



# Twilio integration with Avaya Aura Contact Center (AACC)

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## 1 Audience

This document is intended for technical staff and Value Added Resellers (VAR) with installation and operational responsibilities. This configuration guide provides steps for integrating **Twilio Studio**, a tool to build IVRs and chatbots, with **Avaya Aura Contact Centre** in a Contact Center environment

## 2 Introduction

### 2.1 tekVizion Labs

tekVizion Labs™ is an independent testing and Verification facility offered by tekVizion PVS, Inc. (“tekVizion”). tekVizion Labs offers several types of testing services including:

- Remote Testing – provides secure, remote access to certain products in tekVizion Labs for pre-Verification and ad hoc testing
- Verification Testing – Verification of interoperability performed on-site at tekVizion Labs between two products or in a multi-vendor configuration
- Product Assessment – independent assessment and verification of product functionality, interface usability, assessment of differentiating features as well as suggestions for added functionality, stress and performance testing, etc.

tekVizion is a systems integrator specifically dedicated to the telecommunications industry. Our core services include consulting/solution design, interoperability/Verification testing, integration, custom software development and solution support services. Our services help service providers achieve a smooth transition to packet-voice networks, speeding delivery of integrated services. While we have expertise covering a wide range of technologies, we have extensive experience surrounding our practice areas which include: SIP Trunking, Packet Voice, Service Delivery, and Integrated Services.

The tekVizion team brings together experience from the leading service providers and vendors in telecom. Our unique expertise includes legacy switching services and platforms, and unparalleled product knowledge, interoperability and integration experience on a vast array of VoIP and other next-generation products. We rely on this combined experience to do what we do best: help our clients advance the rollout of services that excite customers and result in new revenues for the bottom line. tekVizion leverages this real-world, multi-vendor integration and test experience and proven processes to offer services to vendors, network operators, enhanced service providers, large enterprises and other professional services firms. tekVizion’s headquarters, along with a state-of-the-art test lab and Executive Briefing Center, is located in Plano, Texas.

*For more information on tekVizion and its practice areas, please visit tekVizion Labs website at [www.tekVizion.com](http://www.tekVizion.com)*

## 2.2 Use Case

This Configuration Guide "blueprint," while modeled after a specific customer use case, is generic enough that it can represent almost any attempt to front-end a customer's Avaya Aura Contact Center with a customer-built customized/bespoke modern, cloud-based IVR (Interactive Voice Response) from Twilio, where the sending of entered or queried data to Avaya is needed.

The Twilio IVR in this scenario can be a basic, DTMF-based IVR, a speech rec-enabled-IVR, or a fully conversational IVR built with an AI-based virtual agent (such as Google's DialogFlow CX) on Twilio, as the customer may prefer to build – and its job done (as successfully validated by this blueprint) is to replace the existing IVR built into a customer's Avaya system, while still providing the necessary context for calls being redirected to the Avaya Aura Contact Center, so that an agent can process the remaining incoming calls still being escalated, same as before, if the call cannot be dealt with via new self-service modalities as enabled by the customer's more modern Twilio IVR, versus all calls needing to be routed to an agent, just because some of those calls required assistance by a live human being.

In this particular case (see Figure 1, below), we've modeled our scenario on that of a typical customer who contacted Twilio for help, because they had an IT department with agents providing phone technical support, from agent stations hung off their Avaya Aura Contact Center platform, and who were getting flooded with password reset calls (a very common and persistent support need in many corporate IT environments, but calls that are nevertheless sometimes tricky to handle in an automated manner). While most password reset calls would usually be addressable via stepping callers through some new, more interactive info-gathering and self-service directions provided via a newly built custom Twilio IVR flow, one that could include two-factor authentication and other enterprise data dipping measures for added security (or personalization), a calls few would still need some "hand-holding" or trouble-shooting by agents – but not so many that if most calls could be handled self-service, agents would not then have a lot more time to process more complicated calls, or do other tasks.

In the case of this typical customer, their existing Avaya IVR system also had several limitations leaving it unable to address this use case by itself – such as the inability to also send text messages (with helpful self-service or TFA - Two Factor Authentication - links), an inability (at least not without expensive upgrades) to add speech rec or conversational IVR capabilities, the practical inability for the IVR to be shared across multiple sites / Aura on-premises installations from the cloud, difficulty in making changes and be centrally managed from the cloud -- all leading this customer to want to front-end their Avaya Contact Center system with something more modern, which they could customize as needed, and build for themselves in the cloud, on Twilio, servicing all of their locations and enabling the IT department of this customer to provide higher degree of self-service to their end-users.

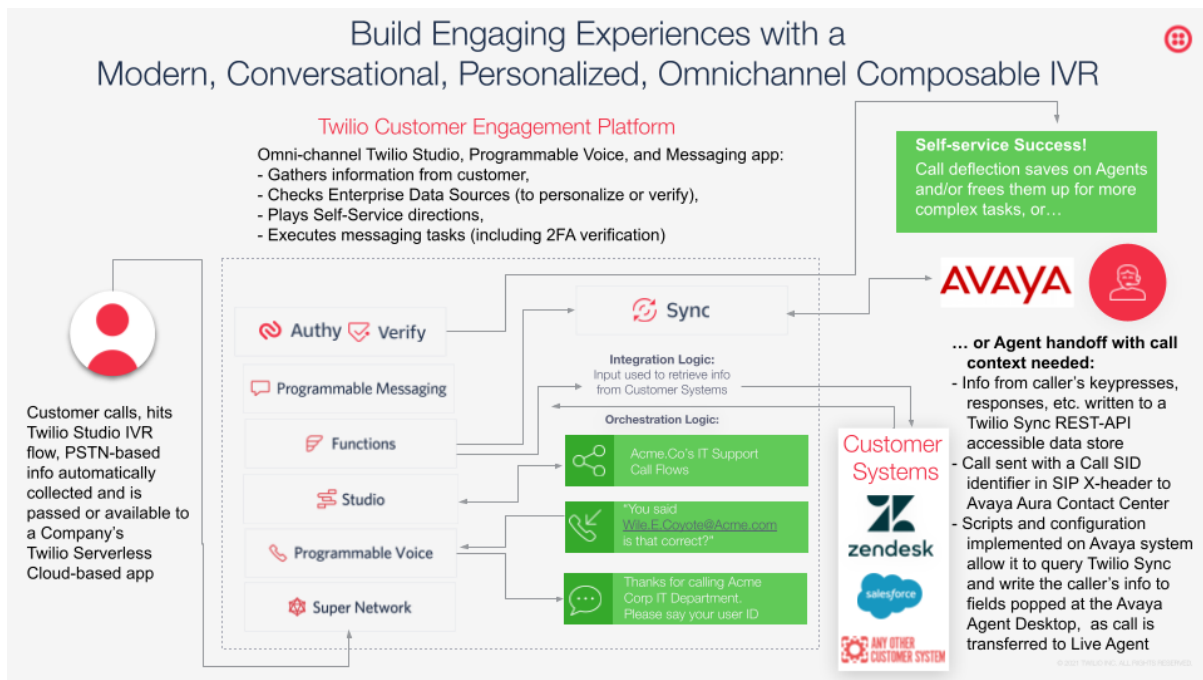


Figure 1 Flowchart View of a use case

When we therefore began constructing our Configuration Guide with this use case in mind, we were seeking to specifically address a typical call flow similar to that faced by a caller into this company's IT department needing help resetting their password, as follows:

- The caller would first call into a Twilio IVR (same phone number, owned by or ported to Twilio, of the company's IT department) similar to the one created here, and enter various data, such as giving their username or email and credentials to the Twilio IVR for a lookup.
- Then the caller would be directed to some self-service directions, delivered via played prompts and/or text messages sent, for resetting their password from the IVR, if that was their issue, (including steps such as being sent a TFA verification message or link to their mobile device on record in the company's database for that user, as an added layer of security) from the IVR, and,
- If that solved the caller's problem, in a self-service/automated manner, then... success (as in most cases)!
- Else... in cases where the verification link, lookup or new password failed, if the caller still needed support, then the caller could elect to have their call sent (queued) at that point to a live IT Support Agent – and most importantly, along with their call, have all of the context input into the Twilio platform and IVR up to that point sent also, such as keypresses and whatever number the caller had called from, language preference, what login credentials they had provided, what number the TFA message was sent to and link sent, success/fail result of reset attempt, etc. – so that the the IT support agent on the Avaya Contact Center eventually picking up the call would have all of that context already in front of them upon answering in their Avaya Agent desktop application, without the need for the caller to repeat or to the agent re-gather this information

While not every literal step in the above flow is covered here in this Configuration Guide (it would be too long), the rest can predominantly be found among Twilio's Quickstart guides

online. The link for Twilio’s Quickstart guides online is <https://www.twilio.com/docs/voice>. However, the basic framework and steps for how to collect and successfully pass entered call context from a customer-built Twilio app to an Avaya on-premise Aura Contact Center system are layed out here, step by step.

The main tools used to build this validated call flow include Twilio Studio, and the Twilio Console interface to other Twilio services and tools, as well as the Avaya Aura Contact Center’s various admin interfaces, as described below.

One interesting key wrinkle solved in validating this Configuration Guide was that the Avaya Aura Contact Center, as is typical for an on-premises contact center system, naturally assumes the existence of an on-premise database from which info like call context would be assembled to be sent on to agents (instead of all the info arriving with the call itself from off-board) – logical enough in the “old days” of single-vendor vertically integrated on-premise systems, but limiting the Avaya system’s usefulness and extensibility today – whereas more modern, multi-party cloud-based bespoke and/or customer-built solutions typically use data sources also centralized in the cloud for sending data with arriving calls as they are passed around. Read on below to see how ancillary Twilio tools like Twilio Sync have enabled the key “cloud database-to-premises system connectivity” aspect necessary to get this configuration working for Avaya customers.

## 2.3 Twilio Studio

Twilio Studio is a visual, drag-and-drop editor for creating applications. It helps to build an IVR system that gathers key presses from callers and connects their calls to an agent at a Contact Center. When using Twilio Studio, customers will also often use Twilio Functions, Assets, Sync, and other aspects of Twilio’s platform in building their applications.

The Twilio product mentions should have links as follows:

- Twilio Studio: <https://www.twilio.com/en-us/serverless/studio>
- Twilio Functions: <https://www.twilio.com/en-us/serverless/functions>
- Assets: <https://www.twilio.com/docs/serverless/functions-assets/assets>
- Sync: <https://www.twilio.com/docs/sync/api>

Additionally, Twilio Studio comes with many “one-click” built-in widgets that make adding in partner capabilities, such as linking to Google DialogFlow CX AI-based Virtual Agents for Conversational IVRs, much easier.

<https://twilio.postclickmarketing.com/on-demand-level-up-with-twilio-voice-google-dialogflow-cx-building-conversational-ai-experiences>

## 2.4 Avaya Aura Contact Center

Avaya Aura Contact Center (AACC) is a solution that delivers intelligent call routing, network-to-desktop Computer Telephony Integration (CTI), and multichannel contact management to contact center agents over an IP network – including Avaya AES, Avaya Aura MM, Avaya Aura CM, Avaya Aura SM, Avaya Aura Media Server, and Avaya Aura Contact Center modules, Avaya SBC, and Avaya Aura Agent Desktop application, as detailed below.

### 3 Topology

The network topology is illustrated below and is representative of Twilio with Avaya Aura Contact Center

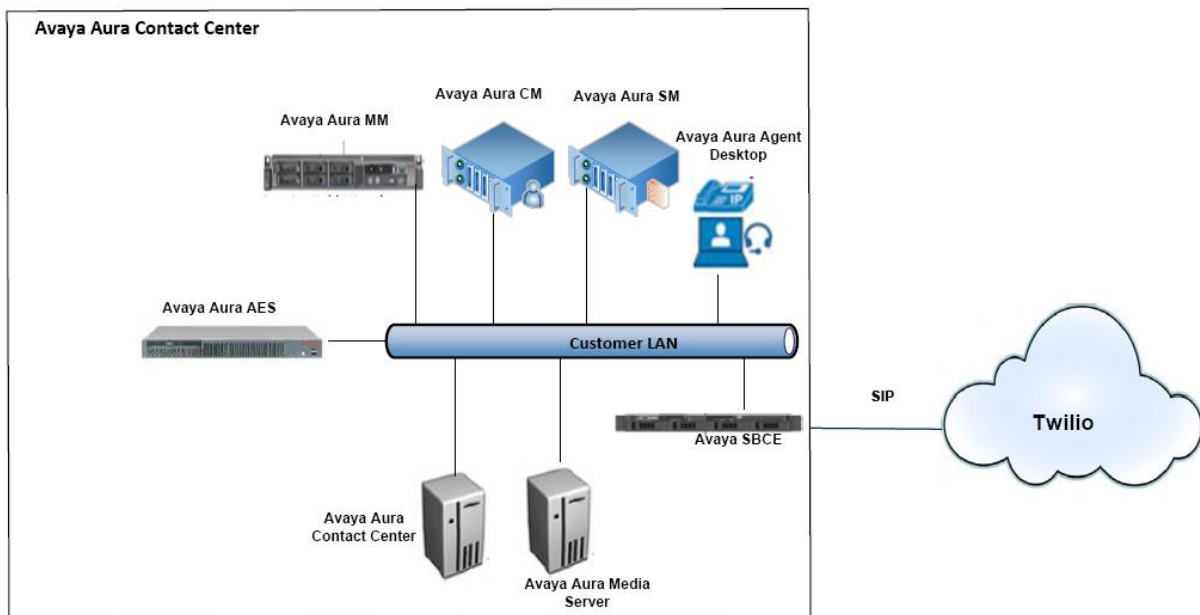


Figure 2 Network Topology

### 3.1 Hardware Components

- Avaya one-X Communicator
- Avaya Aura Agent Desktop

The following components are hosted in VMWare ESXi version 6.5

- Avaya Aura Contact Center (AACC)
- Avaya Aura Media Server (AAMS)

The following components are hosted in UCS-C240 VMWare server ESXi 6.0

- Avaya Aura Communication Manager (CM)
- Avaya Aura Session Manager (SM)
- Avaya Session Border Controller for Enterprise (SBCE)

### 3.2 Software Requirements

- Avaya One-X Communicator 6.2.4.06-FP4
- Avaya Aura Agent Desktop 7.1
- Avaya Aura Contact Center 7.1.2. Avaya Aura Contact Center is upgraded with Feature Pack 2 Service Pack 1 GA patches
- Avaya SBCE 10.1.0.0-32-21432

Avaya Aura

- Communication Manager 10.1
- Session Manager 10.1
- System Manager 10.1

## **4 Pre-requisites**

### **4.1 Twilio**

- Twilio account
- Twilio phone number
- Twilio Studio to build IVR flow

### **4.2 Avaya Aura Contact Center**

- Avaya SBCE to accept calls from Twilio and to route calls to Avaya SM
- Avaya Aura SM setup with all the mandatory elements to handle the inbound Twilio calls to the Avaya Aura Contact Center
- Avaya Aura Orchestration Designer to create an application script containing a call flow for routing calls to a queue and agents.



## 5 Avaya Aura Contact Center Call Flow

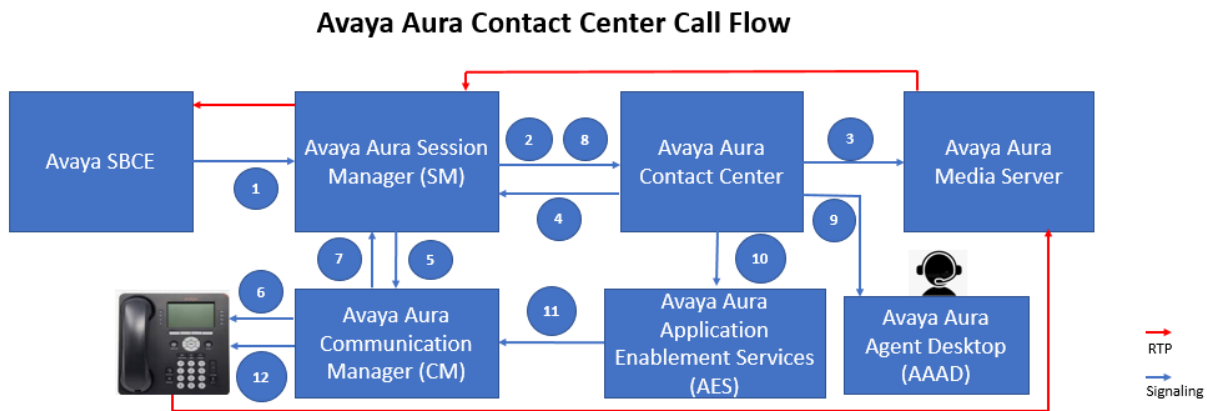


Figure 3 Call Flow

1. Avaya SBCE constructs a SIP User-to-User header from the X-parentCall header value received from Twilio and sends the header to Avaya SM
2. Avaya Aura SM constructs a SIP User-Agent header using the adaptation rules from the SIP User-to-User header received and sends it to Avaya Aura Contact Center (AACC)
3. AACC receives the call with the SIP User-Agent header. The call is sent to a skillset group defined in an AACC application script and then to Avaya Aura Media Server. Music is played to the PSTN user when the user waits in the queue.
4. AACC sends the call to Avaya Aura SM to route the call to an agent assigned to the skillset group.
5. Avaya Aura SM sends the call to Avaya Aura CM.
6. Avaya Aura CM sends the call to Avaya agent desk phone.
7. Avaya Aura CM sends the agent ringing information to Avaya Aura SM.
8. Avaya Aura SM forwards that to AACC.
9. AACC delivers the call to Avaya Aura Agent Desktop (AAAD) and the agent answers the call.
10. AACC sends offhook information to Avaya Aura Application Enablement Services (AES).
11. Avaya Aura Application Enablement Services (AES) notifies Avaya Aura CM to offhook Avaya agent desk phone.
12. Avaya agent desk phone goes offhook.

## 6 Configuration

As described above, this configuration assumes the customer already has a Twilio account set up, and phone number purchased. For more information on how to do that, see the Twilio Programmable Voice Quickstart Guide. The link for Twilio's programmable Voice Quickstart Guide is <https://www.twilio.com/docs/voice>.

### 6.1 Twilio Configuration

#### 6.1.1 SIP domains

- Navigate to **Voice > Manage > SIP domains**
- Under **Configure**,
  - *FRIENDLY NAME*: **AvayaPV**
  - *SIP URI*: **avaya**
- Under **Voice Authentication**,
  - *IP ACCESS CONTROL LISTS*: Select the IP access control lists to authenticate inbound calls to Twilio (Refer Section 6.1.2)
  - *CREDENTIAL LISTS*: Select the appropriate Credential list for authentication (Refer Section 6.1.3)

Figure 4 SIP domains

- Under **SIP Registration**,
  - Allow SIP Endpoints to register: **ENABLED**
- Under **SIP Registration Authentication**,
  - **CREDENTIAL LISTS**: Select the appropriate Credential list for authentication of SIP Endpoint (Refer Section 6.1.3)
- Click **Save**

Develop Monitor

- > Port & Host
- > Regulatory Compliance
- ✓ Voice
  - Overview
  - Try it out
  - Manage
    - Twiml apps
    - SIP domains**
    - BYOC trunks

Docs and Support

[SIP domains /](#)

CALL STATUS CHANGES  HTTP POST ▾

### Secure Media

Secure your communications delivered over the public by encrypting signaling with Transport Layer Security (TLS) and by encrypting media with Secure Real-time Transport Protocol (SRTP).

DISABLED When Secure Media is disabled, RTP must be used for media packets. SIP messages may be sent unencrypted or encrypted using TLS. Any SRTP encrypted calls will be rejected.

**SIP Registration**

Allow SIP Endpoints to register with this SIP Domain. When you configure your SIP endpoint, you must specify the **localized** SIP Domain that you want to register, for example: {domain-name}.sip.us1.twilio.com for North America Virginia (US1). Credential Lists must always be specified. [Learn more](#)

**ENABLED** Endpoints CAN register with this Domain

SIP Registration Authentication

**SIP Registration Authentication**

The following Credential Lists will be used to authenticate SIP Endpoints during registration to allow them to receive outbound SIP calls from Twilio.

The username in the Credential List corresponds to the username that you configure in the SIP Endpoint.

CREDENTIAL LISTS

X

X

+

### Emergency Calling

Emergency addresses are registered on a per Phone Number basis from the [Numbers Page](#). To make an emergency call, you must use the Emergency Address registered Twilio Phone Number. When an emergency call is made, Twilio will IGNORE the webhook and route directly to the appropriate Public Safety Answering Point (PSAP). [Learn more about Emergency Calling](#)

DISABLED Phone Numbers associated with SIP Domain will NOT be allowed to call Emergency Services

Save

Cancel

Delete this SIP Domain

Figure 5 SIP domains Continuation

## 6.1.2 IP access control lists

- Navigate to **Voice > Manage > IP access control lists**
- Click **Create new IP Address Range**
- *Friendly Name: ACLs*
- *IP Address Range: Enter the Avaya SBCE WAN interface IP Range*
- *Friendly Name: IP*

The screenshot shows the Twilio console interface for configuring IP access control lists. The left sidebar has 'Voice' expanded, with 'Manage' and 'IP access control lists' highlighted. The main content area is titled 'Tekvizion ACLs' and includes a '+ Create new IP Address Range' button. Below the title are several form fields: 'Friendly Name' (containing 'ACLs'), 'IP/ACL SID' (containing 'ALa760'), 'Associated SIP Trunks', and 'Associated SIP Domains' (containing 'Avaya PV').

Below the configuration section is a table titled 'IP Address Ranges' with a note: 'IP Access Control Lists may have up to 100 IP addresses.' The table has two columns: 'IP Address Range' and 'Friendly Name'. It contains two rows of data:

IP Address Range	Friendly Name
[Redacted]	[Redacted]
192.65.[Redacted] / 32 192.65.[Redacted]-192.65.[Redacted]	[Redacted] IP

Figure 6 IP access control lists

### 6.1.3 Credential lists

- Navigate to **Voice > Manage > Credential lists**
- *Username:* Enter the **Username**
- *Password:* Enter the **Password**

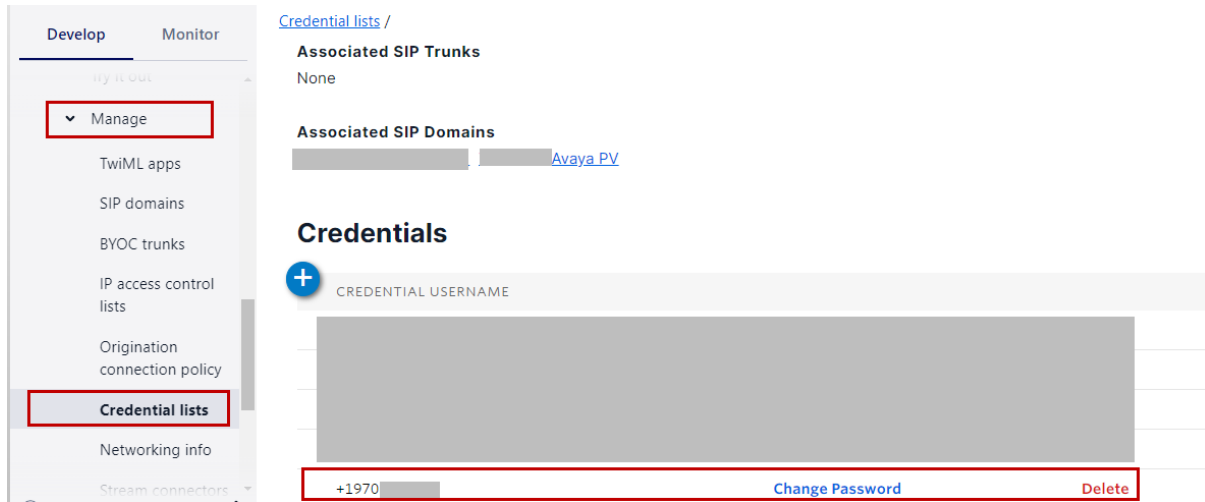


Figure 7 Credential lists

### 6.1.4 Twilio Studio IVR Flow

Twilio IVR Studio flow is created to play IVR, collect a digit from the PSTN user, store it in a repository, transfer the call to Avaya Aura agent and send the digit or queue information (queue number 1 for Sales and 2 for Support) to the Avaya Aura agent as a SIP intrinsic

- Navigate to **Studio > Flows**
- Click **Create new Flow**
- **FLOW NAME: Dual Language IVR Test**
- Click **Next**
- *Choose a template to get going: Enterprise IVR/Phone Tree*
- Click **Next**

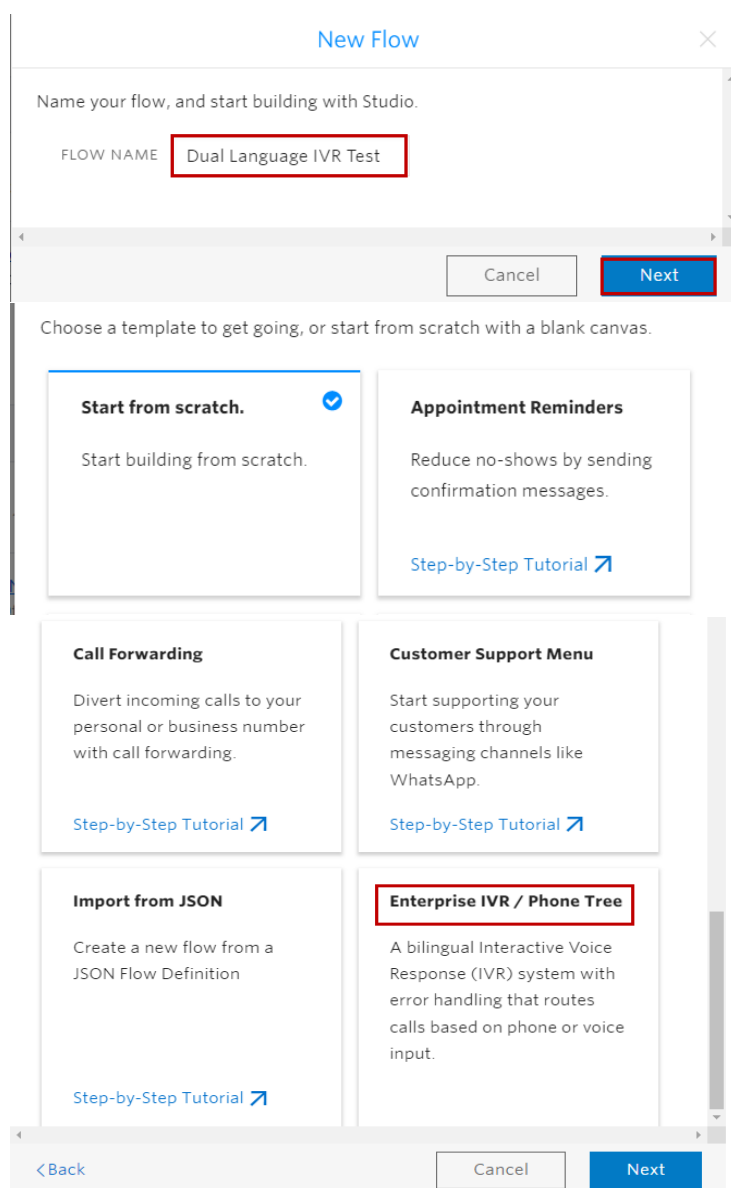


Figure 8 Twilio IVR Studio Flow – Create New Flow

This creates an IVR template as shown below.

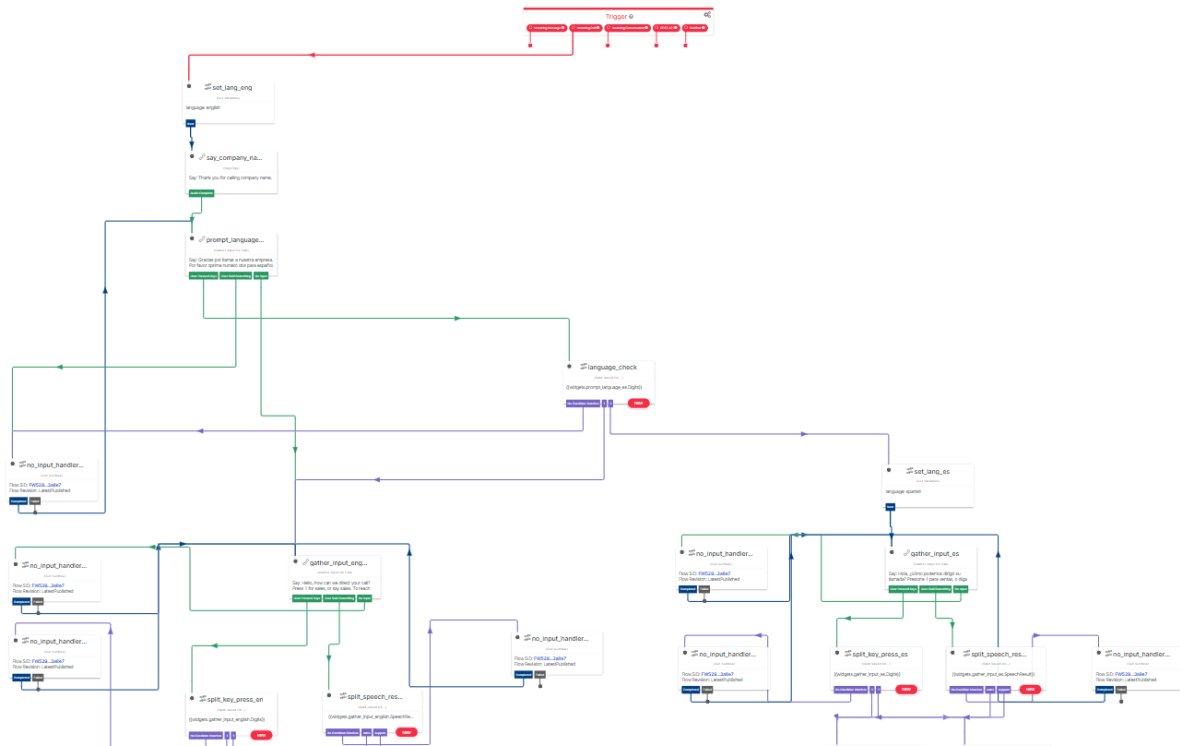


Figure 9 Twilio IVR Studio Flow – Template



End to End Twilio IVR Studio flow built from the template for this interoperability testing is shown below.

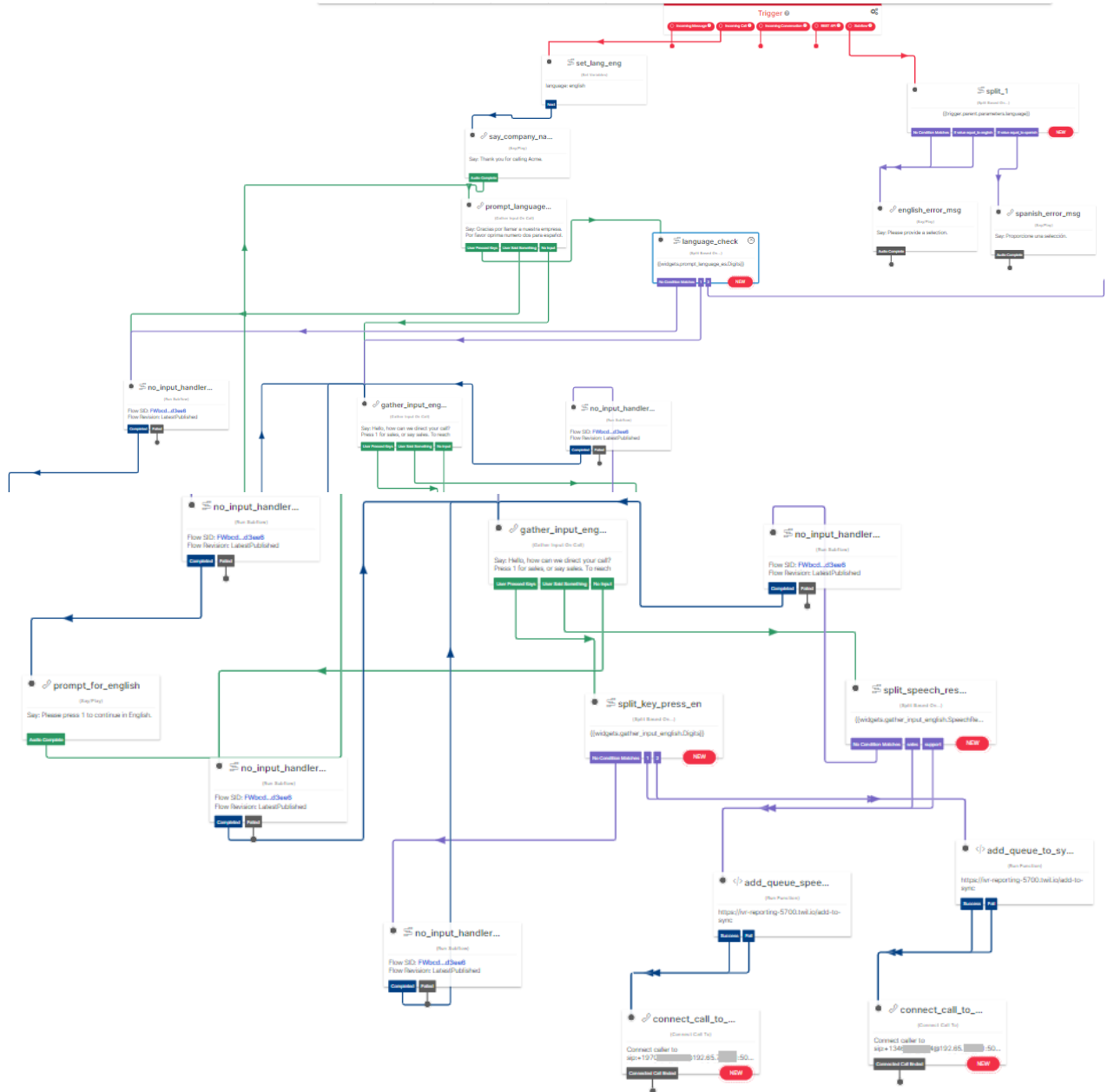


Figure 10 Twilio IVR Studio Flow – End to End Flow

The End to End IVR Flow (Figure 10) interacts with the PSTN user, through the following questions

E.g. Flow number IVR navigation 1

1. PSTN user calls Twilio IVR DID
2. PSTN user hears "Thank you calling Acme" followed by the announcement in Spanish "Gracias por llamar"
3. PSTN does not provide any input
4. PSTN user hears "Hello, how can we direct your call? Press 1 for sales, or say sales. To reach support, press 2 or say support."
5. PSTN user presses 1
6. PSTN user is redirected to Avaya Aura agent for further interaction

E.g. Flow number IVR navigation 2

1. PSTN user calls Twilio IVR DID
2. PSTN user hears "Thank you calling Acme" followed by the announcement in Spanish "Gracias por llamar"
3. PSTN does not provide any input
4. PSTN user hears "Hello, how can we direct your call? Press 1 for sales, or say sales. To reach support, press 2 or say support."
5. PSTN user presses 2
6. PSTN user is redirected to Avaya Aura agent for further interaction.

## Detailed view of Twilio IVR Studio flow

### Widget: set\_lang\_eng

- Create a widget **Set Variables** named **set\_lang\_eng** and this is the entry point when the incoming call is arrived to the Twilio IVR DID
- **WIDGET LIBRARY** can be used to create different kinds of widget. e.g. To set variables, the Set Variables Widget can be used
- Drag and Drop a link from the **Incoming Call** to **set\_lang\_eng** to create a link between them
- Expand the side panel << to configure the variables for a widget
- This widget sets the variable **language** with value **english**
- The configuration needs to be Published using **Publish** once the end to end flow configuration is completed

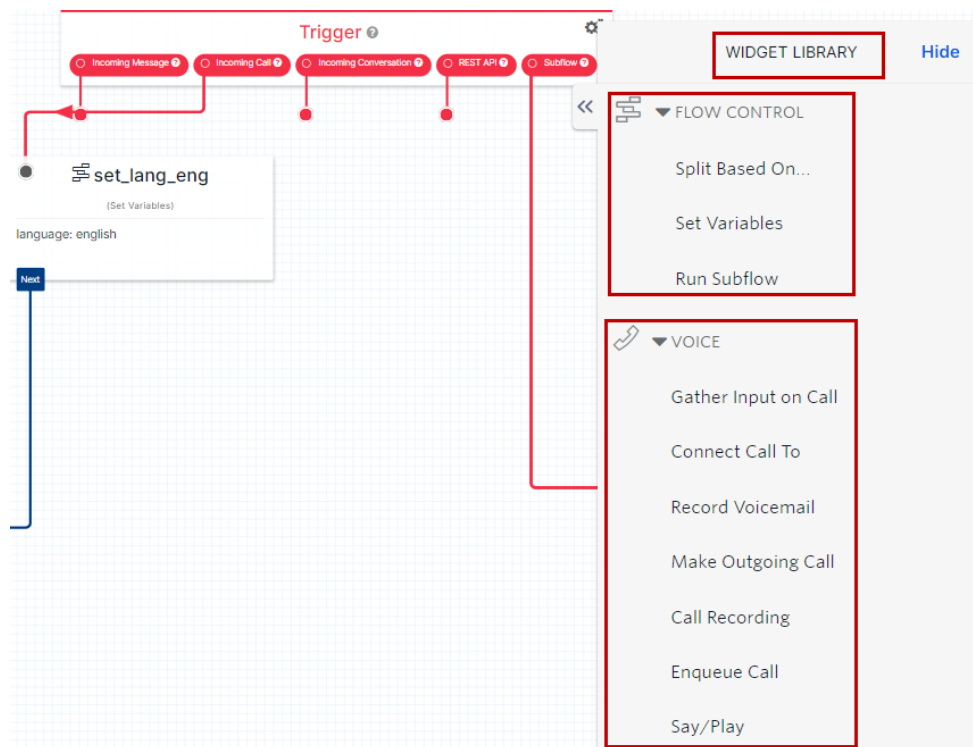


Figure 11 Twilio IVR Studio Flow – set\_lang\_eng

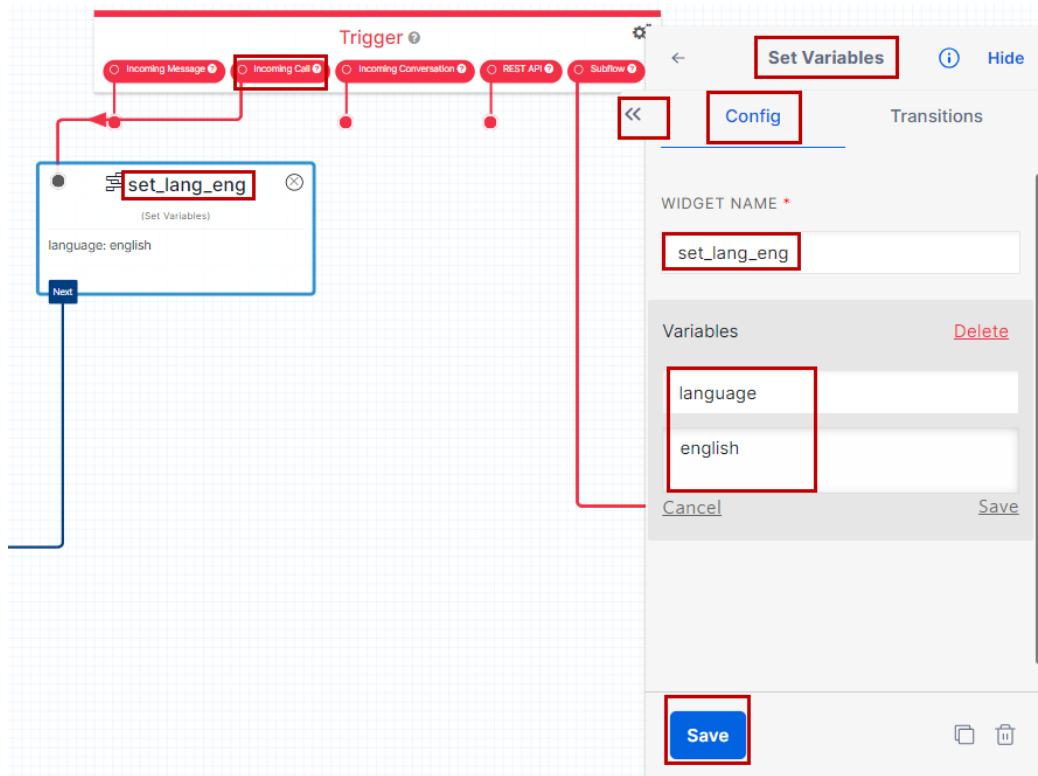


Figure 12 Twilio IVR Studio Flow – set\_lang\_eng Continuation

**Widget: set\_company\_name**

- **Next** option from **set\_lang\_eng** is connected to widget **Say/Play** named **say\_company\_name** and this plays the message “Thank you for calling Acme”
- The other values configured for this widget are highlighted below.

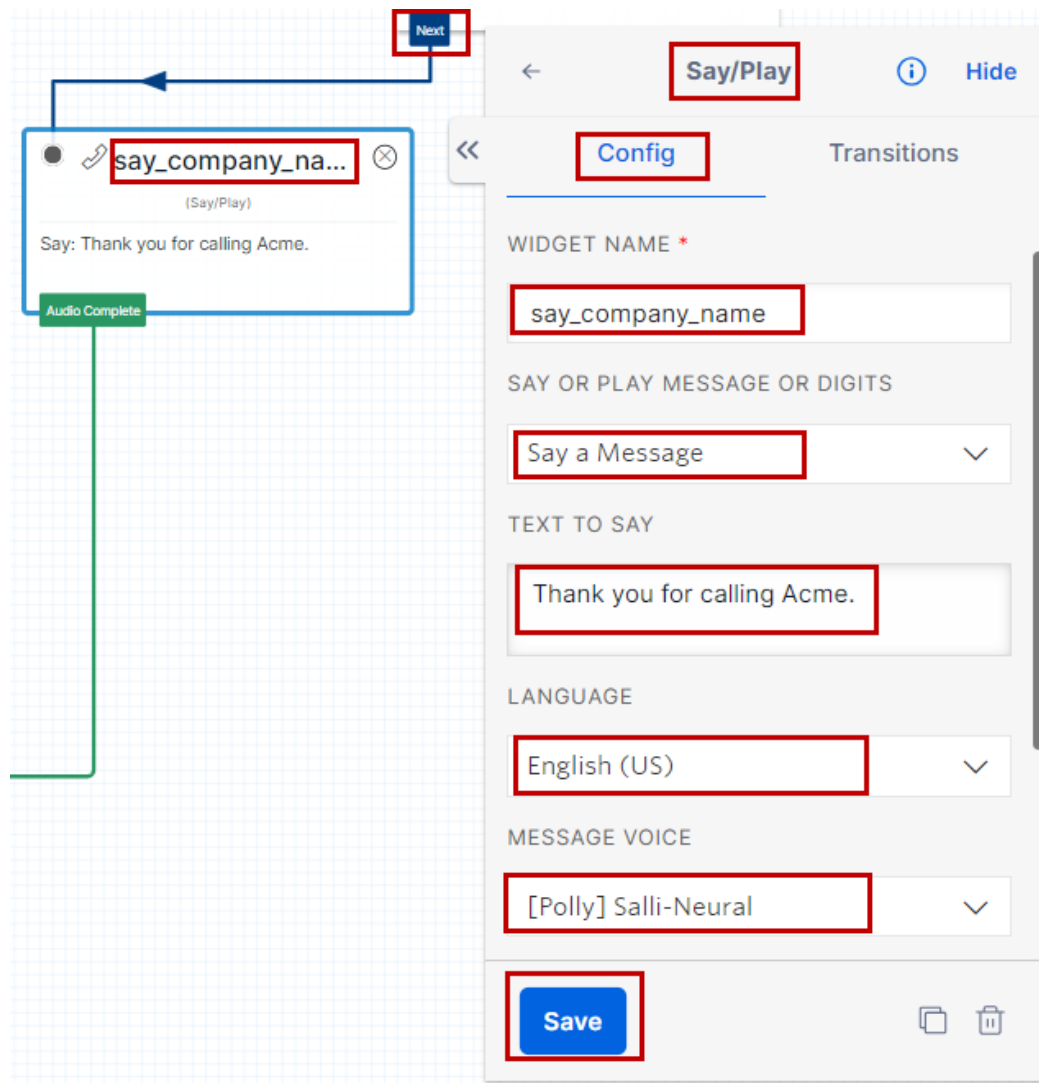


Figure 13 Twilio IVR Studio Flow – say\_company\_name

**Widget: prompt\_language\_es**

- **Audio Complete** option from **say\_company\_name** is connected to widget **Gather Input On Call** named **prompt\_language\_es** and this plays the Spanish message “Gracias por llamar”
- The other values configured for this widget are highlighted below.

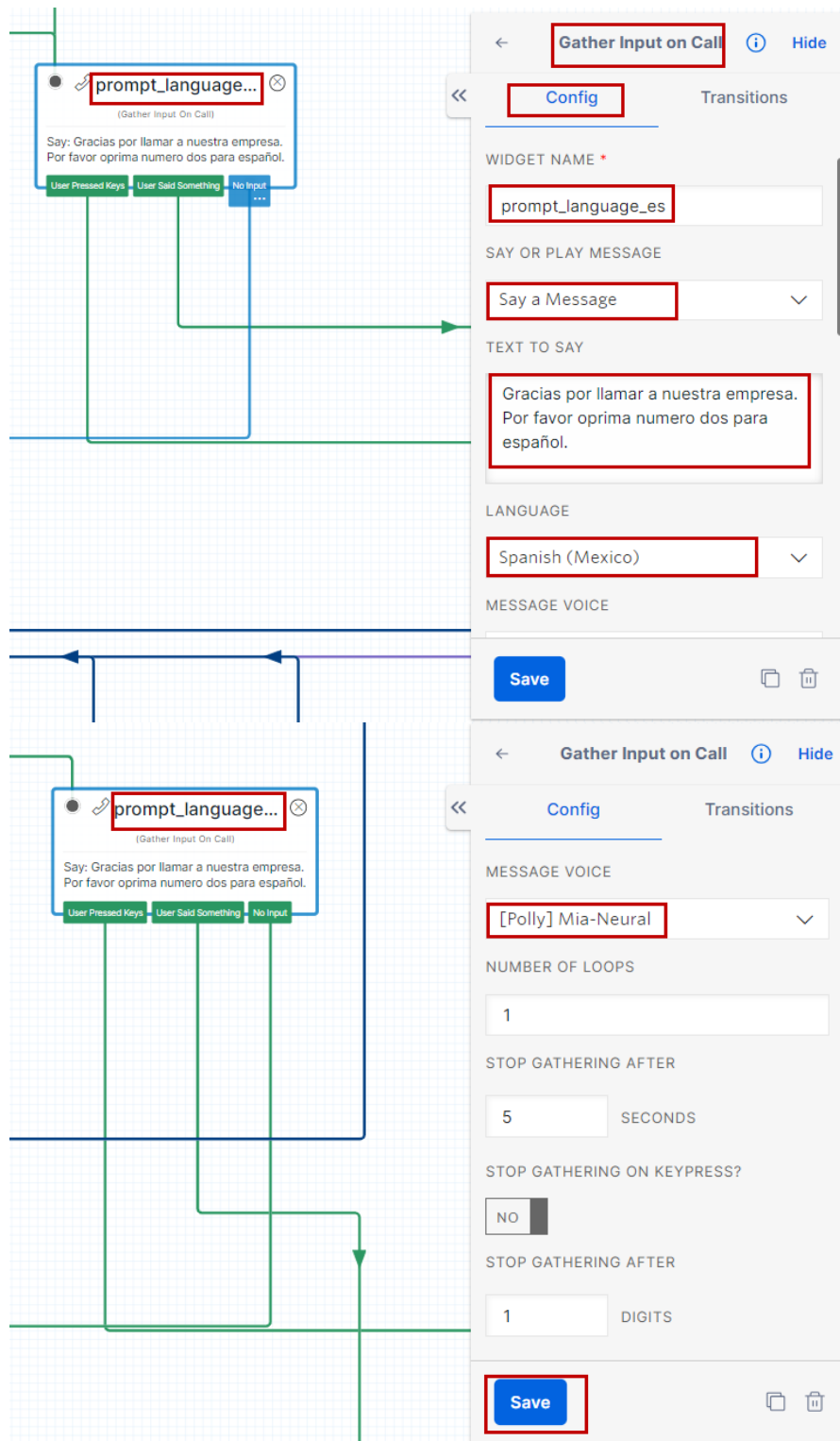


Figure 14 Twilio IVR Studio Flow – prompt\_language\_es

**Widget: language\_check**

- **User Pressed Keys** (in the widget **prompt\_language\_es**) option is connected to widget **Split Based On** named **language\_check**. This splits the language English/Spanish based on the digit which is pressed.
- The other values configured for this widget are highlighted below.

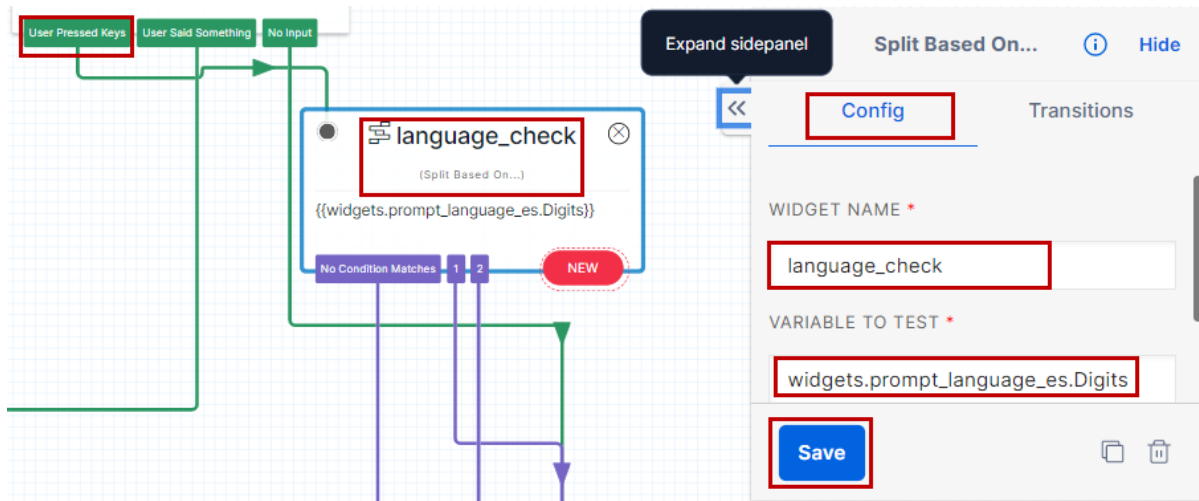


Figure 15 Twilio IVR Studio Flow – language\_check

**Widget: gather\_input\_english**

- **Digit 1** option (in the widget **language\_check**) is connected to widget **Gather input On Call** named **gather\_input\_english**. This plays the IVR “Hello, how can we direct your call”.
- The other values configured for this widget are highlighted below.

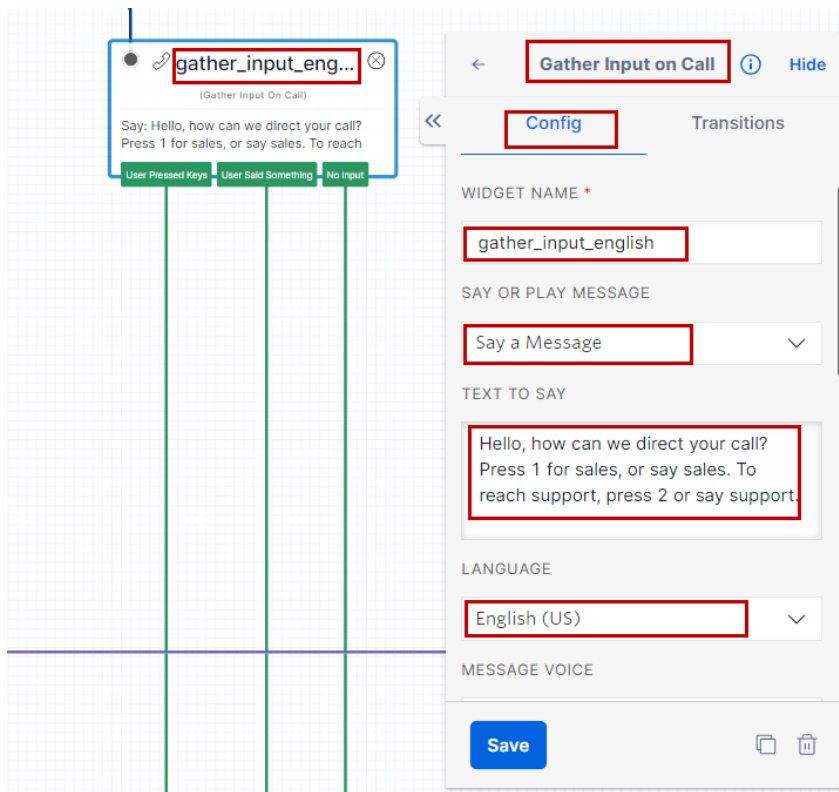


Figure 16 Twilio IVR Studio Flow – language\_check



The image shows two screenshots of the Twilio IVR Studio interface. On the left is a flow diagram with a widget named 'gather\_input\_eng...' (Gather Input On Call). The widget's prompt text is: 'Say: Hello, how can we direct your call? Press 1 for sales, or say sales. To reach'. Below the prompt are three output paths: 'User Pressed Keys', 'User Said Something', and 'No Input'. On the right are two configuration panels for this widget. The top panel shows settings for 'MESSAGE VOICE' (set to '[Polly] Salli-Neural'), 'NUMBER OF LOOPS' (set to 1), 'STOP GATHERING AFTER' (set to 5 SECONDS), and 'STOP GATHERING ON KEYPRESS?' (set to NO). The bottom panel shows settings for 'SPEECH RECOGNITION LANGUAGE' (set to 'English (United States)'), 'SPEECH RECOGNITION HINTS' (set to 'sales, support'), and 'PROFANITY FILTER' (set to True). Both 'Save' buttons are highlighted with red boxes.

Figure 17 Twilio IVR Studio Flow – language\_check Continuation

**Widget: no\_input\_handler**

- **No Condition Matches** option (in the widget **language\_check**) is connected to widget **Run Subflow** named **no\_input\_handler\_1**.
- The parameter **flow.variables.language** (i.e. **english**) is invoked by the Widget named **Split\_1 (Figure 19)**
- The other values configured for this widget are highlighted below.

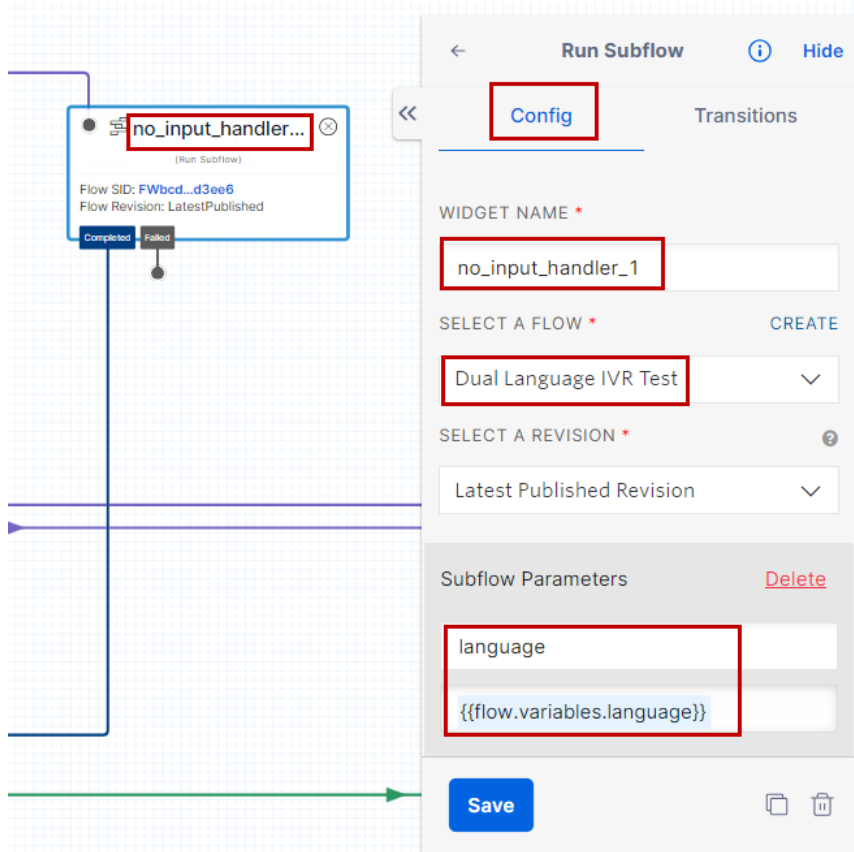


Figure 18 Twilio IVR Studio Flow – no\_input\_handler\_1

**Widget: split\_1**

- Widget **no\_input\_handler\_1** (Figure 18) invokes the Subflow Widget **Split Based On...** named **split\_1**
- **flow.variables.language** (i.e. **english**) is referenced at runtime inside the Subflow via the trigger object **trigger.parent.parameters.language**

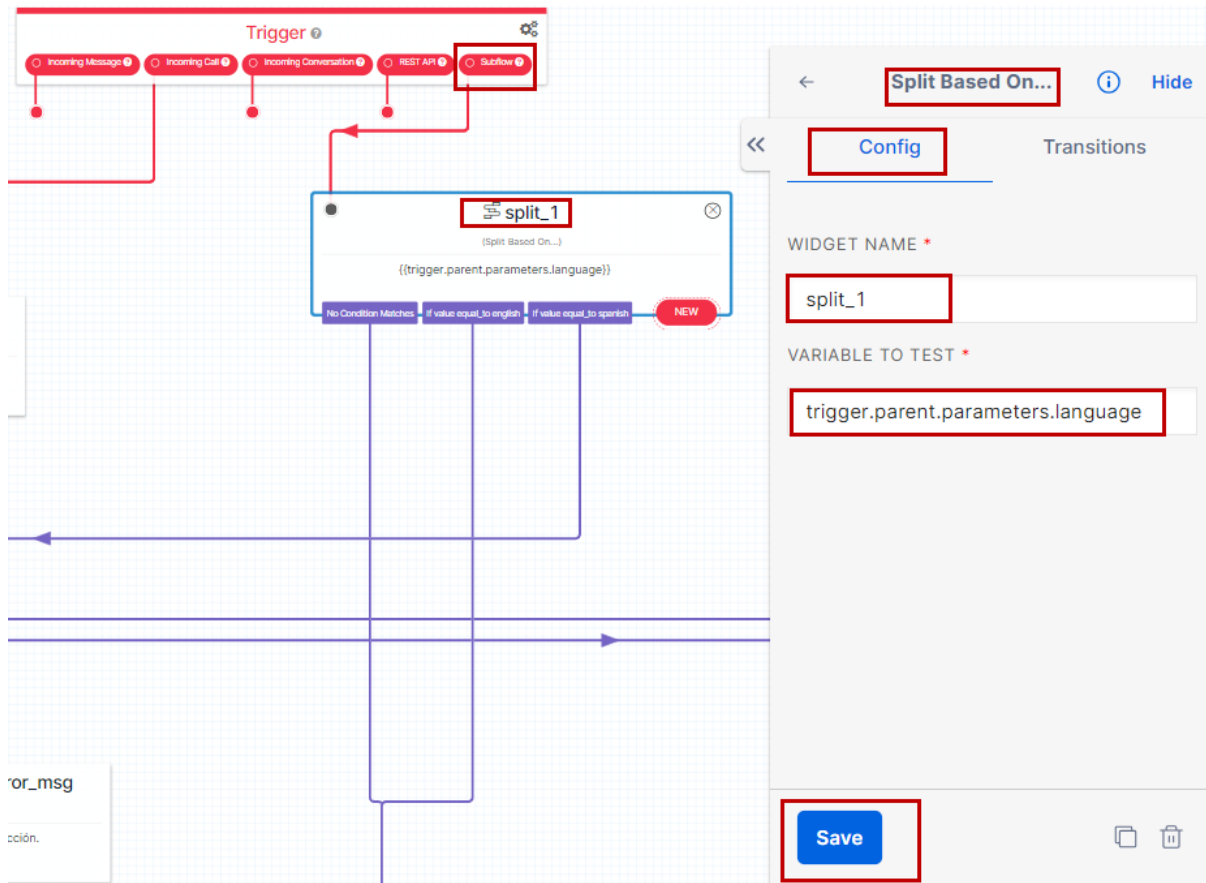


Figure 19 Twilio IVR Studio Flow – split\_1

**Widget: english\_error\_msg**

- Widget **split\_1 (No Condition Matches, If value equal\_to\_english)** invokes **Say/Play** Widget named **english\_error\_msg**
- This widget plays **“Please provide a selection”**.
- The other configured values are highlighted below.

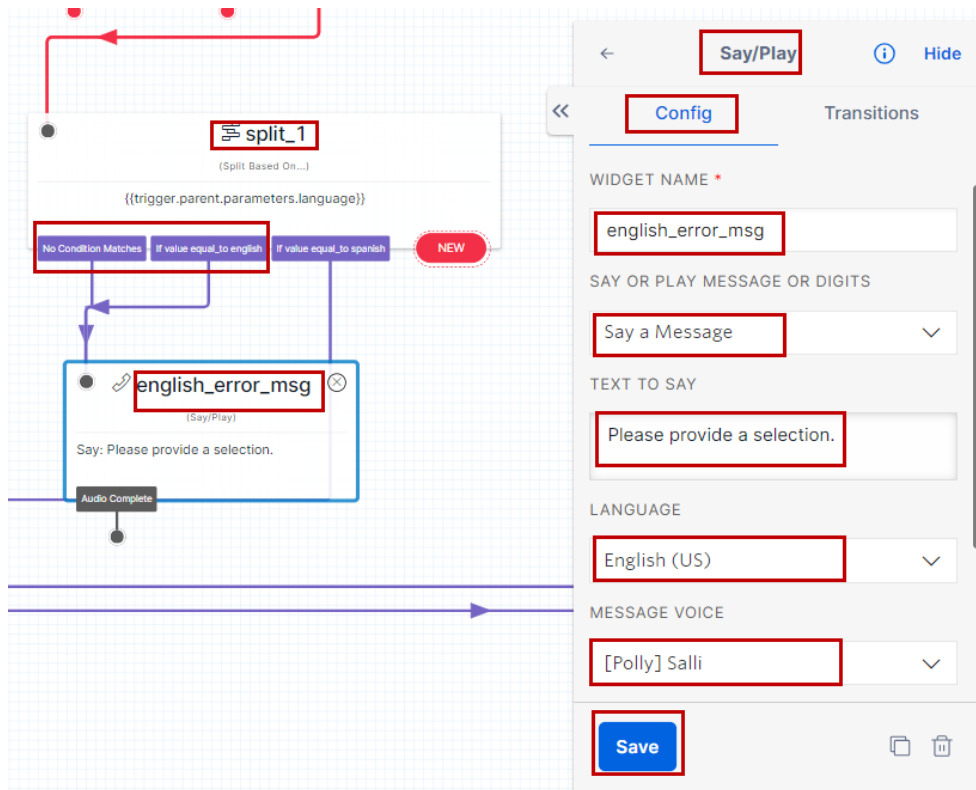


Figure 20 Twilio IVR Studio Flow – english\_error\_msg

### Widget: prompt\_for\_english

- Run Subflow Widget named **no\_input\_handler\_1** invokes Say/Play Widget **prompt\_for\_english**
- This widget plays **“Please press 1 to continue in English”**.
- The other configured values are highlighted below.

The image shows two screenshots from Twilio IVR Studio. The top screenshot displays a flow diagram with a subflow widget 'no\_input\_handler...' (Flow SID: FWbcd...d3ee6) connected to a 'prompt\_for\_english' widget (Say/Play). The bottom screenshot shows the configuration panel for the 'prompt\_for\_english' widget, with several fields highlighted in red:

- WIDGET NAME:** prompt\_for\_english
- SAY OR PLAY MESSAGE OR DIGITS:** Say a Message
- TEXT TO SAY:** Please press 1 to continue in English.
- LANGUAGE:** English (US)
- MESSAGE VOICE:** [Polly] Salli-Neural

Figure 21 Twilio IVR Studio Flow – prompt\_for\_english

**Widget: prompt\_language\_es**

- Say/Play Widget named **prompt\_for\_english** invokes Gather Input on Call Widget named **prompt\_language**
- The other configured values are highlighted below.

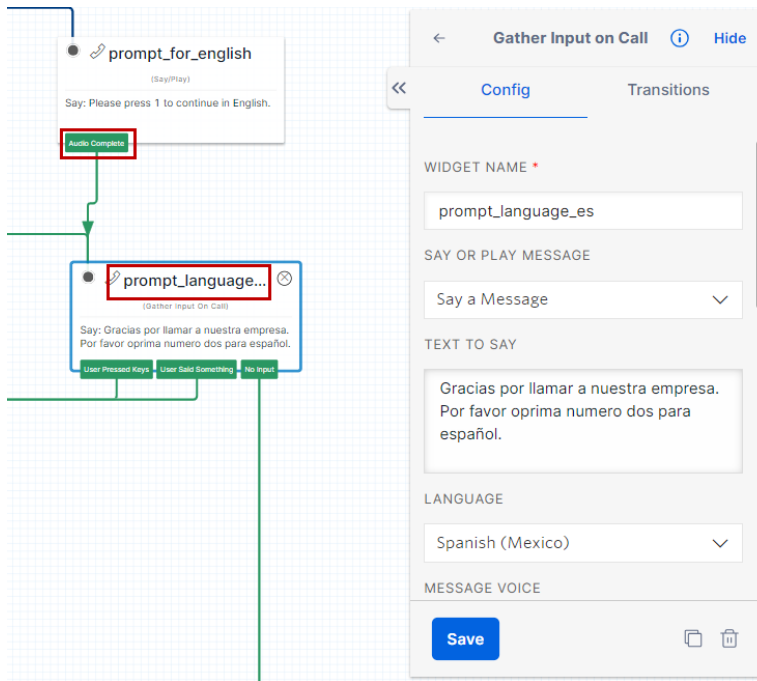


Figure 22 Twilio IVR Studio Flow – prompt\_language

**Widget: split\_key\_press\_en**

- **User Pressed Keys** option from the Widget **gather\_input\_english** is linked to Widget Split Based On... named **split\_key\_press\_en**
- This Widget gathers input digits 1 or 2.
- The other configured values are highlighted below.

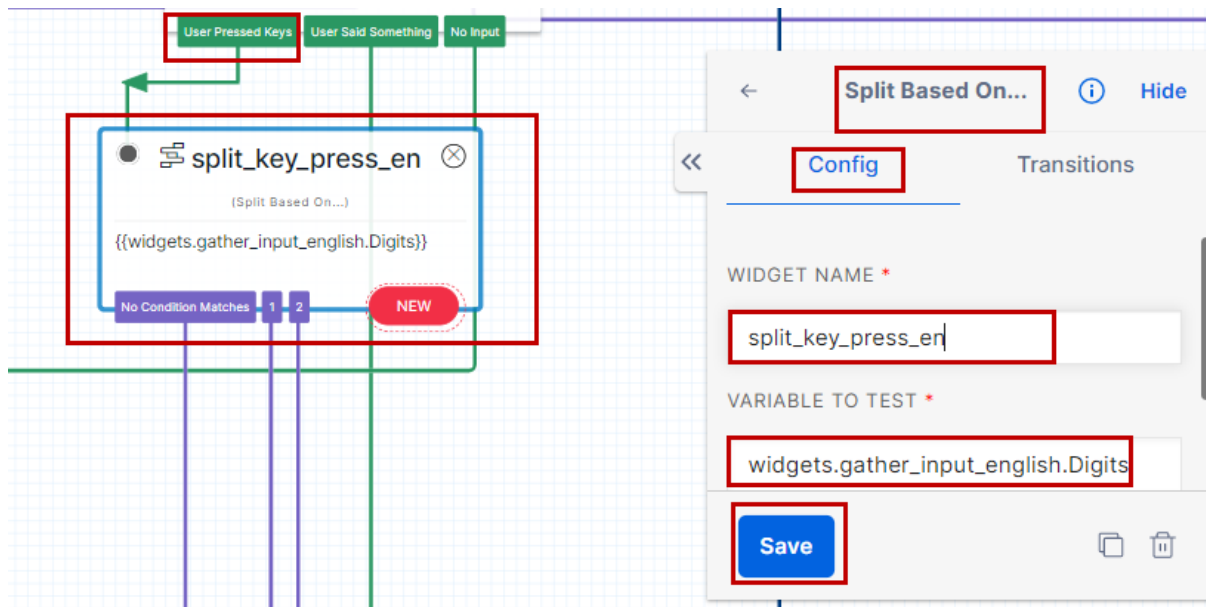


Figure 23 Twilio IVR Studio Flow – split\_key\_press\_en

### Widget: `add_queue_to_sync`

- The digits which are pressed (1 or 2) from the Widget `split_key_press_en` is linked to Widget Run Function named `add_queue_to_sync`
- This Widget calls the Function `add-to-sync` to store the user entered digit in the Twilio database.
- *FUNCTION URL*: `https://ivr-reporting-5700.twil.io/add-to-sync`

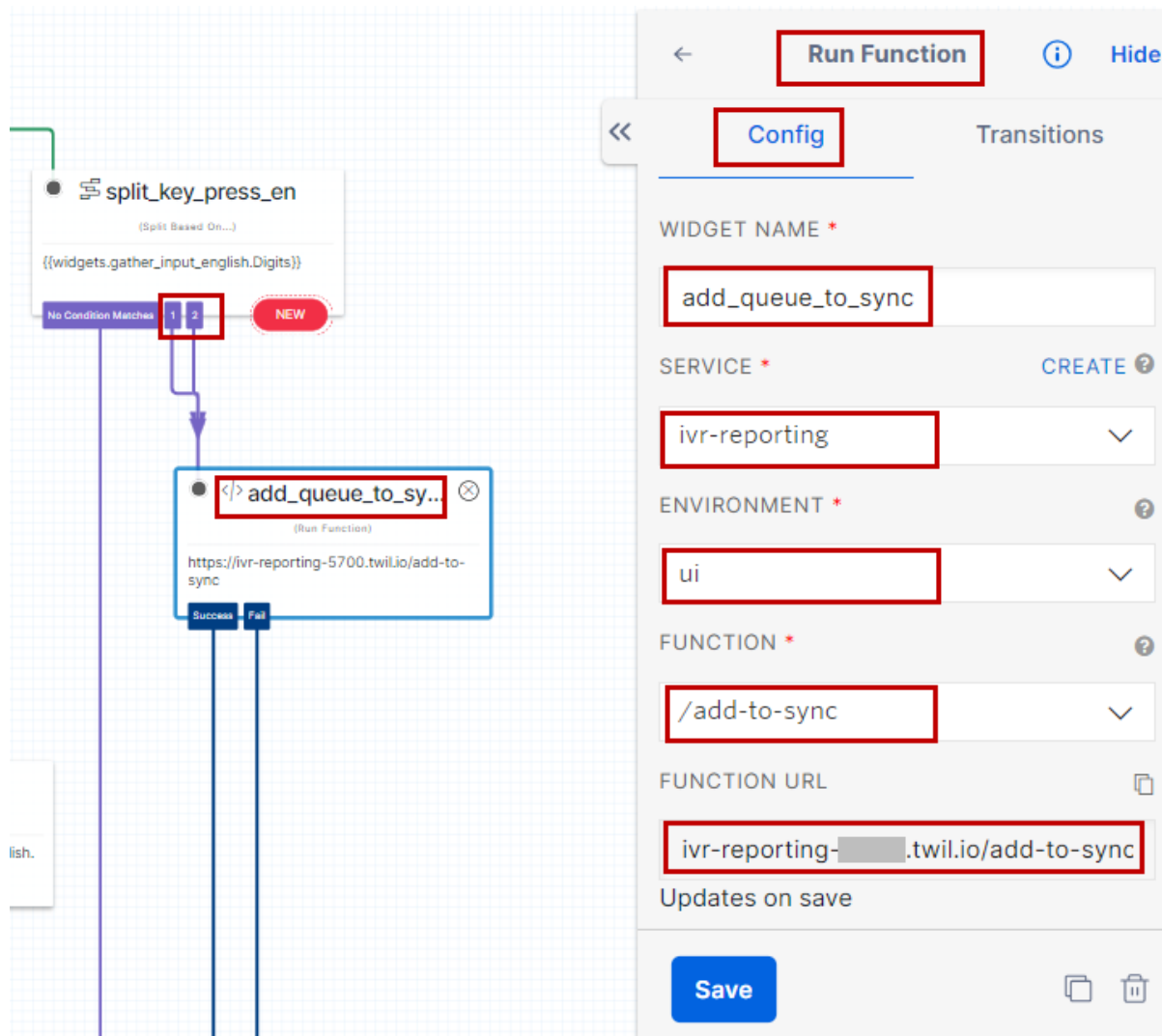


Figure 24 Twilio IVR Studio Flow – `add_queue_to_sync`



- *callSid*: `{{trigger.call.CallSid}}`. This value is set to Twilio CallSid for each call
- *queue*: `{{widgets.gather_input_english.Digits}}`. This value is set to queue number 1 or 2 entered by the PSTN user.
- *callSid* and *queue* are the parameters which are passed to the function **add-to-sync**.

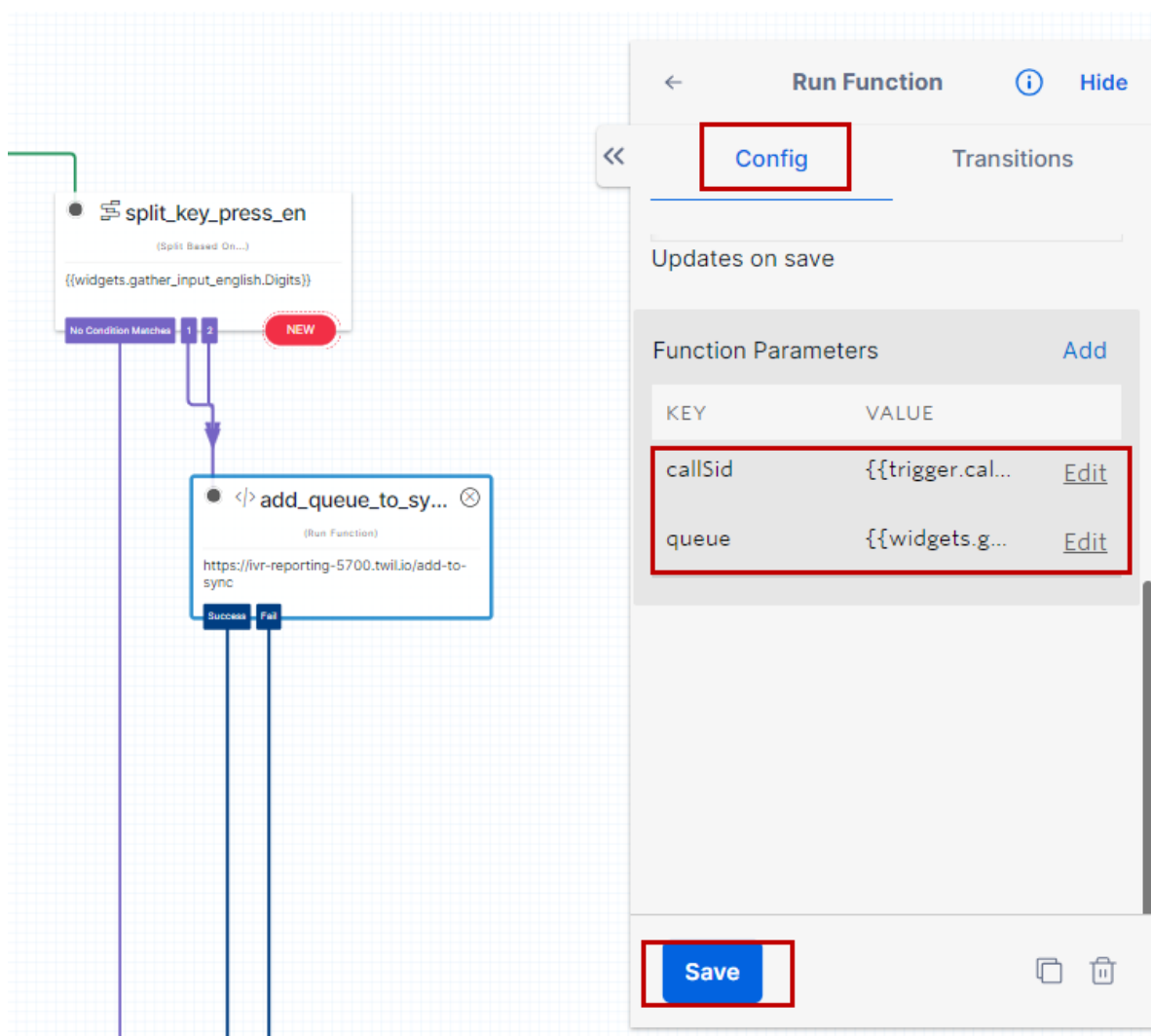


Figure 25 Twilio IVR Studio Flow – `add_queue_to_sync` Continuation

### Widget: connect\_call\_to\_sales

- **Success or Fail** option from the Widget **add\_queue\_to\_sync** is linked to Widget **Connect Call To** named **Connect\_call\_to\_sales**
- **SIP\_ENDPOINT:** **sip:+134XXXXXXX@192.65.XX.XX:5060?X-parentCall={{trigger.call.CallSid}}**
- This Widget sends the call/INVITE towards Avaya SBCE with the header X-parentCall = Twilio CallSid value. The X-parentCall ID is used by Avaya Aura contact center to retrieve the queue information from Twilio.

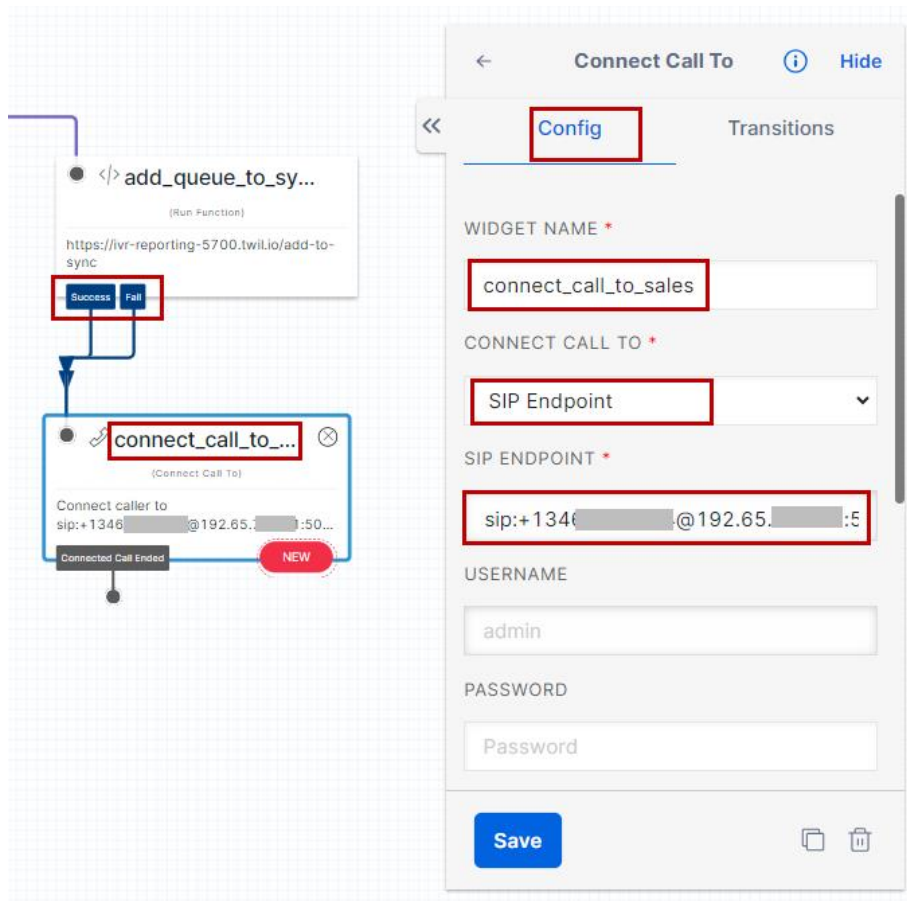


Figure 26 Twilio IVR Studio Flow – connect\_call\_to\_sales

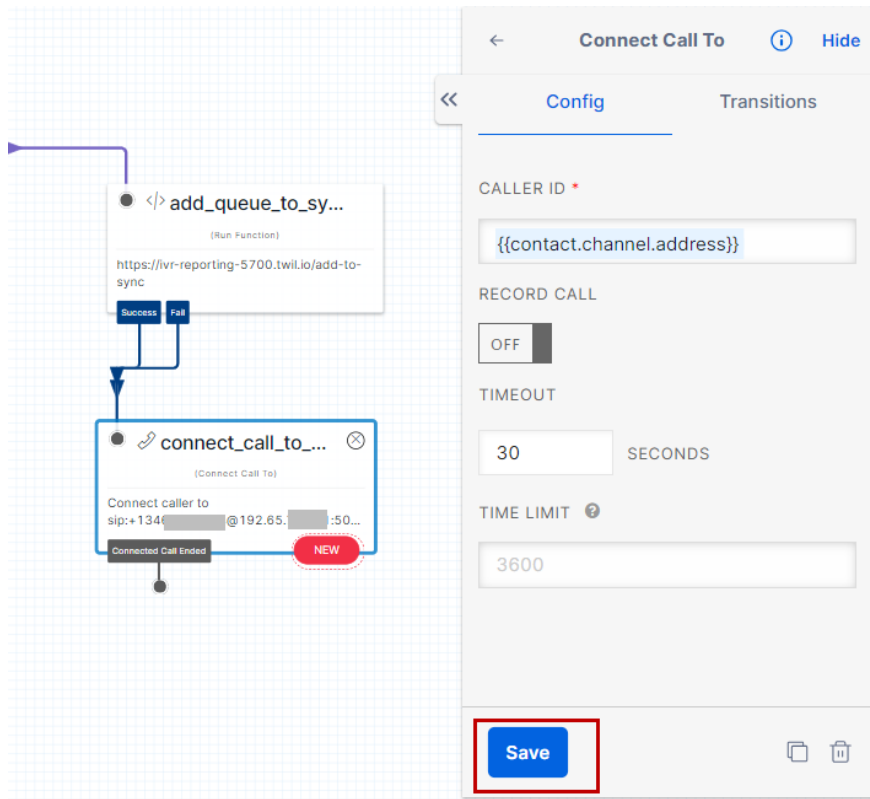


Figure 27 Twilio IVR Studio Flow – connect\_call\_to\_sales Continuation

**Widget: no\_input\_handler\_3**

- **No Condition Matches** option from the Widget **split\_key\_press\_en** is linked to Widget Run Subflow named **no\_input\_handler\_3**
- **no\_input\_handler\_3** runs the Subflow (Same as **Figure 19**) and linked to Widget **gather\_input\_english**

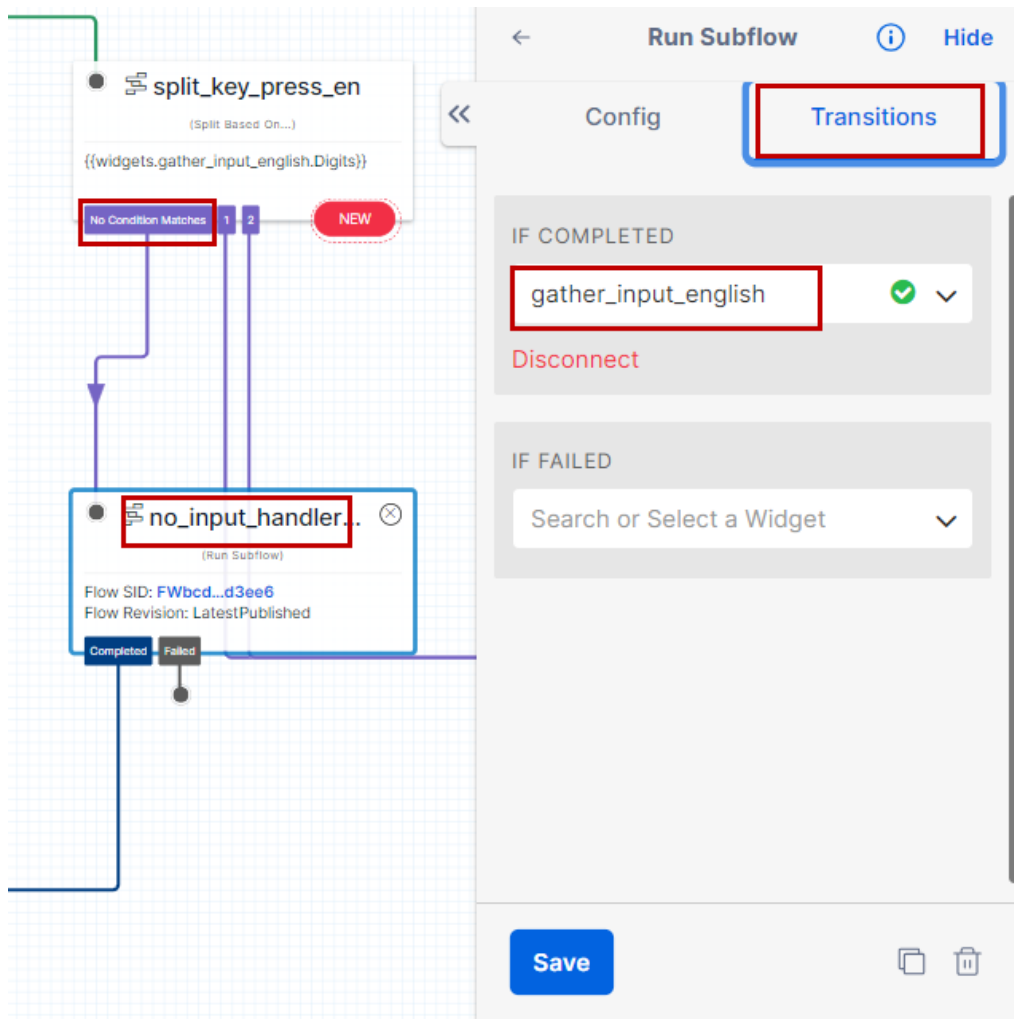


Figure 28 Twilio IVR Studio Flow – no\_input\_handler\_3

**Widget: gather\_input\_english**

- **Completed** option from the Widget **no\_input\_handler\_3** is linked to Widget Gather Input On Call named **gather\_input\_english**
- **gather\_input\_english** follows the same flow as **Figure 16**

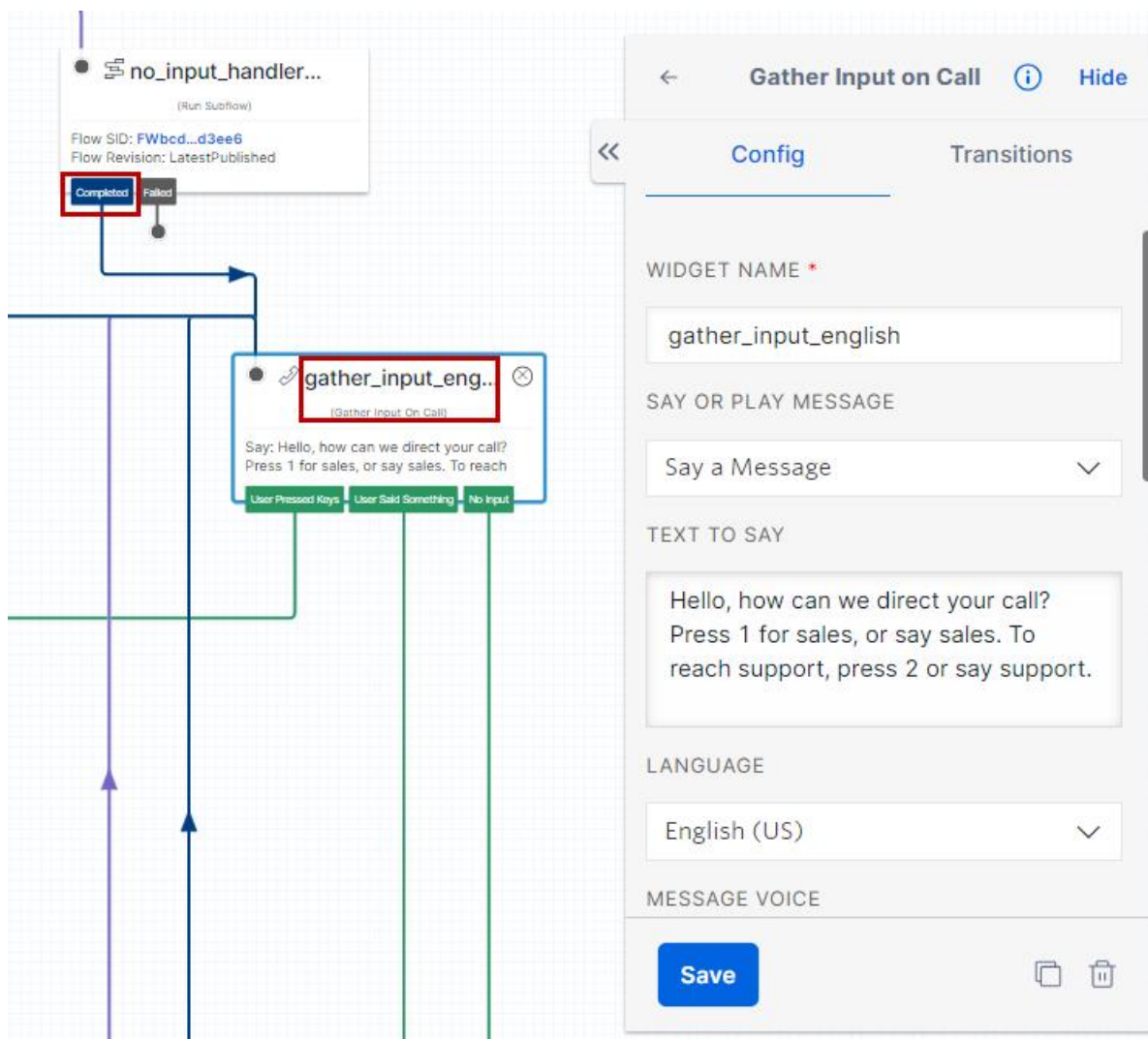


Figure 29 Twilio IVR Studio Flow – gather\_input\_english

**Widget: no\_input\_handler\_1**

- **User Said Something** option from the Widget **prompt\_language** is linked to Widget Run Subflow named **no\_input\_handler\_1**
- **no\_input\_handler\_1** follows the same flow as **Figure 18**

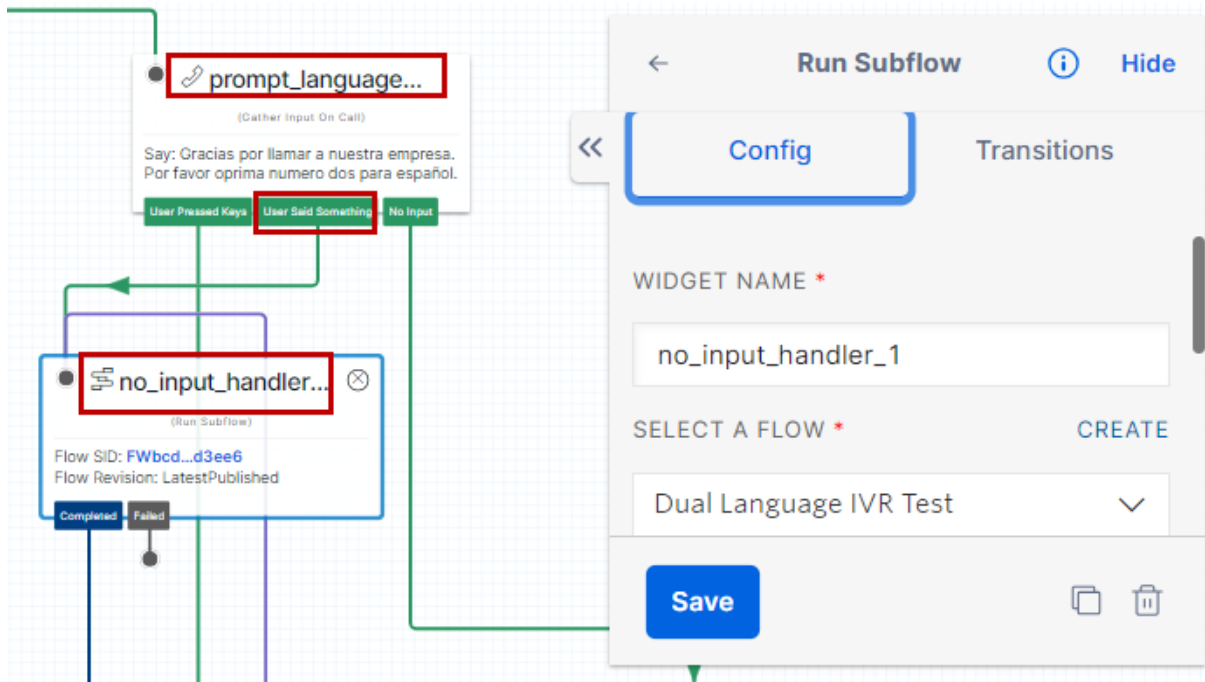


Figure 30 Twilio IVR Studio Flow – no\_input\_handler\_1

**Widget: prompt\_language**

- **No Input** option from the Widget **prompt\_language** is linked to Widget Gather Input On Call named **gather\_input\_english**

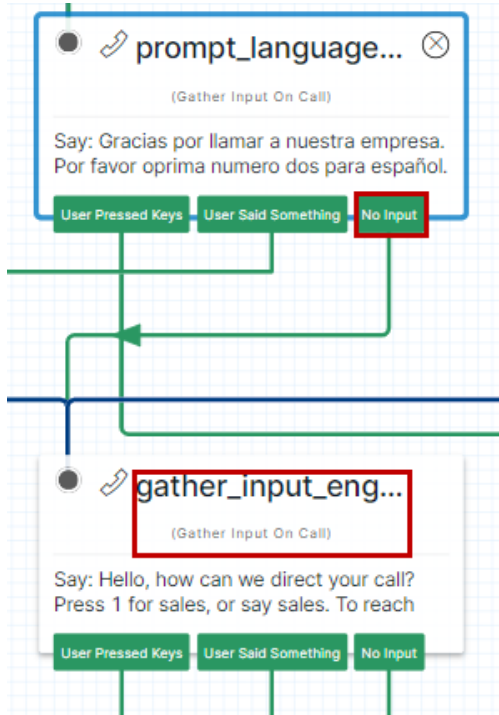


Figure 31 Twilio IVR Studio Flow – prompt\_language

**Widget: gather\_input\_english**

- **User Said Something** option from the Widget **gather\_input\_english** is linked to Widget Split\_Based\_On... named **split\_speech\_result\_en**
- **VARIABLE TO TEST: widgets.gather\_input\_english.SpeechResult**

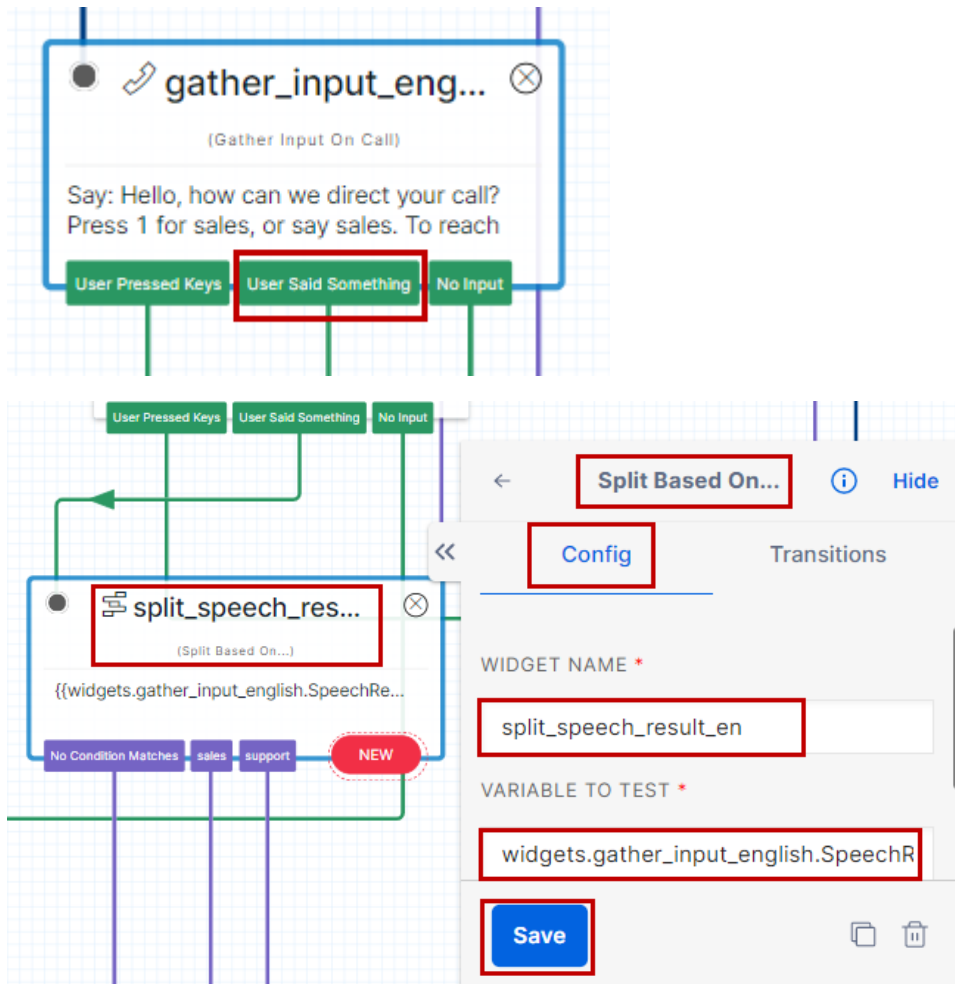


Figure 32 Twilio IVR Studio Flow – split\_speech\_result\_en



**Widget: add\_queue\_speech\_to\_sync**

- **Sales, Support** options from the Widget **split\_speech\_result\_en** is linked to Widget Run Function named **add\_queue\_speech\_to\_sync**
- **add\_queue\_speech\_to\_sync** Widget configuration is same as **add\_queue\_to\_sync** (Refer Figure 24)

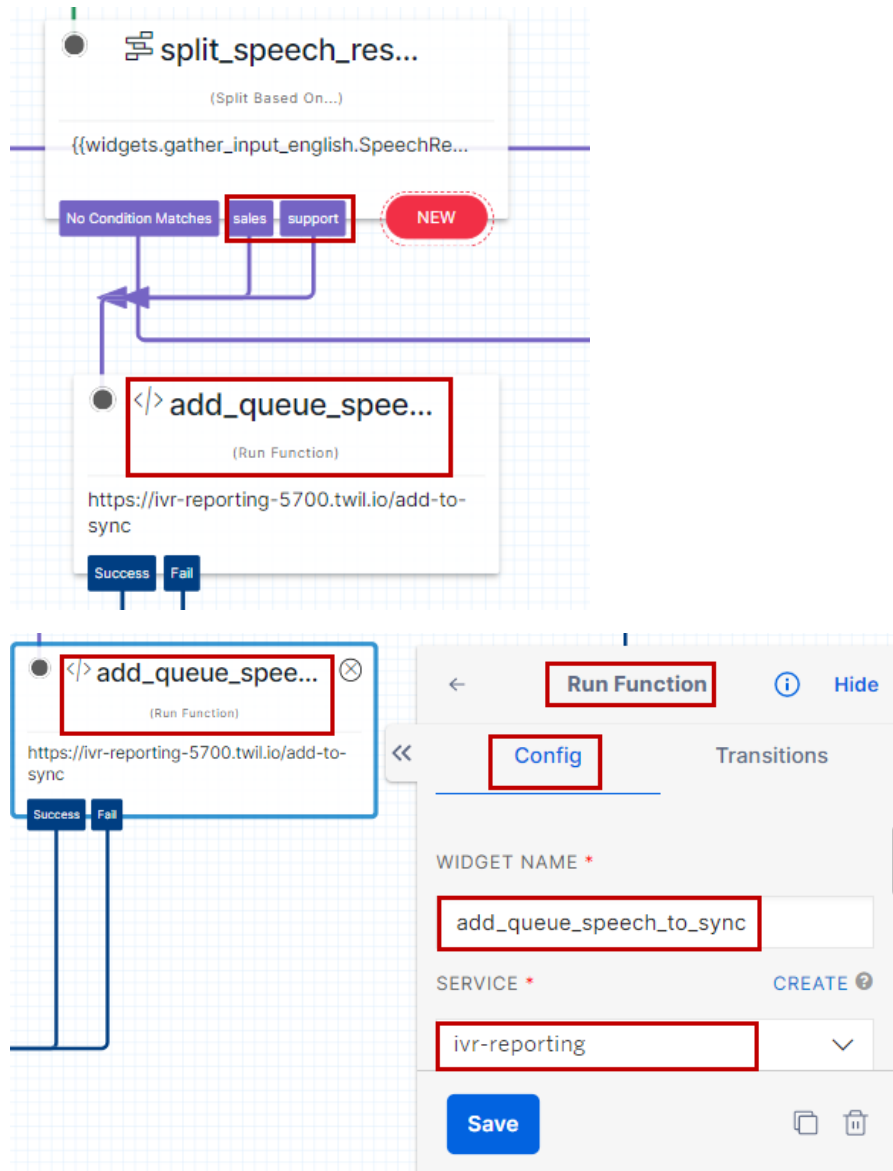


Figure 33 Twilio IVR Studio Flow – add\_queue\_speech\_to\_sync

**Widget: connect\_call\_to\_support**

- **Success, Fail** options from the Widget **add\_queue\_speech\_to\_sync** is linked to Widget Connect Call To named **connect\_call\_to\_support**
- **connect\_call\_to\_support** Widget configuration is same as **connect\_call\_to\_sales** (Refer Figure 26)

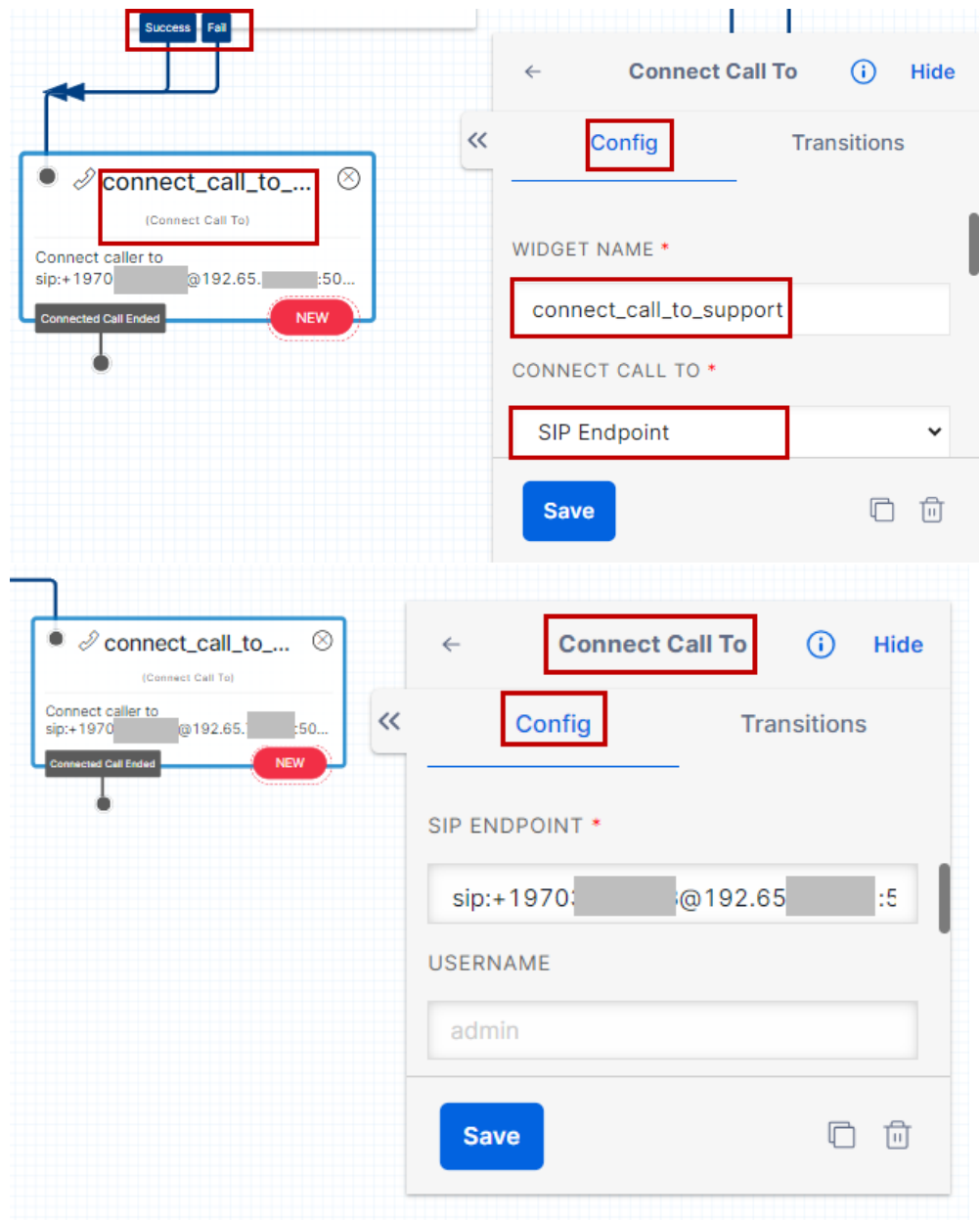


Figure 34 Twilio IVR Studio Flow – connect\_call\_to\_support

**Widget: no\_input\_handler\_4**

- **No Condition Matches** option from the Widget **split\_speech\_result\_en** is linked to Widget Run Subflow named **no\_input\_handler\_4**
- **no\_input\_handler\_4** Widget configuration is same as **no\_input\_handler\_1** (Refer Figure 18)

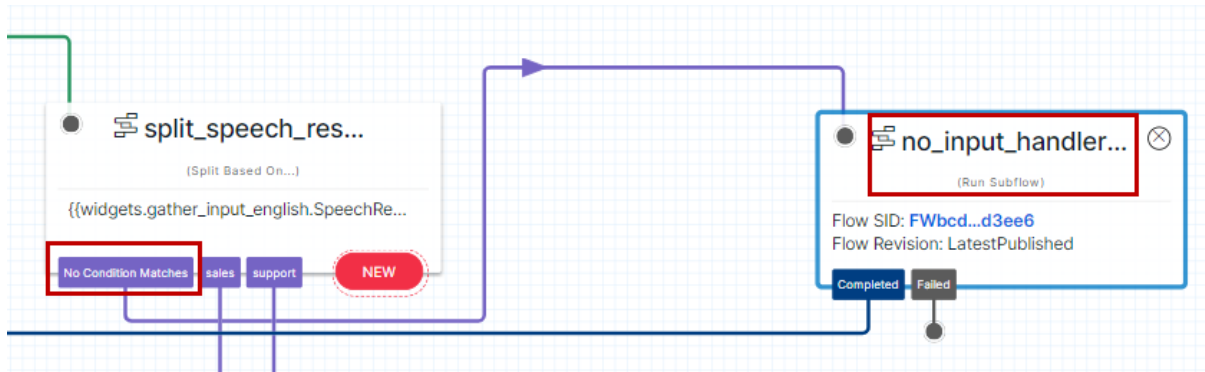


Figure 35 Twilio IVR Studio Flow – no\_input\_handler\_4

## 6.1.5 Phone Numbers

- Navigate to **Phone Numbers > Manage > Active numbers**
- Under **Configure**,
  - *Configure with: Webhook, TwiMLBin, Function, Studio Flow, Proxy Service*
  - *A call comes in: Studio Flow*
  - *Flow: Dual Language IVR Test* (an IVR flow created in the Section 6.1.4)

The screenshot displays the Twilio console interface for configuring a phone number. The left sidebar shows the navigation menu with 'Phone Numbers' expanded to 'Active numbers'. The main content area shows the configuration for a specific phone number. The 'Configure' tab is selected, and the 'Voice Configuration' section is visible. The 'Configure with' dropdown is set to 'Webhook, TwiML Bin, Function, Studio Flow, Proxy Service'. The 'A call comes in' dropdown is set to 'Studio Flow', and the 'Flow' dropdown is set to 'Dual Language IVR Test'. The 'Primary handler fails' dropdown is set to 'Webhook', and the 'HTTP' method is set to 'HTTP POST'. The 'Call status changes' dropdown is set to 'https://webhooks.twilio.com/v1/Account...', and the 'HTTP' method is set to 'HTTP POST'. The 'Caller Name Lookup' dropdown is set to 'Disabled'. The 'Emergency Calling' section shows a warning: 'Emergency Address is not registered.' with an 'Add Emergency Address' button.

Figure 36 Phone Numbers

- Click **Save configuration**

The screenshot displays the Twilio console configuration interface. On the left, a sidebar menu includes 'Develop' and 'Monitor' tabs, with 'Phone Numbers' expanded to show 'Manage' and 'Active numbers' sub-sections. The main configuration area is titled 'Phone Number' and contains several sections: 'Routing' (set to 'Regional'), 'Messaging Service' (a dropdown menu), 'Configure with' (set to 'Webhook, TwiML Bin, Function, Studio Flow, Proxy Service'), and two identical 'Message handler' sections. Each handler section has three fields: 'A message comes in' (set to 'Webhook'), 'URL' (set to 'https://demo.twilio.com/welcome/sms/reply'), and 'HTTP' (set to 'HTTP POST'). At the bottom of the configuration area, there are two buttons: 'Save configuration' (highlighted with a red box) and 'Return to Active Numbers'.

Figure 37 Phone Number Continuation

## 6.1.6 Functions

- Navigate to **Functions and Assets > Services**
- Click **Create Service**
- *Service Name: ivr\_reporting*
- Click **Next**

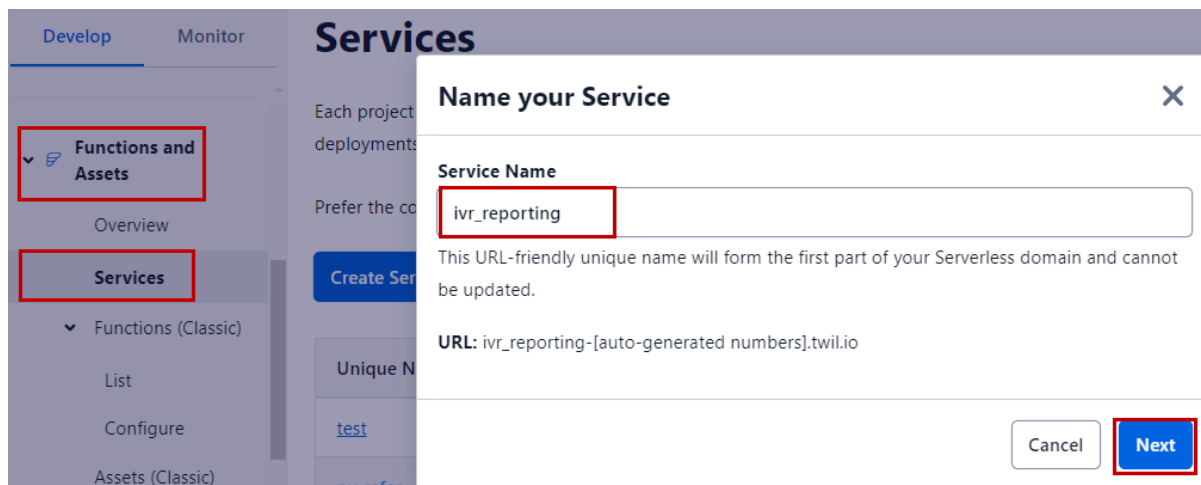


Figure 38 Functions – Configure Service

- Click **Create your function**
- *Functions:* Type the function name e.g. **add\_to\_sync**
- Click Add+ to create more functions



Figure 39 Functions – Create function

- `add_to_sync` function is made as protected using the **Protected with Lock** icon
- Javascript for the `add_to_sync` function is shown in the right pane

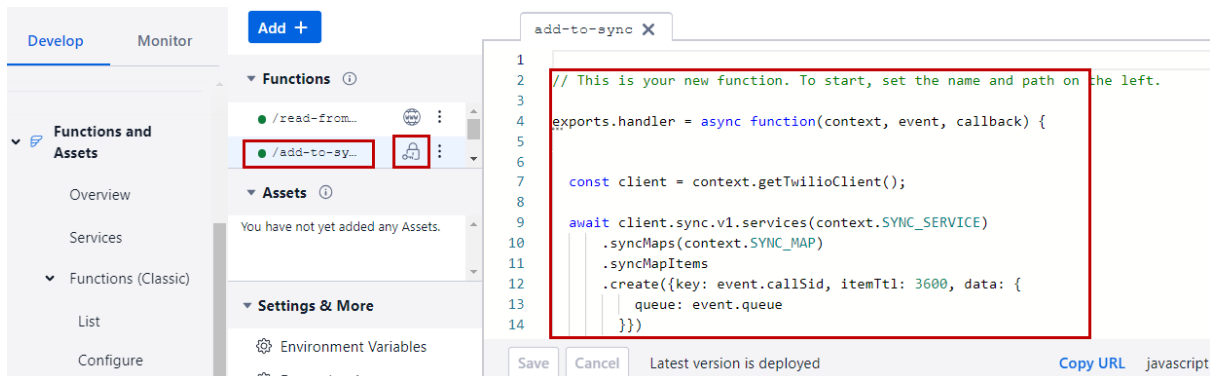


Figure 40 Functions – `add_to_sync`

- Full screen view of the entire code is shown below.
- The below code stores the **Twilio CallSid** and the **queue number** (1 or 2) for each inbound call to Twilio IVR DID in the Maps database  
The function parameters CallSid and queue number for `add_to_sync` is passed from the Twilio Studio IVR Flow (**Section 6.1.4 Figure 24**)
- Below is the javascript for **`add_to_Sync`**:

```
// This is your new function. To start, set the name and path on the left.
```

```
exports.handler = async function(context, event, callback) {

  const client = context.getTwilioClient();

  await client.sync.v1.services(context.SYNC_SERVICE)

    .syncMaps(context.SYNC_MAP)

    .syncMapItems

    .create({key: event.callSid, itemTtl: 3600, data: {

      queue: event.queue

    }})

    .then(sync_map_item => {

      console.log(sync_map_item.key)

      return callback(null, sync_map_item.key);

    })

    .catch(error => {

      console.log(error);

    })

}
```

```

return callback(error, null);

});

};

```

- Click on the **three dots** and Click **Copy URL** to copy the URL of add\_to\_sync function
- The URL for add\_to\_sync function is <https://ivr-reporting-XXXX.twilio.io/add-to-sync>
- The above URL is given as input to the Twilio IVR studio flow (Refer Section 6.1.4 Figure 24)

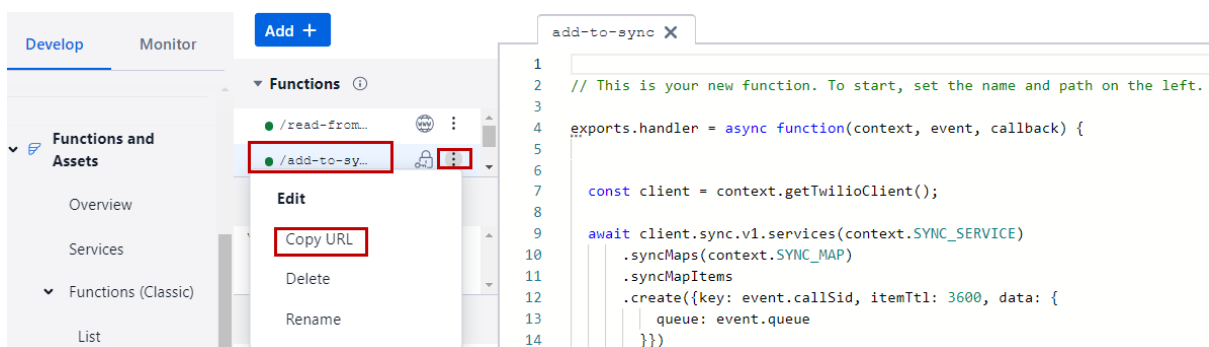


Figure 41 Functions – add\_to\_sync Continuation

- Click Add+ to create a function **read\_from\_sync**
- The URL for read\_from\_sync function is <https://ivr-reporting-XXXX.twilio.io/read-from-sync>
- **read\_from\_sync** function is made as Publicly accessible using the **Globe** icon
- This function retrieves the Queue data and the digits pressed from the MAPS database for each Twilio callSid
- Below is the javascript for **read\_from\_sync**

// This is your new function. To start, set the name and path on the left.

```

exports.handler = async function(context, event, callback) {

  const client = context.getTwilioClient();

  await client.sync.v1.services(context.SYNC_SERVICE)

    .syncMaps(context.SYNC_MAP)

    .syncMapItems(event.callSid)

    .fetch()

    .then(sync_map_item => {

```



```
    console.log(sync_map_item.key + ": " + sync_map_item.data);  
    return callback(null, sync_map_item.data);  
  })  
  .catch(error => {  
    console.log(error);  
    return callback(error, null);  
  });  
};
```

- Navigate to **Settings & More > Environment Variables**
- **Key: SYNC\_SERVICE**
- **Value:** Enter the Service SID value of **AvayaCallContext Sync Service (Refer Section 6.1.7)**
- Click **Add**
- **Key: SYNC\_MAP**
- **Value:** Enter the Maps SID value of **AvayaCallContext Sync Service (Refer Section 6.1.7)**
- Click **Add**

**Environment Variables**

Use Environment Variables to store configuration like API keys rather than hardcoding them into your Functions. Every time your Functions are invoked, we pass in a context parameter. The context object will contain the keys and values that you define below. As a convenience, you can choose to include your ACCOUNT\_SID and AUTH\_TOKEN as well. If you do so, `context.getTwilioClient()` will return an initialized REST client that you can use to make calls to the Twilio REST API.

Add my Twilio Credentials (ACCOUNT\_SID) and (AUTH\_TOKEN) to ENV

Key	Value	
<input type="text"/>	<input type="text"/>	<input type="button" value="Add"/>
<input checked="" type="checkbox"/> Add my Twilio Credentials (ACCOUNT_SID) and (AUTH_TOKEN) to ENV		
Key	Value	
SYNC_SERVICE	.....	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
SYNC_MAP	.....	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Figure 42 Functions – Environment Variables

- Navigate to **Settings & More > Dependencies**
- *Node Version: Node.js v16*
- Below are the **Modules** and the corresponding **Versions** which are added as dependencies

The figure illustrates the steps to configure dependencies for a Twilio Function. It shows the navigation path from the 'Settings & More' menu to the 'Dependencies' page. The 'Node Version' is set to 'Node.js v16'. The 'Add' button is used to import npm modules. The final screenshot displays a table of installed dependencies:

Module	Version	Edit	Delete
lodash	4.17.11	Edit	Delete
twilio	3.29.2	Edit	Delete
xmldom	0.1.27	Edit	Delete
@twilio/runtime-handler	1.2.1	Edit	Delete
util	0.11.0	Edit	Delete

Figure 43 Functions – Dependencies

- Click **Deploy All** to validate and deploy the code

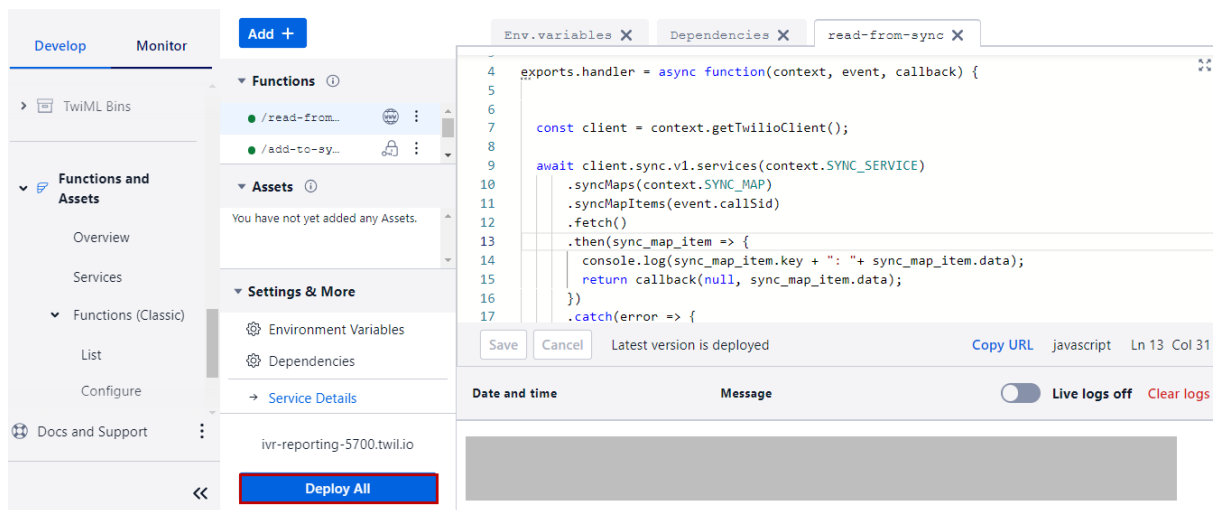


Figure 44 Functions – Deploy All

## 6.1.7 Services

- Navigate to **Sync > Services**
- Click **Create new Sync Service**
- Sync Service named **AvayaCallContext** is shown below
- Click **Save**

The screenshot shows the Twilio console interface. At the top right, there is a blue button labeled "Create new Sync Service". Below this is a "Services" section with a descriptive text box and a list of capabilities: "Create multiple environments (dev, stage, prod) under the same Twilio account with segregated data", "Scope access to resources through the REST API", and "Configure behavior of those resources in the scope of a Service". A table below lists services, with one entry highlighted: "AvayaCallContext" with SID "IS7e...", "Date Created" "2023-03-06T19:31:56Z", and "Date Updated" "2023-03-06T19:31:56Z".

The bottom part of the screenshot shows the "Service Configuration" page for "AvayaCallContext". The "Properties" section includes:
 

- Sync Service friendly name:** AvayaCallContext
- Webhook Url:** https://demo.twilio.com/welcome/sync/repl
- ACL enabled:**  (Whether token identities in the Service must be granted access to Sync objects by using the Permissions resource.)
- Reachability enabled:**  (Whether the service instance should call webhook\_url when client endpoints connect to Sync.)

 A summary box on the right shows:
 

- Service SID:** IS7e...
- Date created:** 2023-03-07 1:01:56
- Date updated:** 2023-03-07 1:01:56

 At the bottom, there are "Save", "Cancel", and "Reset this service" buttons.

Figure 45 Sync Service

- Navigate to **AvayaCallContext > Maps**
- Click **Create new Sync Map**
- Sync Map named **MP21XXX** is shown below
- Click **Map Name MP21XXX**
- **KEY** value i.e. Twilio callSid and the **Map Item Data** is added in to the database as shown below

**Sync Maps** Create new Sync Map

A Sync Map [stores unordered JSON objects](#) accessible via a developer-defined key. It is an unordered collection of individual Map items. A few notes about Sync Maps:

- Full map modification history persists with every change that triggers a new revision.
- Strict ordering of map mutation events is guaranteed, but the map item order is not defined.
- By default, data persists permanently, but maps will expire and be deleted automatically if eviction is configured via the TTL parameter.

10 per page

NAME	SID	DATE CREATED	DATE_UPDATED	DATE EXPIRES
MP21	MP21	2023-03-09	2023-05-31 19:40:13	-

Maps / Items Permissions

10 per page Create new Map Item

KEY	DATE CREATED	DATE UPDATED	DATE EXPIRES	ACTIONS
CA7	2023-03-09 19:48:03	2023-03-09 19:48:03	-	<a href="#">Edit</a> <a href="#">Delete</a>

**Map Item Data**

```
{
  "queue": "2"
}
```

Figure 46 Sync Maps

## 6.2 Avaya SBCE Configuration

### 1.1.1 Avaya SBCE Login

- Log into Avaya Session Border Controller for Enterprise (SBCE) web interface by typing “**https://X.X.X.X/sbc**”
- Enter the **Username** and **Password**
- Click **Log In**



Figure 47 Avaya SBCE Login

- Under **Device**, select **ASBCE10** from drop down to expand the configuration for Avaya SBCE

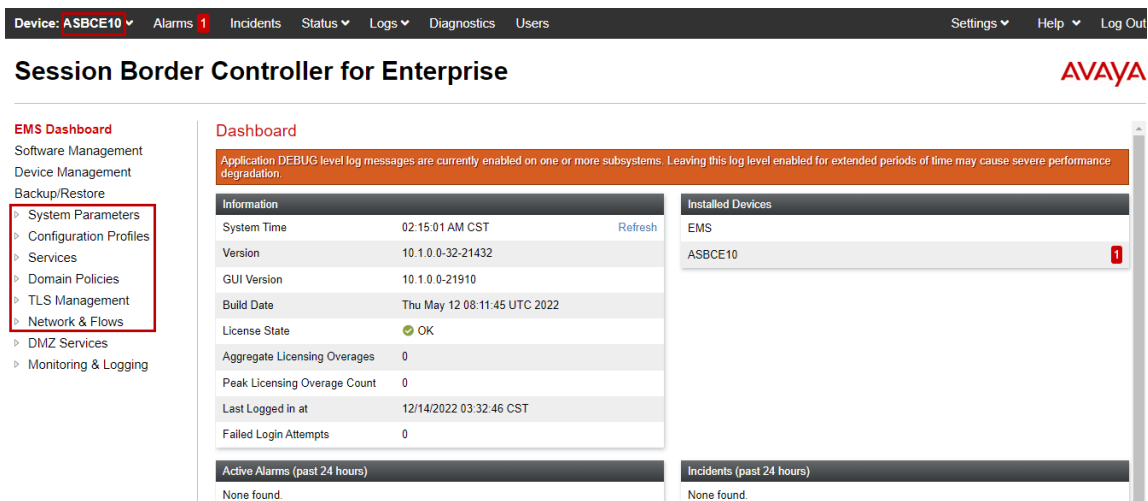


Figure 48 Selection of Avaya SBCE Device

## 1.1.2 Server Interworking

### Server Interworking for Avaya SM

- Navigate to **Configuration Profiles > Server Interworking**
- Select the predefined Interworking Profile **avaya-ru**, click **Clone**
- Set **Clone Name**: **AASM.10.1**
- Click **Finish**

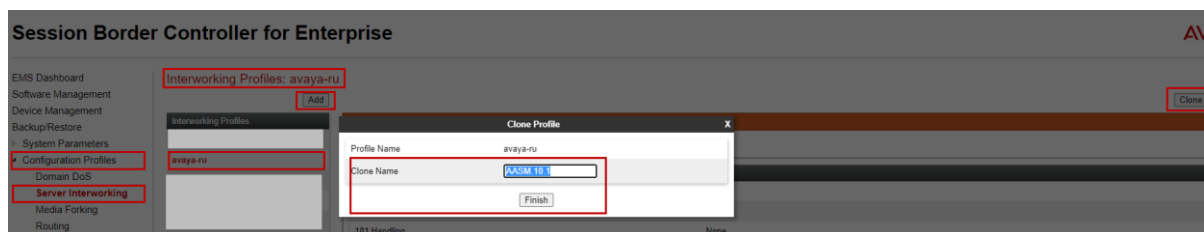


Figure 49 Server Interworking Profile for Avaya SM

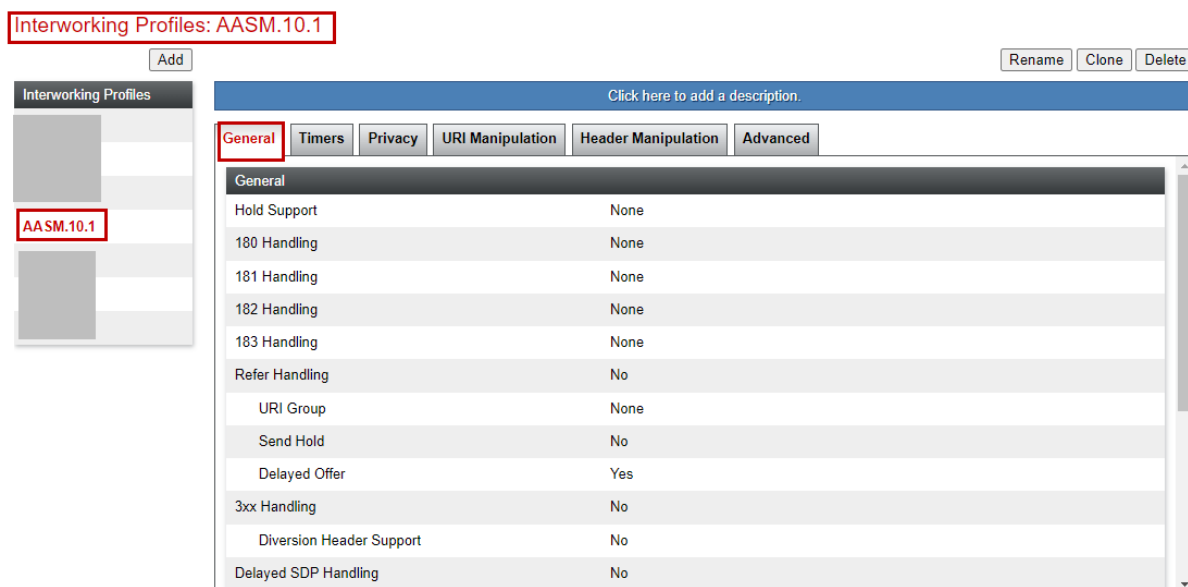


Figure 50 Server Interworking Profile for Avaya SM Continuation



Interworking Profiles: AASM.10.1

[Click here to add a description.](#)

[Add](#)

Interworking Profiles

AASM.10.1

<a href="#">Click here to add a description.</a>	
General	Timers
Delayed Offer	Yes
3xx Handling	No
Diversion Header Support	No
Delayed SDP Handling	No
Re-Invite Handling	No
Prack Handling	No
Allow 18X SDP	No
T.38 Support	No
URI Scheme	SIP
Via Header Format	RFC3261
SIPS Required	No
Mediasec	No

[Edit](#)

Interworking Profiles: AASM.10.1

[Click here to add a description.](#)

[Add](#)

Interworking Profiles

AASM.10.1

<a href="#">Click here to add a description.</a>	
General	Timers
Record Routes	Both Sides
Include End Point IP for Context Lookup	No
Extensions	Avaya
Diversion Manipulation	No
Has Remote SBC	Yes
Route Response on Via Port	No
Relay INVITE Replace for SIPREC	No
MOBX Re-INVITE Handling	No
NATing for 301/302 Redirection	Yes
DTMF	
DTMF Support	RFC 2833 Relay & SIP NOTIFY

[Edit](#)

Figure 51 Server Interworking Profile for Avaya SM Continuation

### 1.1.3 SIP Servers

#### SIP Server for Avaya SM

- Navigate to **Services > SIP Servers**
- Click **Add**
- Set *Profile Name*: **Avaya**
- Click **Next**
- Set *Server Type*: Select **Trunk Server** from the drop down
- Set *IP Address/FQDN*: Enter the **Avaya Aura Session Manager SIP IP Address**
- Set *Port*: **5060**
- Set *Transport*: **UDP**
- Click **Finish**

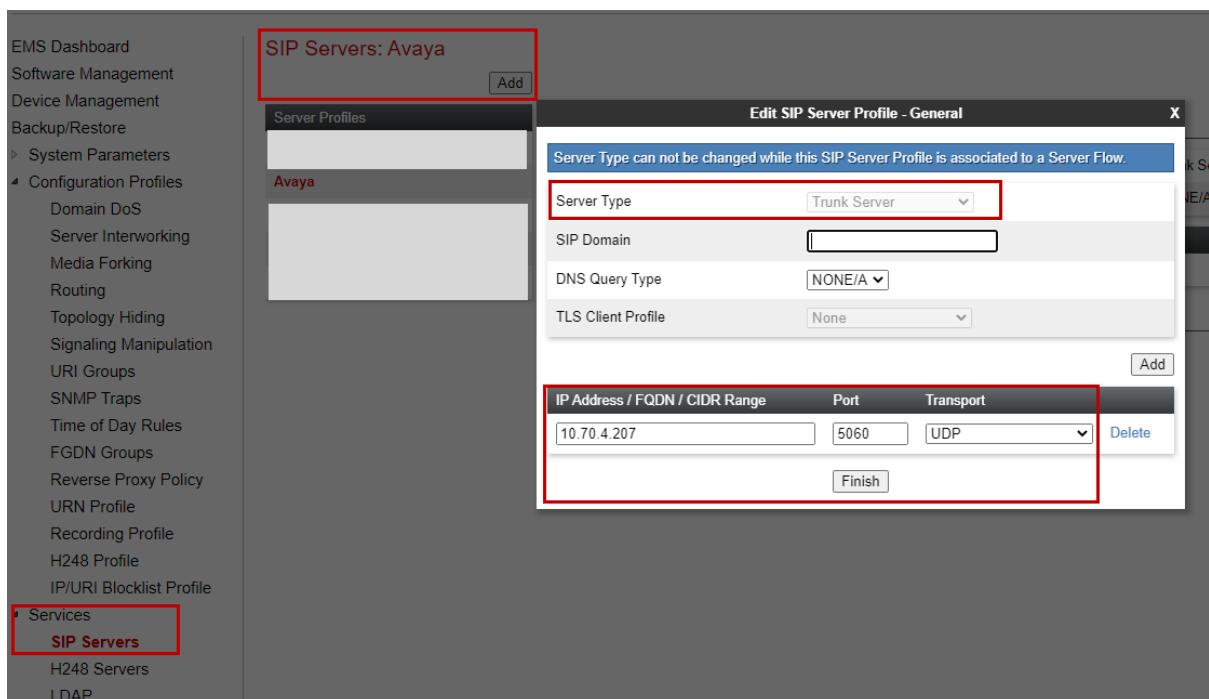


Figure 52 SIP Server for Avaya SM

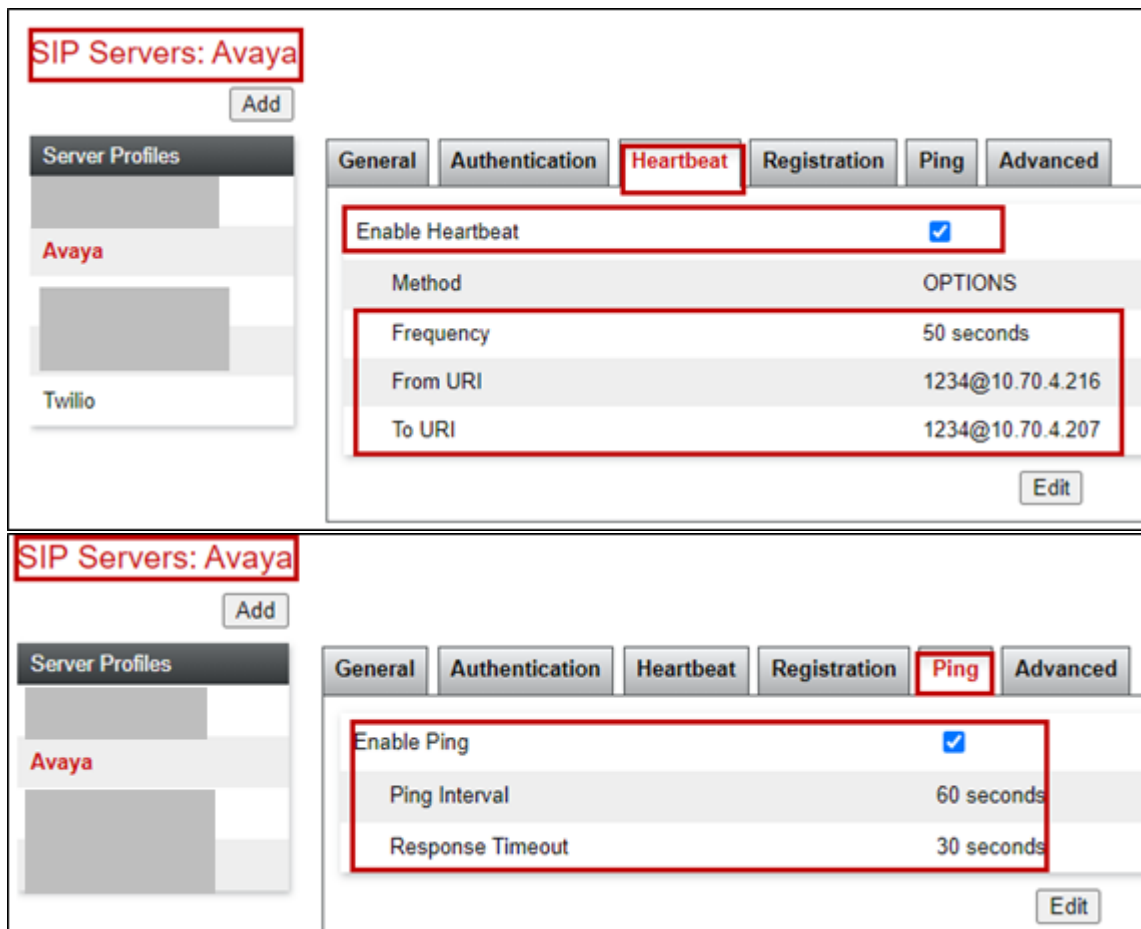


Figure 53 SIP Server for Avaya SM Continuation

- Navigate to **Advanced** tab
- Set *Enable Grooming*: **Checked**
- Set *Interworking Profile*: Select **AASM.10.1** (created in section 6.2.2)

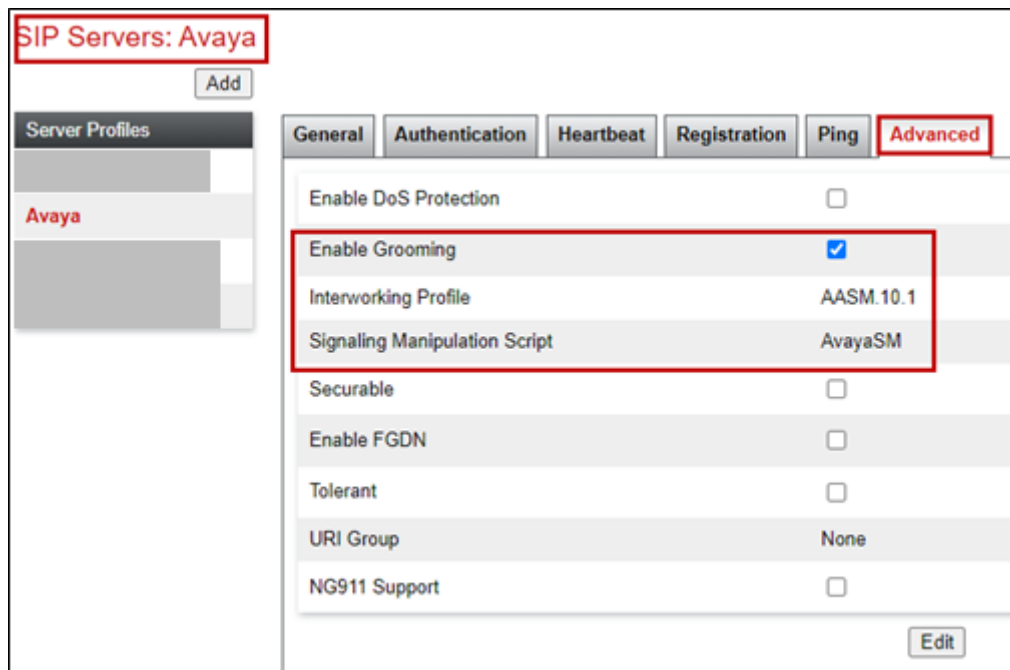


Figure 54 SIP Server for Avaya SM Continuation

### SIP Server for Twilio

- Navigate to **Services > SIP Servers**
- Click **Add**
- Set *Profile Name*: **Twilio**
- Click **Next**
- Set *Server Type*: Select **Trunk Server** from the drop down
- Set *IP Address/FQDN*: Enter the **Twilio Host Name**
- Set *Port*: **5060**
- Set *Transport*: **UDP**
- Click **Finish**

### Session Border Controller for Enterprise

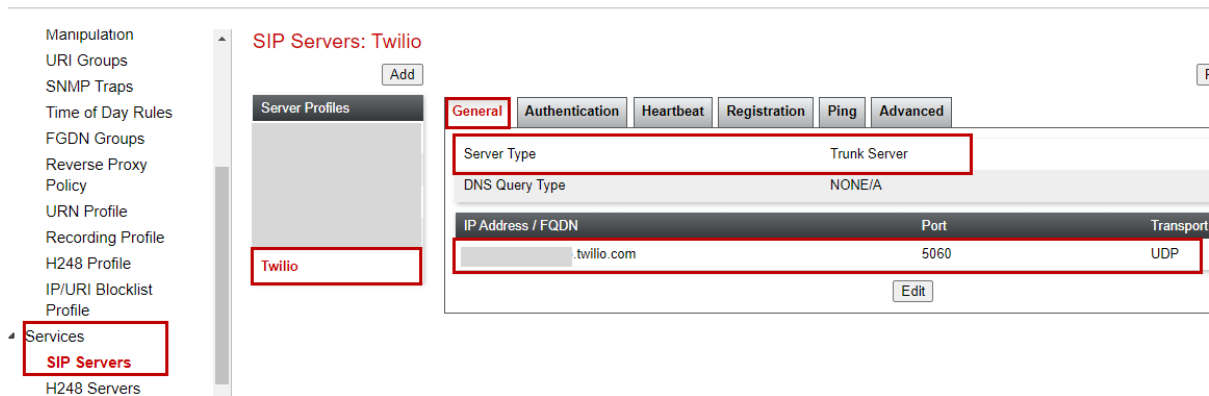


Figure 55 SIP Server for Twilio

- Navigate to **Authentication** tab
- *Enable Authentication*: **Enabled**
- *User Name*: Enter the **User Name** provided by Twilio
- *Password*: Enter the **Password** provided by Twilio

### SIP Servers: Twilio

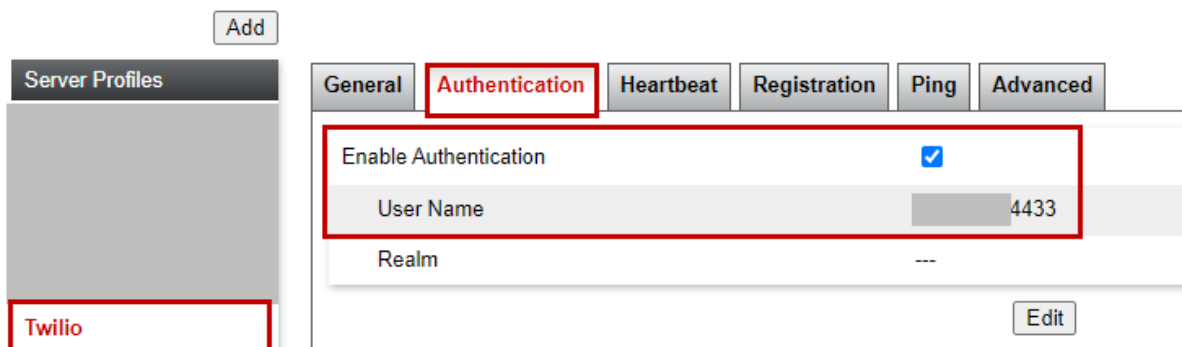


Figure 56 SIP Server for Twilio Continuation

- Navigate to **Heartbeat** tab
- *Enable Heartbeat: Enabled*
- *Method: OPTIONS*
- *Frequency: 60 Seconds*
- *From URI: 1234@192.65.x.x*
- *To URI: 1234@xxxx.twilio.com*

### SIP Servers: Twilio

Add

Server Profiles

---

Twilio

General	Authentication	Heartbeat	Registration	Ping	Advanced
Enable Heartbeat		<input checked="" type="checkbox"/>			
Method		OPTIONS			
Frequency		60 seconds			
From URI		1234@192.65			
To URI		1234@	twilio.com		

Edit

Figure 57 SIP Server for Twilio Continuation

- Navigate to **Ping** tab
- *Enable Ping: Enabled*
- *Ping Interval: 60 seconds*
- *Response Timeout: 30 Seconds*

### SIP Servers: Twilio

Add

Server Profiles

---

Twilio

General	Authentication	Heartbeat	Registration	Ping	Advanced
Enable Ping				<input checked="" type="checkbox"/>	
Ping Interval				60 seconds	
Response Timeout				30 seconds	

Edit

Figure 58 SIP Server for Twilio Continuation

- Navigate to **Advanced** tab

SIP Servers: Twilio

Add

Server Profiles

Twilio

General	Authentication	Heartbeat	Registration	Ping	Advanced
Enable DoS Protection					<input type="checkbox"/>
Enable Grooming					<input checked="" type="checkbox"/>
Interworking Profile					None
Signaling Manipulation Script					None
Securable					<input type="checkbox"/>
Enable FGDN					<input type="checkbox"/>
Tolerant					<input type="checkbox"/>
URI Group					None
NG911 Support					<input type="checkbox"/>

Edit

Figure 59 SIP Server for Twilio Continuation

### 1.1.4 Topology Hiding

#### Topology Hiding profile for Twilio

- Set *Header*: **Request-Line**, **To** are selected
- Set *Replace Action*: **Overwrite**
- Set *Overwrite Value*: Enter **Twilio Host name**

The screenshot shows the 'Topology Hiding Profiles: Twilio' configuration page. On the left is a navigation menu with 'Configuration Profiles' and 'Topology Hiding' highlighted. The main area shows a table of header rules for the 'Twilio' profile.

Header	Criteria	Replace Action	Overwrite Value
From	IP/Domain	Auto	---
To	IP/Domain	Overwrite	twilio.com
Refer-To	IP/Domain	Auto	---
Via	IP/Domain	Auto	---
SDP	IP/Domain	Auto	---
Request-Line	IP/Domain	Overwrite	twilio.com
Record-Route	IP/Domain	Auto	---
Referred-By	IP/Domain	Auto	---

Figure 60 Topology Hiding Profile for Twilio



### 1.1.5 Routing

#### Routing for Avaya SM

- Navigate to **Configuration Profiles > Routing**
- Create Routing Profile named **Avaya\_SM**
- At Routing Profile Window, Click **Add**
- Set *SIP Server Profile: Avaya* (configured in section 6.2.3)
- The **Server IP, Port and Transport Protocol** populates automatically

#### Session Border Controller for Enterprise

The screenshot displays the Twilio configuration interface for creating a routing profile. The sidebar on the left shows the navigation menu, with 'Routing' highlighted. The main configuration area shows a table of routing profiles, with 'AVAYA\_SM' selected. The 'Edit Rule' window for 'AVAYA\_SM' is open, showing various configuration options and a table of rule entries.

**Routing Profiles: AVAYA\_SM**

Priority	URI Group	Time of Day	Load Balancing	Next Hop Address
1	*	default	Priority	10.70.4.207:5060

**Profile : AVAYA\_SM - Edit Rule**

URI Group: \* Time of Day: default

Load Balancing: Priority

Transport: None

LDAP Server Profile: None

Matched Attribute Priority:

Next Hop Priority:

Ignore Route Header:

ENUM:  ENUM Suffix:

Priority / Weight	LDAP Search Attribute	LDAP Search Regex Pattern	LDAP Search Regex Result	SIP Server Profile	Next Hop Address	Transport
1				Avaya	10.70.4.207:50	None

Figure 61 Routing for Avaya SM

## Routing for Twilio

- Set **SIP Server Profile: Twilio** (configured in section 6.2.3)
- The **Server IP, Port** and **Transport Protocol** populates automatically

Profile : Twilio - Edit Rule

URI Group	*	Time of Day	default
Load Balancing	Priority	NAPTR	<input type="checkbox"/>
Transport	None	LDAP Routing	<input type="checkbox"/>
LDAP Server Profile	None	LDAP Base DN (Search)	None
Matched Attribute Priority	<input type="checkbox"/>	Alternate Routing	<input type="checkbox"/>
Next Hop Priority	<input checked="" type="checkbox"/>	Next Hop In-Dialog	<input type="checkbox"/>
Ignore Route Header	<input type="checkbox"/>		
ENUM	<input type="checkbox"/>	ENUM Suffix	

Add

Priority / Weight	LDAP Search Attribute	LDAP Search Regex Pattern	LDAP Search Regex Result	SIP Server Profile	Next Hop Address	Transport	
1				Twilio	ya	None	Delete

Finish

Figure 62 Routing for Twilio

## 1.1.6 Media Rules

### Media Rule for Twilio

- Navigate to **Domain Policies > Media Rules**
- Create Media Rules named **Twilio**

### Session Border Controller for Enterprise

The screenshot displays the configuration page for a Media Rule named 'Twilio'. The left sidebar shows a navigation menu with 'Domain Policies' expanded and 'Media Rules' selected. The main content area is titled 'Media Rules: Twilio' and includes an 'Add' button. Below this, there is a list of media rules with 'Twilio' highlighted. The configuration details for the 'Twilio' rule are shown in a tabbed interface with the 'Encryption' tab selected. The configuration includes settings for Audio Encryption and Video Encryption, both set to RTP Preferred Formats, with Symmetric Context Reset checked and Key Change in New Offer unchecked. A Miscellaneous section at the bottom has Capability Negotiation unchecked. An 'Edit' button is located at the bottom right of the configuration area.

Category	Setting	Value
Audio Encryption	Preferred Formats	RTP
	Interworking	<input type="checkbox"/>
	Symmetric Context Reset	<input checked="" type="checkbox"/>
	Key Change in New Offer	<input type="checkbox"/>
Video Encryption	Preferred Formats	RTP
	Interworking	<input type="checkbox"/>
	Symmetric Context Reset	<input checked="" type="checkbox"/>
	Key Change in New Offer	<input type="checkbox"/>
Miscellaneous	Capability Negotiation	<input type="checkbox"/>

Figure 63 Media Rules for Twilio

Media Rules: Twilio

[Add](#)

Media Rules

Twilio

[Click here to add a description.](#)

Encryption

Codec Prioritization

Advanced

QoS

---

**Silencing**

Silencing Enabled

Timeout 60 second(s)

---

**Binary Floor Control Protocol**

BFCP Enabled

---

**Far End Camera Control**

FECC Enabled

---

**Real Time Text**

RTT Enabled

---

**ANAT**

ANAT Enabled

Media Rules: Twilio

[Add](#)

Media Rules

Twilio

[Click here to add a description.](#)

Encryption

Codec Prioritization

Advanced

QoS

---

RTT Enabled

---

**ANAT**

ANAT Enabled

---

**Media Line Compliance**

Media Line Compliance Enabled

---

**Interactive Connectivity Establishment**

ICE Gateway Support

---

**Port Change on New Offer**

Audio Port Change on New Offer Enabled

Video Port Change on New Offer Enabled

[Edit](#)

Figure 64 Media Rules for Twilio Continuation

Media Rules: Twilio

Add
F

Media Rules

---

Twilio

[Click here to add a description.](#)

Encryption
Codec Prioritization
Advanced
QoS

Media QoS Marking

Enabled

QoS Type TOS

Audio QoS

Audio Precedence	Routine	Audio ToS	Minimize Delay
------------------	---------	-----------	----------------

Video QoS

Video Precedence	Routine	Video ToS	Minimize Delay
------------------	---------	-----------	----------------

Edit

Figure 65 Media Rules for Twilio Continuation

### Media Rule for Avaya SM

Media Rule for Avaya SM is same as Twilio. It is named as **AvayaSM**. (No screenshot of AvayaSM Media rule is shown)

## 1.1.7 Signaling Rules

### Signaling Rules for Avaya SM

- Navigate to **Domain Policies > Signaling Rules**
- Create Signaling Rules named **Avaya SM**

### Session Border Controller for Enterprise

The screenshot shows the configuration page for a Signaling Rule named "Avaya SM". The left sidebar contains a navigation tree with "Signaling Rules" highlighted. The main content area has tabs for "General", "Requests", "Responses", "Request Headers", "Response Headers", "Signaling QoS", and "UCID". The "General" tab is active, showing "Inbound" and "Outbound" sections with "Requests" and "Non-2XX Final Responses" set to "Allow". A "Content-Type Policy" section is also visible with "Enable Content-Type Checks" checked.

### Session Border Controller for Enterprise



This screenshot shows the "Request Headers" configuration page for the "Avaya SM" rule. It features a table with 7 rows of header controls. Each row includes a Row ID, Header Name, Method Name, Header Criteria, Action, Proprietary status, and Direction. Edit and Delete buttons are provided for each entry.

Row	Header Name	Method Name	Header Criteria	Action	Proprietary	Direction		
1	Alert-Info	ALL	Forbidden	Remove Header	No	IN	Edit	Delete
2	Reason	ALL	Forbidden	Remove Header	No	IN	Edit	Delete
3	AV-Global-Session-ID	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
4	Endpoint-View	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
5	P-AV-Message-Id	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
6	P-Charging-Vector	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
7	P-Location	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete

Figure 66 Signaling Rules for Avaya SM

Signaling Rules: Avaya SM

Rename Clone Delete

Click here to add a description.

General Requests Responses Request Headers **Response Headers** Signaling QoS UCID

Add In Header Control Add Out Header Control

Row	Header Name	Response Code	Method Name	Header Criteria	Action	Proprietary	Direction		
1	AV-Global-Session-ID	1XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
2	AV-Global-Session-ID	2XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
3	Endpoint-View	1XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
4	Endpoint-View	2XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
5	P-AV-Message-Id	1XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
6	P-AV-Message-Id	2XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
7	P-Location	1XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete
8	P-Location	2XX	ALL	Forbidden	Remove Header	Yes	IN	Edit	Delete

Signaling Rules: Avaya SM

Add

Click here to add a description.

General Requests Responses Request Headers **Response Headers** **Signaling QoS** UCID

Signaling QoS

QoS Type TOS

Precedence Routine

ToS Minimize Delay

Edit

Signaling Rules: Avaya SM

Add

Click here to add a description.

General Requests Responses Request Headers Response Headers Signaling QoS **UCID**

UCID

Node ID 1

Protocol Discriminator 0x00

Edit

Figure 67 Signaling Rules for Avaya SM Continuation

### 1.1.8 End Point Policy Groups

#### End Point Policy Group for Twilio

- Create End Point Policy Groups named **Twilio**
- Set *Media Rule: Twilio* (Created in Section 6.2.6)

#### Session Border Controller for Enterprise

The screenshot shows the 'Policy Groups: Twilio' configuration page. On the left, a navigation menu lists various policy categories, with 'End Point Policy Groups' highlighted. The main area shows a table of policy groups. A single policy group is listed with the following details:

Order	Application	Border	Media	Security	Signaling	Charging	RTCP Mon Gen
1	default	default	Twilio	default-low	default	None	Off

Figure 68 End Point Policy Group for Twilio

#### End Point Policy Group for Avaya SM

- Create End Point Policy Groups named **Avaya SM**
- Set *Media Rule: AvayaSM* (Created in Section 6.2.6)
- Set *Signaling Rule: Avaya SM* (Created in Section 6.2.7)

#### Session Border Controller for Enterprise

The screenshot shows the 'Policy Groups: Avaya SM' configuration page. On the left, a navigation menu lists various policy categories, with 'End Point Policy Groups' highlighted. The main area shows a table of policy groups. A single policy group is listed with the following details:

Order	Application	Border	Media	Security	Signaling	Charging	RTCP Mon Gen
1	default	default	AvayaSM	default-low	Avaya SM	None	Off

Figure 69 End Point Policy Group for Avaya SM



## 1.1.9 Network Management

### Network Interface for Avaya SM

- Navigate to **Network & Flows > Network Management**
- Create Network Interface for Avaya SM named **LAN**
- Set *Default Gateway*: Default Gateway of **Avaya SM IP address**
- Set *Network Prefix or Subnet Mask*: Enter the **Subnet Mask**
- *Interface*: Select **A1**
- *IP Address*: Enter IP address of **Avaya SM**

**Session Border Controller for Enterprise**

**Network Management**

**Edit Network**

Modifications to the interfaces and IP addresses are service impacting and take effect immediately. If changes are made, sessions using this network will be dropped.

Name	LAN
Default Gateway	10.70.4.1
Network Prefix or Subnet Mask	255.255.255.0
Interface	A1

Add

IP Address	Public IP	Gateway Override	
	Use IP Address	Use Default	Delete
10.70.4.216	Use IP Address	Use Default	Delete

Finish

Figure 70 Network Interface for Avaya SM

### Network Interface for Twilio

- Create Network Interface for Twilio named **WAN**
- Set *Default Gateway*: Default Gateway for **Twilio** interface
- Set *Network Prefix or Subnet Mask*: Enter the **Subnet Mask**
- *Interface*: Select **B1**
- *IP Address*: Enter interface IP address for **Twilio**

X
Edit Network

Modifications to the interfaces and IP addresses are service impacting and take effect immediately. If changes are made, sessions using this network will be dropped.

Name	<input style="width: 90%;" type="text" value="WAN"/>
Default Gateway	<input style="width: 90%;" type="text" value="192.65."/>
Network Prefix or Subnet Mask	<input style="width: 90%;" type="text" value="255.255.255.128"/>
Interface	<input style="width: 90%;" type="text" value="B1"/>

IP Address	Public IP	Gateway Override	
<input style="width: 90%;" type="text" value="192.65."/>	<input type="button" value="Use IP Address"/>	<input type="button" value="Use Default"/>	<a href="#" style="color: blue; text-decoration: none;">Delete</a>

Figure 71 Network Interface for Twilio

1.1.10 Media Interface

**Media Interface facing Twilio**

- Navigate to **Network & Flows > Media Interface**
- Create **Media Interface** named **MI\_WAN**
- Set **IP Address**: Select **WAN (B1, VLAN 0)** from the drop down and the **IP address** populates automatically. The IP address for Interface facing Twilio is 192.65.X.X

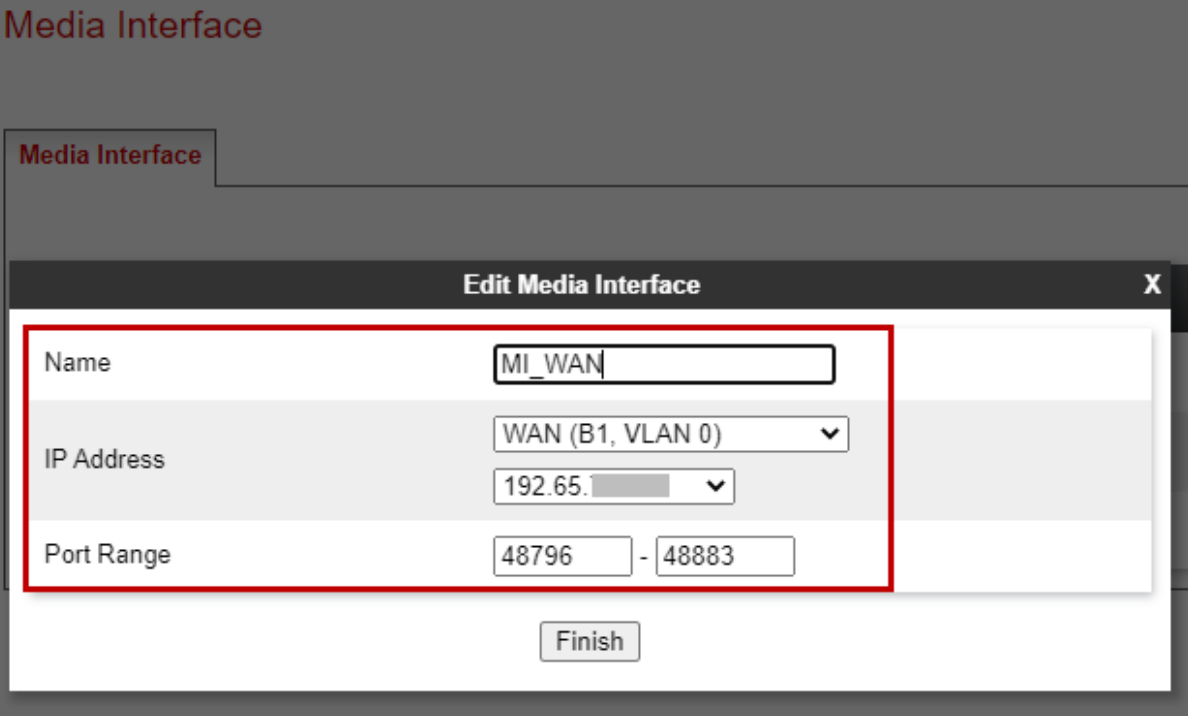


Figure 72 Media Interface for Twilio

**Media Interface facing Avaya SM**

- Create **Media Interface** named **MI\_LAN**
- Set **IP Address**: Select **LAN (A1, VLAN 0)** from the drop down and the **IP address** populates automatically. The IP address for Interface facing Avaya SM is 10.70.4.216

The screenshot shows a configuration window titled "Edit Media Interface". The form is divided into several sections. The "Name" field contains the text "MI\_LAN". The "IP Address" section features a dropdown menu currently set to "LAN (A1, VLAN 0)", which has opened a sub-menu titled "IP Addresses" showing the value "10.70.4.216". The "Port Range" section consists of two input boxes, the first containing "35000" and the second containing "40000", separated by a hyphen. A "Finish" button is positioned at the bottom center of the form area.

Figure 73 Media Interface for Avaya SM

### 1.1.11 Signaling Interface

#### Signaling Interface for Avaya SM

- Navigate to: **Network & Flows > Signaling Interface**
- Set **Name**: **SI\_LAN** is given for the interface facing Avaya Aura SM
- Set **IP Address**: Select **LAN (A1, VLAN 0)**
- Set **UDP Port**: **5060**

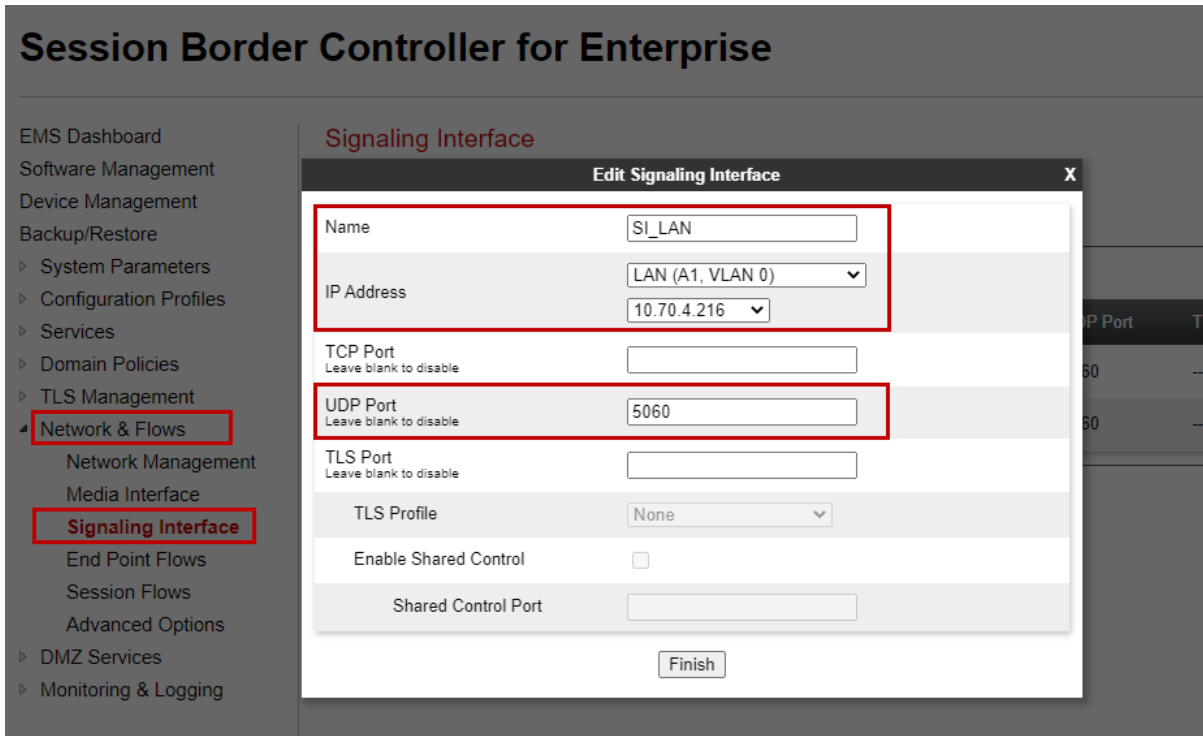


Figure 74 Signaling Interface for Avaya SM

### Signaling Interface for Twilio

- Navigate to: **Network & Flows > Signaling Interface**
- Set **Name**: **SI\_WAN** is given for the interface facing Avaya SM
- Set **IP Address**: Select **WAN (B1, VLAN 0)**
- Set **UDP Port**: **5060**

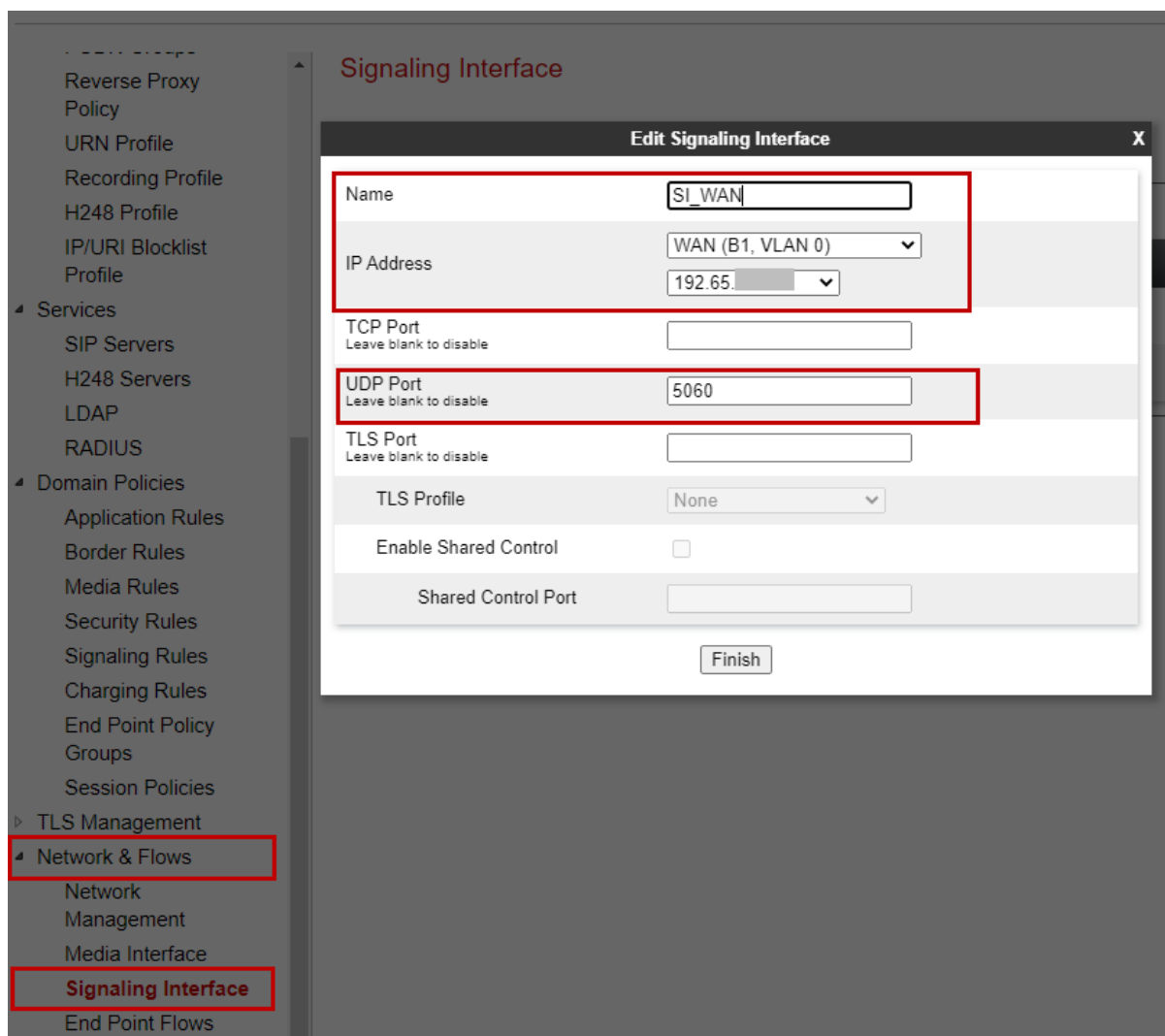


Figure 75 Signaling Interface for Twilio

### 1.1.12 End Point Flows

- Navigate to **Network & Flows > End Point Flows > Server Flows**
- Below are the Server Flows created for Avaya SM and Twilio

#### Session Border Controller for Enterprise

AVAYA

EMS Dashboard

Software Management

Device Management

Backup/Restore

System Parameters

Configuration Profiles

Services

Domain Policies

TLS Management

**Network & Flows**

  Network Management

  Media Interface

  Signaling Interface

**End Point Flows**

  Session Flows

  Advanced Options

#### End Point Flows

Subscriber Flows
Server Flows
Add

Modifications made to a Server Flow will only take effect on new sessions.

Hover over a row to see its description.

**SIP Server: Avaya**

Priority	Flow Name	URI Group	Received Interface	Signaling Interface	End Point Policy Group	Routing Profile	
1	AvayaSM	*	SI_WAN	SI_LAN	Twilio	Twilio	View Clone Edit Delete

**SIP Server: Twilio**

Priority	Flow Name	URI Group	Received Interface	Signaling Interface	End Point Policy Group	Routing Profile	
1	Twilio	*	SI_LAN	SI_WAN	Avaya SM	AVAYA_SM	View Clone Edit Delete

Figure 76 End Point Flows – Server Flows

Server Flow for Avaya SM

Edit Flow: Twilio
X

Flow Name	<input style="width: 90%;" type="text" value="Twilio"/>
SIP Server Profile	<input style="width: 90%;" type="text" value="Twilio"/>
URI Group	<input style="width: 90%;" type="text" value="*"/>
Transport	<input style="width: 90%;" type="text" value="*"/>
Remote Subnet	<input style="width: 90%;" type="text" value="*"/>
Received Interface	<input style="width: 90%;" type="text" value="SI_LAN"/>
Signaling Interface	<input style="width: 90%;" type="text" value="SI_WAN"/>
Media Interface	<input style="width: 90%;" type="text" value="MI_LAN"/>
Secondary Media Interface	<input style="width: 90%;" type="text" value="None"/>
End Point Policy Group	<input style="width: 90%;" type="text" value="Avaya SM"/>
Routing Profile	<input style="width: 90%;" type="text" value="AVAYA_SM"/>
Topology Hiding Profile	<input style="width: 90%;" type="text" value="Twilio"/>
Signaling Manipulation Script	<input style="width: 90%;" type="text" value="None"/>
Remote Branch Office	<input style="width: 90%;" type="text" value="Any"/>
Link Monitoring from Peer	<input type="checkbox"/>
FQDN Support	<input type="checkbox"/>
FQDN	<input style="width: 90%;" type="text"/>

Figure 77 End Point Flow for Avaya SM



Server Flow for Twilio

Edit Flow: AvayaSM
X

Flow Name	<input style="width: 90%;" type="text" value="AvayaSM"/>
SIP Server Profile	<input style="width: 90%;" type="text" value="Avaya"/>
URI Group	<input style="width: 90%;" type="text" value="*/"/>
Transport	<input style="width: 90%;" type="text" value="*/"/>
Remote Subnet	<input style="width: 90%;" type="text" value="*/"/>
Received Interface	<input style="width: 90%;" type="text" value="SI_WAN"/>
Signaling Interface	<input style="width: 90%;" type="text" value="SI_LAN"/>
Media Interface	<input style="width: 90%;" type="text" value="MI_LAN"/>
Secondary Media Interface	<input style="width: 90%;" type="text" value="None"/>
End Point Policy Group	<input style="width: 90%;" type="text" value="Twilio"/>
Routing Profile	<input style="width: 90%;" type="text" value="Twilio"/>
Topology Hiding Profile	<input style="width: 90%;" type="text" value="default"/>
Signaling Manipulation Script	<input style="width: 90%;" type="text" value="None"/>
Remote Branch Office	<input style="width: 90%;" type="text" value="Any"/>
Link Monitoring from Peer	<input type="checkbox"/>
FQDN Support	<input type="checkbox"/>
FQDN	<input style="width: 90%;" type="text"/>

Figure 78 End Point Flow for Twilio

### 1.1.13 Signaling Manipulation

Signaling Manipulation script **AvayaSM** is created towards Avaya SM. This script assigns the X-parentCall value to User-to-User header and sent towards Avaya SM

Navigate to **Configuration Profiles > Signaling Manipulation**  
**Session Border Controller for Enterprise**

**Signaling Manipulation Scripts: AvayaSM**

Upload Add

Click here to add a description.

**Signaling Manipulation**

```

within session "INVITE"
{
act on request where %DIRECTION="OUTBOUND" and %ENTRY_POINT="POST_ROUTING" and %METHOD="INVITE"
{
%HEADERS["User-to-User"][1] = %HEADERS["X-parentCall"][1];
}
}
    
```

Edit

AvayaSM

Figure 79 Sigma script towards Avaya SM

## 1.2 Avaya Aura Session Manager Configuration

### 1.2.1 Avaya Aura SM Login

- Avaya Aura SM Configuration is accomplished through the Avaya Aura System Manager.
- Access Avaya Aura System Manager Web login screen via **https://<IP Address/FQDN>**
- Use admin as **User ID** and associated **Password**
- Click **Log On**

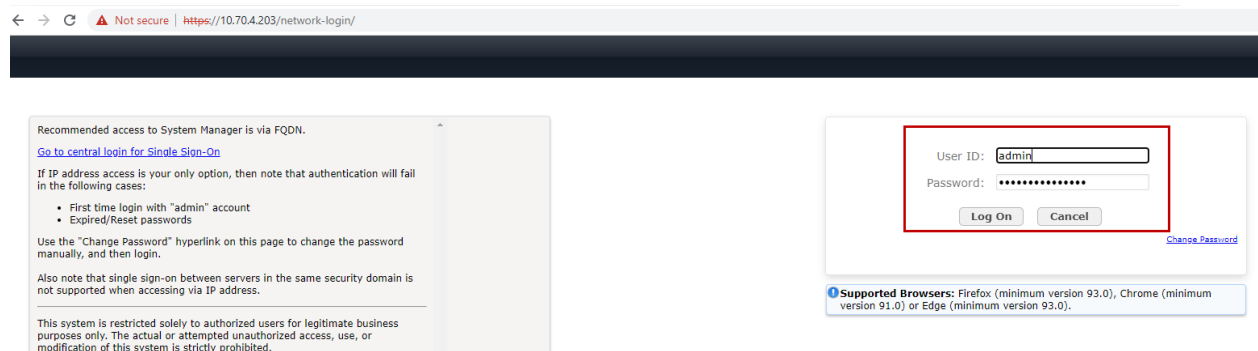


Figure 80 Avaya SM Login

## 1.2.2 Domain

- Navigate to **Elements > Routing**

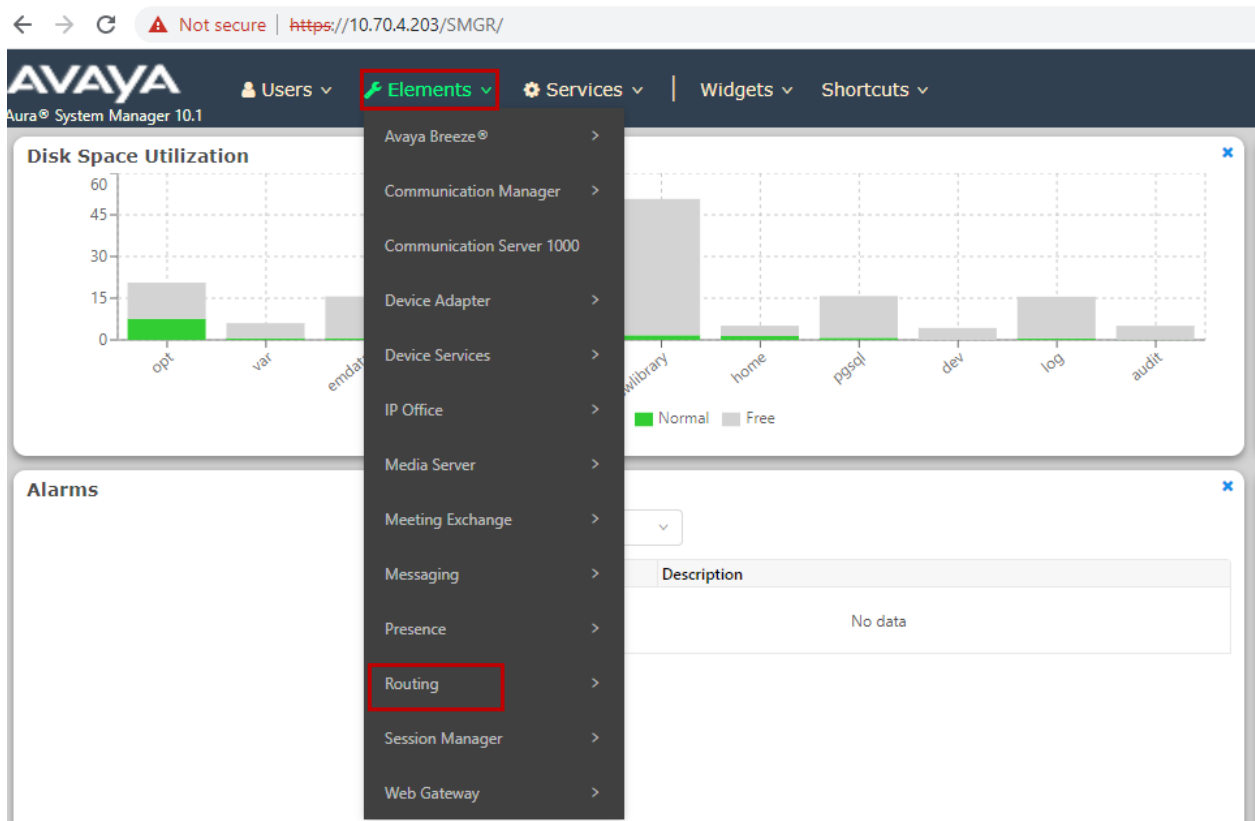


Figure 81 Routing

- Navigate to **Routing > Domains**
- Click **New**

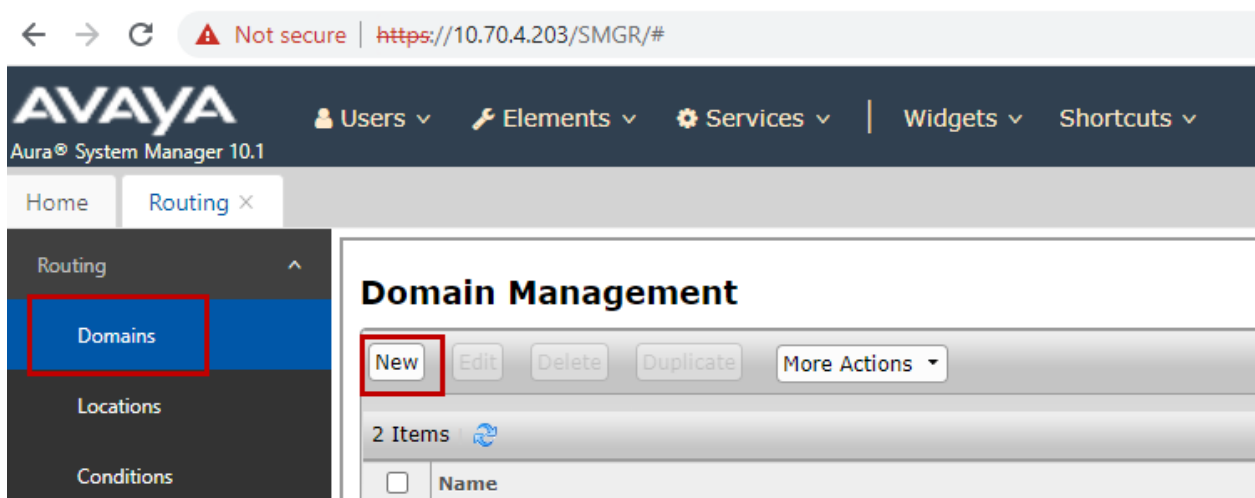


Figure 82 Add Domain

- Set **Name**: Enter the domain name of Avaya Aura SM, **xxxx.com**
- Set **Type**: **sip**

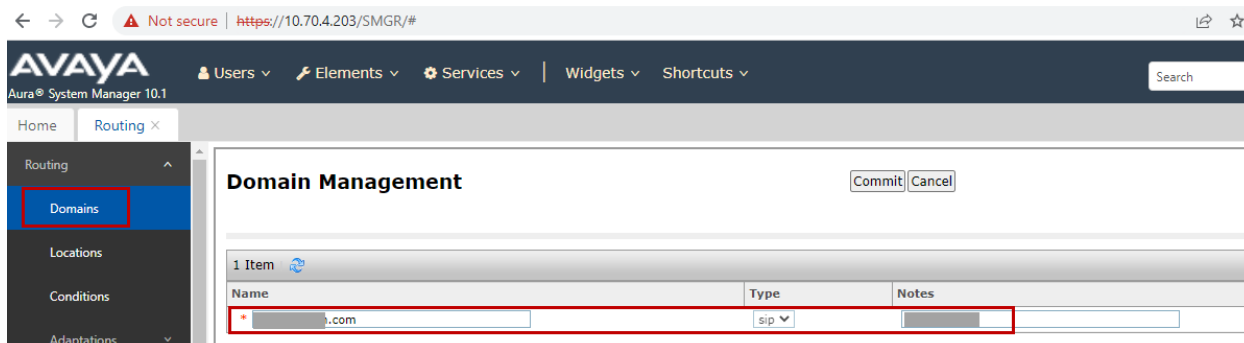


Figure 83 Domain

### 1.2.3 Locations

- Navigate to **Routing > Locations**
- Select **New**

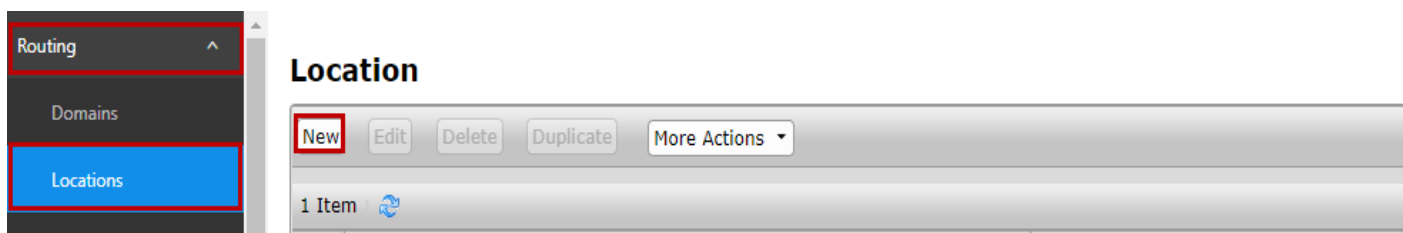


Figure 84 Locations

- Set **Name**: **Plano**

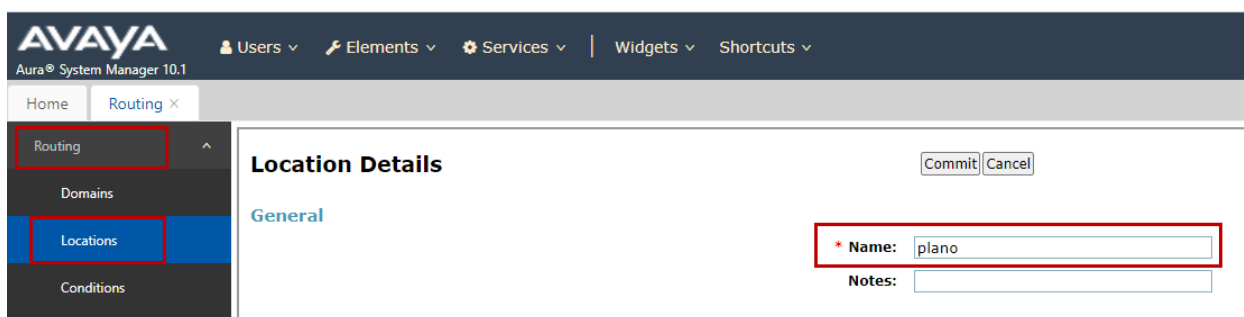


Figure 85 Locations Continuation

- Under *Location Pattern*, select **Add** to add **IP Address** Patterns for different networks that communicates within the location
- Set *IP Address Pattern*: **10.80.33.x**
- Leave all other fields to default values
- Click **Commit**

**Location Pattern**

Add Remove

10 Items

<input type="checkbox"/>	IP Address Pattern	Notes
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>		
<input type="checkbox"/>	* 10.89.26.*	
<input type="checkbox"/>	* 10.89.33.*	
<input type="checkbox"/>		
<input type="checkbox"/>		

Select : All, None

Commit Cancel

Figure 86 Locations continuation

## 1.2.4 Adaptations

### Adaptation for Avaya Aura Contact Center

- Navigate to **Routing > Adaptations**. Click **New**
- Set **Adaptation Name: Adaptation for AvayaCC**
- Set **Module Name: DigitConversionAdapter**
- Set **Module Parameter Type: Name-Value Parameter** is selected from the drop down, Click **Add**
- Set **Name/Value: fromto/true**
- Set **Name/Value: osrcd/10.70.4.207** (Avaya Aura SM IP is entered)
- Set **Name/Value: odstc/xxxx.com** (Avaya Aura Contact Center Domain name is entered)
- Under **Digit Conversion for Outgoing Calls from SM**, add an entry to delete the incoming number pattern and send/insert CDN number (Pilot number e.g. 7500) of the Avaya Aura Contact Center in the destination address
- Click **Commit**

The screenshot shows the Twilio Adaptation configuration interface. The left sidebar contains navigation options: Routing, Domains, Locations, Conditions, Adaptations (highlighted), Regular Expression..., Device Mappings, SIP Entities, Entity Links, Time Ranges, and Routing Policies. The main content area is titled "Adaptation Details" and includes a "Commit" button. Under the "General" section, the following fields are visible: Adaptation Name (Adaptation for AvayaCC), Notes, Module Name (DigitConversionAdapter), Type (digit), State (enabled), and Module Parameter Type (Name-Value Parameter). Below this is a table for Name-Value Parameters:

Name	Value
fromto	true
osrcd	10.70.4.207
odstd	xxxx.com

Below the table is the "Egress URI Parameters" field. At the bottom, there is a section titled "Digit Conversion for Outgoing Calls from SM" with a table of 2 items:

Matching Pattern	Min	Max	Phone Context	Delete Digits	Insert Digits	Address to modify	Adaptation Data	Notes
*+1346	5	36		12	7500	destination		
*+1970	5	36		12	7500	destination		

Figure 87 Adaptation for Avaya Aura Contact Center

## Regular Expression for Avaya Aura Contact Center

This regular expression towards Avaya Aura Contact Center (CC) copies the User-to-User header value (i.e. X-parentCall value) received from Avaya SBCE and assigns it to User-Agent header in the Avaya Aura SM

Avaya Aura SM sends User-Agent header with X-parentCall value towards Avaya Aura CC

- Navigate to **Routing > Adaptations > Regular Expression**. Click **New**
- Set Name: **test**

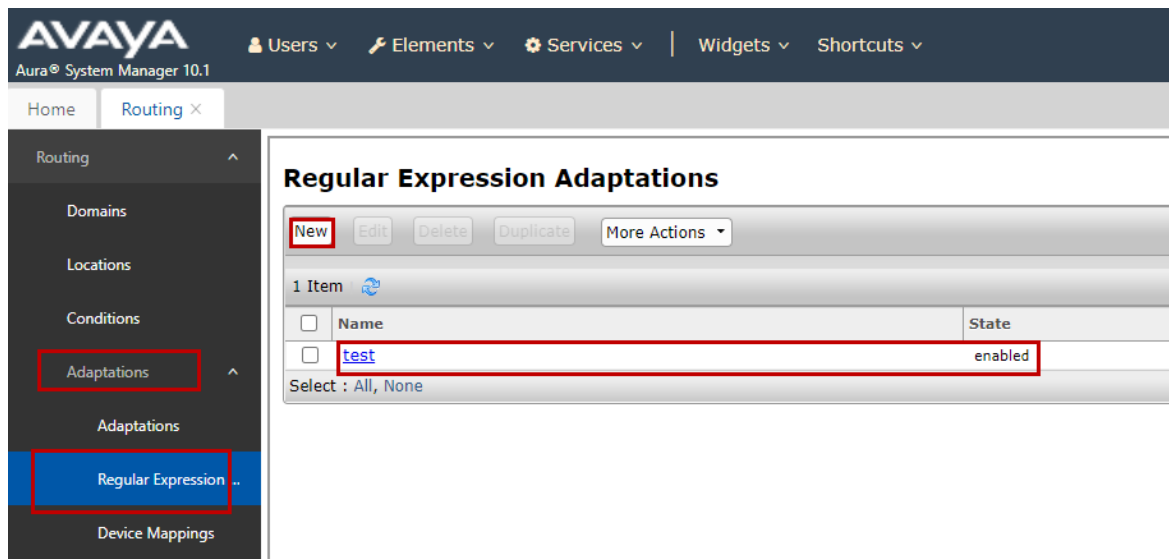


Figure 88 Regular Expression for Avaya Aura Contact Center



- Navigate to **Outgoing Adaptation Rules**. Click **Add**
- Create **Rule Name: removeuseragent**

The screenshot shows the Twilio console interface for configuring Regular Expression Adaptation Rules. On the left is a navigation menu with 'Regular Expression ...' selected. The main content area is titled 'Regular Expression Adaptation Details' and includes a 'General' section with fields for Name (test), Notes (cc), and State (enabled). Below this are sections for 'Incoming Adaptation Rules' (0 items) and 'Outgoing Adaptation Rules' (1 item). The 'Outgoing Adaptation Rules' table has a single entry with Order 1 and Rule Name 'removeuseragent', both highlighted with red boxes. 'Add' buttons for both sections are also highlighted with red boxes.

Figure 89 Regular Expression for Avaya Aura Contact Center Continuation

- Under **Regular Expression Adaptation Rule Details**,
  - *Rule Name*: **removeuseragent**
  - *Direction*: **Outgoing**
- Navigate to **Rule Variables**. Click **Add**
  - Set *Variable Name*: **AvayaSM**
  - Set *Source Type*: **Header**
  - Set *Source*: **User-to-User**
  - Set *Instance*: **top**
  - Set *Match Expression*: **.\***
- Navigate to **Rule Actions**. Click **Add**
  - Set *Source Type*: **Header**
  - Set *Source*: **User-Agent**
  - Set *Instance*: **any**
  - Set *Operation*: **modify**
  - Set *Match Expression*: **.\***
  - Set *Replace/Add Expression*: **\${AvayaSM}**

The screenshot displays the Twilio console interface for configuring a Regular Expression Adaptation Rule. The rule is named 'removeuseragent' and is set to 'Outgoing' direction. It includes a Rule Variable named 'AvayaSM' with source 'User-to-User' and instance 'top', and a Rule Action that modifies the 'User-Agent' header with the value of the 'AvayaSM' variable.

**Regular Expression Adaptation Rule Details**

**General**

- Rule Name: removeuseragent
- Condition: [Dropdown]
- Direction: Outgoing
- Order: 1
- Notes: [Text Area]

**Rule Variables**

Variable Name	Source Type	Source	Instance	Match Expression	Notes
AvayaSM	Header	User-to-User	top	.*	

**Rule Actions**

Order	Source Type	Source	Instance	Operation	Match Expression	Replace / Add Expression	Notes
1	Header	User-Agent	any	modify	.*	\${AvayaSM}	

Figure 90 Regular Expression for Avaya Aura Contact Center Continuation

## Adaptation for Avaya Aura Communication Manager (CM)

This adaptation changes the host part of FROM and TO header with Avaya Aura CM domain name

- Set *Adaptation Name*: **Adaptation\_For\_cm**
- Set *Module Name*: **DigitConversionAdapter**
- Set *Module Parameter Type*: **Name-Value Parameter** is selected from the drop down, Click **Add**
- Set *Name/Value*: **fromto/true**.
- Set *Name/Value*: **odstd/xxxx.com** (Avaya Aura CM Domain name is entered)
- Set *Name/Value*: **osrcd/xxxx.com** (Avaya Aura CM Domain name is entered)

**Adaptation Details** Commit Cancel

**General**

\* **Adaptation Name:** Adaptation\_For\_cm

**Notes:**

\* **Module Name:** DigitConversionAdapter

**Type:** digit

**State:** enabled

**Module Parameter Type:** Name-Value Parameter

Add		Remove
<input type="checkbox"/>	Name	Value
<input type="checkbox"/>	fromto	true
<input type="checkbox"/>	odstd	xxxx.com
<input type="checkbox"/>	osrcd	xxxx.com

Select : All, None

**Egress URI Parameters:**

Figure 91 Adaptation for Avaya Aura CM

## 1.2.5 SIP Entities and Entity Links

### SIP Entity for Avaya Aura Session Manager

- Navigate to: **Routing > SIP Entities**
- Click **New**
- Set **Name**: Enter name of the host, **AASM10**
- Set **FQDN or IP Address**: Enter the **SIP address** of the **Session Manager**
- Set **Type**: **Session Manager** is selected from the drop down
- Set **Location**: Select the **location** (Created in Section 6.3.3)
- Under **Listen Ports**
  - Set **TCP/TLS Failover Port: 5060/5061**
- Click **Add** to assign Domain **xxxxx.com** (Default Domain name)for the following Ports and Protocols
- Port **5060/5062** and Protocol **TCP/UDP**
- Click **Commit**

The screenshot displays the Avaya Aura System Manager 10.1 interface for configuring a SIP Entity. The left sidebar shows the navigation menu with 'SIP Entities' selected. The main content area is titled 'SIP Entity Details' and includes a 'Commit' button.

**General**

- Name:** AASM10
- IP Address:** 10.70.4.207
- SIP FQDN:** (empty)
- Type:** Session Manager
- Notes:** (empty)
- Location:** plano
- Outbound Proxy:** (empty)
- Time Zone:** America/Chicago
- Minimum TLS Version:** Use Global Setting
- Credential name:** (empty)

**Monitoring**

- SIP Link Monitoring:** Link Monitoring Enabled
- Proactive Monitoring Interval (in seconds):** 900
- Reactive Monitoring Interval (in seconds):** 120
- Number of Tries:** 1
- Number of Successes:** 1
- CRLF Keep Alive Monitoring:** Use Session Manager Configuration

**Failover Ports**

- TCP Failover port:** 5060
- TLS Failover port:** 5061

**Listen Ports**

Buttons: Add, Remove

Listen Ports	Protocol	Default Domain	Endpoint	Notes
<input type="checkbox"/> 5060	TCP	xxxxx.com	<input checked="" type="checkbox"/>	
<input type="checkbox"/> 5060	UDP	xxxxx.com	<input type="checkbox"/>	
<input type="checkbox"/> 5061	TLS	xxxxx.com	<input checked="" type="checkbox"/>	
<input type="checkbox"/> 5062	TCP	xxxxx.com	<input type="checkbox"/>	

Select : All, None

Figure 92 SIP Entity for Avaya SM

## SIP Entity and Entity Links for Avaya Aura Communication Manager

- Set *Name*: **AACM10**
- Set *FQDN or IP Address*: Enter the **IP address** of Avaya Aura Communication Manager
- Set *Type*: **CM**
- Set *Location*: Select the **location** (Created in Section 6.3.3)

The screenshot shows the Avaya Aura System Manager 10.1 interface. The left sidebar is expanded to 'Routing', and 'SIP Entities' is selected. The main area displays 'SIP Entity Details' for 'AACM10'. The 'General' tab is active, and the 'Commit' button is highlighted with a red box. The configuration fields are as follows:

Field	Value
Name	AACM10
FQDN or IP Address	10.70.4.204
Type	CM
Notes	
Location	plano
Time Zone	America/Chicago
SIP Timer B/F (in seconds)	4
Minimum TLS Version	Use Global Setting
Credential name	
Securable	<input type="checkbox"/>
Call Detail Recording	both

Figure 93 SIP Entity and Entity Link for Avaya CM

- Set *Adaptation*: Select the **Adaptation** for Avaya Aura CM configured in Section 6.3.4
- Under **Entity Links**, Click **Add**
  - Set *Name*: **SM10\_CM\_SIP Trunk**
  - Set *SIP Entity 1*: Select the SIP entity **AASM10**
  - Set *SIP Entity 2*: **AACM10**
  - Set *Protocol*: **TCP**
  - Set *Port*: **5060**
  - Set *Connection Policy*: **trusted**

**Adaptations**

Order	Name	Module Name	State	Type
1	Adaptation_For_cm	DigitConversionAdapter	enabled	digit

Select : All, None

**Loop Detection**

Loop Detection Mode:

Loop Count Threshold:

Loop Detection Interval (in msec):

**Monitoring**

SIP Link Monitoring:

\* Proactive Monitoring Interval (in seconds):

\* Reactive Monitoring Interval (in seconds):

\* Number of Tries:

\* Number of Successes:

CRLF Keep Alive Monitoring:

Supports Call Admission Control:

Shared Bandwidth Manager:

Primary Session Manager Bandwidth Association:

Backup Session Manager Bandwidth Association:

**Entity Links**

Override Port & Transport with DNS SRV:

1 Item

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service
* SM10_CM_SIP Trunk	AASM10	TCP	* 5060	AACM10	* 5060	trusted	<input type="checkbox"/>

Select : All, None

Figure 94 SIP Entity and Entity Link for Avaya CM Continuation

## SIP Entity and Entity Links for Twilio

- Set **Name**: **Twilio**
- Set **FQDN or IP Address**: Enter the **IP address** of **Avaya SBCE LAN IP**
- Set **Type**: **SIP Trunk**
- Set **Location**: Select the **location** (Created in Section 6.3.3)

**SIP Entity Details** [Commit] [Cancel]

**General**

\* Name: Twilio

\* FQDN or IP Address: 10.70.4.216

Type: SIP Trunk

Notes:

Location: plano

Time Zone: America/Fortaleza

\* SIP Timer B/F (in seconds): 4

Minimum TLS Version: Use Global Setting

Credential name:

Securable:

Call Detail Recording: egress

Figure 95 SIP Entity and Entity Link for Twilio

- Under **Entity Links**, Click **Add**
  - Set **Name**: **SMtoTwilio**
  - Set **SIP Entity 1**: Select the SIP entity **AASM10**
  - Set **SIP Entity 2**: **Twilio**
  - Set **Protocol**: **UDP**
  - Set **Port**: **5060**
  - Set **Connection Policy**: **trusted**

**Loop Detection**

Loop Detection Mode: On

Loop Count Threshold: 5

Loop Detection Interval (in msec): 200

**Monitoring**

SIP Link Monitoring: Link Monitoring Disabled

CRLF Keep Alive Monitoring: CRLF Monitoring Disabled

Supports Call Admission Control:

Shared Bandwidth Manager:

Primary Session Manager Bandwidth Association:

Backup Session Manager Bandwidth Association:

**Entity Links**

Override Port & Transport with DNS SRV:

[Add] [Remove]

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy	Deny New Service
* SMtoTwilio	* AASM10	UDP	* 5060	* Twilio	* 5060	trusted	<input type="checkbox"/>

Figure 96 SIP Entity and Entity Link for Twilio Continuation

## SIP Entity and Entity Links for Avaya Aura CC

- Set **Name**: **Avaya CC Manager Server**
- Set **FQDN or IP Address**: Enter the **IP address** of **Avaya Aura Contact Center IP**
- Set **Type**: **Other**
- Set **Location**: Select the **location** (Created in Section 6.3.3)
- **Adaptations**: Select the **Adaptation** and the **Regular Expression** for Avaya Aura CC configured in Section 6.3.4
- Under **Entity Links**, Click **Add**
  - Set **Name**: **SMtoAvayaCCMS**
  - Set **SIP Entity 1**: Select the SIP entity **AASM10**
  - Set **Port**: **5062**
  - Set **SIP Entity 2**: **Avaya CC Manager Server**
  - Set **Protocol**: **TCP**
  - Set **Port**: **5060**
  - Set **Connection Policy**: **trusted**

**SIP Entity Details**

**General**

Name: Avaya CC Manager Server  
 FQDN or IP Address: 10.89.33.31  
 Type: Other  
 Location: plano  
 Time Zone: America/Fortaleza

**Adaptations**

Order	Name	Module Name	State	Type	Notes
1	Adaptation for AvayaCC	DigitConversionAdapter	enabled	digit	
2	test	RegExpAdapter	enabled	regex	cc

**Entity Links**

Name	SIP Entity 1	Protocol	Port	SIP Entity 2	Port	Connection Policy
SMtoAvayaCCMS	AASM10	TCP	5062	Avaya CC Manager Server	5060	trusted

Figure 97 SIP Entity and Entity Link for Avaya Aura CC



## 1.2.6 Routing Policies

### Routing policy to Avaya Aura CM

- Navigate to: **Routing > Routing Policies**
- Click **New**
- Set **Name: SM to CM**
- Click **Select** under **SIP Entity as Destination** and the **SIP Entities** window is displayed
- Check the radio button beside **AACM10** as destination SIP Entity (Configured in Section 6.3.5)
- Click **Select** and return back to **Routing Policy Details** page
- Click **Commit**

**Routing Policy Details** [Commit] [Cancel]

**General**

\* Name: SM to CM

Disabled:

\* Retries: 0

Notes:

**SIP Entity as Destination**

Select

Name	FQDN or IP Address	Type
AACM10	10.70.4.204	CM

Time of Day

Figure 98 Routing Policy for Avaya Aura CM

### Routing policy to Avaya Aura Contact Center (CC)

- Set **Name: AvayaCCMS**
- Click **Select** under **SIP Entity as Destination** and the **SIP Entities** window is displayed
- Check the radio button beside **Avaya CC Manager Server** as destination SIP Entity (Configured in Section 6.3.5)
- Click **Select** and return back to **Routing Policy Details** page
- Click **Commit**

**Routing Policy Details** [Commit] [Cancel]

**General**

\* Name: AvayaCCMS

Disabled:

\* Retries: 0

Notes:

**SIP Entity as Destination**

Select

Name	FQDN or IP Address	Type
Avaya CC Manager Server	10.89.33.31	Other

Time of Day

Figure 99 Routing Policy for Avaya Aura CC

## 1.2.7 Dial Patterns

### Dial Pattern for Avaya Aura CM

- Navigate to: **Routing > Dial Patterns**
- Click **New**
- Set *Pattern*: **3001**
- Set *Min*: **4**
- Set *Max*: **4**
- SIP *Domain*: **xxxx.com** (Domain name of Avaya Aura SM)
- Under **Originating Locations** and **Routing Policies**, Click **Add**, at the new window
  - *Originating Location*: Select **Plano** (Created in Section 6.3.3)
  - *Routing Policies*: Select **SM to CM** under Routing Policies
  - Click **Select** to return to **Dial Pattern Details** page
  - Click **Commit**

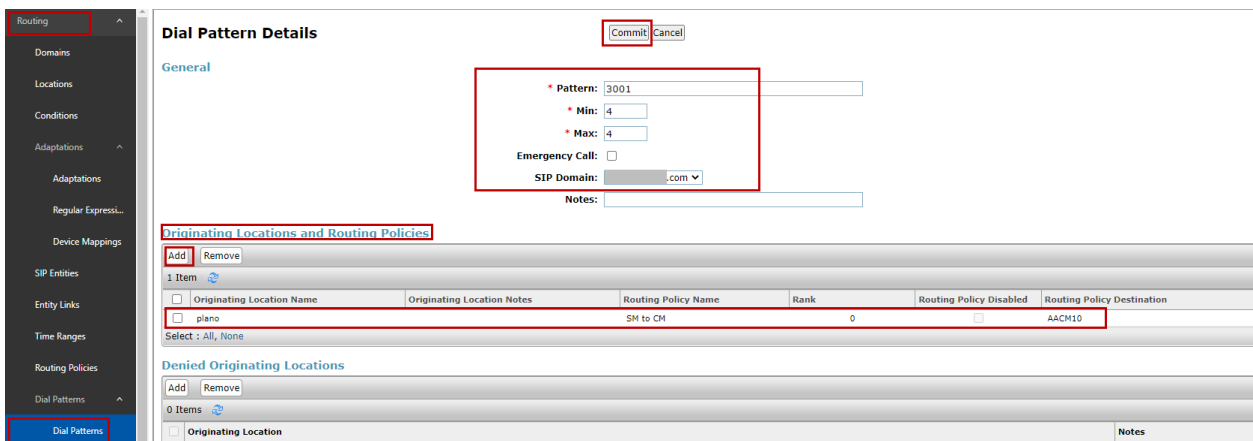


Figure 100 Dial Pattern for Avaya Aura CM

## Dial Pattern for Avaya Aura CC

- Navigate to: **Routing > Dial Patterns**
- Click **New**
- Set *Pattern*: **7500**
- Set *Min*: **4**
- Set *Max*: **36**
- SIP *Domain*: **xxxx.com** (Domain name of Avaya Aura SM)
- Under **Originating Locations** and **Routing Policies**, Click **Add**, at the new window
  - *Originating Location*: Select **Plano** (Created in Section 6.3.3)
  - *Routing Policies*: Select **AvayaCCMS** under Routing Policies
  - Click **Select** to return to **Dial Pattern Details** page
  - Click **Commit**

**Dial Pattern Details**

General

\* Pattern:   
 \* Min:   
 \* Max:   
 Emergency Call:   
 SIP Domain:    
 Notes:

Originating Locations and Routing Policies

<input type="checkbox"/>	Originating Location Name	Originating Location Notes	Routing Policy Name	Rank	Routing Policy Disabled	Routing Policy Destination
<input type="checkbox"/>	plano		AvayaCCMS	0	<input type="checkbox"/>	Avaya CC Manager Server

Select : All, None

Figure 101 Dial Pattern for Avaya Aura CC

### 1.3 Avaya Aura Communication Manager Configuration

This section with screen shots taken from Avaya Aura CM gives a general overview of the Avaya Aura CM configuration.

#### 1.3.1 Avaya Aura CM Login

```

10.70.4.204 - PuTTY
> te,
| federal or other applicable domestic and foreign laws.
|
| The use of this system may be monitored and recorded for administrative and
| security reasons. Anyone accessing this system expressly consents to such
| monitoring and recording, and is advised that if it reveals possible evidence
>
| of criminal activity, the evidence of such activity may be provided to law
| enforcement officials.
|
| All users must comply with all corporate instructions regarding the protectio
> n
| of information assets.
| End of banner message from server
| Keyboard-interactive authentication prompts from server:
| Password:
| End of keyboard-interactive prompts from server
Last login: Tue Jan  3 03:17:03 MST 2023 from 10.70.4.203 on pts/1
Last failed login: Tue Jan  3 16:41:32 MST 2023 from 172.16.31.156 on ssh:notty
There was 1 failed login attempt since the last successful login.
Enter your terminal type (i.e., xterm, vt100, etc.) [vt100]=>
1856612: old priority 0, new priority 0
admin@AACM10>
  
```

Figure 102 Avaya Aura CM Login

### 1.3.2 IP Node Name

Use the **list node-names ip** command to verify that node names are defined for Avaya Aura CM (procr), Session Manager (**AASM10**). The node names are needed for configuring the Signaling Group

```

10.70.4.204 - PuTTY
list node-names all

                                NODE NAMES

Type      Name          IP Address
IP        AASM10        10.70.4.207
IP        AvayaAES       10.70.4.211
IP        default       0.0.0.0
IP        procr         10.70.4.204
IP        procr6        ::

Command successfully completed
Command:

```

Figure 103 IP Node Name

### 1.3.3 IP Codec Set

Use **change ip-codec-set 1** to define list of codecs for calls between Avaya Aura CM and SM.

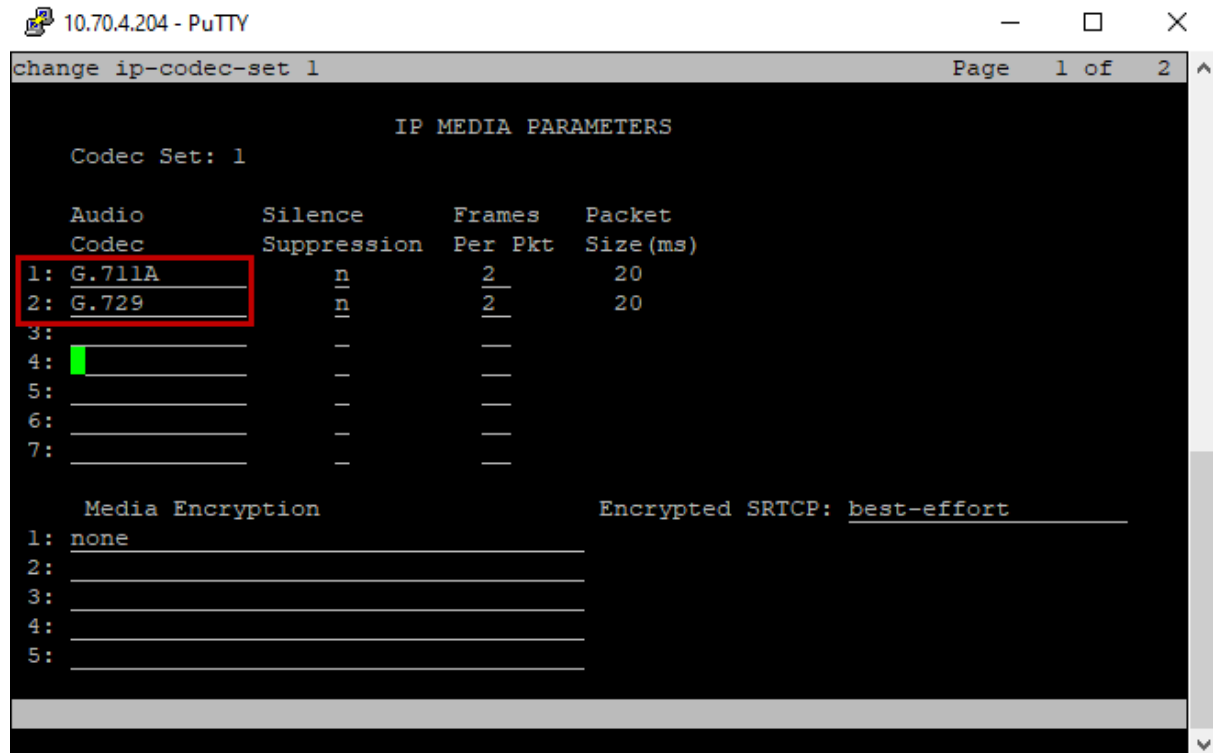


Figure 104 IP Codec Set

### 1.3.4 IP Network Region

- Use **change ip-network-region 1** to define the network region
- *Authoritative Domain:* Domain name **xxxxx.com**
- *Codec Set:* Enter codec set **1** created in Section 6.4.3
- *Intra-region IP-IP Direct Audio:* **yes**
- *Intra-region IP-IP Direct Audio:* **yes**

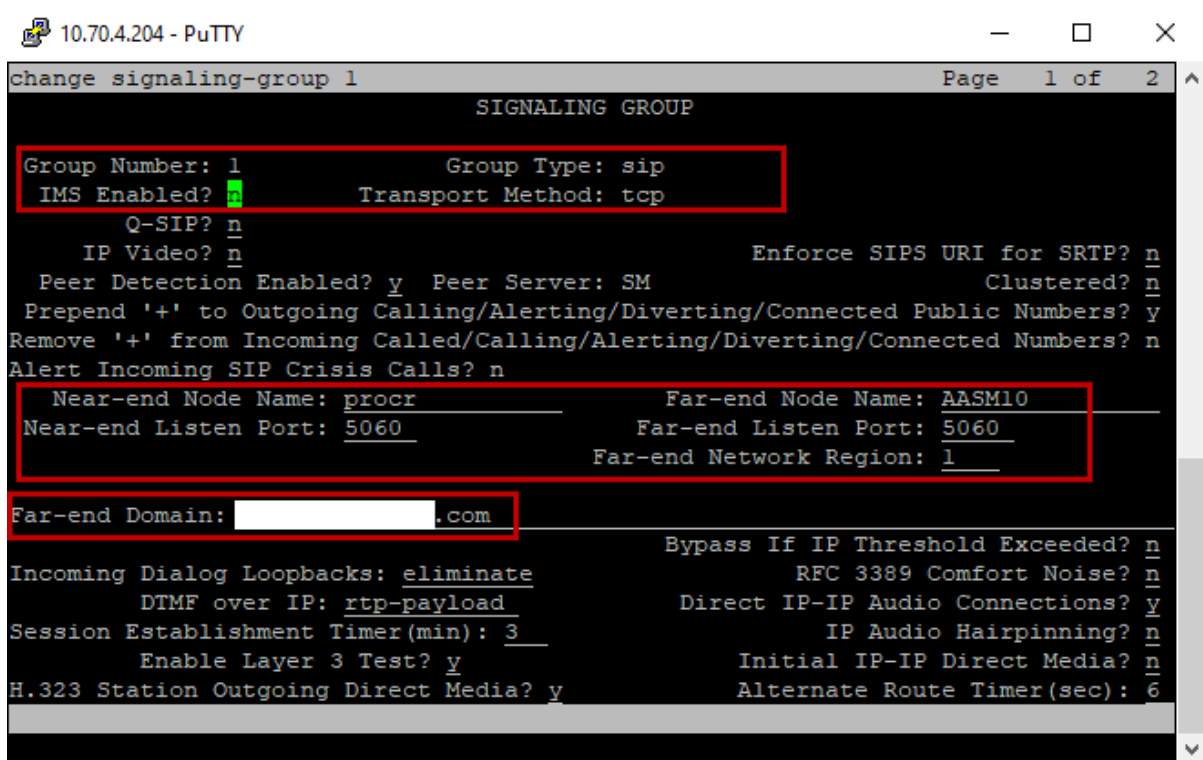
```

10.70.4.204 - PuTTY
change ip-network-region 1
IP NETWORK REGION
Region: 1      NR Group: 1
Location:      Authoritative Domain: .com
Name:         Stub Network Region: n
MEDIA PARAMETERS
  Codec Set: 1
  Intra-region IP-IP Direct Audio: yes
  Inter-region IP-IP Direct Audio: yes
  UDP Port Min: 2048      IP Audio Hairpinning? n
  UDP Port Max: 3329
DIFFSERV/TOS PARAMETERS
  Call Control PHB Value: 46
  Audio PHB Value: 46
  Video PHB Value: 26
802.1P/Q PARAMETERS
  Call Control 802.1p Priority: 6
  Audio 802.1p Priority: 6
  Video 802.1p Priority: 5
H.323 IP ENDPOINTS
  H.323 Link Bounce Recovery? y
  Idle Traffic Interval (sec): 20
  Keep-Alive Interval (sec): 5
  Keep-Alive Count: 5
AUDIO RESOURCE RESERVATION PARAMETERS
  RSVP Enabled? n
  
```

Figure 105 IP Network Region

### 1.3.5 Signaling Group

- Command **add signaling group 1** is used to create Signaling Group. Use **change signaling group 1** to modify existing signaling group.
- Set *Group Type*: **sip**
- Set *Transport Method*: **tcp**
- Set *Near-end Node Name*: **procr**
- Set *Near-end Listen Port*: **5060**
- Set *Far-end Node Name*: **AASM10**
- Set *Far-end Listen Port*: **5060**
- Set *Far-end Network Region*: **1**
- Set *Far-end Domain*: **xxxxx.com** (Avaya Aura SM Domain name)



```

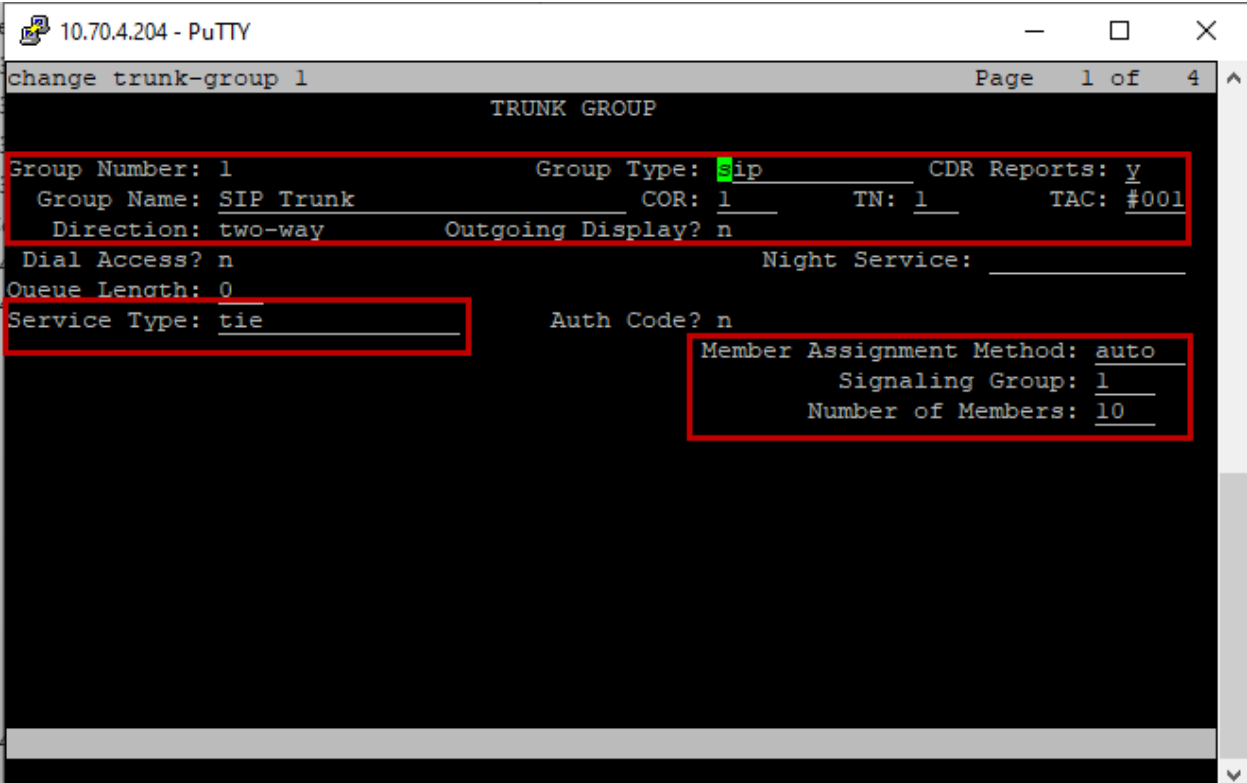
change signaling-group 1                                     Page 1 of 2
SIGNALING GROUP
Group Number: 1                                           Group Type: sip
IMS Enabled? [y]                                          Transport Method: tcp
Q-SIP? [n]
IP Video? [n]
Peer Detection Enabled? [y] Peer Server: SM                Enforce SIPS URI for SRTP? [n]
Prepend '+' to Outgoing Calling/Alerting/Diverting/Connected Public Numbers? [y]
Remove '+' from Incoming Called/Calling/Alerting/Diverting/Connected Numbers? [n]
Alert Incoming SIP Crisis Calls? [n]
Near-end Node Name: procr                                  Far-end Node Name: AASM10
Near-end Listen Port: 5060                                Far-end Listen Port: 5060
Far-end Network Region: 1
Far-end Domain: [redacted].com
Incoming Dialog Loopbacks: eliminate                      Bypass If IP Threshold Exceeded? [n]
DTMF over IP: rtp-payload                                RFC 3389 Comfort Noise? [n]
Session Establishment Timer(min): 3                       Direct IP-IP Audio Connections? [y]
Enable Layer 3 Test? [y]                                  IP Audio Hairpinning? [n]
H.323 Station Outgoing Direct Media? [y]                 Initial IP-IP Direct Media? [n]
Alternate Route Timer(sec): 6                             Alternate Route Timer(sec): 6
  
```

Figure 106 Signaling Group



### 1.3.6 Trunk Group

- Trunk group **1** is used for trunk to Avaya SM. Command **add trunk group 1** is used to create Trunk Group. Use **change trunk group 1** to modify existing trunk group.
- Set *Group Type*: **sip**
- Set *Group Name*: **SIP Trunk**
- Set *TAC*: **#001**
- Set *Direction*: **two-way**
- Set *Service Type*: **tie**
- Set *Member Assignment Method*: **auto**
- Set *Signaling Group*: **1** (created in Section 6.4.5)
- Set *Number of Members*: **10**



```

10.70.4.204 - PuTTY
change trunk-group 1
Page 1 of 4
TRUNK GROUP
Group Number: 1          Group Type: sip          CDR Reports: y
Group Name: SIP Trunk    COR: 1                 TN: 1                 TAC: #001
Direction: two-way      Outgoing Display? n
Dial Access? n          Night Service:
Queue Length: 0
Service Type: tie
Auth Code? n
Member Assignment Method: auto
Signaling Group: 1
Number of Members: 10
    
```

Figure 107 Trunk Group

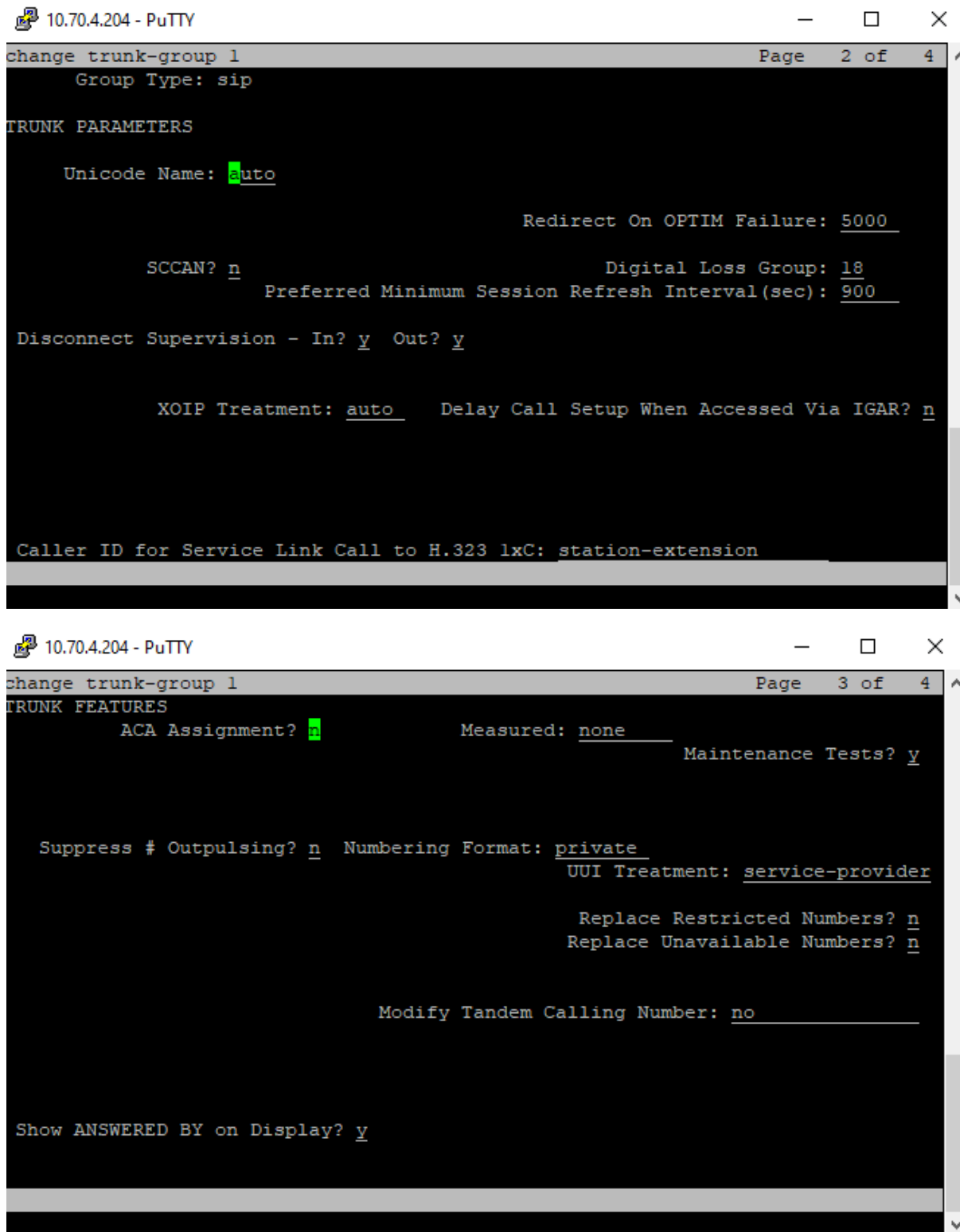


Figure 108 Trunk Group Continuation

```

10.70.4.204 - PuTTY
change trunk-group 1 Page 4 of 4
PROTOCOL VARIATIONS
    Mark Users as Phone? n
Prepend '+' to Calling/Alerting/Diverting/Connected Number? n
    Send Transferring Party Information? y
    Network Call Redirection? n
    Send Diversion Header? n
    Support Request History? y
    Telephone Event Payload Type: 101
    Convert 180 to 183 for Early Media? n
    Always Use re-INVITE for Display Updates? n
Resend Display UPDATE Once on Receipt of 481 Response? n
    Identity for Calling Party Display: From
    Block Sending Calling Party Location in INVITE? n
    Accept Redirect to Blank User Destination? n
Enable Q-SIP? n
Interworking of ISDN Clearing with In-Band Tones: keep-channel-active
    Request URI Contents: may-have-extra-digits

```

Figure 109 Trunk Group Continuation

### 1.3.7 Station

- The command **add station 3001** is used to add an extension
- **Type: 9620**
- **Name: Avaya Deskphone**
- **Security Code:** Enter a **Password**
- **IP Softphone: y**

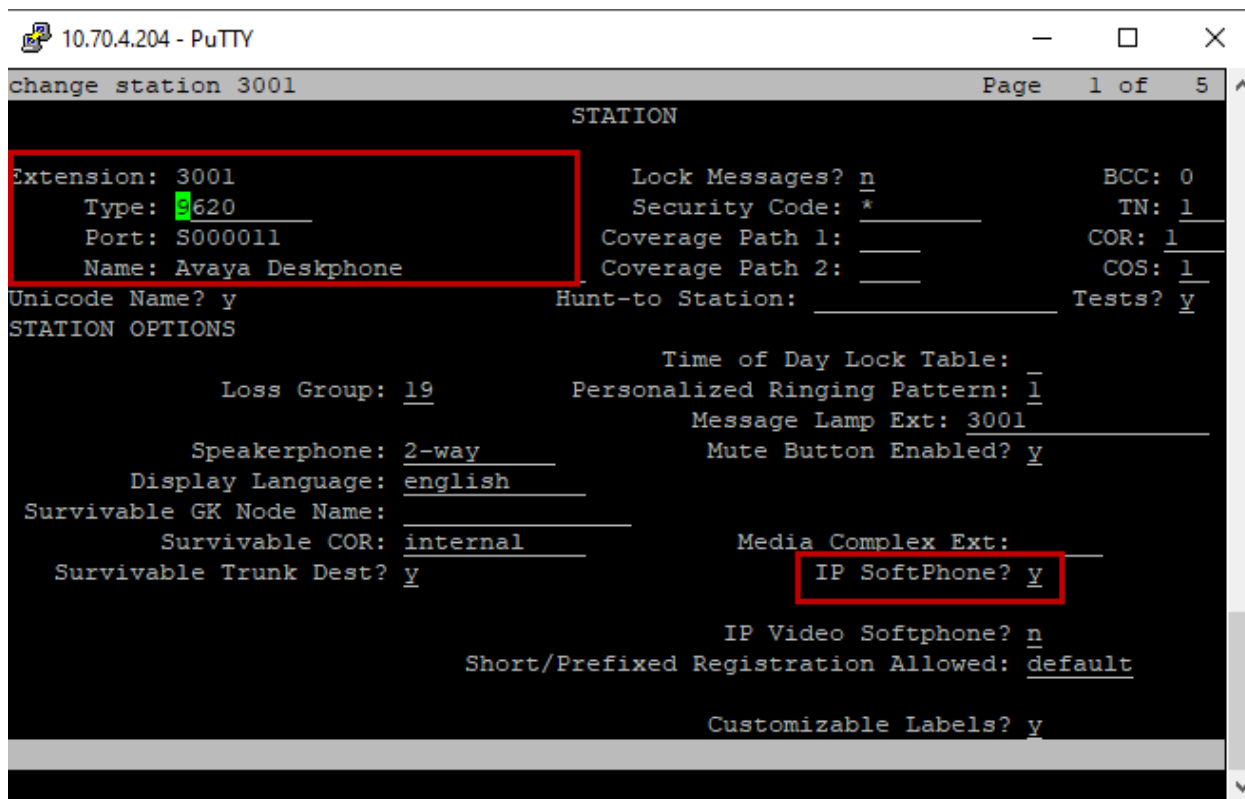
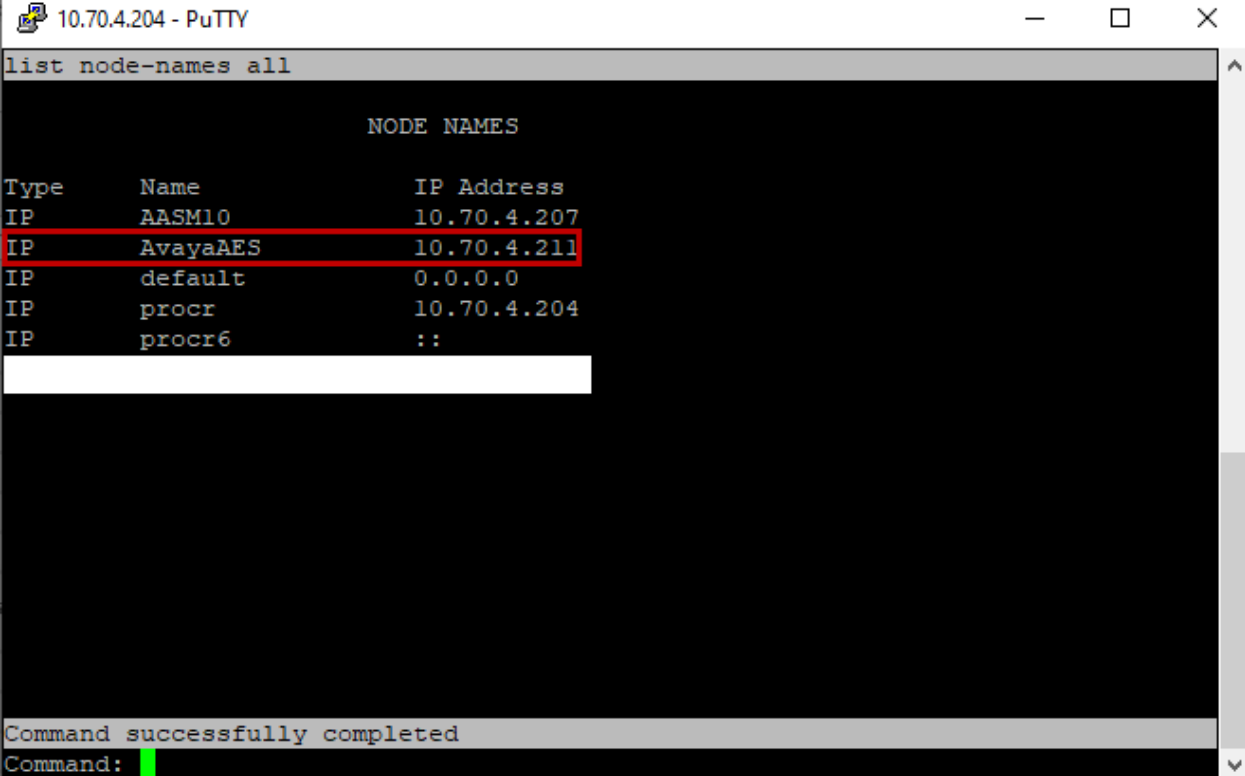


Figure 110 Add Station

### 1.3.8 Application Enablement Services (AES) Configuration

#### List Node Names

Type **list node-names all** and verify if AES server IP is configured



```

10.70.4.204 - PuTTY
list node-names all

                                NODE NAMES

Type      Name           IP Address
IP        AASM10         10.70.4.207
IP        AvayaAES       10.70.4.211
IP        default        0.0.0.0
IP        procr          10.70.4.204
IP        procr6         ::

Command successfully completed
Command:
    
```

Figure 111 List Node Names - AES IP Address

### Configuration of IP services for AES transport link

- The Command **change ip-services** is used to configure IP services
- Set *Type*: **AESVCS**
- Set *Enabled*: **Y**
- Set *Local Node*: **procr**
- Set *Local Port*: **8765**

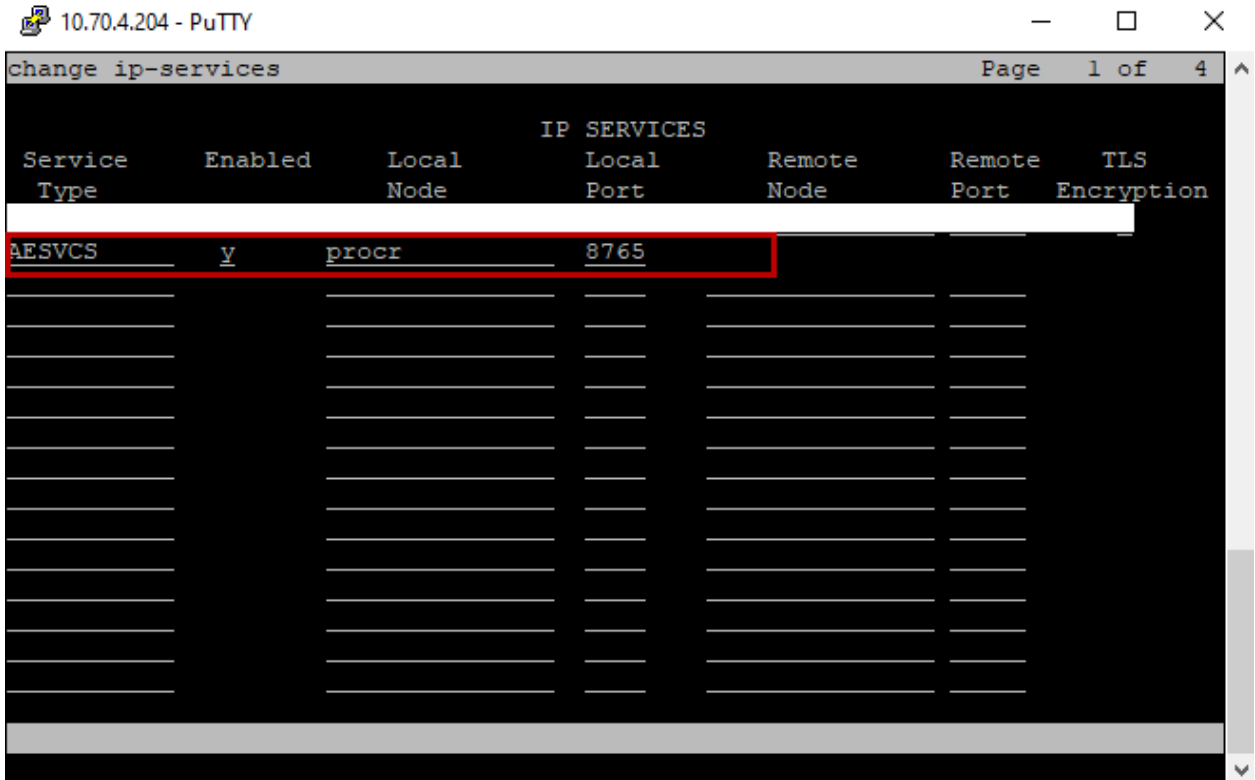


Figure 112 AES IP Services

- *AE Services Server*: **aaaes10** (host name of AES server)
- *Set Password*: **Enter a password** (This must matches the name and password of the AES server)
- *Set Enabled*: **Y**

Server ID	AE Services Server	Password	Enabled	Status
1:	aaaes10	*	y	in use
2:			-	
3:			-	
4:			-	
5:			-	
6:			-	
7:			-	
8:			-	
9:			-	
10:			-	
11:			-	
12:			-	
13:			-	
14:			-	
15:			-	
16:			-	

Figure 113 AES IP Services Continuation

### Configuration of CTI Link for AES

- The Command **add cti-link** is used to configure CTI link to AES server
- Set *Extension*: **An available Extension number**
- Set *Type*: **ADJ-IP**
- Set *Name*: **CTI to AES**

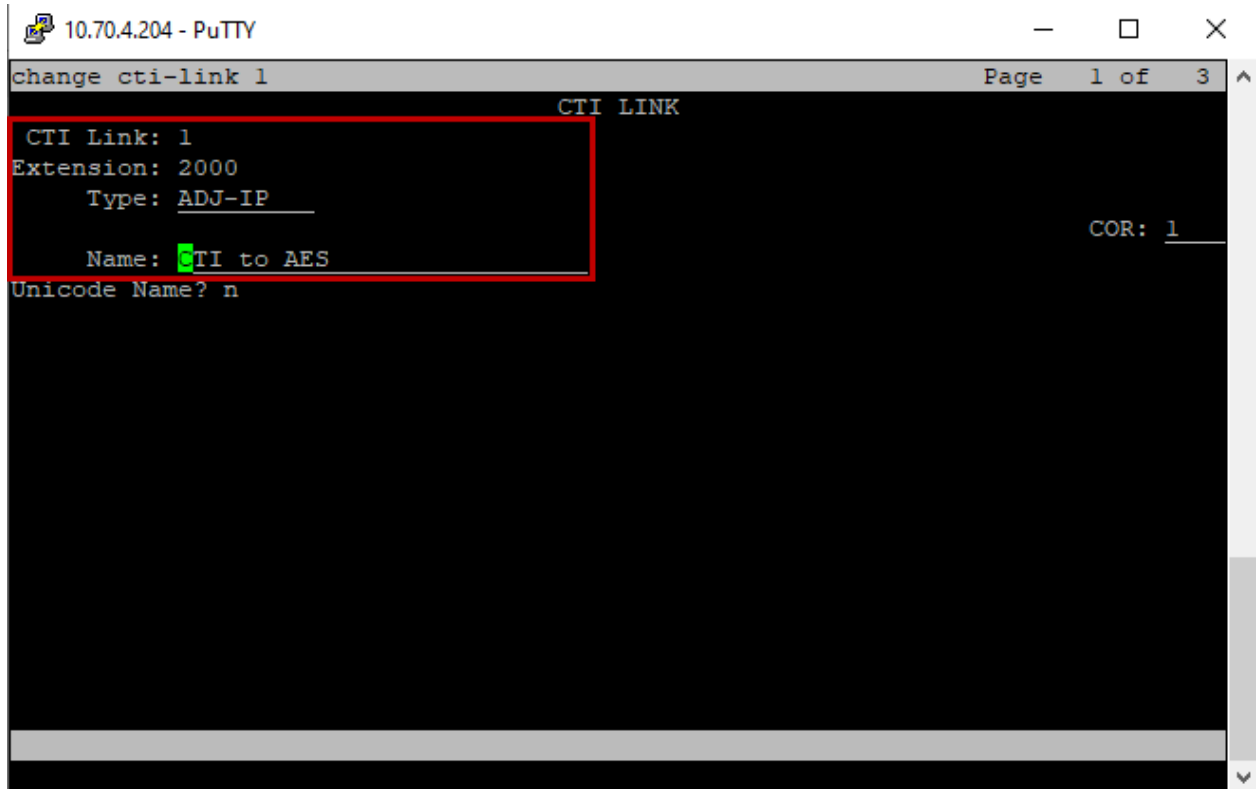


Figure 114 AES CTI Link



## 1.4 Application Enablement Services (AES) Configuration

Avaya Aura Application Enablement Services (AES) is a set of enhanced telephony APIs, protocols, and Web services. These applications support access to the call processing, media, and administrative features available in Communication Manager

### 1.4.1 AES Login

- Access AES Web login screen via **https://<AES IP Address>**
- Use *cust* as **User ID** and associated **Password**
- Click **Login**

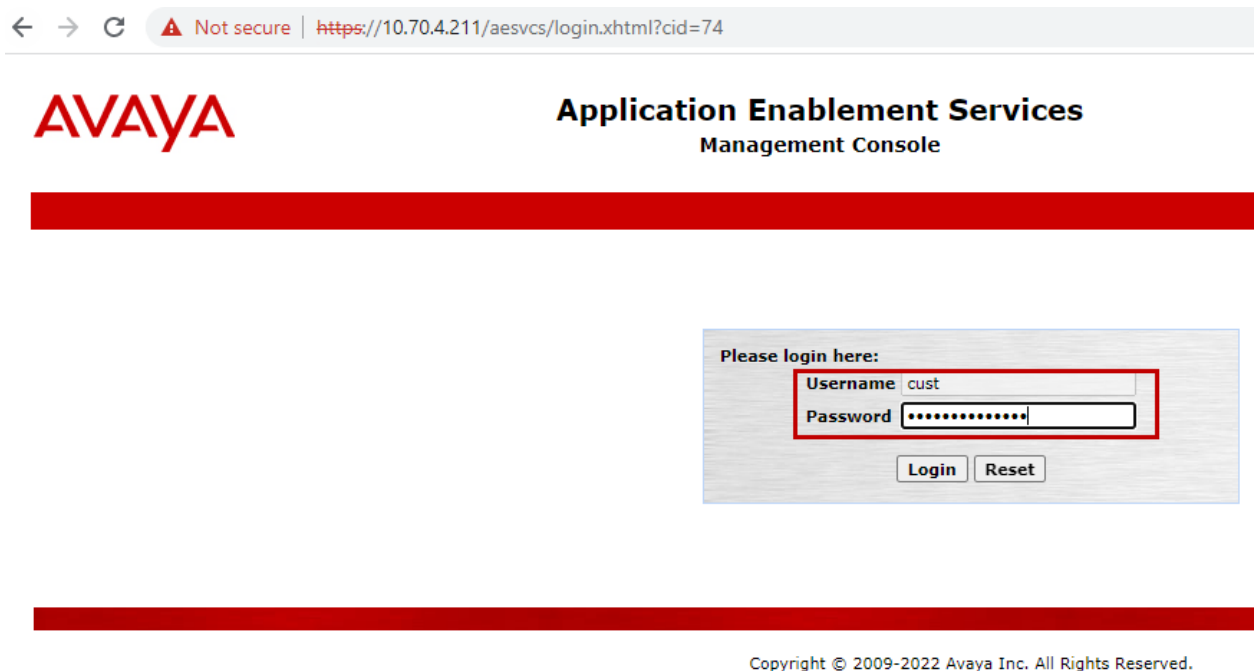


Figure 115 AES Login

## 1.4.2 Communication Manager Switch Connections

- Navigate to **Communication Manager Interface > Switch Connections**
- Under *Switch Connections*, type the host name of **Avaya Aura CM** (e.g. AACM10)
- Click **Add Connection**



### Application Enablement Services Management Console

Last login: Wed Nov 2 06:01:15 2022 from 172.16.31.18  
 Number of prior failed login attempts: 0  
 HostName/IP: aaaes10/10.70.4.211  
 Server Offer Type: VIRTUAL\_APPLIANCE\_ON\_VMWARE  
 SW Version: 10.1.0.1.0.7-0  
 Server Date and Time: Wed Jan 04 01:14:11 EST 2023  
 HA Status: Not Configured

Communication Manager Interface | Switch Connections Home | Help | Logout

- ▶ AE Services
- ▼ Communication Manager Interface
  - Switch Connections
  - ▶ Dial Plan
  - High Availability
  - ▶ Licensing
  - ▶ Maintenance

Switch Connections

Connection Name	Processor Ethernet	Msg Period	Number of Active Connections
AACM10	Yes	30	1

| 
  | 
  | 
  |

Figure 116 AES Avaya CM Switch Connections

- *Switch Password*: Type the Avaya CM **AES IP Service password** (This password must match the password entered when configuring IP Services (Section 6.4.8))
- *Confirm Switch Password*: **Type the above password again**
- *Processor Ethernet*: **Enabled**
- Click **Apply**



### Application Enablement Services Management Console

Communication Manager Interface | Switch Connections

- ▶ AE Services
- ▼ Communication Manager Interface
  - Switch Connections
  - ▶ Dial Plan
  - High Availability
  - ▶ Licensing
  - ▶ Maintenance
  - ▶ Networking
  - ▶ Security
  - ▶ Status
  - ▶ User Management
  - ▶ Utilities
  - ▶ Help

Connection Details - AACM10

Switch Password

Confirm Switch Password

Msg Period  Minutes (1 - 72)

Provide AE Services certificate to switch

Secure H323 Connection

Processor Ethernet

Enable TLS Certificate Validation

Figure 117 AES Avaya CM Switch Connections Continuation

### 1.4.3 Communication Manager Switch Connections CLAN IP

- Navigate to **Communication Manager Interface > Switch Connections**
- Under *Switch Connections*, Select the Connection Name **AACM10**
- Click **Edit PE/CLAN IPs**

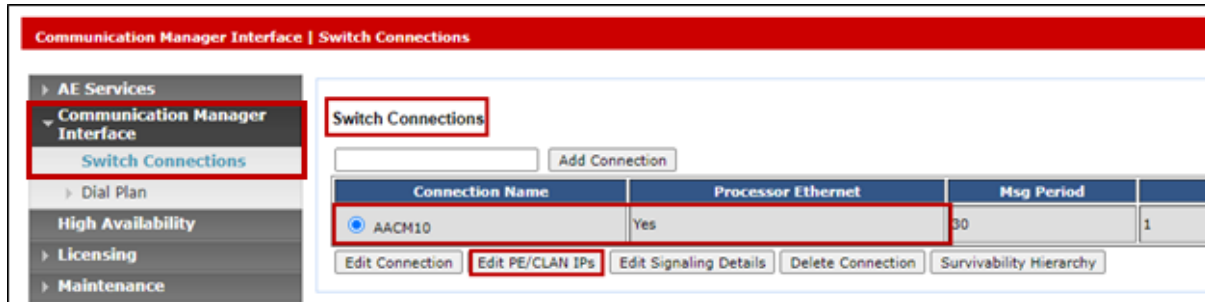


Figure 118 AES Avaya CM Switch Connections CLAN IP

- Under *Edit Processor Ethernet IP*, type the **IP address of Avaya Aura CM** (e.g. 10.70.4.204)
- Click **Add/Edit Name or IP**



#### Application Enablement Services Management Console

Welcome: User cust  
Last login: Wed Nov 2 06:01:15 2022 frc  
Number of prior failed login attempts: 0  
HostName/IP: aaees10/10.70.4.211  
Server Offer Type: VIRTUAL\_APPLIANCE  
SW Version: 10.1.0.1.0.7-0  
Server Date and Time: Wed Jan 04 01:1  
HA Status: Not Configured



Figure 119 AES Avaya CM Switch Connections CLAN IP Continuation

#### 1.4.4 CTI link to Communication Manager

- Navigate to **AE Services > TSAPI > TSAPI Links**
- Under *TSAPI Links*, Click **Add Link**
  - *Link: 1*
  - *Switch Connection: AACM10*
  - *Switch CTI Link Number: 1* (This is the CTI link number which is configured in Avaya CM Section 6.4.8)
- Click **Apply Changes**



### Application Enablement Services Management Console

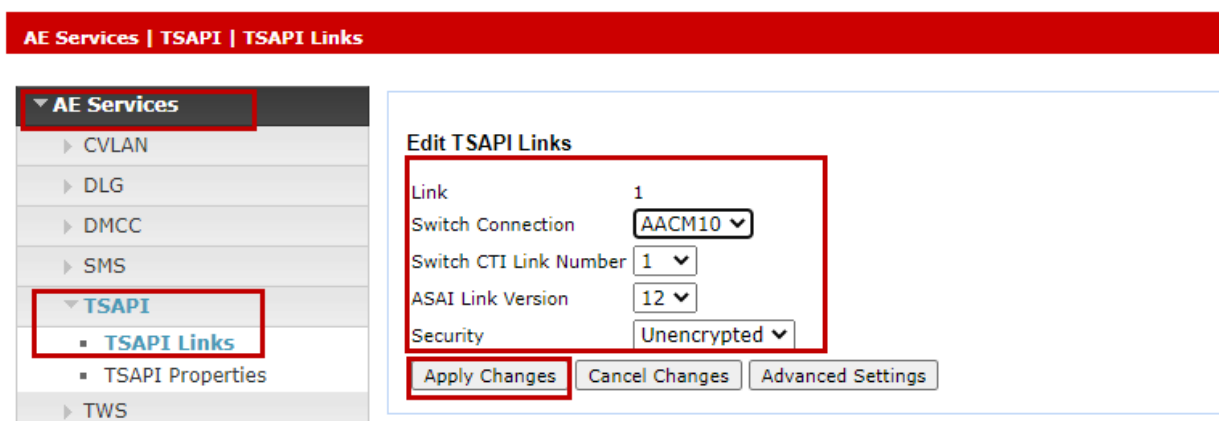


Figure 120 Adding a CTI Link

### 1.4.5 TR87 on the AES

- Navigate to **Networking > Ports**
- Under *DMCC Server Ports* section, **Enable** the *TR/87 Port*

**Networking | Ports**

- ▶ AE Services
- ▶ Communication Manager Interface
- ▶ High Availability
- ▶ Licensing
- ▶ Maintenance
- ▼ **Networking**
- AE Service IP (Local IP)
- Network Configure
- Ports
- TCP/TLS Settings
- ▶ Security
- ▶ Status
- ▶ User Management
- ▶ Utilities
- ▶ Help

**Ports**

			Enabled	Disabled
<b>CVLAN Ports</b>				
Unencrypted TCP Port	9999		<input checked="" type="radio"/>	<input type="radio"/>
Encrypted TCP Port	<input type="text" value="9998"/>		<input checked="" type="radio"/>	<input type="radio"/>
<hr/>				
DLG Port	TCP Port	5678		
<hr/>				
<b>TSAPI Ports</b>				
TSAPI Service Port	450		<input checked="" type="radio"/>	<input type="radio"/>
Local TLINK Ports				
TCP Port Min	1024			
TCP Port Max	1039			
Unencrypted TLINK Ports				
TCP Port Min	<input type="text" value="1050"/>			
TCP Port Max	<input type="text" value="1065"/>			
Encrypted TLINK Ports				
TCP Port Min	<input type="text" value="1066"/>			
TCP Port Max	<input type="text" value="1081"/>			
<hr/>				
<b>DMCC Server Ports</b>				
Unencrypted Port	<input type="text" value="4721"/>		<input type="radio"/>	<input checked="" type="radio"/>
Encrypted Port	<input type="text" value="4722"/>		<input checked="" type="radio"/>	<input type="radio"/>
TR/87 Port	<input type="text" value="4723"/>		<input checked="" type="radio"/>	<input type="radio"/>

Figure 121 Enabling TR87 Port

### 1.4.6 Security on the AES

- Navigate to **Security > Host AA > Service Settings**
- **TR/87: Require Trusted Host Entry is enabled**

**Security | Host AA | Service Settings**

- ▶ AE Services
- ▶ Communication Manager Interface
- ▶ High Availability
- ▶ Licensing
- ▶ Maintenance
- ▶ Networking
- ▼ Security
- ▶ Account Management
- ▶ Audit
- ▶ Certificate Management
- Enterprise Directory
- ▼ Host AA
- Trusted Hosts
- **Service Settings**
- ▶ PAM

#### Service Settings

Services	Authenticate Client Cert with Trusted Certs	Require Trusted Host Entry
Apache	<input type="checkbox"/>	<input type="checkbox"/>
CVLAN	<input type="checkbox"/>	<input type="checkbox"/>
DMCC	<input type="checkbox"/>	<input type="checkbox"/>
TR/87	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
TSAPI	<input type="checkbox"/>	<input type="checkbox"/>

Figure 122 Configuring Security

### 1.4.7 Certificate Authority root certificate in to AES

- Navigate to **Security > Certificate Management > CA Trusted Certificates**
- Click **Import**
- Under the **Trusted Certificate Import**,
  - *File Path*: Click Choose File and browse Root CA file (e.g. **RootCA – Copy.pem**)
  - *Certificate Alias*: **RootCA**
- Click **Apply**



## Application Enablement Services Management Console

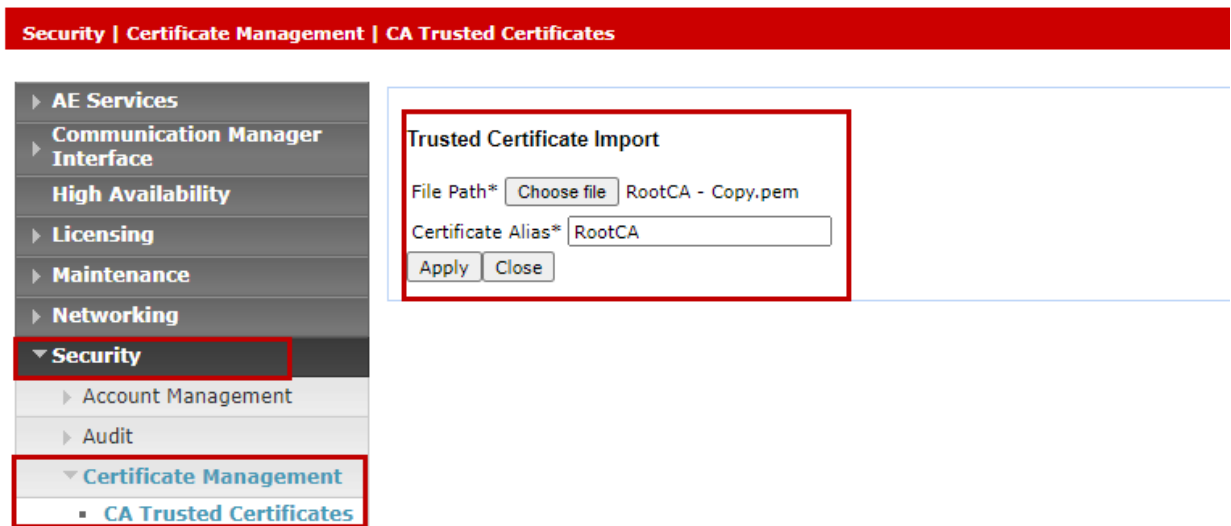


Figure 123 Importing Root CA in to AES

- The uploaded **RootCA** is displayed under the CA Trusted Certificates with the status as “Valid”

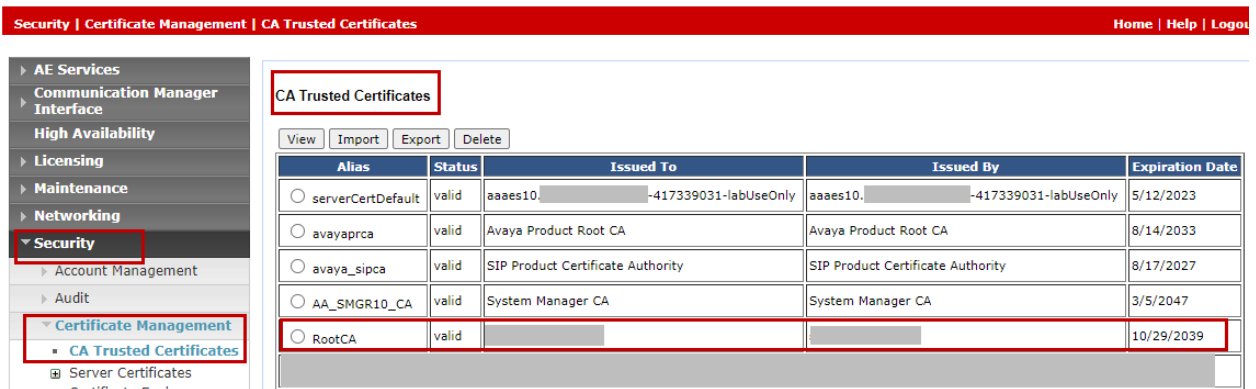


Figure 124 Importing Root CA in to AES Continuation

### 1.4.8 AES Certificate Signing Request

- Navigate to **Security > Certificate Management > Server Certificates**
- Click **Add**
- Under the **Add Server Certificate**,
  - *Certificate Alias*: select **aesservices**
  - *Password*: Type **certificate key password**
  - *Re-enter Password*: **Reenter the above password again**
  - *Key size*: **2048**
  - *Distinguished Name (DN)\**: **cn=aaaes10,dc=xxxx,dc=com (where xxxx=domain name of AES)**
  - *Challenge Password*: Type **certificate request password**
  - *Re-enter Challenge Password*: **Type the above password again**

Figure 125 Generating AES CSR



- Click **Apply**
- A **Server Certificate Manual Enrollment Request** page appears
- Copy all the text in the **Certificate Request PEM** box in to a text file. This is the Certificate Signing Request (CSR) text.
- Get the CSR signed from a Certificate Authority

- ▣ **Server Certificates**
  - Default Certificates
  - Default Settings
  - Pending Requests
  - Certificate Expiry Notification
  - Revocation Configuration
- Enterprise Directory
- ▶ Host AA
- ▶ PAM
- ▶ Security Database
- Session Timeouts
- Standard Reserved Ports
- AIDE Configuration
- ▶ **Status**
- ▶ **User Management**
- ▶ **Utilities**
- ▶ **Help**

**Certificate Request Parameters:**

Certificate Validity\*

Distinguished Name (DN)\*   
(In DN use comma ',' as attributes separator. To include comma in an attribute value escape it using backslash. e.g. \,.)

Challenge Password

Re-enter Challenge Password

**x509v3\_config Subject Alternative Name (SAN)**

SAN IP Address

(Use comma ',' as attributes separator to add multiple values)

SAN DNS Name

(Use comma ',' as attributes separator to add multiple values)

**Key Usage\***   
Non-repudiation  
 Key encipherment  
 Data encipherment  
 Key agreement  
 Key certificate sign  
 CRL sign  
 Encipher only  
 Decipher only

**Extended Key Usage**   
SSL/TLS Web Client Authentication  
 Code signing  
 E-mail Protection (S/MIME)

**SCEP Parameters:**

SCEP Server URL

CA Certificate Alias

CA Identifier

Figure 126 Generating AES CSR Continuation

### 1.4.9 Signed Certificate in to AES

- Navigate to **Security > Certificate Management > Server Certificates**
- Click **Import**
- Under the **Server Certificate Import**,
  - *File Path*: Click Choose File and browse Signed Certificate file (e.g. **AESSignedwithclientandserverauth.cer**)
  - *Establish Chain of Trust*: **Enabled**
  - *Certificate Alias*: **aeservices**
- Click **Apply**

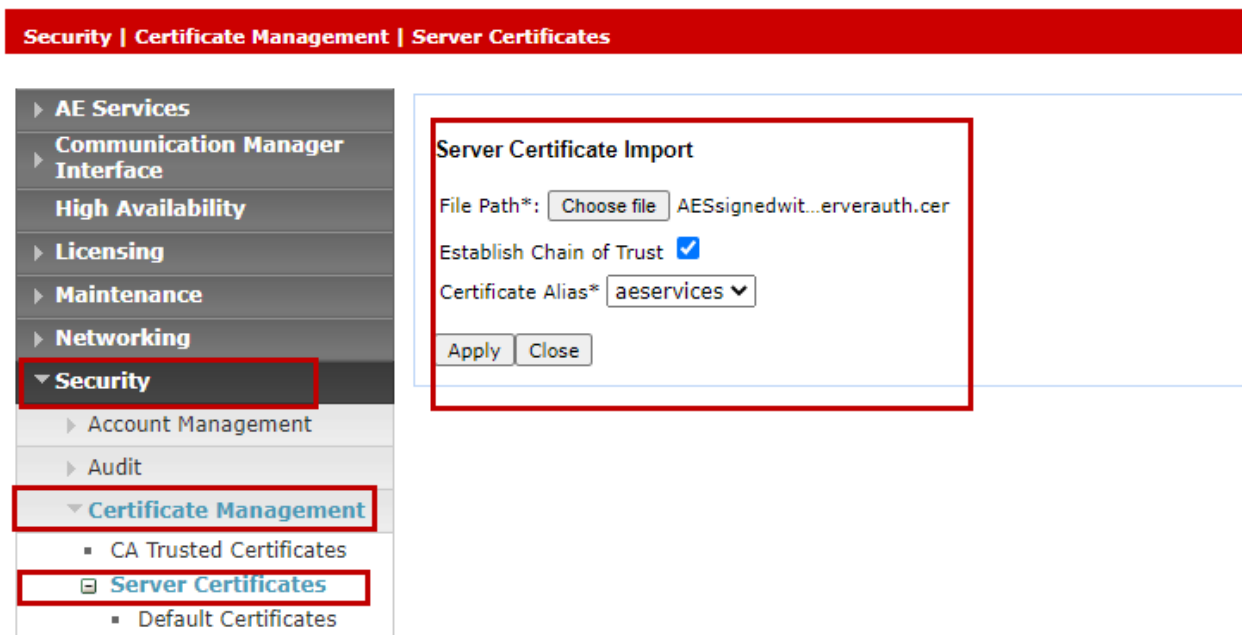


Figure 127 Importing Signed Certificate in to AES

- The Server Certificate **aeservices** is imported with the status displayed as “valid”

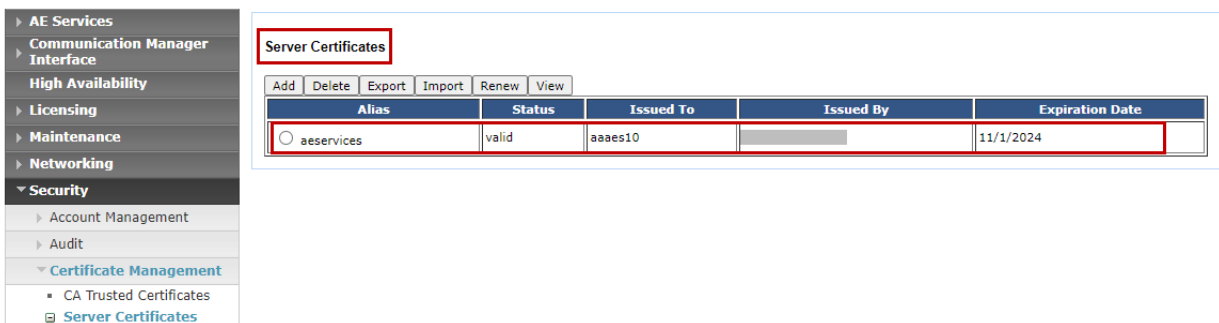


Figure 128 Importing Signed Certificate in to AES Continuation

### 1.4.10 Avaya Aura Contact Server as a trusted host on AES

- Navigate to **Security > Host AA > Trusted Hosts**
- Click **Add**
- Under **Add Trusted Host**,
  - *Certificate CN or SubAltName*: **Type FQDN of the Avaya Aura CC**
  - *Service Type*: **TR/87**
- Click **Apply Changes**

**Security | Host AA | Trusted Hosts**

**Edit Trusted Host**

Certificate CN or SubAltName

Service Type\*

User Authentication Policy\*

User Authorization Policy\*

The "All" Service Type can be used to specify a user authorization policy for both the DMCC and TR/87 services. The TR/87 service cannot p "User Authentication Required" is selected with a Service Type of "All" that will only enable user authentication on the DMCC service.

Figure 129 Adding Avaya Aura CC as a trusted host

**Security | Host AA | Trusted Hosts**

**Trusted Hosts\***

Certificate CN or SubAltName	Service Type	User Authentication Policy	User Authorization Policy
<input checked="" type="radio"/> <input type="text" value="...com"/>	TR87	AUTHENTICATION_NOT_REQUIRED	UNRESTRICTED_ACCESS

\* Note: This page is only enforced to be configured if the "Require Trusted Host Entry" checkbox is checked on the "Service Settings" page.

Figure 130 Adding Avaya Aura CC as a Trusted host Continuation

### 1.4.11 Certificate Store in Avaya Aura CC

- Login to windows server where Avaya Aura CC is installed
- Search for Security Manager and Click **Security Manager**

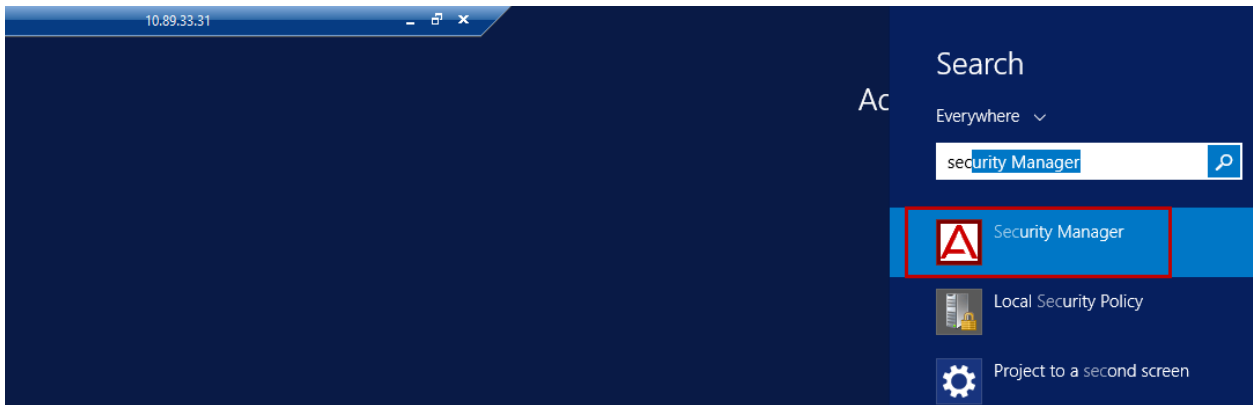


Figure 131 Security Manager

- *Enter in the security store password:* Type the security store **password**

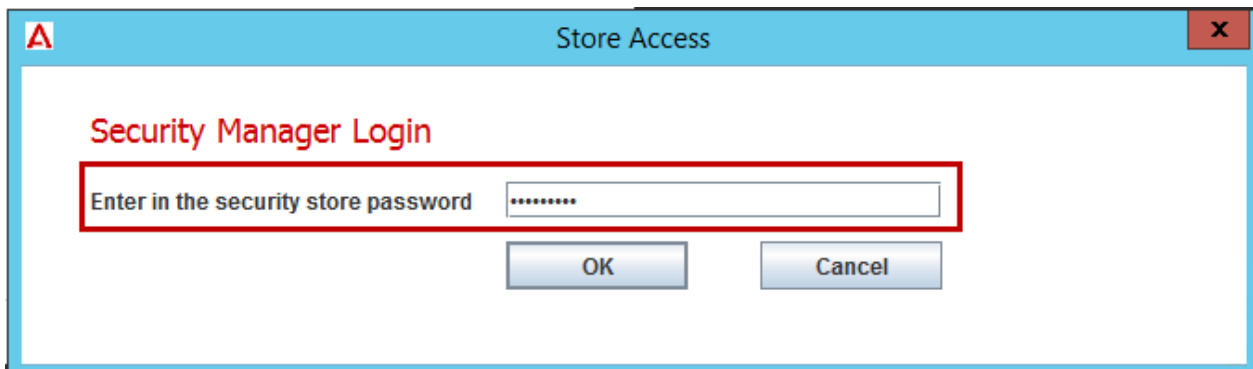


Figure 132 Security Manager Login

Store Commands Help
Security Manager

You are currently viewing the active Store
Security Manager

Security Store
Certificate Request
Add Certificate
Security Configuration
Store Maintenance
Display Certificates
Expiration Alerts
Database Encryption
Advanced

(\* denotes mandatory)

<b>Full Computer Name (FQDN)</b> *	<input type="text" value="...com"/>	<b>Subject Alternative Name (SAN)</b>	
<b>Name of Organizational unit</b>	<input type="text" value="Manage"/>	<b>Type</b>	<input type="text" value="DNS"/>
<b>Name of Organization</b>	<input type="text" value="Tekvizion"/>	<b>Value</b>	<input type="text"/>
<b>City or Locality</b>	<input type="text" value="Plano"/>	<input type="button" value="Add SAN"/> <input type="button" value="Remove SAN"/>	
<b>State or Province</b>	<input type="text" value="TX"/>	ip:10.89.33.31	
<b>Two Letter Country Code</b>	<input type="text" value="US"/>		
<b>Encryption Algorithm Level</b> *	<input type="text" value="SHA256"/>		
<b>Key Size</b> *	<input type="text" value="2048"/>		
<b>Security Store Password</b> *	<input type="password"/>		
<b>Confirm Store Password</b> *	<input type="password"/>		

**Store Status**

Last successful login was on Thu Dec 01 22:55:33 CST 2022 and there were 0 failed attempts since your last login

Figure 133 Security Manager – Security Store

- Navigate to **Certificate Request** and copy the contents of CSR text
- Get the CSR signed from Certificate Authority

The screenshot shows the Security Manager interface. At the top, there is a navigation bar with 'Security Manager' and a sub-menu with 'Security Store', 'Certificate Request' (highlighted), 'Add Certificate', 'Security Configuration', 'Store Maintenance', 'Display Certificates', and 'Expiration Alerts'. Below the navigation bar, the status is shown as 'Security Store Status : Created' and 'Signing Request Status : Signed'. The file location is 'D:\Avaya\Contact Center\Common Components\CCKey Stores\signme.csr'. The contents of the certificate request are listed below, enclosed in a red box:

```
-----BEGIN NEW CERTIFICATE REQUEST-----
MIIC/DCCAEQCAQAwdjELMAkGA1UEBhMCVVMxCzAJBgNVBAGTAIRYMQ4wDAYDVQQH
EwVQbGFubzESMBAGA1UEChMJVGVRdml6aW9uMQ8wDQYDVQQLEwZNYW5hZ2UxJTAj
BgNVBAMTHEXhYjEzMDFBQ0MudGVrdml6aW9uMGFicy5jb20wggEiMA0GCSqGSIb3
DQEBAQUAA4IBDwAwggEKAoIBAQB8Qv1YNdWWs9PszlTZK0Ymwx2H71nwaDGwyz
Dw/AUeSVqkTibI2PtjLHs6v+mSCa38IFEaENkhsHN2BlmOeGAF52AF9mHxTZRzd
Y/clcGNuWGBlg7lila9/YFAh5Sj9pvz5V18iCsvk4RW9D1ixM928+Ohyw+WUqAa
i8xFinb/AaZM0UKuefK5DHZHSvEM3ZpJ5Tr6JqZmanRg8f9dljBj3IHkmF5fthU
mZkaj5sCSblxO4gaJ0Rx8SHyVdYMeRBjqA5HjflLz2ebtiQ/xsrYKkPVYQdrWI
NVqXeYovedSj7UfJAOA8ZW2jiVgFR+XKWxktrH8U7mB17xrAgMBAAGgQTA/Bgkq
nkiG9w0BCQ4xMjAwMA8GA1UdeEQQIMAaHBApZIR8wHQYDVR0OBByEFBjcTb85VE46
RA664CMLLjjiwaH3MA0GCSqGSIb3DQEBCwUAA4IBAQC9foIY9aFcbnD27f4O9DK
hww0RCugwHilsMQza1MzXP22P5nFKZgU3zmdIRrYrYt15Xcl1FKZ1EHuTnxJSh
zXenYLM3gn7/SPI1z30PLzBOefzq0I8fWqg7AIZTAPmupR66GLR5cqu63QCU8G
DK9YaSbqrrlxW29xkpn0Vdye5B3Tm5GnMxmbWAQQz1f2W9/Nf8pdgCLIOuds
ZsHB6HKugjOZ9Waf/a/bVUyVo42LES140W1vB76N2IVpUrHqDanTvXwqIN5z7aEa
DHtePmsvQ0eiVPPqr7/F4O1RQvnphZiYvun+h7knR/Ew2Xoz8XEpLNhzw/XMyZ7
-----END NEW CERTIFICATE REQUEST-----
```

Figure 134 Security Manager – Certificate Request

- Navigate to **Add Certificate**
- Under **Add Certificates Automatically (Auto detects Identity, Root, PKCs#12 and p7b certificates)**,
  - *Select Folder:* Click **Browse**
  - Navigate to the folder where Root CA and Server certificates are stored
  - *Certificates:* **AvayaCCsignedwithClientandserverAuth.cer, RootCA.p7b**  
(Root and Server Certificates)
- Click **Add all Certificates**

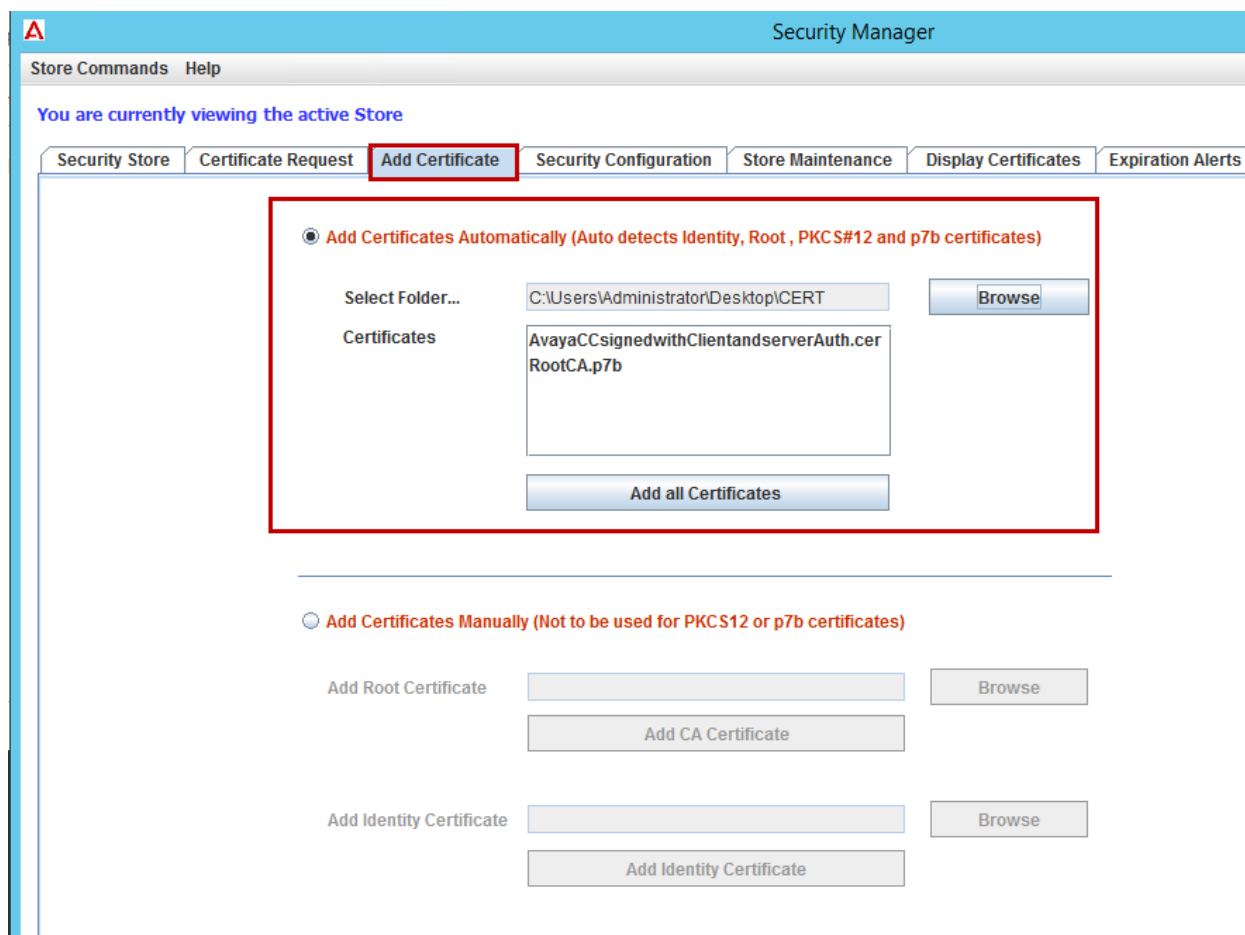


Figure 135 Security Manager – Add Certificate

Security Manager

Store Commands Help

You are currently viewing the active Store Security Manager

Security Store Certificate Request Add Certificate **Security Configuration** Store Maintenance Display Certificates Expiration Alerts Database Encryption Adv

**Web Services Security Level (OFF)**

The web services security setting is currently set to  Security On  
 **Security Off**

Insecure web services port:

This enables applications and services governed by this setting to use TLS. The minimum level of TLSv1 to be used is determined by the TLSv1 Protocol Level Settings option.

---

**Important information when security (OFF)**

If this system is configured as part of a High Availability deployment then both systems must the same security level. This is a manual step as security settings are not automatically propagated across.

The following applications will now utilise unsecured HTTP connections for inbound and outbound network communications

- Manager Administrator
- Multimedia Administrator
- Multimedia Services
- Agent Greeting
- Orchestration Designer
- Agent Desktop
- Outbound Campaign Management Tool

**TLSv1 Protocol Level Settings**

The TLSv1 protocol level selected will be the minimum level of TLS allowed when the application or service is configured to communicate over TLS.

**SIP and CTI Signalling Level**

Current TLS Level for SIP and CTI communication

**CCMA - Multimedia Web Service Level**

Current TLS Level for CCMA-MM

**Event Broker Web Service Level**

Current TLS Level for EBWS

**Cache Database Level**

Current TLS Level for Cache Database

Figure 136 Security Manager – Security Configuration



- Navigate to **Store Maintenance**
- Under **Identity and Root Certificates that reside in the store**, the root and server Certificates that are added through **Add Certificate** tab are displayed

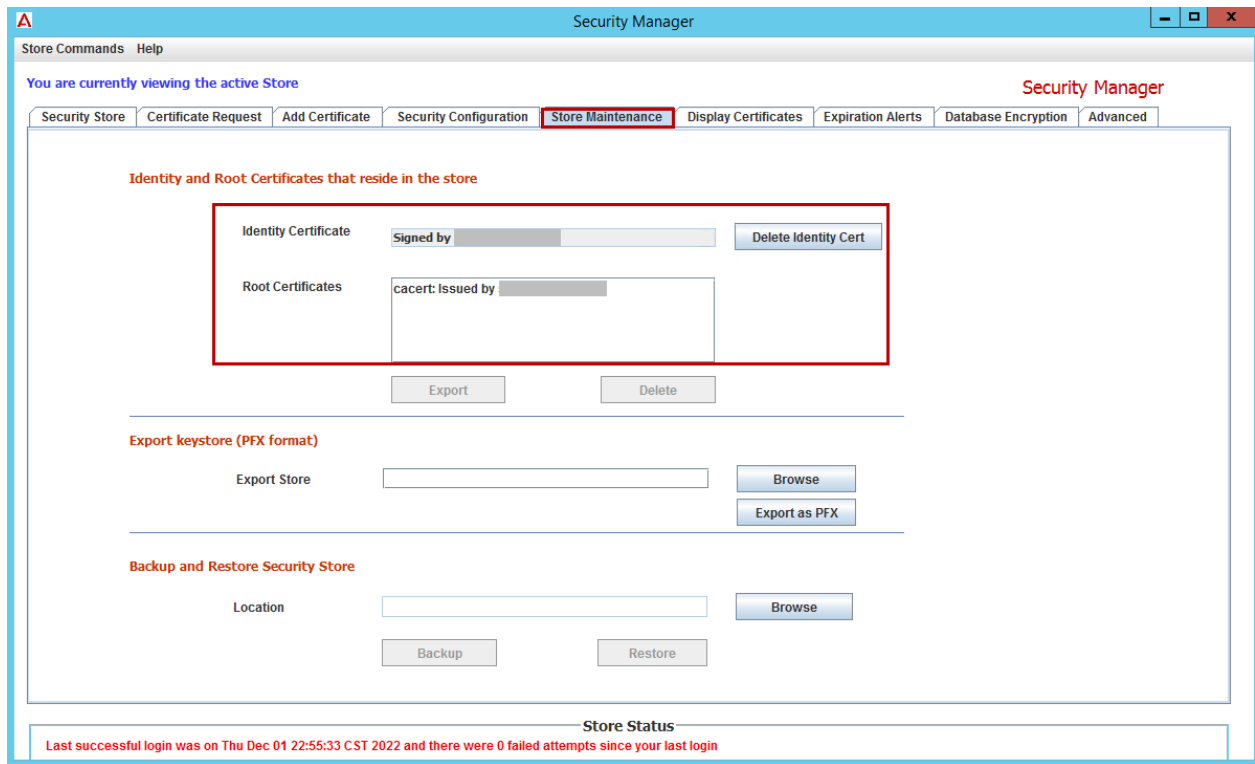


Figure 137 Security Manager – Store Maintenance

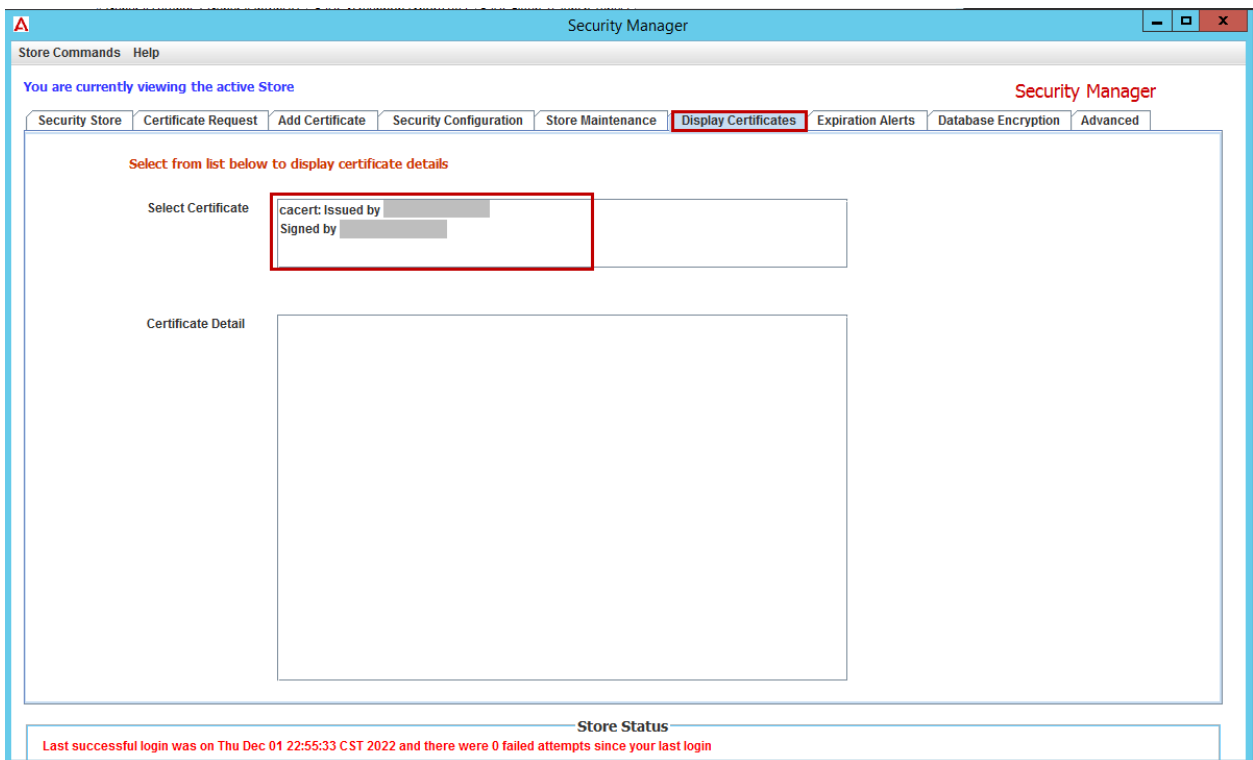


Figure 138 Security Manager – Display Certificates

## 1.5 Avaya Aura Media Server (AAMS) Configuration

- Access Avaya Aura MS Web login screen via **https://<Avaya Aura Media Server IP>**
- Use admin as **User ID** and associated **Password**
- Click **Sign In**

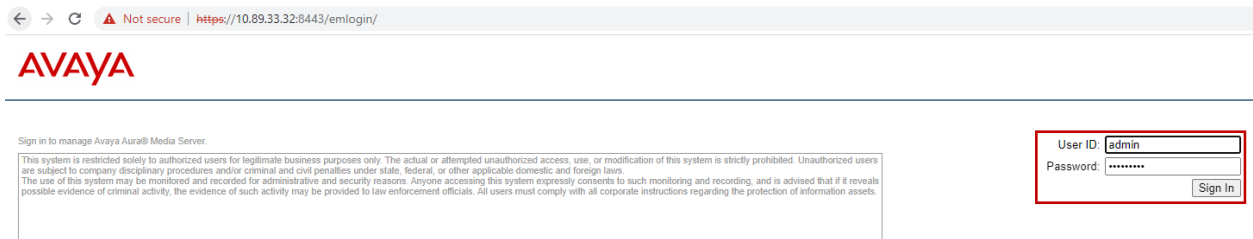


Figure 139 Avaya Aura Media Server Login

### 1.5.1 Nodes and Routes

- Navigate to **System Configuration > Signaling Protocols > SIP > Nodes and Routes**
- Under **Trusted Nodes**,
  - Click **Add**
- Under **Add SIP Trusted Node**,
  - *Host or Server Address: 10.89.33.31* (Avaya Aura Contact Center Server IP)

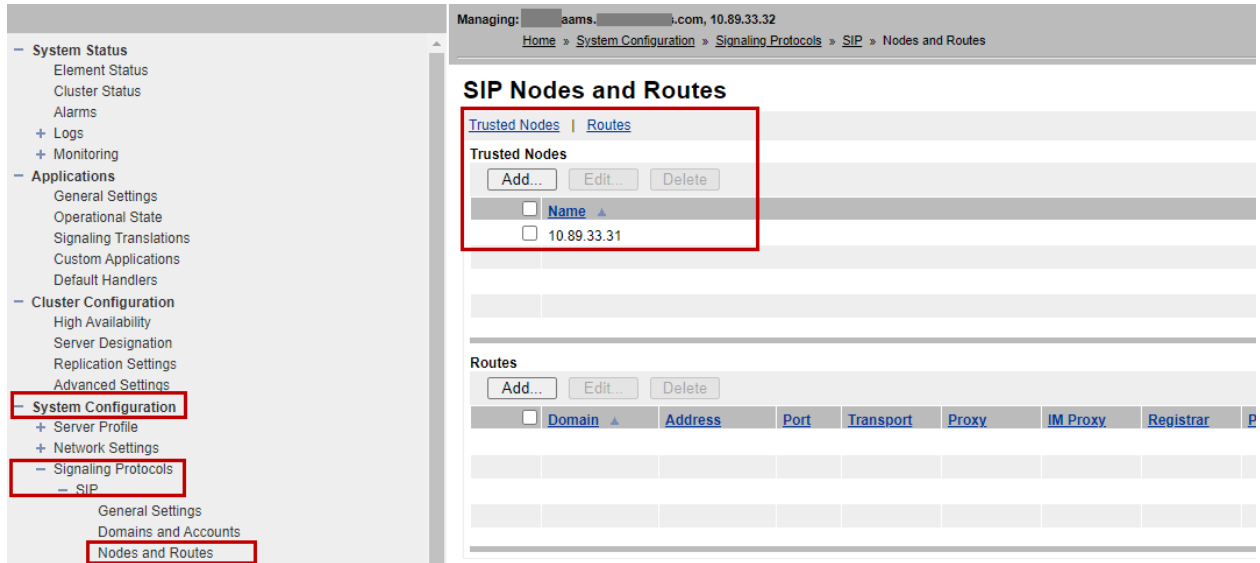


Figure 140 Avaya Aura Media Server – Add Trusted Node

## 1.6 Avaya Aura Contact Center Configuration

### 1.6.1 Avaya Aura Contact Center Login

- Login to Windows machine where Avaya Aura Contact Center is installed

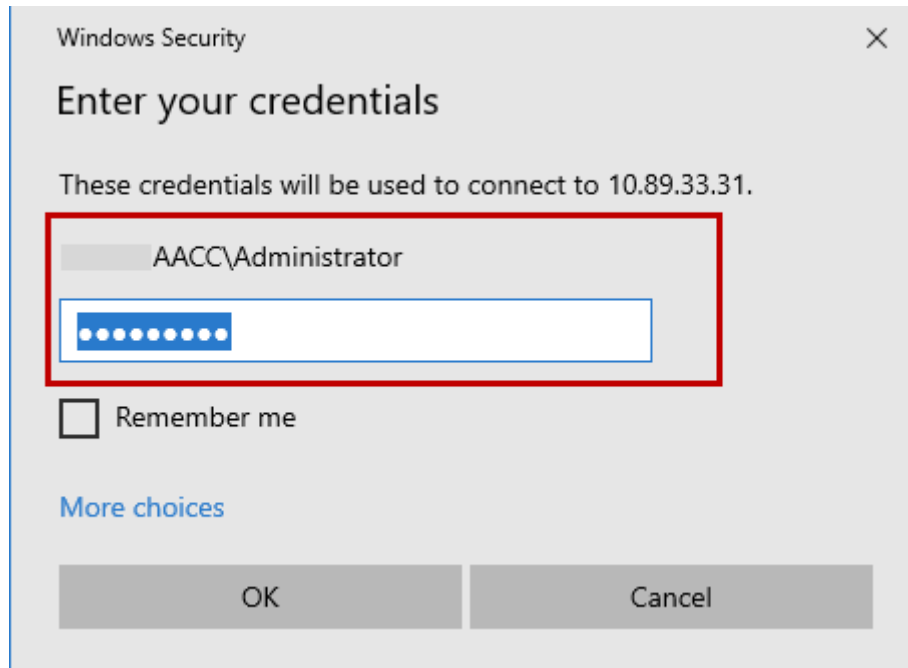


Figure 141 Avaya Aura CC Login

### 1.6.2 System Control and Monitor Utility

- Navigate to Windows search and type System Control and Monitor Utility
- Click **System Control and Monitor Utility**
- Ensure appropriate Contact Center Services are started in System Control and Monitor Utility

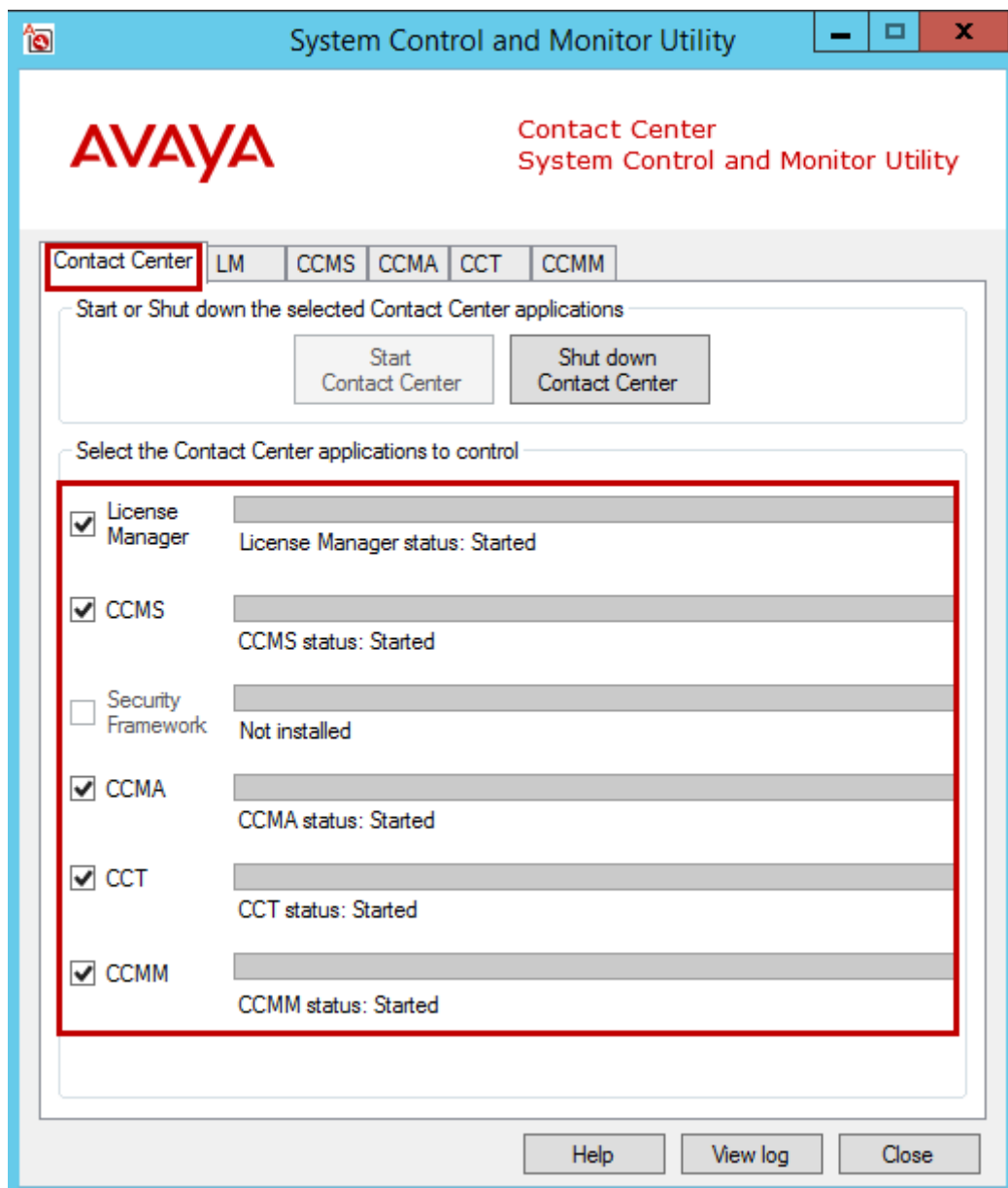


Figure 142 System Control and Monitor Utility

### 1.6.3 Server Configuration

- Navigate to Windows search and type Server Configuration
- Click **Server Configuration**
- Navigate to **Main Menu > Local Settings**
- Below are the default settings under **Local Settings**

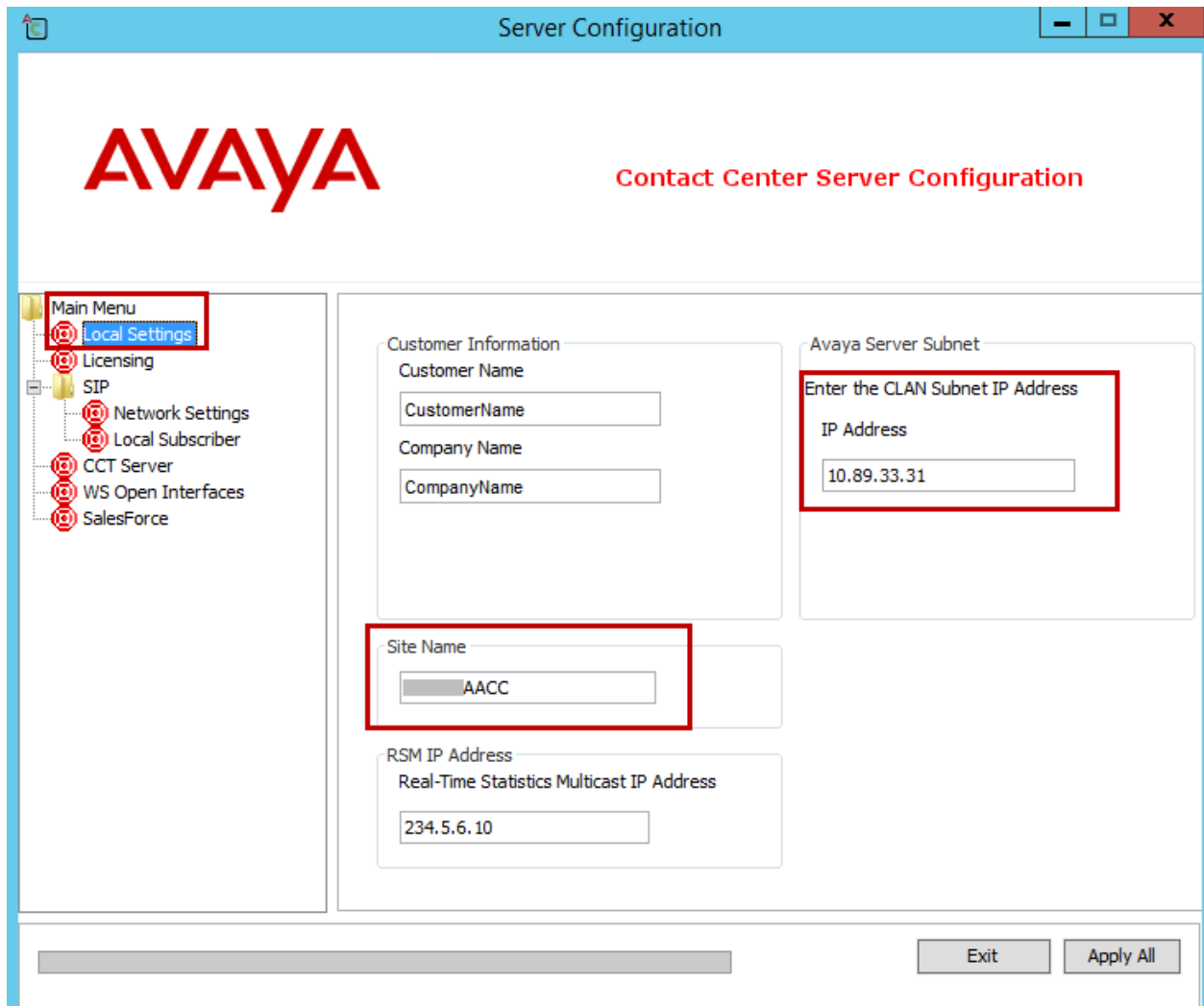


Figure 143 Server Configuration – Local Settings

- Navigate to **Main Menu > Licensing**
- Below are the default settings under **Licensing**

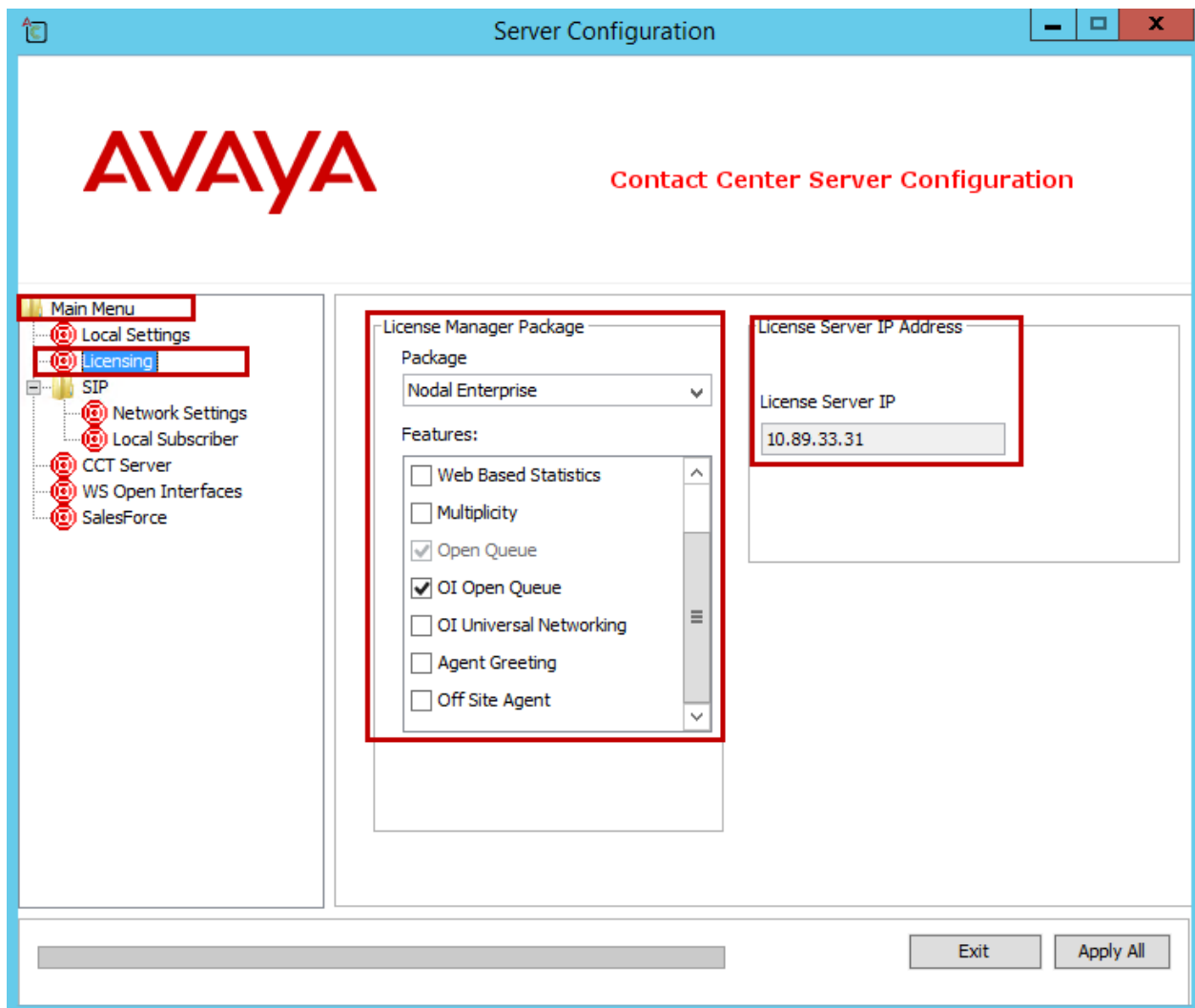


Figure 144 Server Configuration – Licensing



- Navigate to **Main Menu > SIP > Network Settings**
- Under **SIP Network Settings**,
  - *Voice Proxy Server*. Enter the IP Address of **Avaya Aura SM**
  - *Port*: **5062**
  - *Transport*: **TCP**
  - *CTI Proxy Server*. Enter the IP address of **Avaya AES server**
  - *Port*: **4723**
  - *Transport*: **TLS**

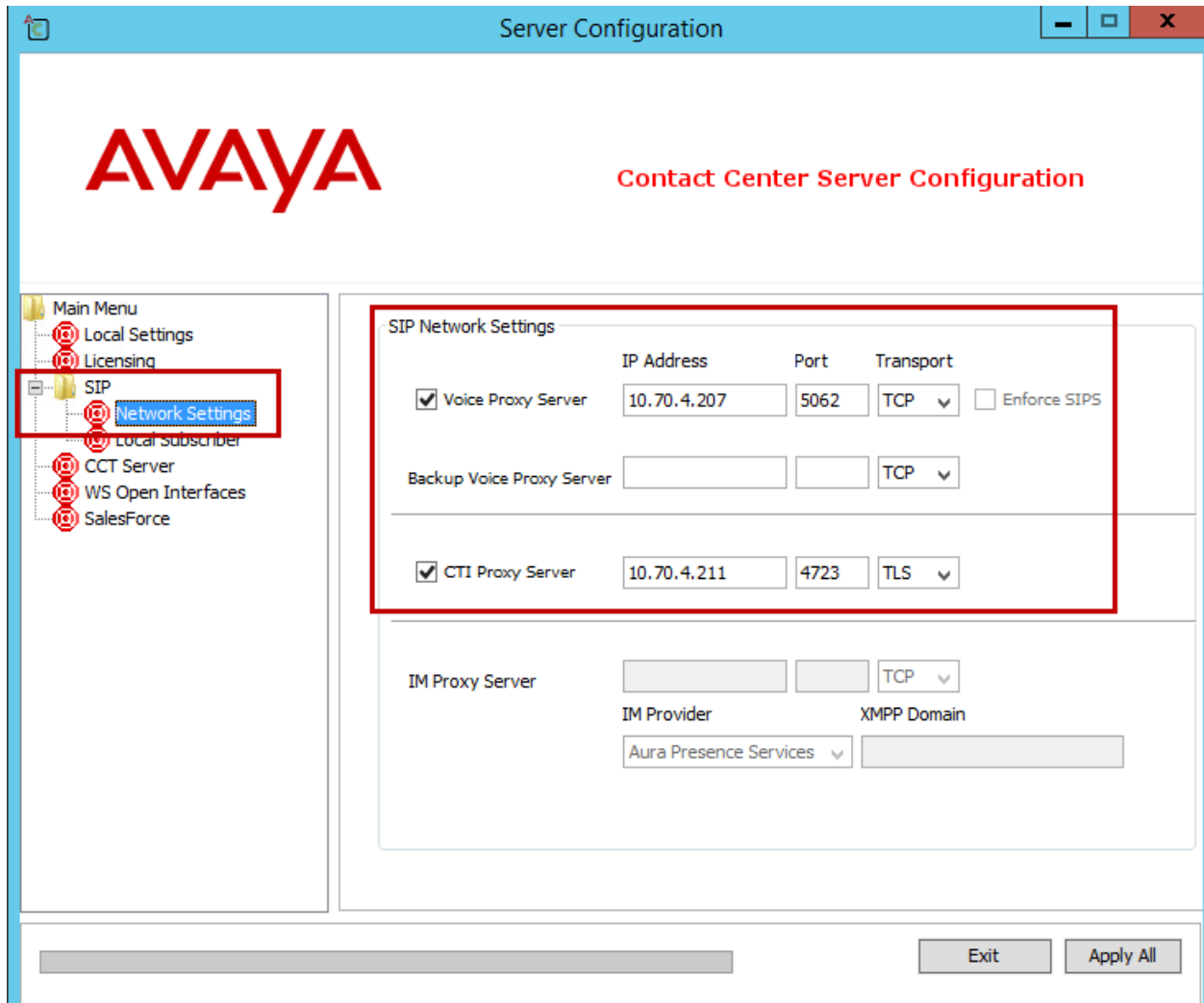


Figure 145 Server Configuration – SIP Network Settings

- Navigate to **Main Menu > SIP > Local Subscriber**
- Below are the default settings under **Local Subscriber**

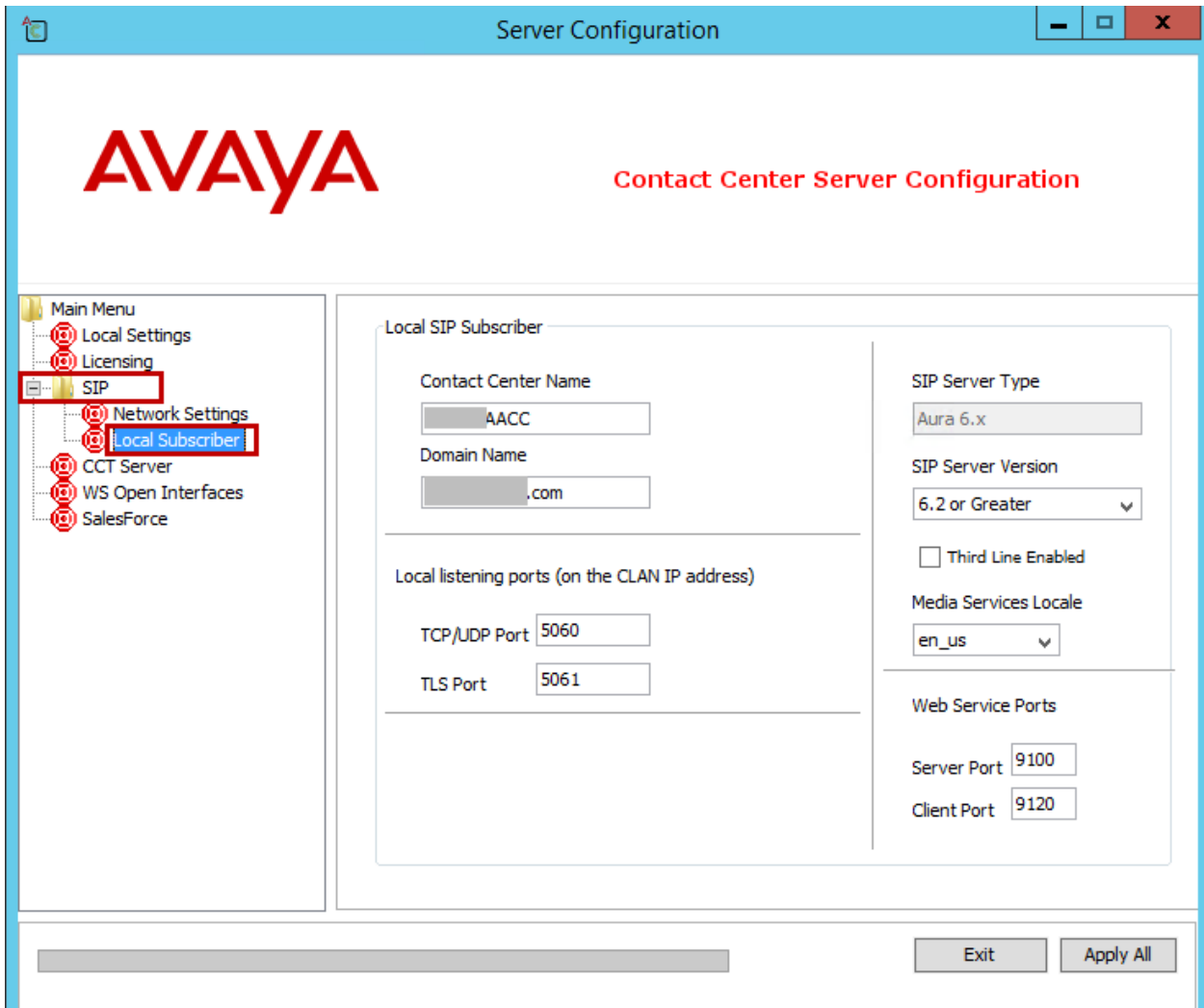


Figure 146 Server Configuration – SIP Local Subscriber

- Navigate to **Main Menu > CCT Server**
- Below are the default settings under **CCT Server**

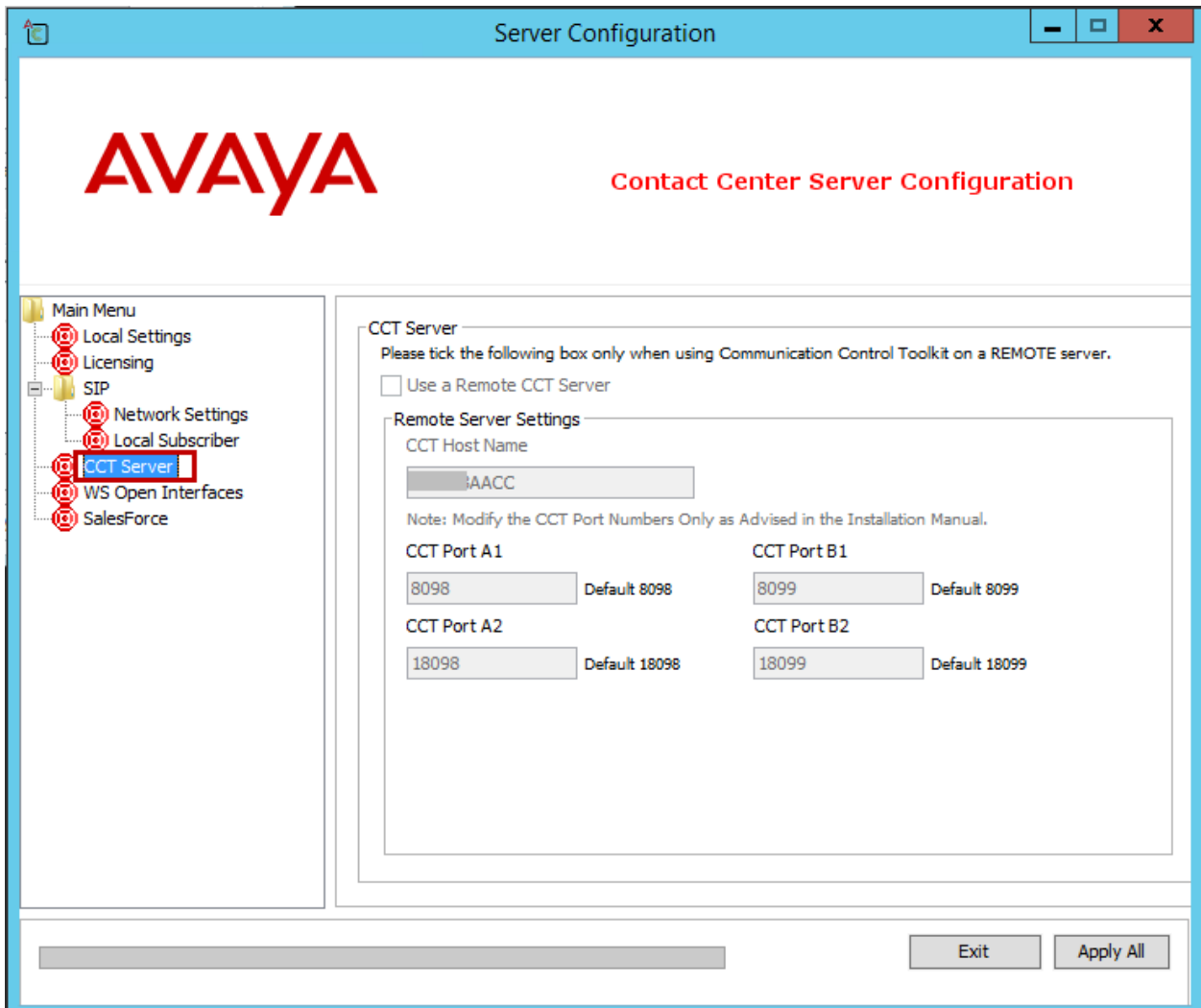


Figure 147 Server Configuration – CCT Server

### 1.6.4 SGM Management Client

- Navigate to Windows search and type SGM Management Client
- Ensure **Voice Outbound Proxy, CTI Proxy and Media Server(s)** state displays Connected

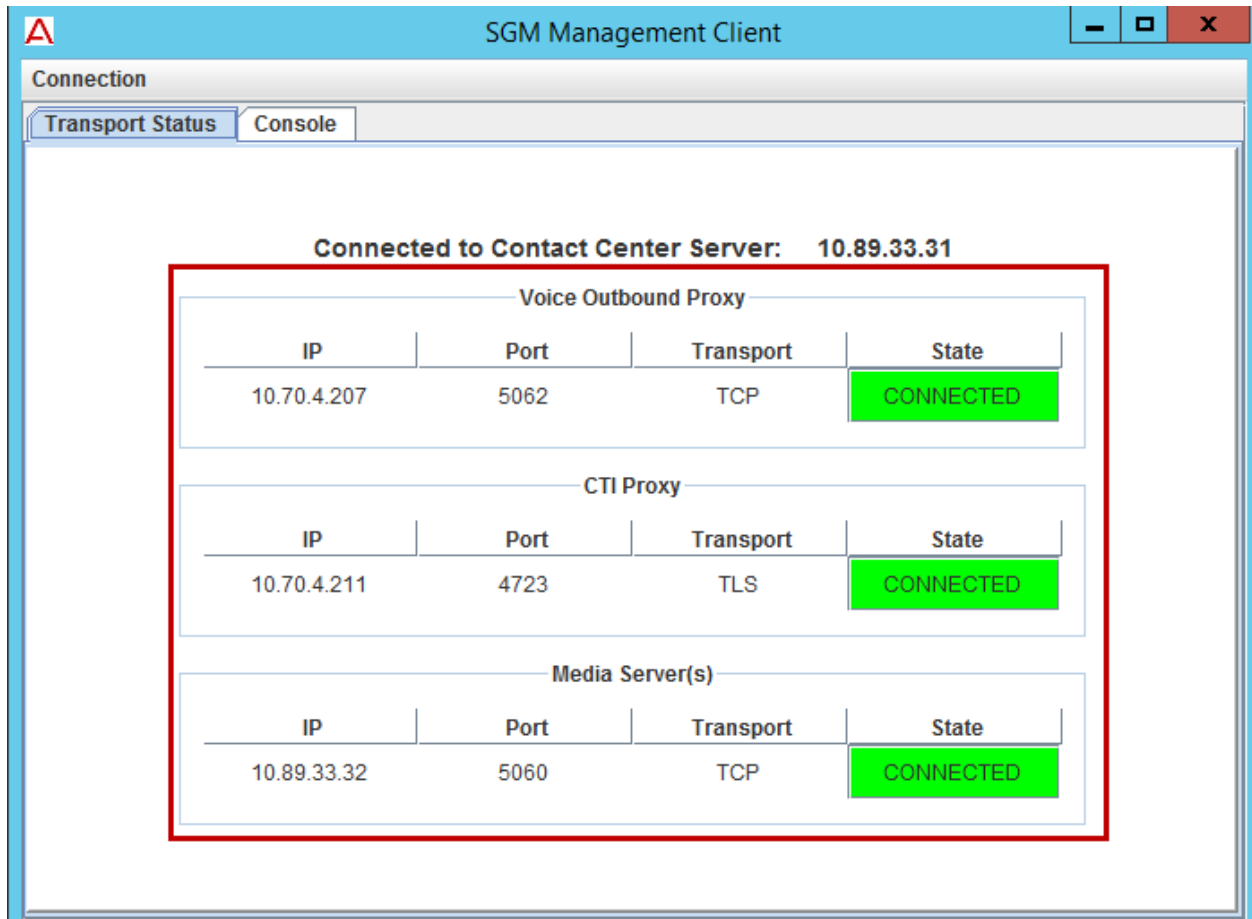


Figure 148 SGM Management Client

### 1.6.5 Avaya Aura Contact Center (CC) Manager Configuration

- Access Avaya Aura CC Web login screen via **http://<Avaya Aura CC IP Address>**
- Use webadmin as **User ID** and associated **Password**
- Click **Login**

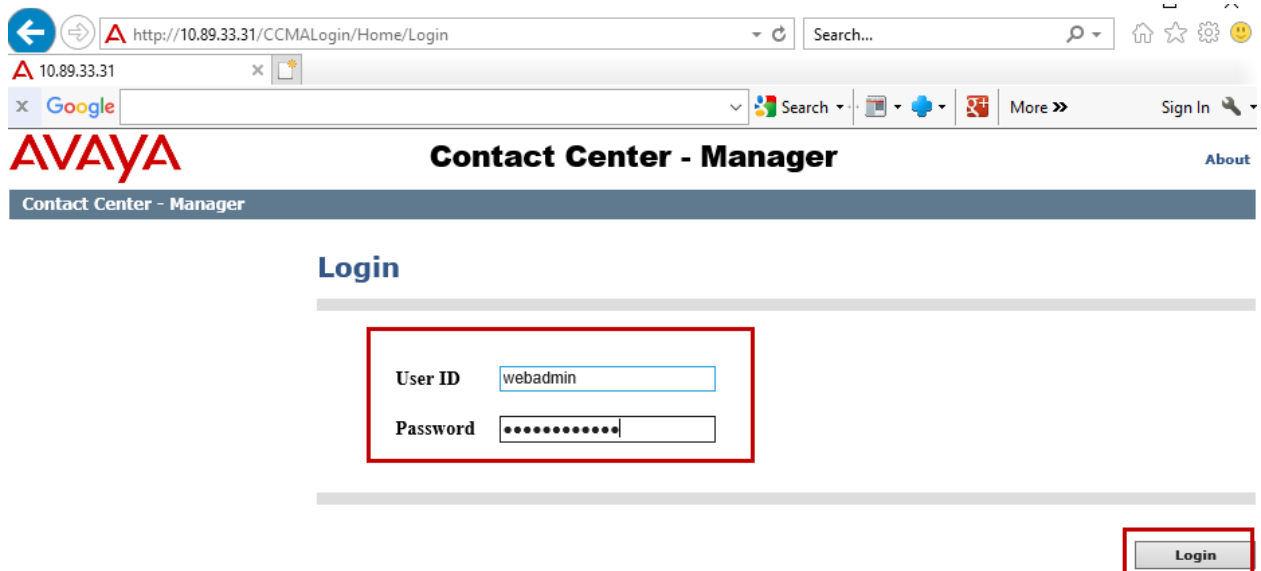


Figure 149 Avaya Aura CC Manager Login

## 1.6.6 CDNs (Route Point) Configuration

- Navigate to **Launchpad > Configuration**

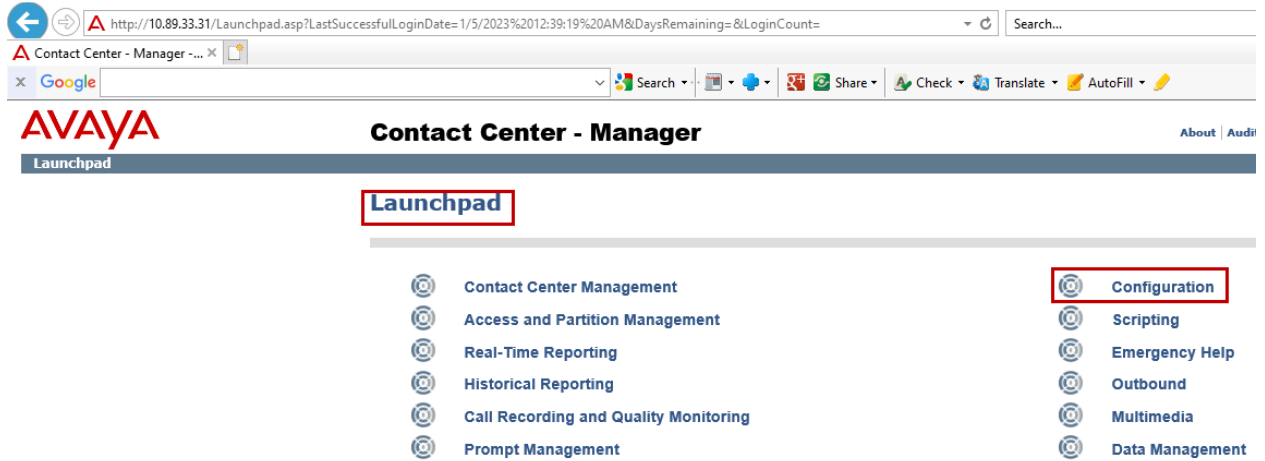


Figure 150 Launchpad

- Navigate to **AACC > CDNs (Route Points)**
- **Name: 7500**
- **Number: 7500**
- **URI: sip:7500@<Avaya Aura CC domain name>.com**
- **Call Type: Local**
- **Acquired: Enabled**

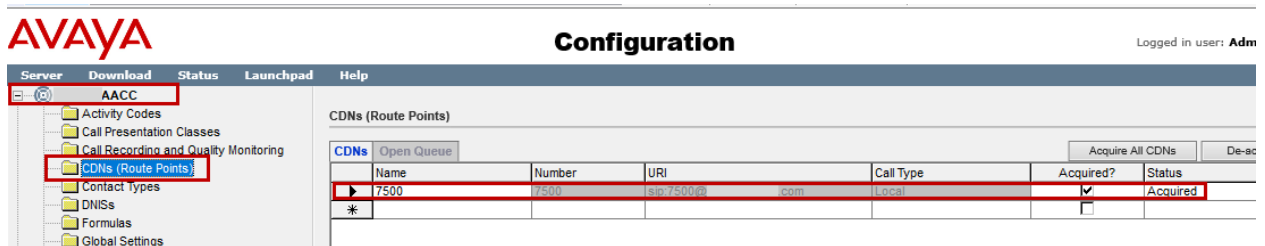


Figure 151 CDNs (Route Point) configuration

### 1.6.7 Media Server

- Navigate to **AACC > Media Servers**
- **Name:** Enter the host name of Avaya Aura Media Server (e.g. AAMS)
- **IP Address:** 10.89.33.32 (IP address of Avaya Aura Media Server)
- **Transport:** TCP
- **Master Content Store:** Enabled



### Configuration

	Server Name	IP Address	Port Number	Transport	Master Content Store
▶	aams	10.89.33.32	5060	TCP	<input checked="" type="checkbox"/>
*					<input type="checkbox"/>

Figure 152 Add Media Server

### 1.6.8 Media Server Configuration

- Navigate to **AACC > Media Services and Routes**
- Under **Media Services and Routes**,
  - *Service Name*: Ensure for each of the Service Names (e.g. **ACC\_APP\_ID**, **CONF**, **MDIALOG**) with Treatment address (e.g. **sip\_sip-conf@<domain name>.com**), the media server e.g. **AAMS** is associated
  - *Routes (Target Media Servers)*: Select a row from the service name (e.g. **ACC\_APP\_ID**) and move the media server e.g. **AAMS** from **Available** to **Selected** column
- Repeat the same step for Service Names **CONF** and **MDIALOG**
- Click **Submit**

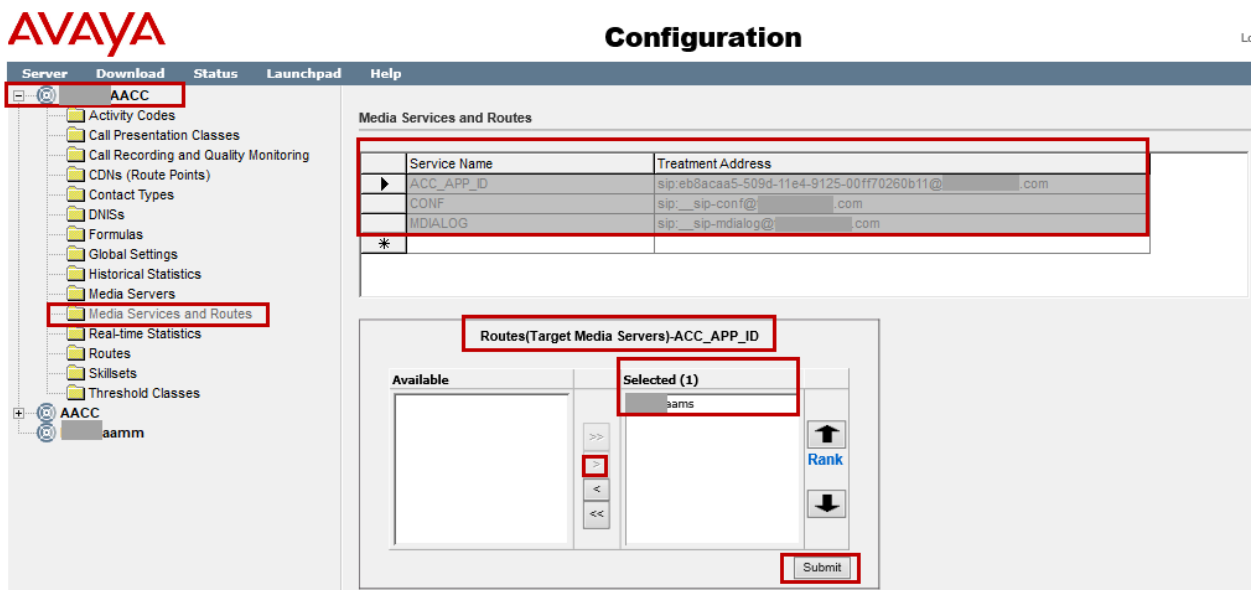


Figure 153 Media Server Configuration



1.6.9 CCT Server

- Navigate to **Launchpad > Configuration**

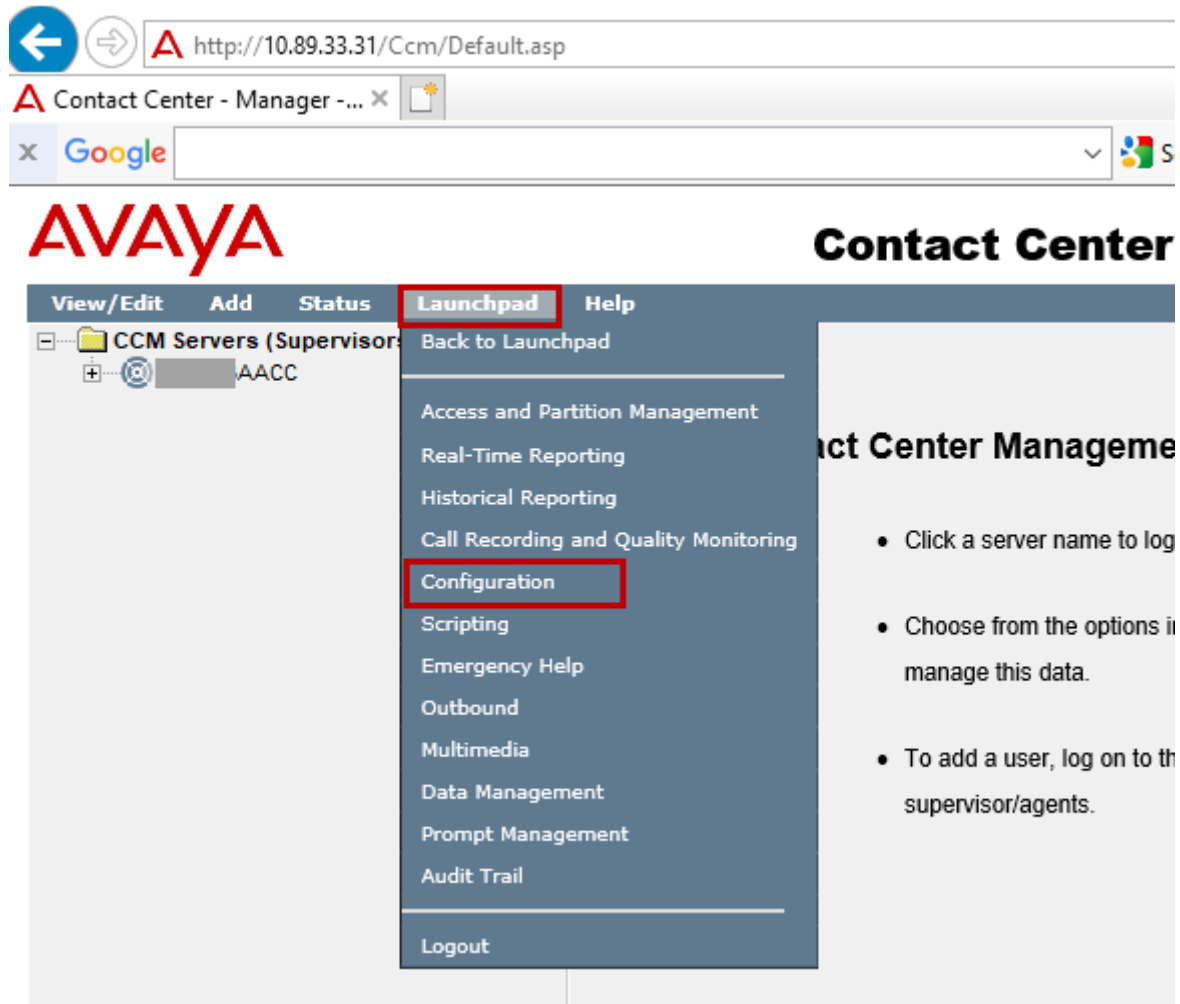


Figure 154 Add CCT Server

- Navigate to **Server > Add Server**
- Under **Server Properties**,
  - *Type: CCT*
  - *Server Name: AACC* (Host name of the Avaya Aura Contact Center Server)
  - *IP Address: 10.89.33.31* (Avaya Aura Contact Center Server IP populates automatically)
  - *Display name: AACC*
  - *Port Number: 8081*
  - *Associated CCMS Servers: AACC* (Select the Avaya Aura Contact Center server radio button)
- Click **Submit**

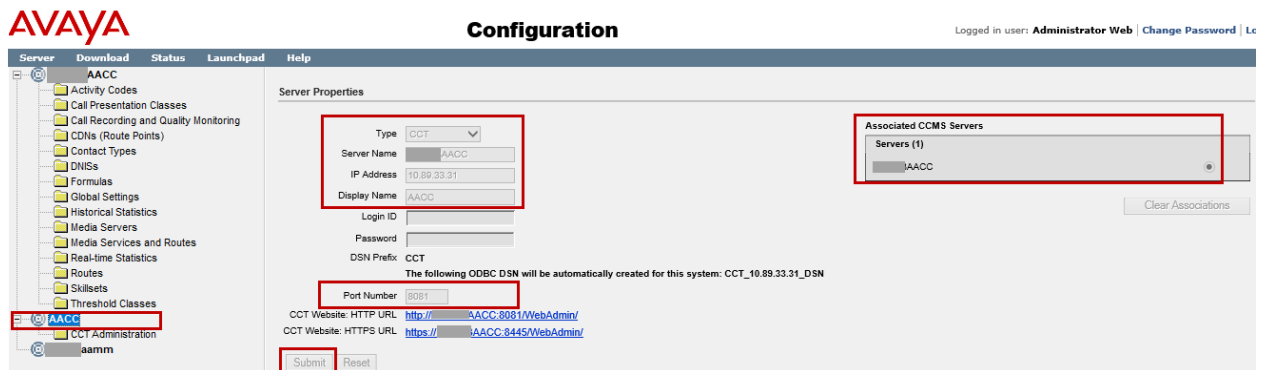


Figure 155 Add CCT Server Continuation

### 1.6.10 Contact Center Agent

- Navigate to **Launchpad > Contact Center Management > CCM Servers (Supervisors) > AACC > Supervisor Default > Right Click > Add Agent**
- Under **User Details**,
  - *User Type:* **Agent**
  - *First Name:* **seetha**
  - *Last Name:* **agent1**
  - *Login ID:* **3001**
  - *Voice URI:* **sip:3001@<Avaya Aura CC domain name>.com**
- Under **Account Type**,
  - *Create CCT Agent:* **Enabled**

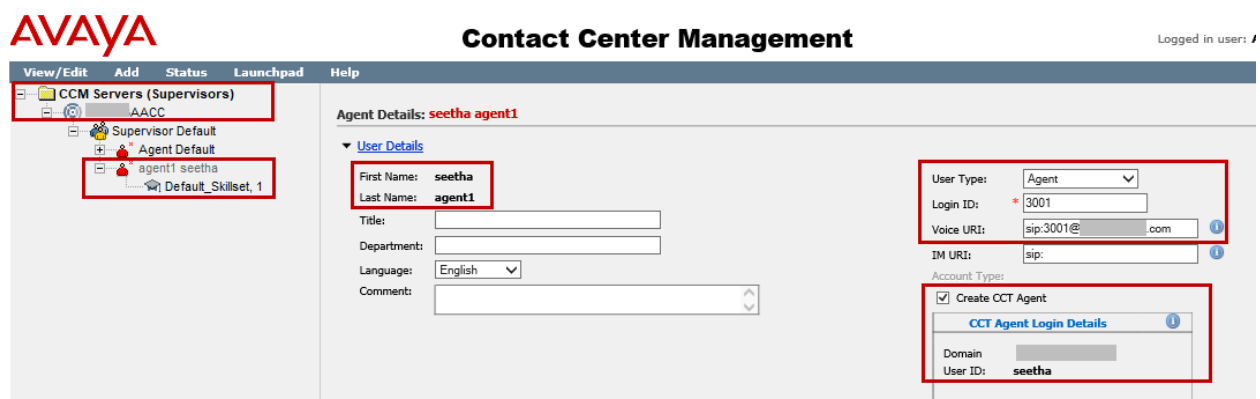


Figure 156 Contact Center Agent

- Under **Associate User Account**
  - *Search domain users:* **Enabled**
  - Under **Domain Details**,
  - *Server Name or IP:* **10.85.0.12**
- Under **Domain Account**
  - *(Domain\User ID):* **<Avaya Aura CC domain name>\seetha**
  - *Password:* **Enter the associated user password**
- Under **Search all accounts where**
  - Select **First Name**
  - *Starts with:* **seetha**
  - Click **Search**
- Select the row listed with User Name as **seetha**

**Associate User Account**

Search local operating system
  Search local security server
  **Search domain users**

**Domain Details**

Server Name or IP \* 10.85.0.12

Specify Domain Account

**Domain Account**

(Domain\User ID) \* \seetha

Password \* .....

Base DN

Port Number

Use Secure Connection

Search all user accounts where:

starts with  and includes

User Name	Last Name (1)	First Name	Status	Description
<input checked="" type="radio"/> seetha	agent1	seetha	Available	

The account specified here will be used by the Supervisor/Agent to login to CCMA.

Figure 157 Contact Center Agent Continuation

- Under **Contact Types**,
  - **Voice: Enabled**

The screenshot shows the 'Agent Information' section with 'Primary Supervisor' set to 'Supervisor Default', 'Login Status' as 'Logged Out', 'Call Presentation' as 'Call\_Centre\_Administrator', and 'Threshold' as 'Agent\_Template'. Below this is the 'Contact Types' section, which contains a table with the following data:

Contact Type	Enabled
SMS	<input type="checkbox"/>
Social_Networking	<input type="checkbox"/>
Video	<input type="checkbox"/>
Voice	<input checked="" type="checkbox"/>
Voice_Mail	<input type="checkbox"/>
Web_Communications	<input type="checkbox"/>

Figure 158 Contact Center Agent Continuation

- Under **Skillsets**,
  - **Skillset Name: Default\_Skillset**
- Click **Submit**

The screenshot shows the 'Skillsets' section with a table containing one entry:

Skillset Name (1)	Contact Type	Priority
Default_Skillset	Voice	1

Below the table are links for 'Assign Skillsets' and 'Partitions'. At the bottom of the page are buttons for 'Clear', 'Submit', 'Create Copy', 'Create Many', and 'Logout Agent'. The 'Submit' button is highlighted with a red box.

Figure 159 Contact Center Agent Continuation

### 1.6.11 TFE REST Configurator

TFE REST Configurator is used to define the Twilio API URL with authorization credentials. The endpoint ID **1** is used by in the Application script (Section 6.7.12 - **CallTwilio\_API**) to invoke the Twilio API URL

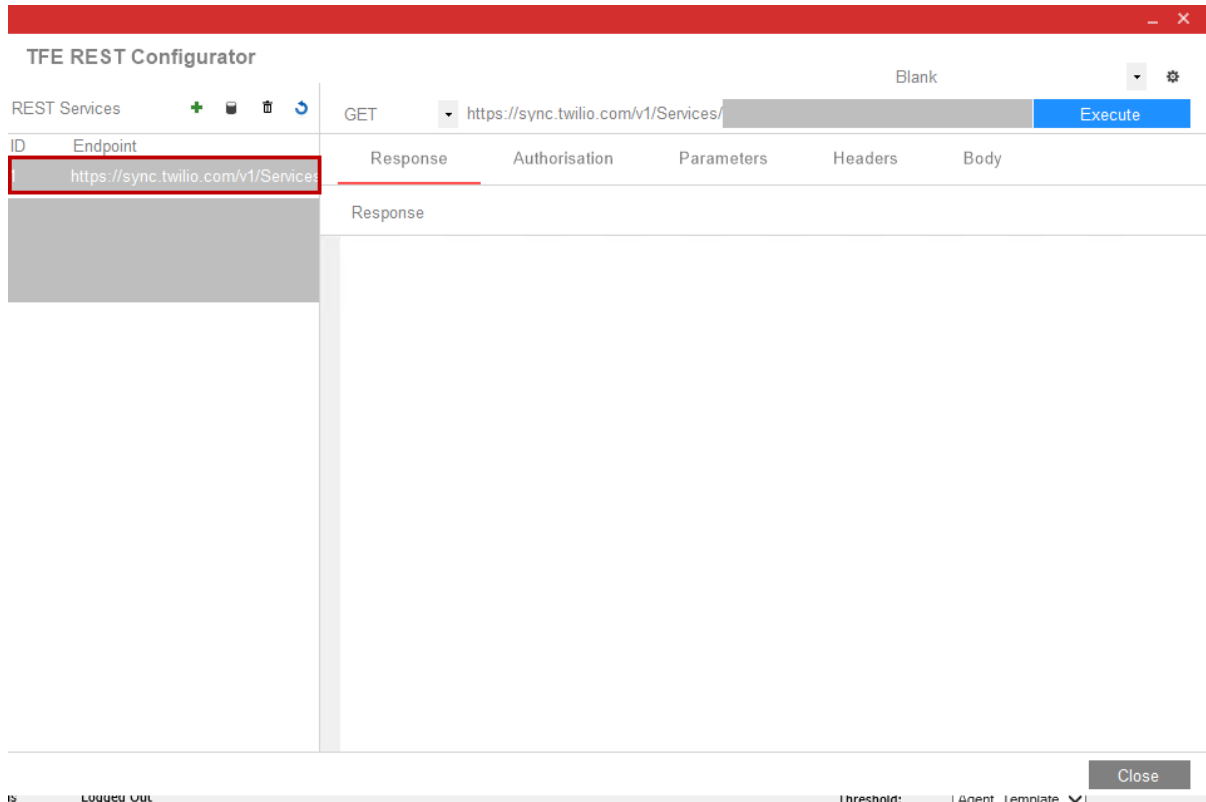


Figure 160 TFE REST Configurator

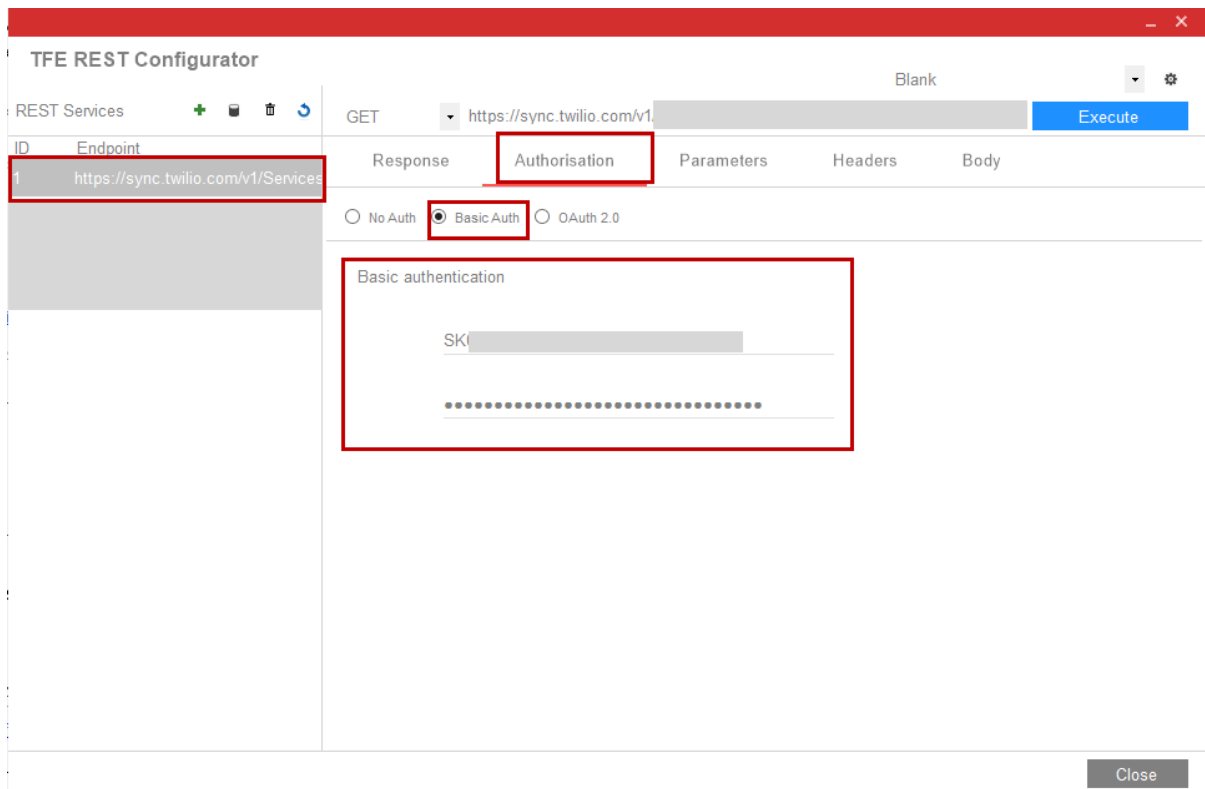


Figure 161 TFE REST Configurator Continuation

### 1.6.12 Avaya Aura Orchestration Designer Application Script

Applications contains instructions that determine the sequence of steps that a contact follows after the contact arrives at Avaya Aura Contact Center

- Navigate to **Launchpad > Scripting > Orchestration Designer > Launch Orchestration Designer**
- **Orchestration Designer** tool is launched

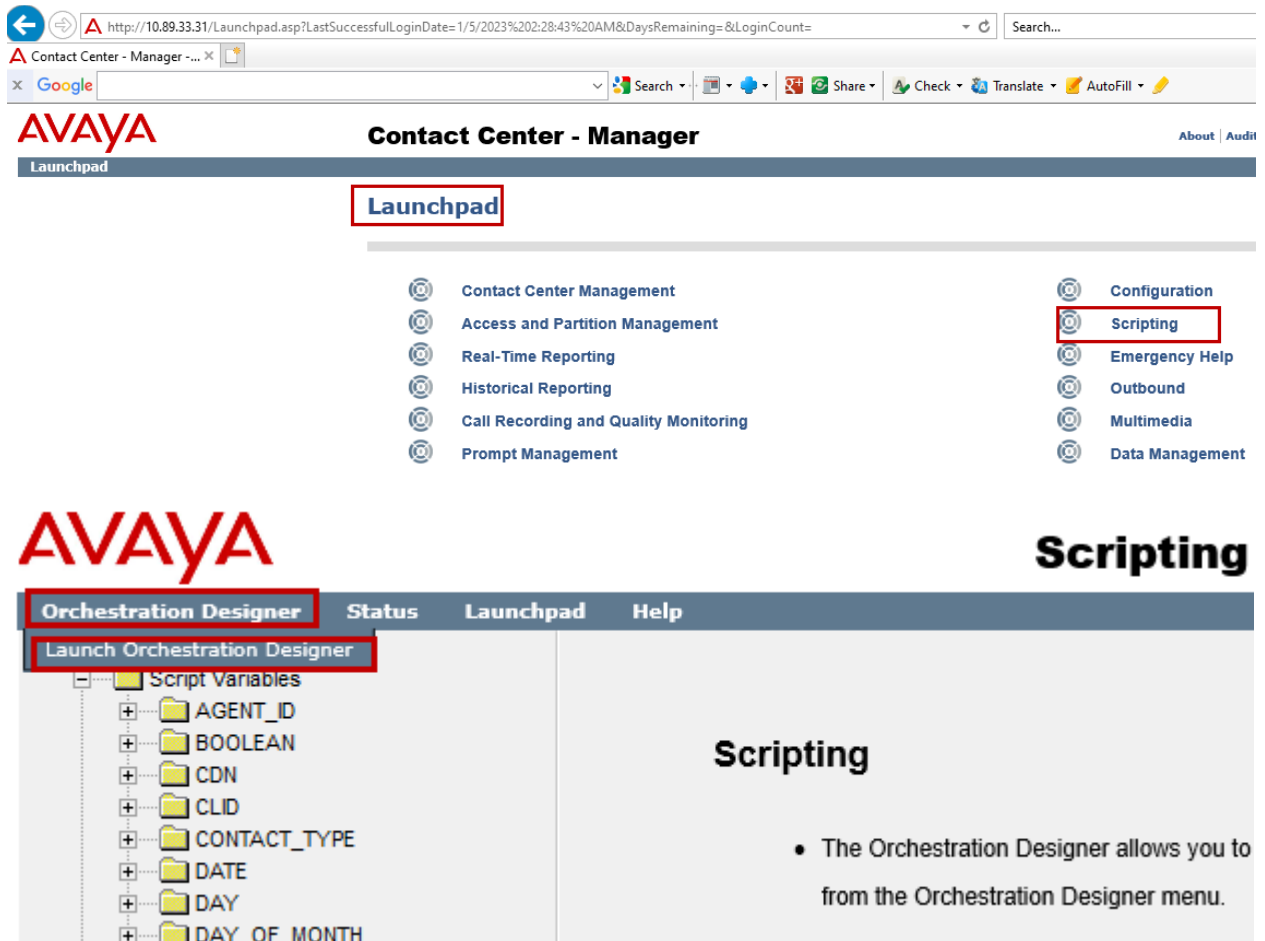


Figure 162 Launch Orchestration Designer



- In the Orchestration Designer, navigate to **Contact Center**
- Click **Connect to CCMA**
- **CCMA: 10.89.33.31 (IP address of Avaya Aura CC)**
- **Port:80**
- **User ID: webadmin**
- **Password:** Type the appropriate **password**
- Click **OK**

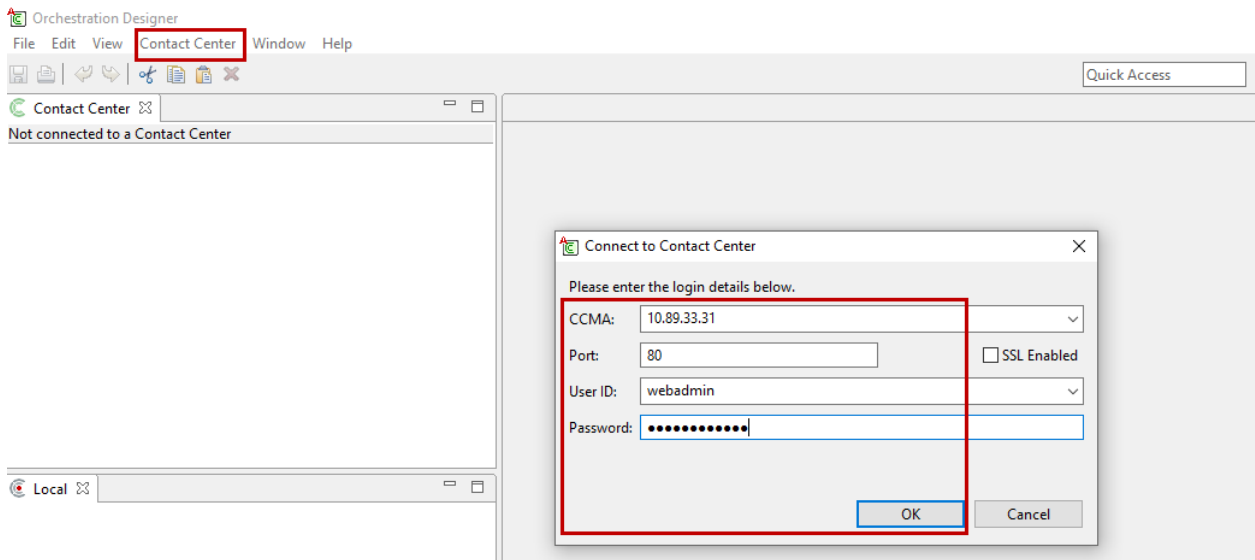


Figure 163 Orchestration Designer Login

- Navigate to **10.89.33.31 > AACC > Applications [Full Control] > Right Click > New > Application**

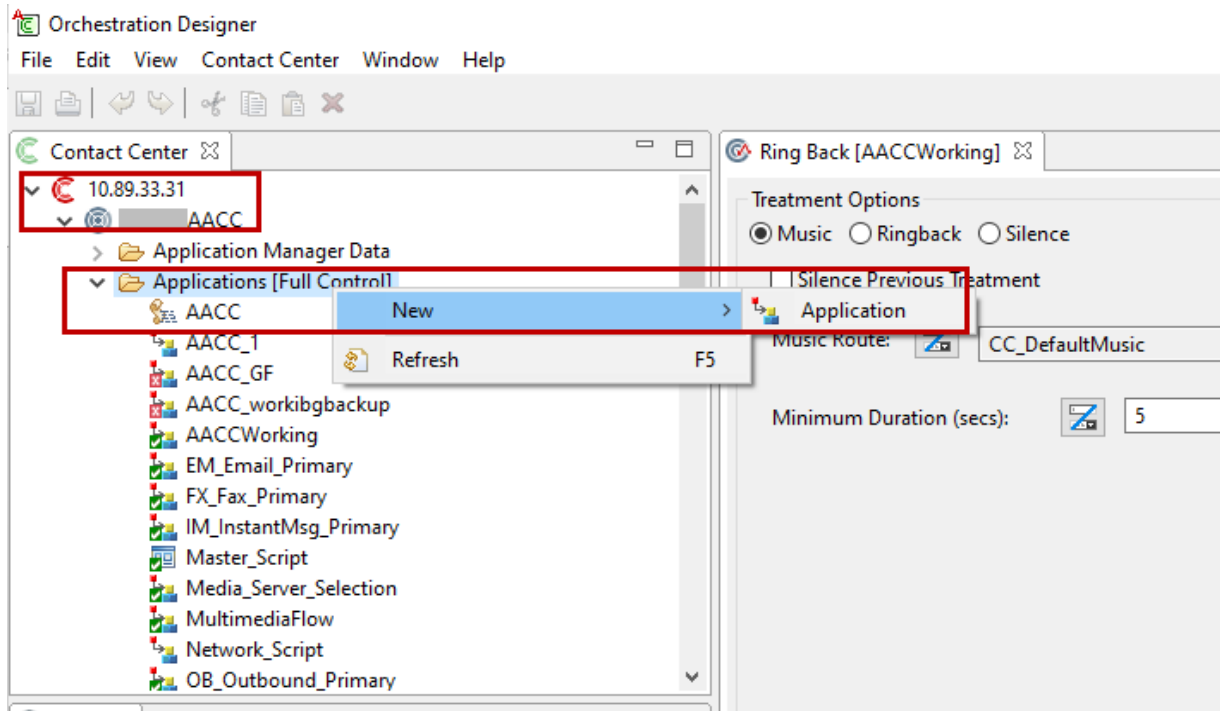


Figure 164 Orchestration Designer – Create New Application

In the **New Application** window,

- *Application Name:* **AACCWorking**
- *Application Type:* **Graphical Flow**
- *Application Template:* **New\_Flow**
- Click **Finish**

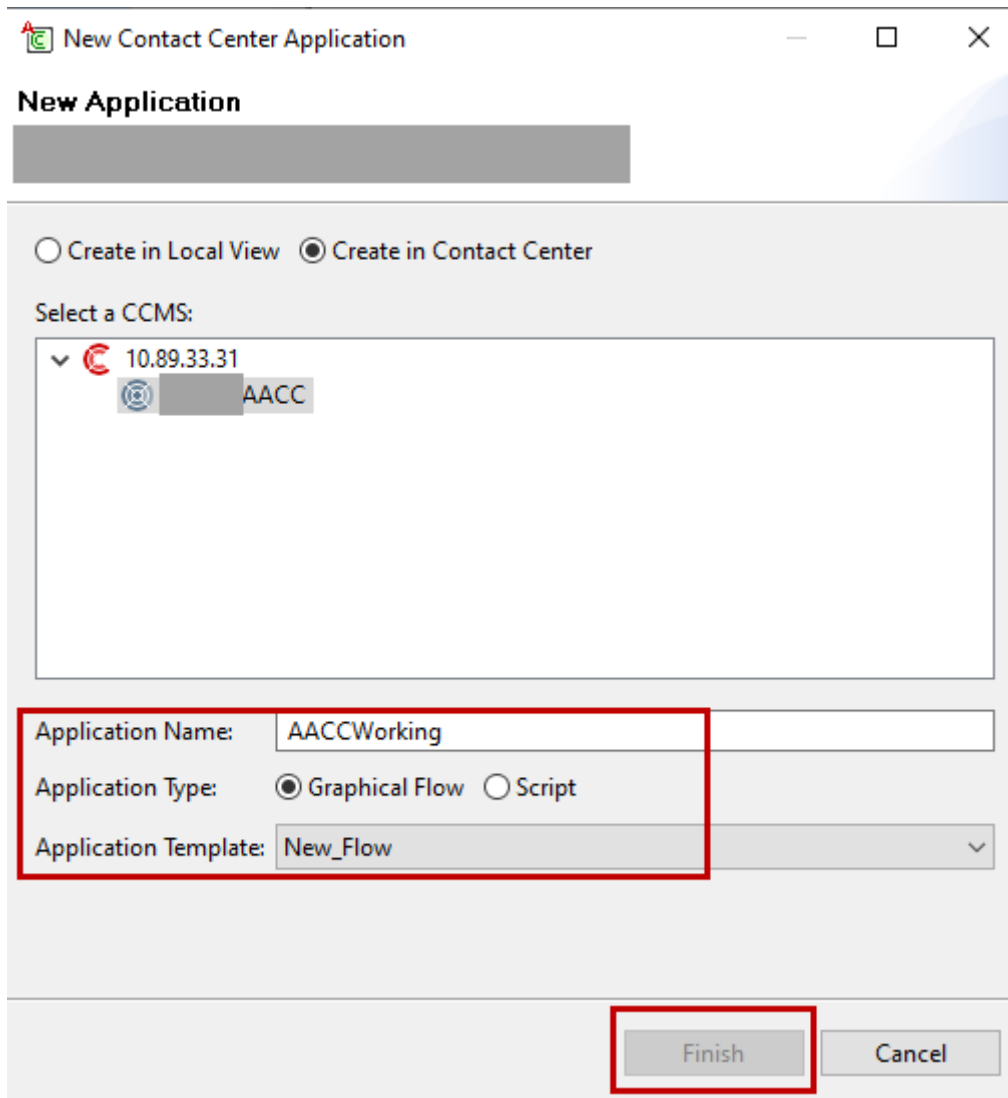


Figure 165 Orchestration Designer – Create New Application Continuation

The Graphical flow **AACCWorking** is designed to send the IVR digit entered by the PSTN user to be displayed in the Avaya Aura Agent Desktop

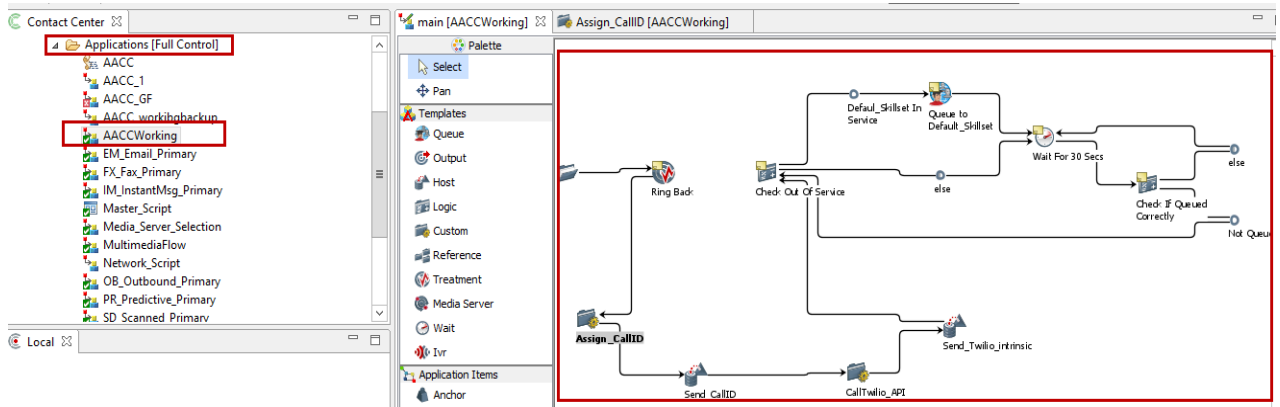


Figure 166 Orchestration Designer – Graphical Flow

## Detailed description of AACCWorking Graphical flow blocks

**Ringback** – Plays music when the PSTN caller waits in the queue

- Double click on the **Ring Back** icon in the Graphical Flow (Figure 124)
- Under **Treatment Options**,
  - **Music: Enabled**
  - **Music Route:** Click **Browse** and choose **CC\_DefaultMusic**
  - **Minimum Duration (secs): 5**
- Click **Save** (Navigate to **File > Save**)

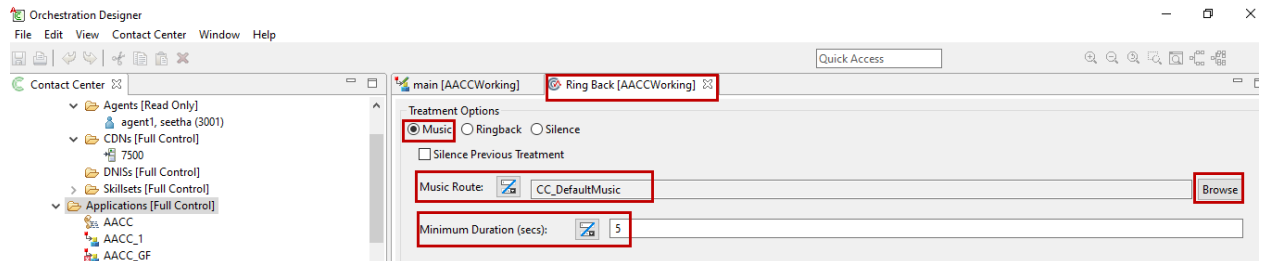


Figure 167 Orchestration Designer – Graphical Flow Continuation

**Assign\_CallID** – Assigns the Twilio Call ID to a variable **mysearchURL\_cv**. Refer Figure 130 and 131 to create a variable **mySearchURL\_cv**

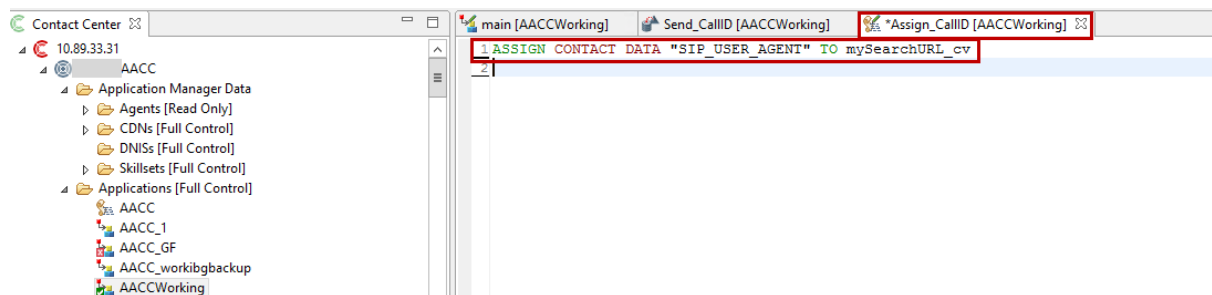


Figure 168 Orchestration Designer – Graphical Flow Continuation

**Send\_CallID – Sends the Twilio Call ID to the next block CallTwilio\_API**

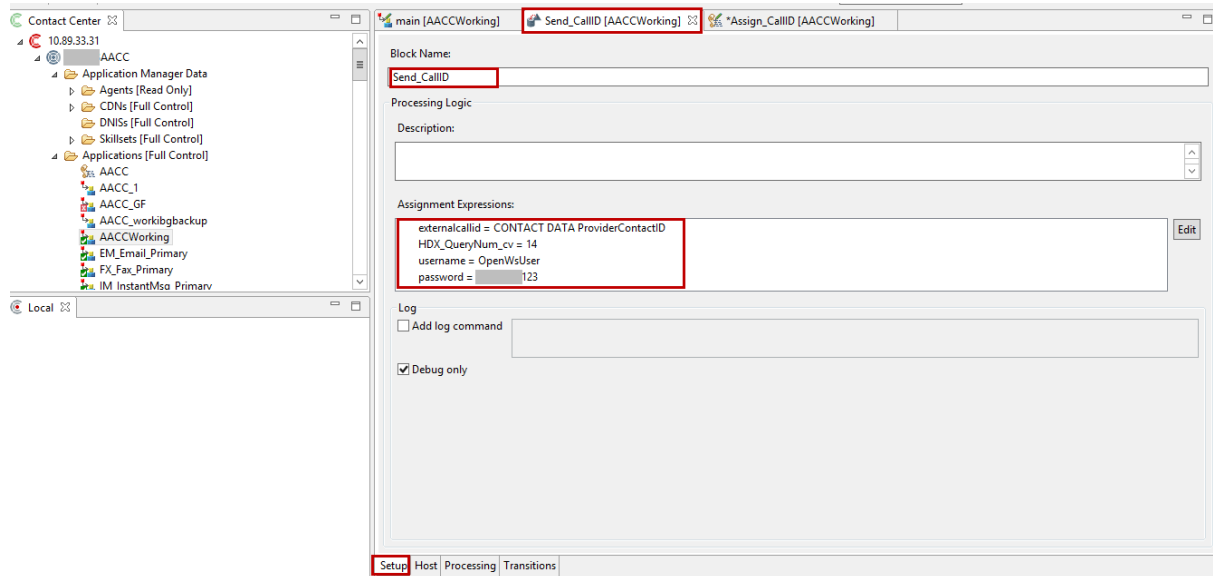


Figure 169 Orchestration Designer – Graphical Flow Continuation

Request Parameter **intrinsickey\_cv** variable is assigned the value **Twilio\_CallID**. Refer Figure 130 and 131 to create a variable **intrinsickey\_cv**

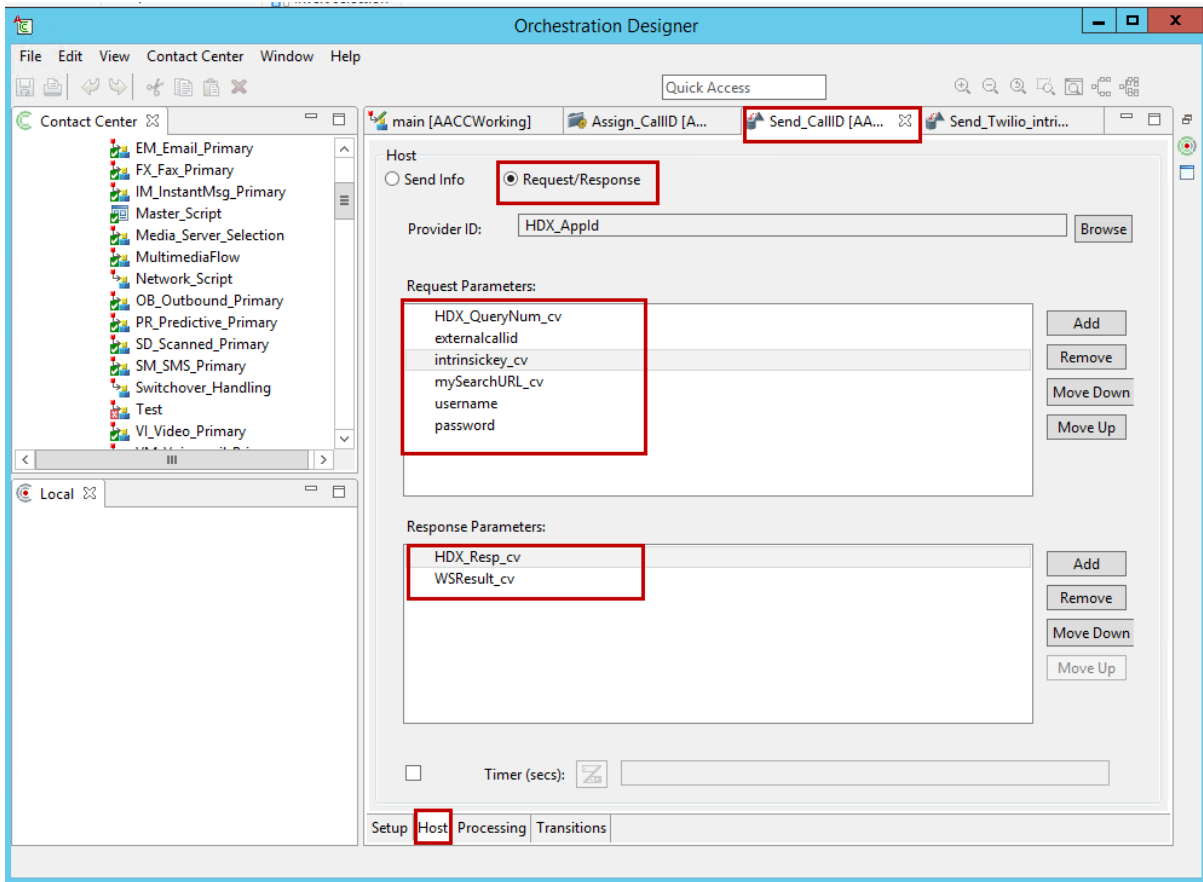


Figure 170 Orchestration Designer – Graphical Flow Continuation

**CallTwilio\_API** – Query the Twilio API URL and sends the output to the next block

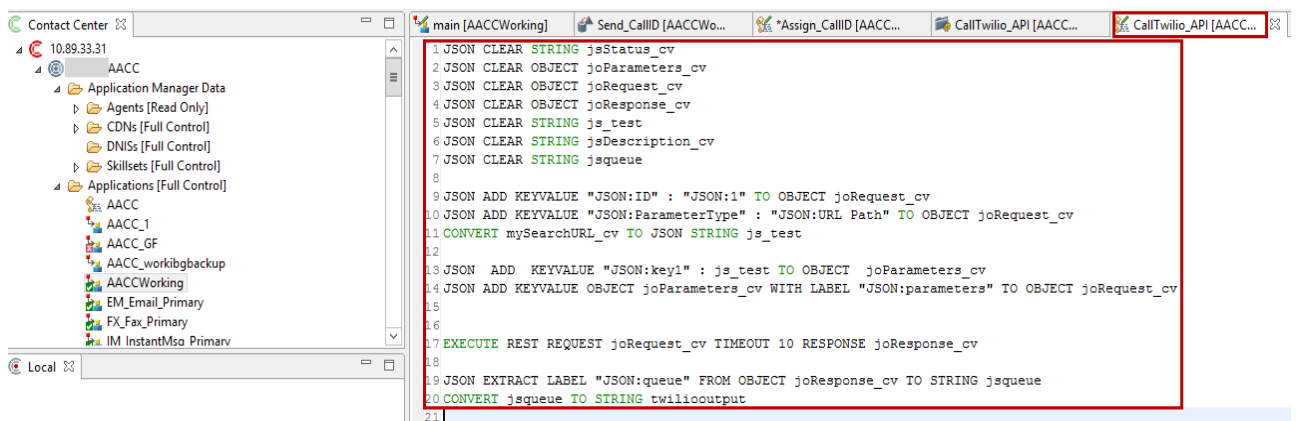


Figure 171 Orchestration Designer – Graphical Flow Continuation

**Send\_Twilio\_intrinsic** – Sends the response from Twilio API URL to Avaya Agent desktop

Navigate to **10.89.33.31 > Application Variables > STRING**

Create a global string variable named **intrinsicKey\_gv** and assign a value IVR\_Digit\_entered. This is the string which is displayed in the Avaya agent desktop with the corresponding digit entered by the user.

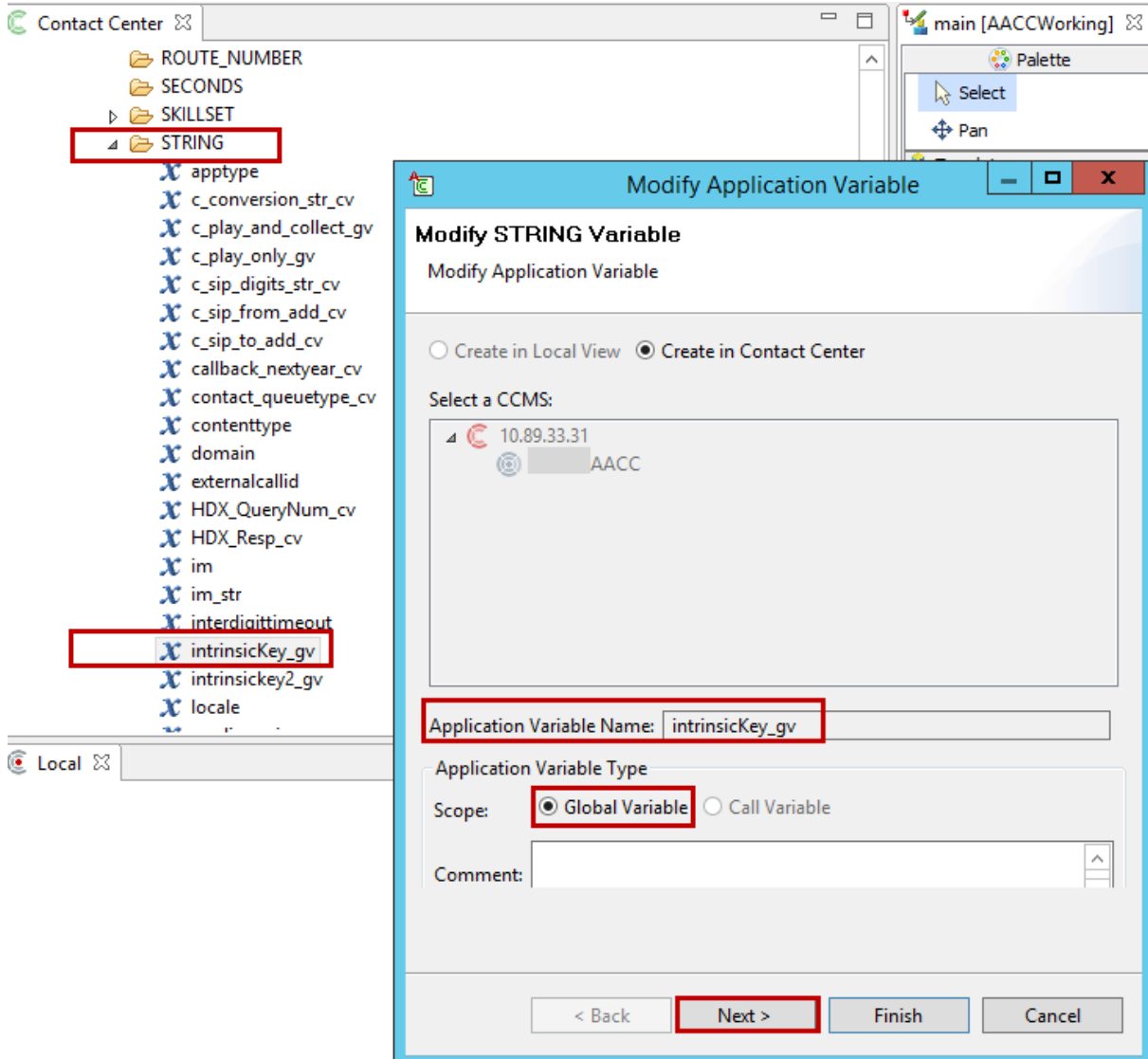


Figure 172 Orchestrator Designer – Graphical Flow Continuation

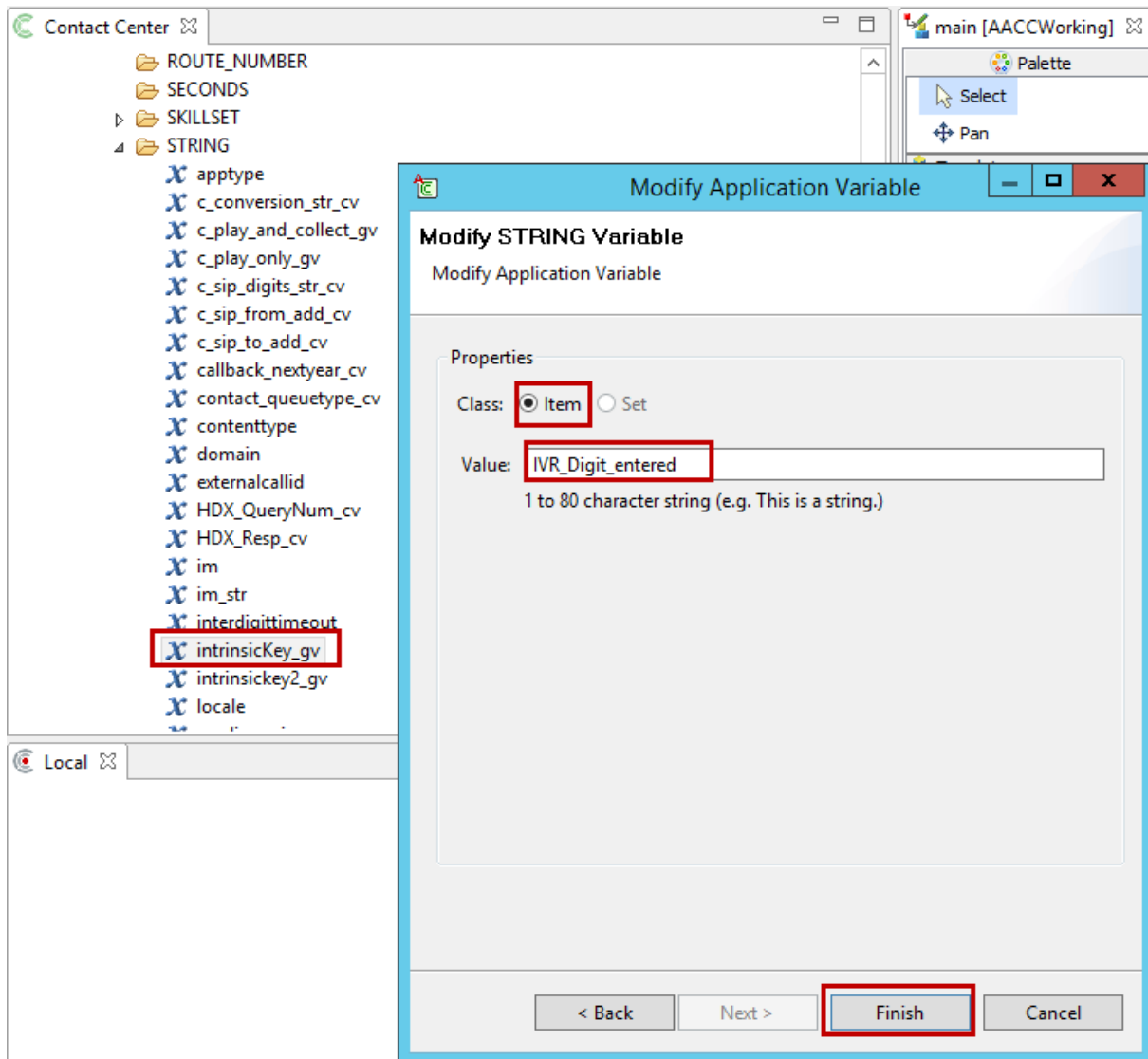


Figure 173 Orchestration Designer – Graphical Flow Continuation



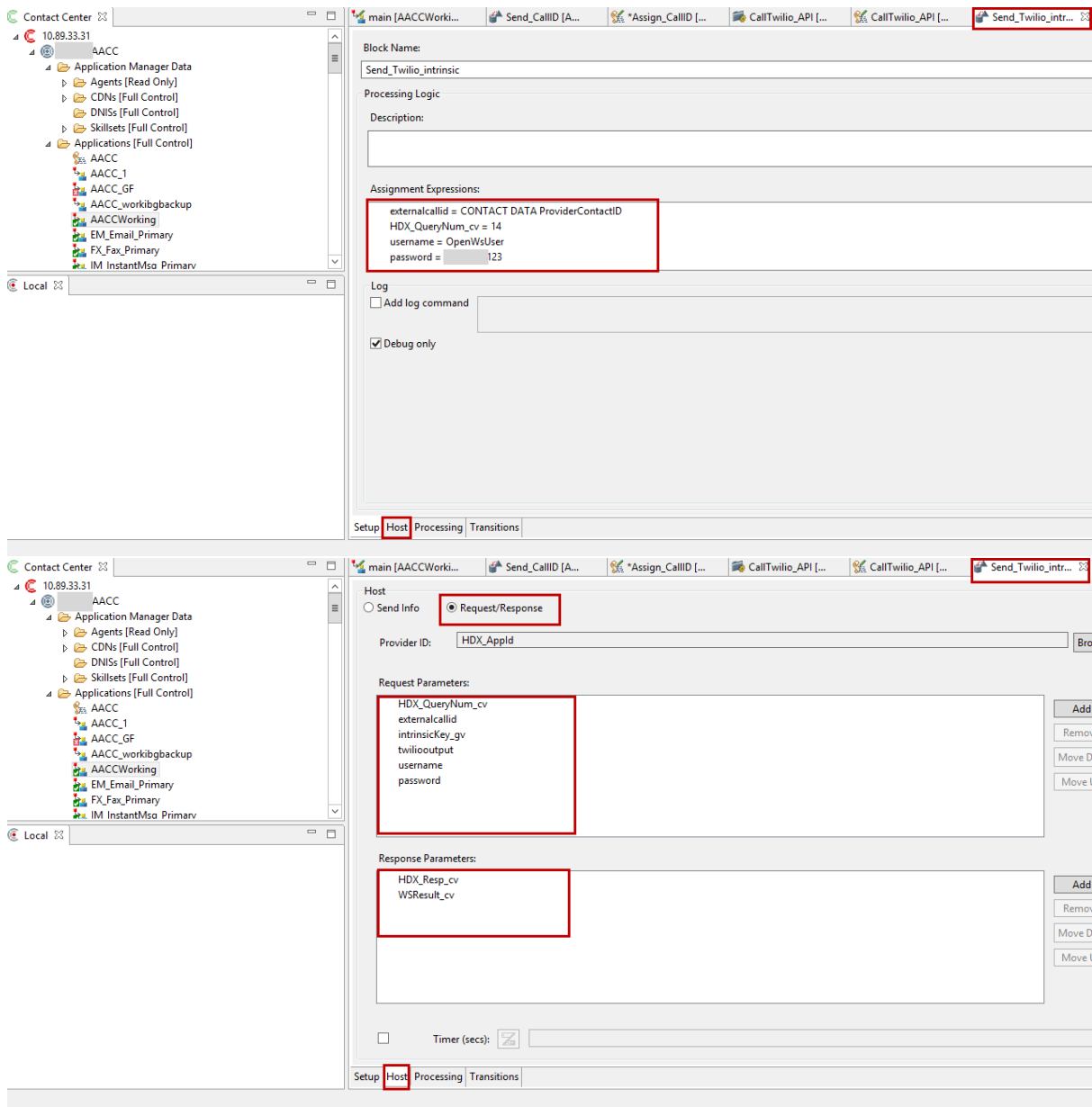


Figure 174 Orchestration Designer – Graphical Flow Continuation

- Right click on the application **AACCWorking**
- Click **Activate** to activate the application

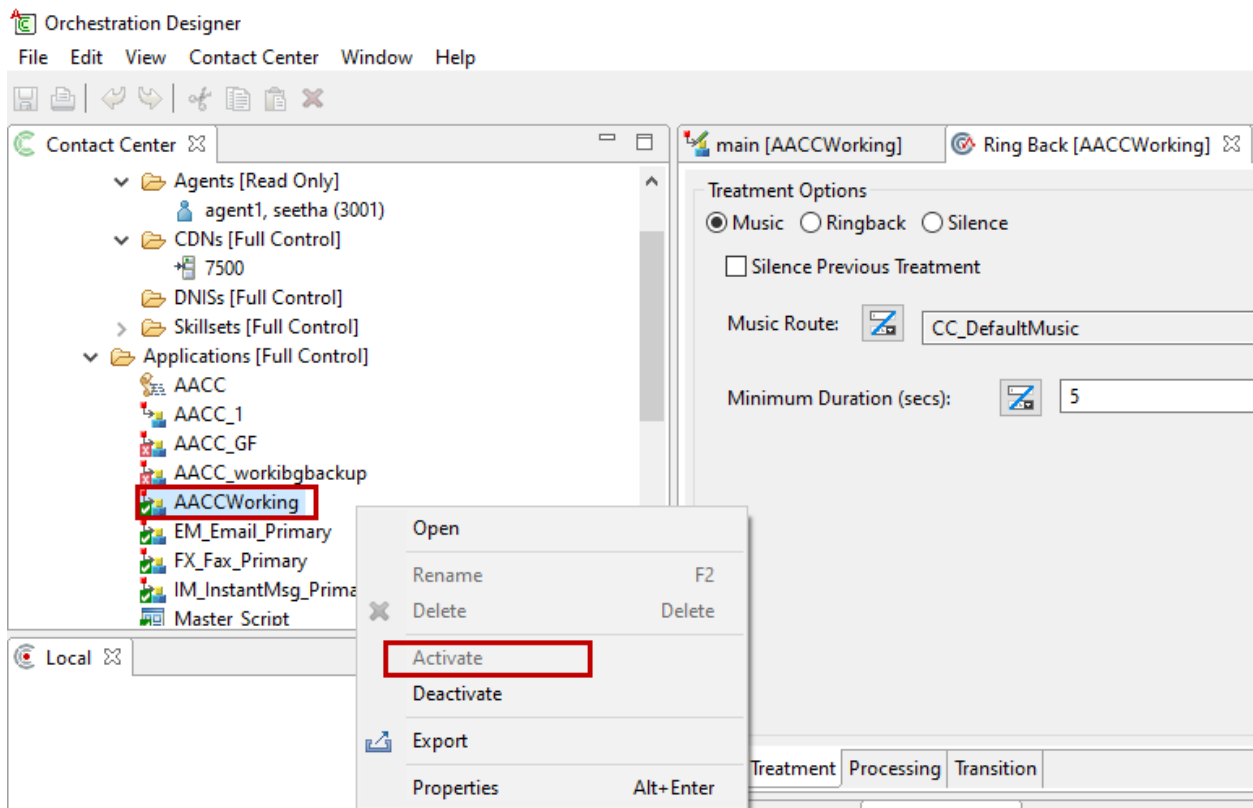


Figure 175 Oracle Fusion Middleware Administration Console – Activate Application

- Navigate to **Application > Master\_Script** to map the application **AACCWorking** with the **CDN 7500**
- Under **Configured Routes**,
  - Navigate to **Application Manager Data > CDNs > 7500**
  - Click **Add/Edit**
  - Select the application **AACCWorking** from **Application Chooser > Valid Applications**
  - Click **OK**

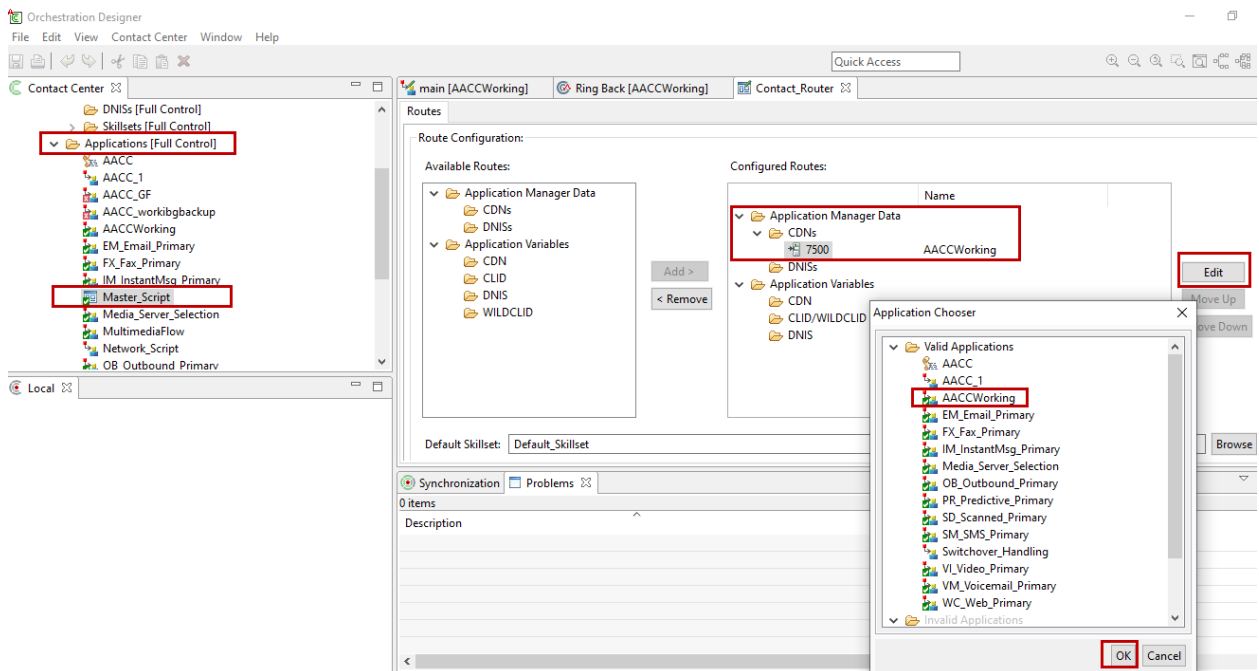


Figure 176 Orchestration Designer – Master Script mapping with Application

### 1.6.13 CCMM (Contact Center Multimedia) Administration

- Navigate to **Launch Pad > Multimedia** to configure the Avaya Aura Agent Desktop Settings

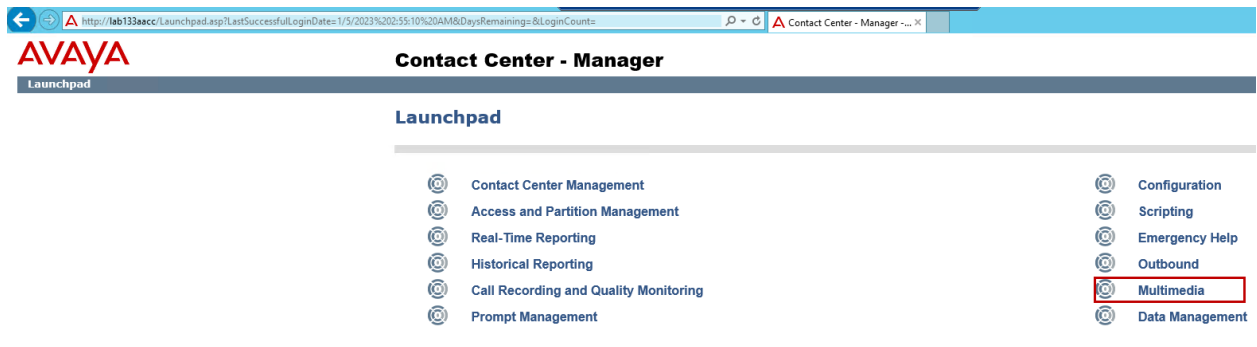


Figure 177 CCMM

- Click **Launch Multimedia Client**
- Click **Install prerequisite software** for the necessary pre-requisite software to be installed for CCMM Administration tool installation

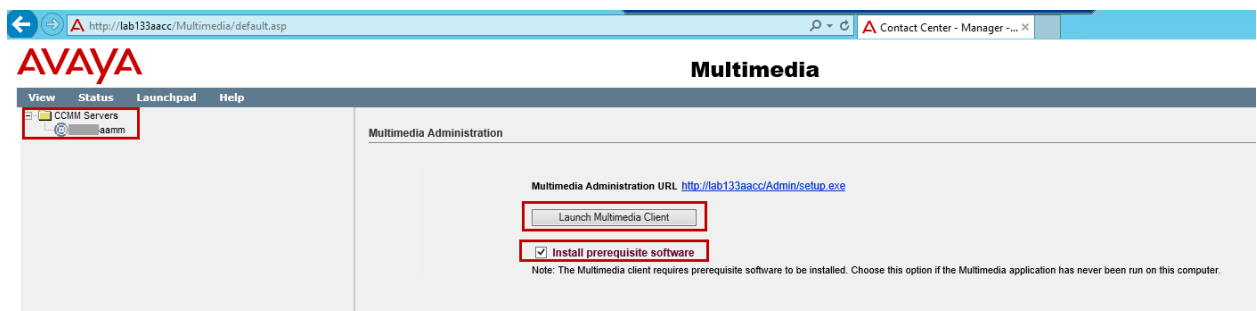


Figure 178 CCMM Continuation

- Navigate to **Agent Desktop Configuration > Basic Screenpops > General Settings**
- Below are the default settings under **General Settings**

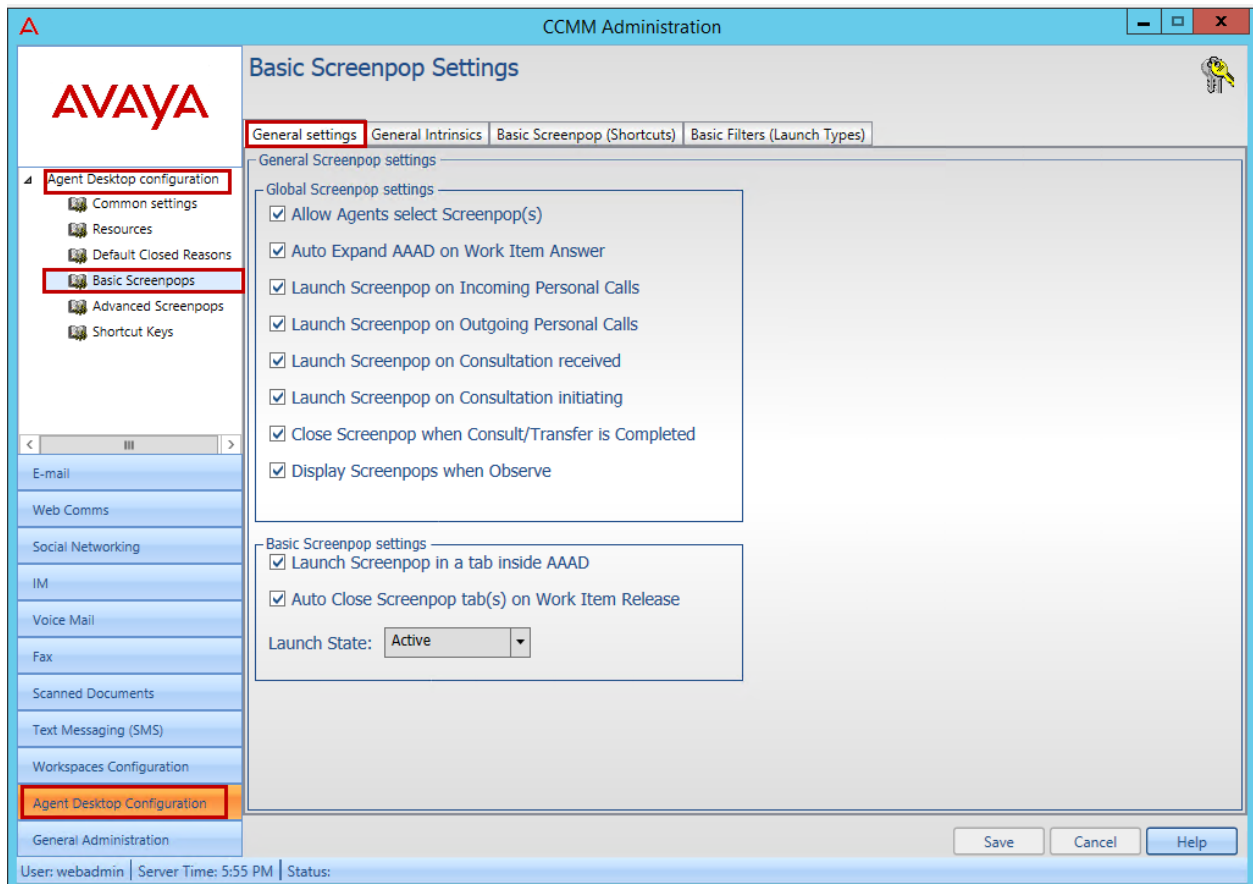


Figure 179 CCMM Continuation

- Navigate to **Agent Desktop Configuration > Basic Screenpops > General Intrinsic**
- Click **Add**
- **Name: IVR\_Digit\_entered**
- **Friendly Name: IVR\_Digit\_entered**
- **Display: Enabled**

Note:

- Avaya Aura Agent Desktop (AAD) General Intrinsic settings maps the Screenpop Intrinsic **IVR\_Digit\_entered** with the IVR\_Digit\_entered intrinsic received from the Avaya Aura Orchestration Designer Application Script named **AACCWorking** and displays the digit entered by the PSTN user in the Avaya Aura Agent desktop

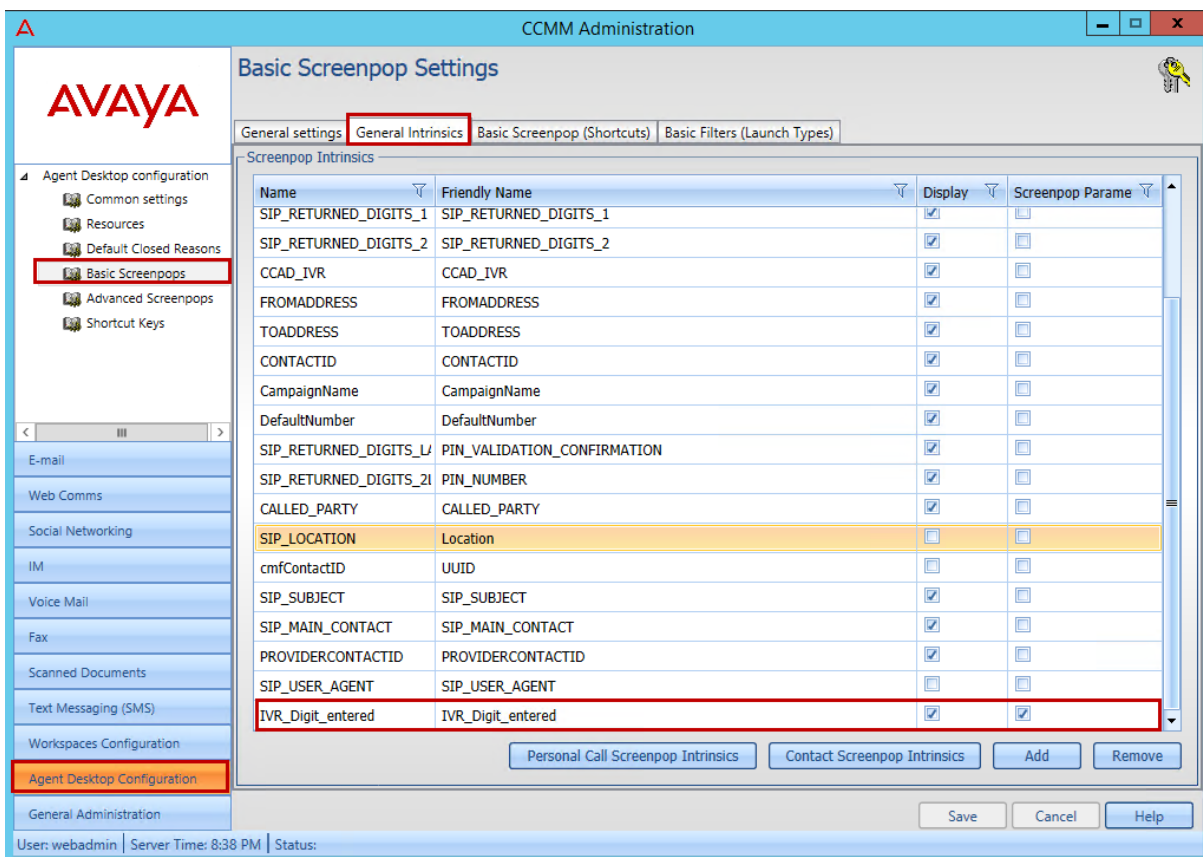


Figure 180 CCMM Continuation

### 1.6.14 Avaya Aura Agent Desktop

When the Avaya Aura Agent desktop client answers the call, it displays the IVR digit entered by the user as a SIP intrinsic named **IVR\_Digit\_entered** as shown below

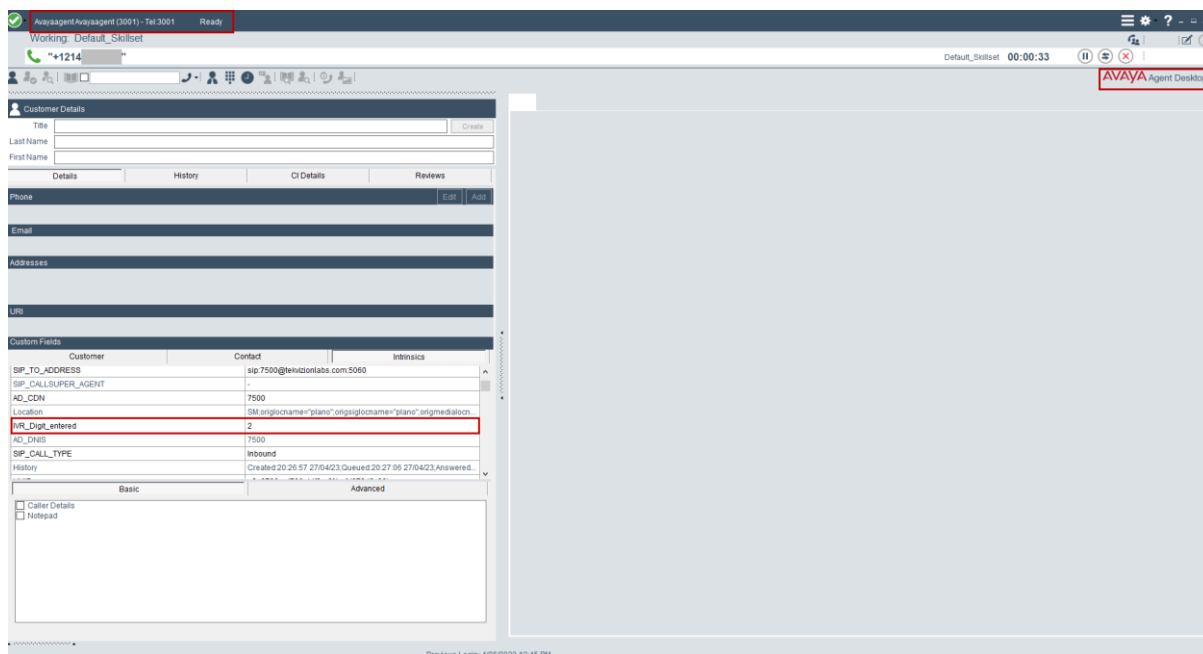


Figure 181 Avaya Aura Agent Desktop

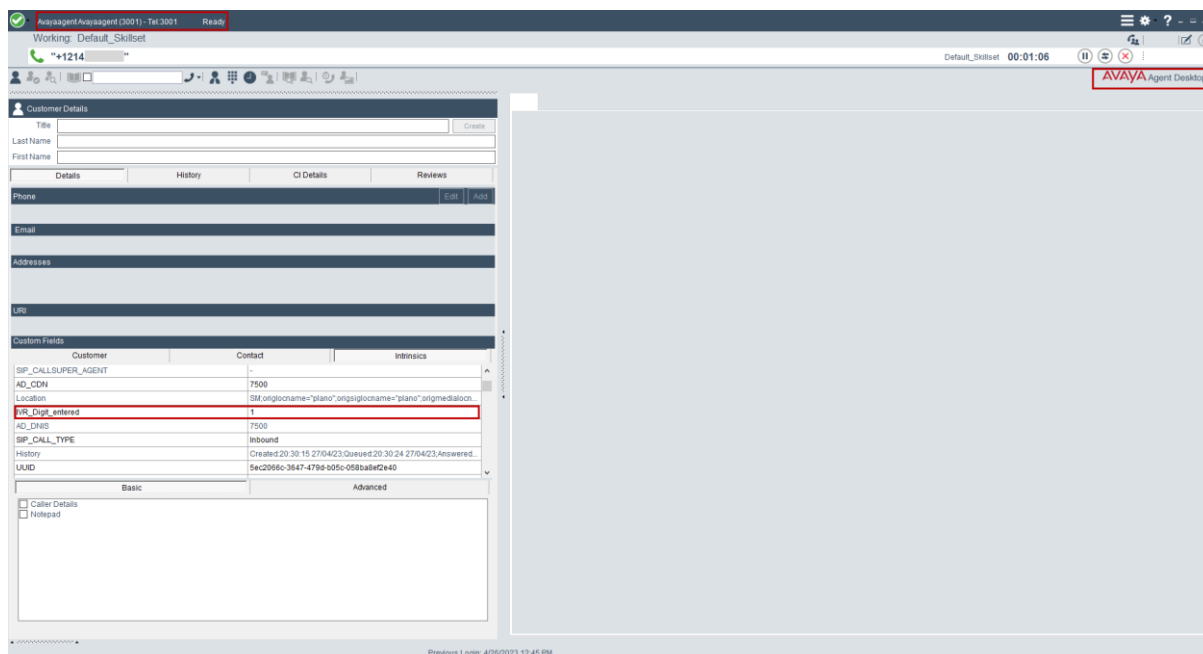


Figure 182 Avaya Aura Agent Desktop Continuation