCall	✓
9	Long Duration	✓
10	OPTIONS validation	✓
11	DTMF handling	✓
12	Session Audits	✓

Legend

Supported	✓
Not Supported	✗

Caveats

- Two way audio issue (both sides not audible) has been observed when blind transfer initiated by Teams is rejected from PSTN side. This is a known issue for Ribbon and will be addressed in the upcoming SBC releases.

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 and solutions, please visit:
https://ribboncommunications.com/products

For detailed information about Anywhere365 products and solutions, please visit:
https://anywhere365.io/

Conclusion

This Interoperability Guidedescribe the configuration steps required for**Ribbon SBC SWe Lite**to successfully interoperate with **Anywhere365**. All feature and serviceability test cases were completed and passed with the exceptions/observations noted inTest Results.

All features and capabilities tested are detailed within this document - any limitations, notes or observations are also recorded in order to provide the reader with an accurate understanding of what is/is not covered.

Configuration guidance is provided to enable the reader to replicate the same base setup additional configuration changes are possibly required to suit the exact deployment environment.