Configure Contact Center Enterprise Virtual Agent Voice with Dialogflow CX

Contents

Introduction

This document describes how to configure Contact Center Enterprise (CCE) Virtual Agent integrated with Google Contact Center Artificial Intelligence (CCAI) Dialogflow Customer Experience version (CX).

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Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Unified Contact Center Enterprise (UCCE) Release 12.6
- Cisco Package Contact Center Enterprise (PCCE) Release 12.6
- Customer Voice Portal (CVP)
- Google Dialogflow CX
- Control Hub
- Postman tool

Components Used

The information in this document is based on these software versions:

- UCCE Release 12.6(1)
- CVP 12.6(1) ES8
- Cloud Coinnect 12.6(1)
- Cisco Virtual Voice Browser (VVB) 12.6(1) ES 3
- Cisco Unified Call Studio 12.6(1) patch: Software Download - Cisco Systems - Call Studio Patch
- Google Dialogflow CX
- Control Hub

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background

A Dialogflow CX agent is a virtual agent that handles concurrent conversations with your end-users. It is a natural language understanding module that understands the nuances of human language. Dialogflow translates end-user text or audio during a conversation to structured data that your apps and services can understand. You design and build a Dialogflow agent to handle the types of conversations required for your system.

A Dialogflow agent is similar to a human call center agent. You train them both to handle expected conversation scenarios, and your training does not need to be overly explicit.

Dialogflow CX, provides a new way to design agents, which changes from a state machine (static conversations) approach to a more “agent”-design one. This gives you clear and explicit control over a conversation, a better end-user experience, and a better development workflow when you build a conversational AI experience for your environment.

> **Note**: Dialogfow CX agent is supported only for OEM (Cisco billed).

Configure

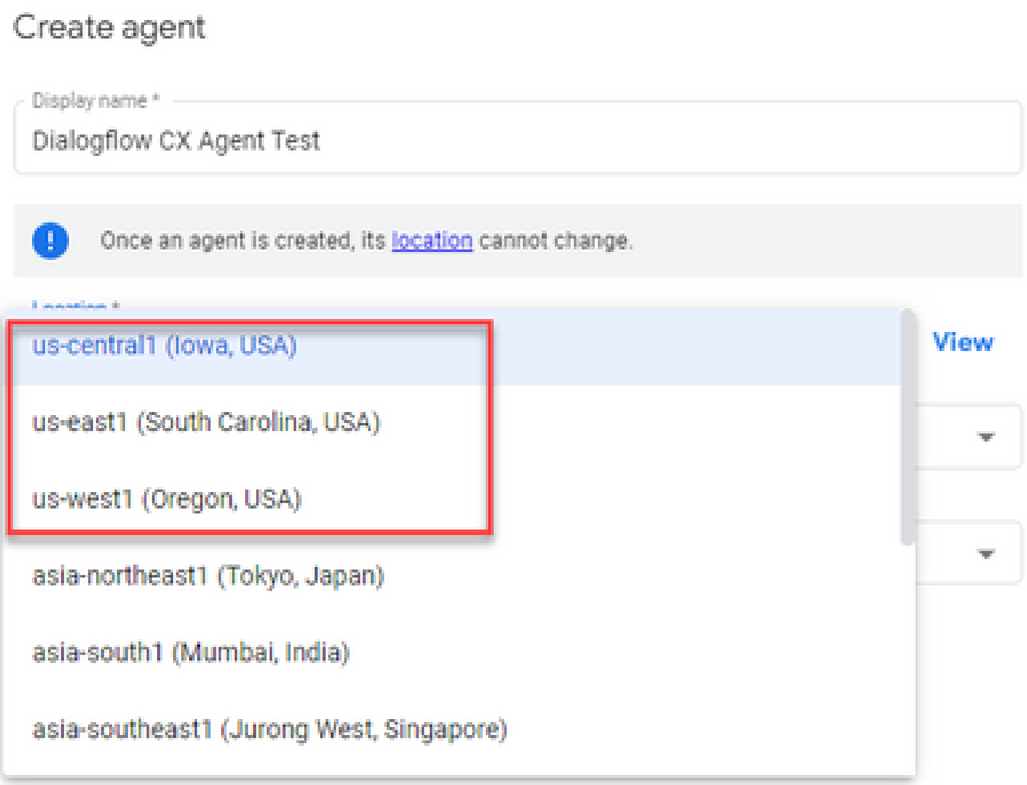
Create Google Project and Dialogflow CX Agent

A Google Project needs to be created and provision with Cisco, in addition a Virtial Agent (Dialogflow CX) needs ton be created before you can start the integration with CCE. When a project is provisioned to Cisco you are considered a OEM customer (Cisco billed). If you need information on how to create and provision the project, and how to create the Dialogflow CX agent visit: Create Google Project and Dialogflow CX Agent

Create Virtual Agent Profile

When you create the Dialogflow Virtual agent you select the Google Data Center location. The steps to create the conversation profile depend on the Dialogflow CX location.

Location - US / Global



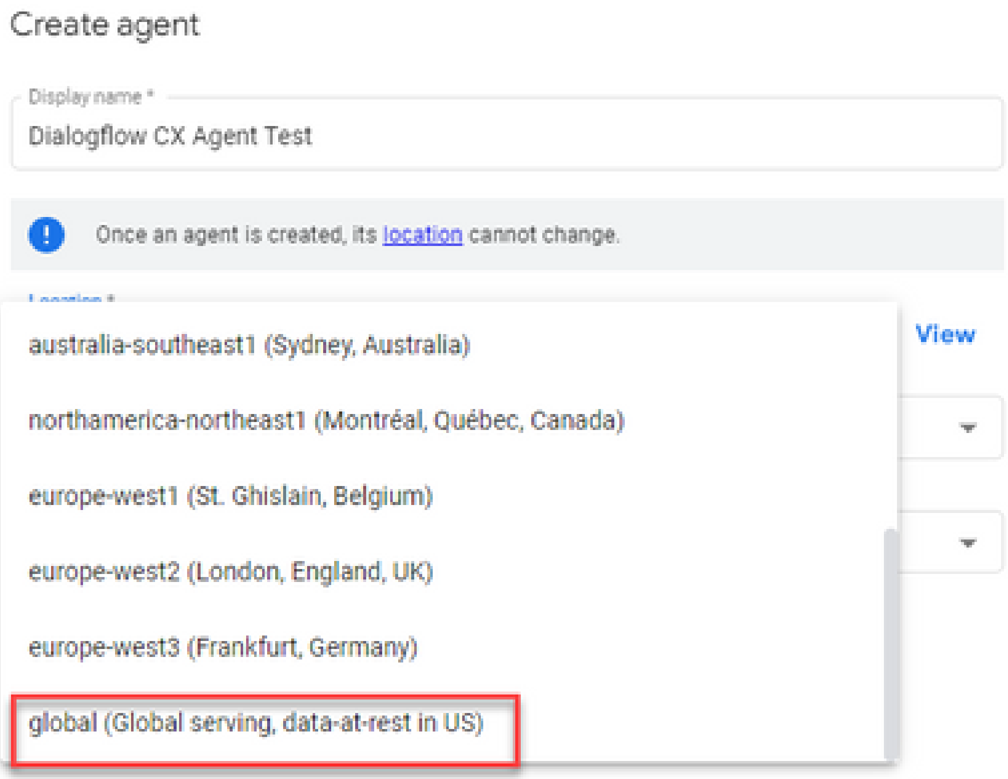
Create agent

Display name *

Dialogflow CX Agent Test

Once an agent is created, its location cannot change.

Location *
us-central1 (Iowa, USA)
us-east1 (South Carolina, USA)
us-west1 (Oregon, USA)
asia-northeast1 (Tokyo, Japan)
asia-south1 (Mumbai, India)
asia-southeast1 (Jurong West, Singapore)
View



Create agent

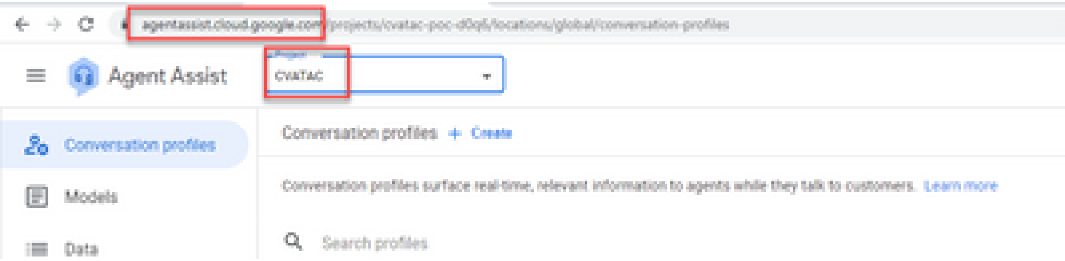
Display name *

Dialogflow CX Agent Test

Once an agent is created, its location cannot change.

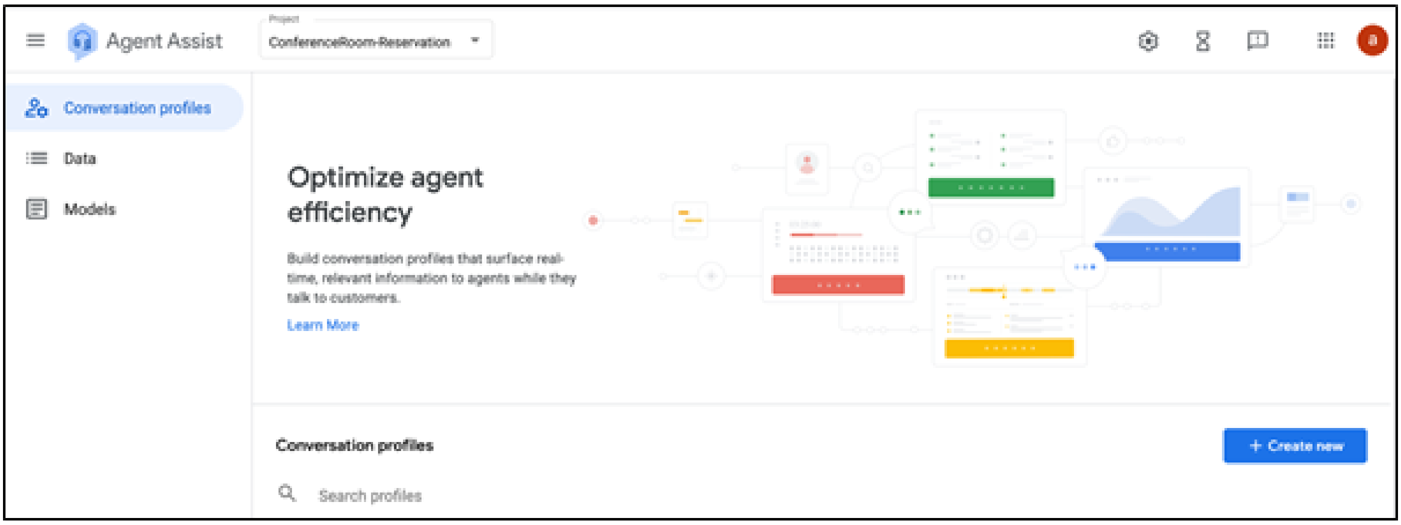
Location *
australia-southeast1 (Sydney, Australia)
northamerica-northeast1 (Montréal, Québec, Canada)
europe-west1 (St. Ghislain, Belgium)
europe-west2 (London, England, UK)
europe-west3 (Frankfurt, Germany)
global (Global serving, data-at-rest in US)
View

Step 1. Log in to [Google Agent Assist]() and choose the project which was used when you created the Dialogflow CX agent.


agentassist.cloud.google.com/projects/cvatac-poc-d0q6/locations/global/conversation-profiles
Agent Assist
Project
CVATAC
Conversation profiles
Models
Data
Conversation profiles + Create
Search profiles

Conversation profiles surface real-time, relevant information to agents while they talk to customers. Learn more

Step 2. Select the **Conversation profiles** and click **Create new** as shown in the image.

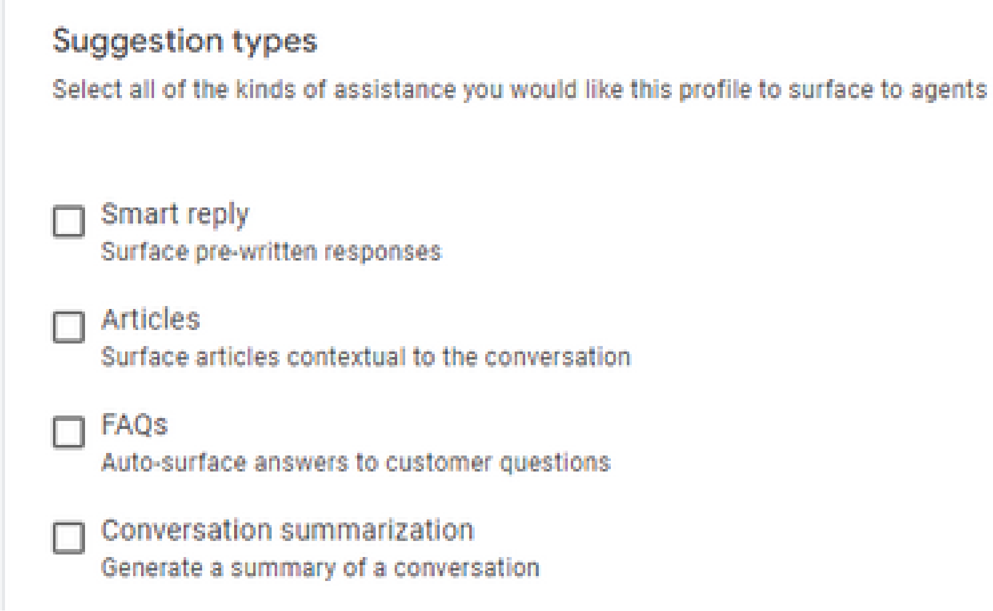


Optimize agent efficiency

Build conversation profiles that surface real-time, relevant information to agents while they talk to customers.

Step 3. Update these details while you create the conversation profile and click **create**.

- Display name – Give any name to identify the profile.
- Suggestion types – Leave it blank



Suggestion types

Select all of the kinds of assistance you would like this profile to surface to agents

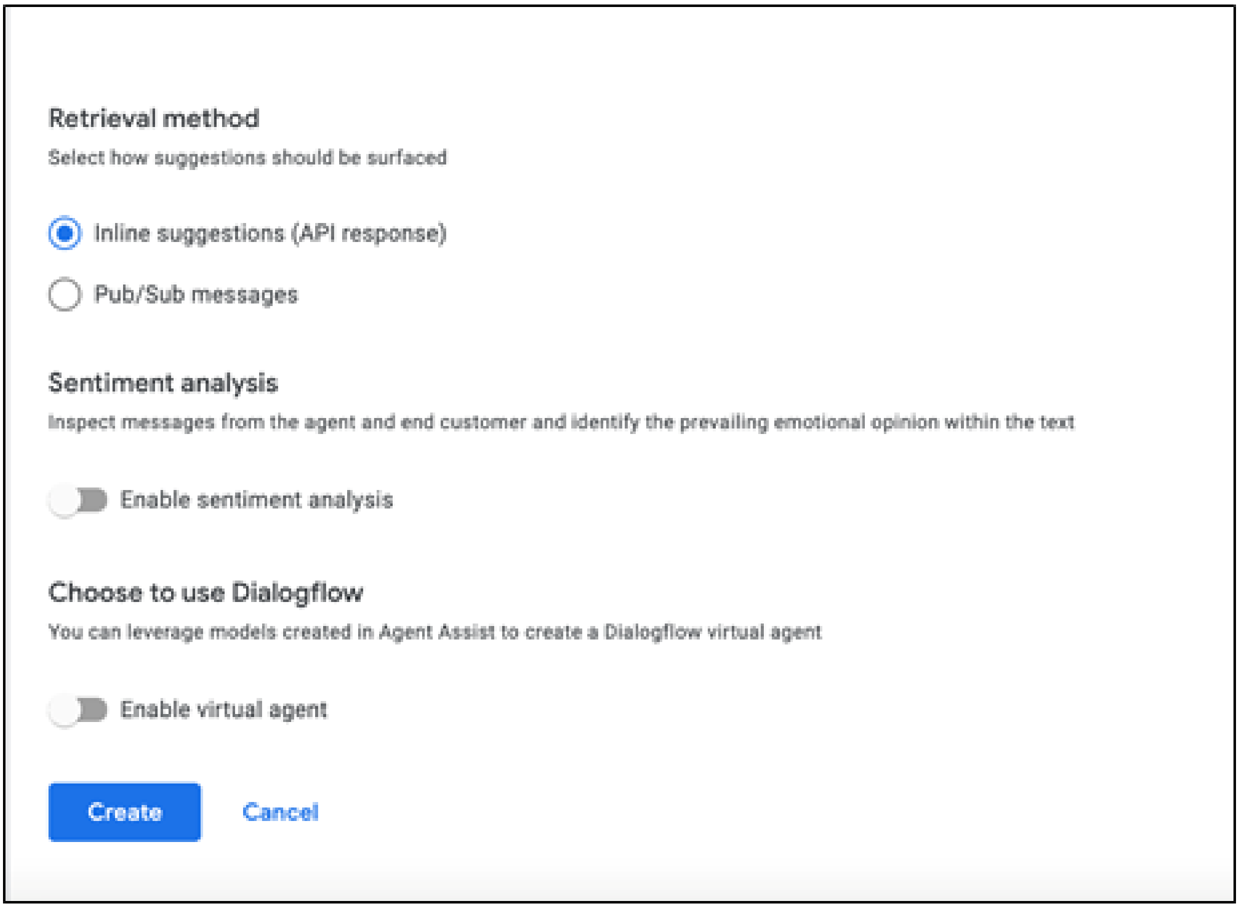
☐ Smart reply
Surface pre-written responses

☐ Articles
Surface articles contextual to the conversation

☐ FAQs
Auto-surface answers to customer questions

☐ Conversation summarization
Generate a summary of a conversation

- Retrieval method - Leave the default.



Retrieval method

Select how suggestions should be surfaced

● Inline suggestions (API response)

○ Pub/Sub messages

Sentiment analysis

Inspect messages from the agent and end customer and identify the prevailing emotional opinion within the text

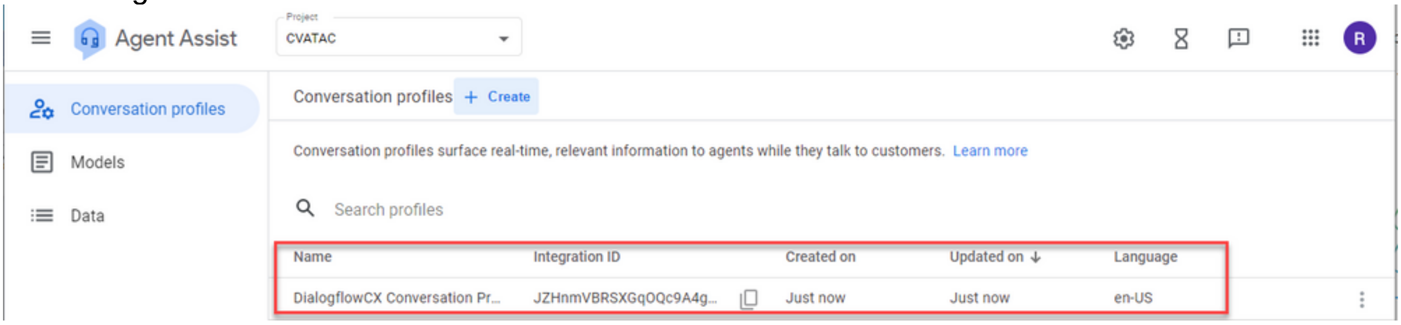
Enable sentiment analysis

Choose to use Dialogflow

You can leverage models created in Agent Assist to create a Dialogflow virtual agent

Enable virtual agent

- Now the conversation profile appears on Agent Assist URL.
- Copy the Integration ID. Click **Copy to Clipboard**. This is used later in the Control Hub configuration.

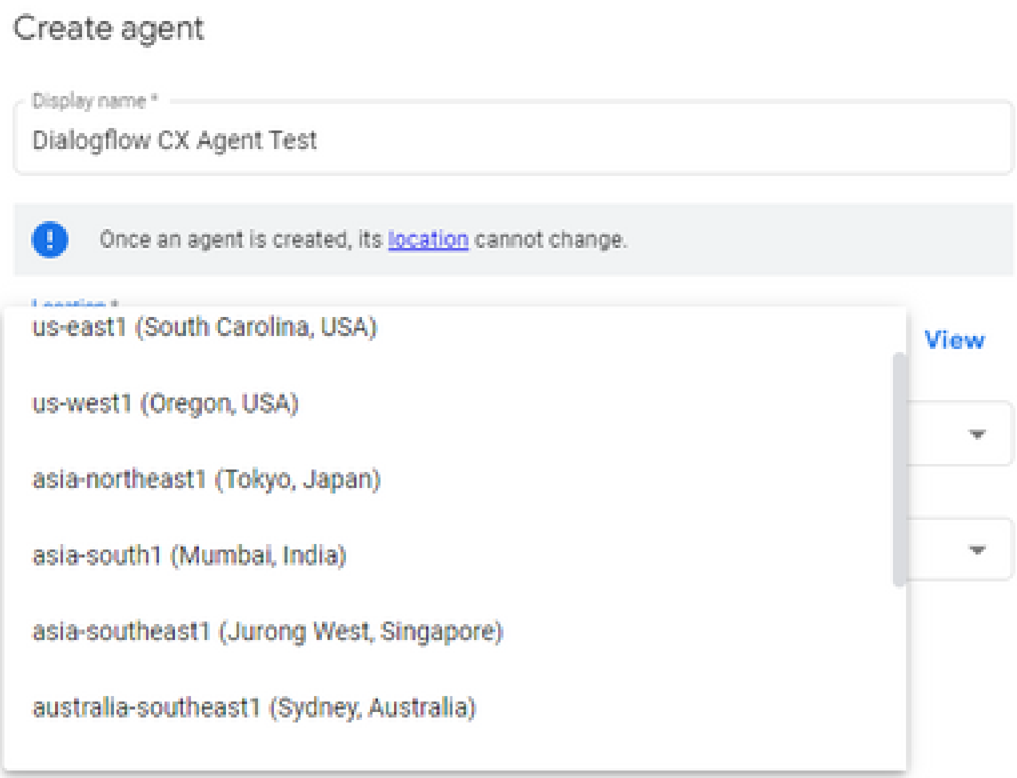


Conversation profiles

Conversation profiles surface real-time, relevant information to agents while they talk to customers. Learn more

Name	Integration ID	Created on	Updated on ↓	Language
DialogflowCX Conversation Pr...	JZHnmVBRSXGqOQc9A4g...	Just now	Just now	en-US

Location - Non US / Global



Create agent

Display name *

Dialogflow CX Agent Test

Once an agent is created, its location cannot change.

us-east1 (South Carolina, USA)

us-west1 (Oregon, USA)

asia-northeast1 (Tokyo, Japan)

asia-south1 (Mumbai, India)

asia-southeast1 (Jurong West, Singapore)

australia-southeast1 (Sydney, Australia)

Step 1. Get the agent ID:

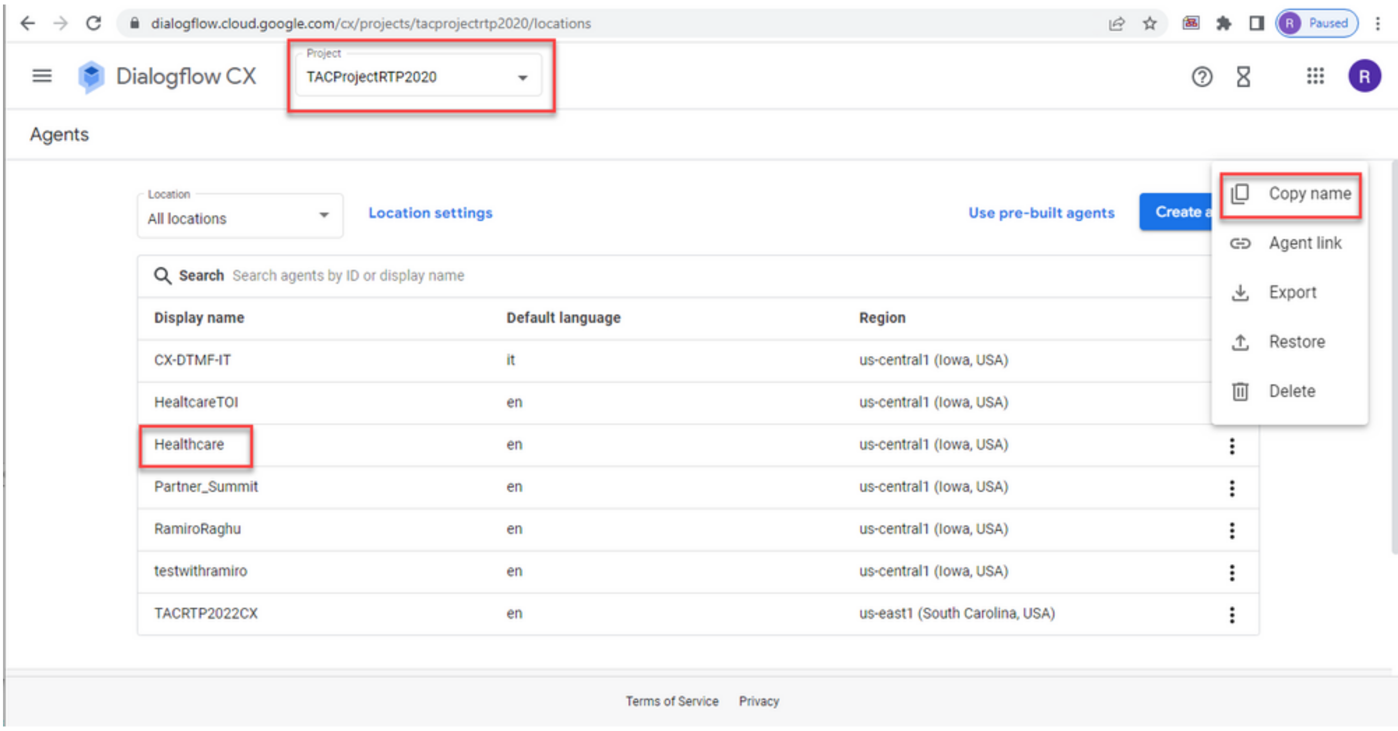
1. Open https://dialogflow.cloud.google.com/cx/projects.

2. Select the appropriate project. The list of configured agents is displayed.

3. Note the agent ID to be configured. If no new agents have been created, you can select a pre-configured agent.

For example: Healthcare Id:

projects/tacprojectrtp2020/locations/us-central1/agents/5cca975a-bbb3-40d0-aa2a-1bf453d9bf5c



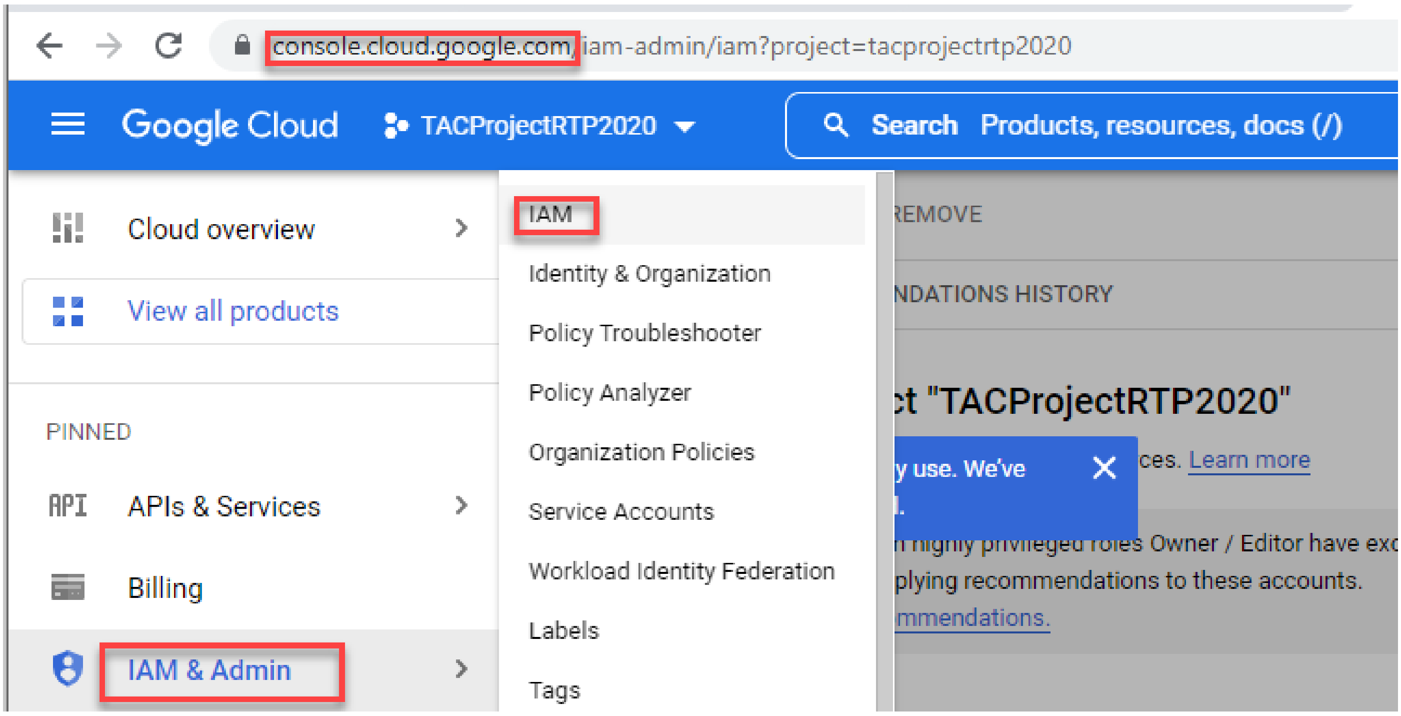
Display name	Default language	Region
CX-DTMF-IT	it	us-central1 (Iowa, USA)
HealtcareTOI	en	us-central1 (Iowa, USA)
Healthcare	en	us-central1 (Iowa, USA)
Partner_Summit	en	us-central1 (Iowa, USA)
RamiroRaghu	en	us-central1 (Iowa, USA)
testwithramiro	en	us-central1 (Iowa, USA)
TACRTP2022CX	en	us-east1 (South Carolina, USA)

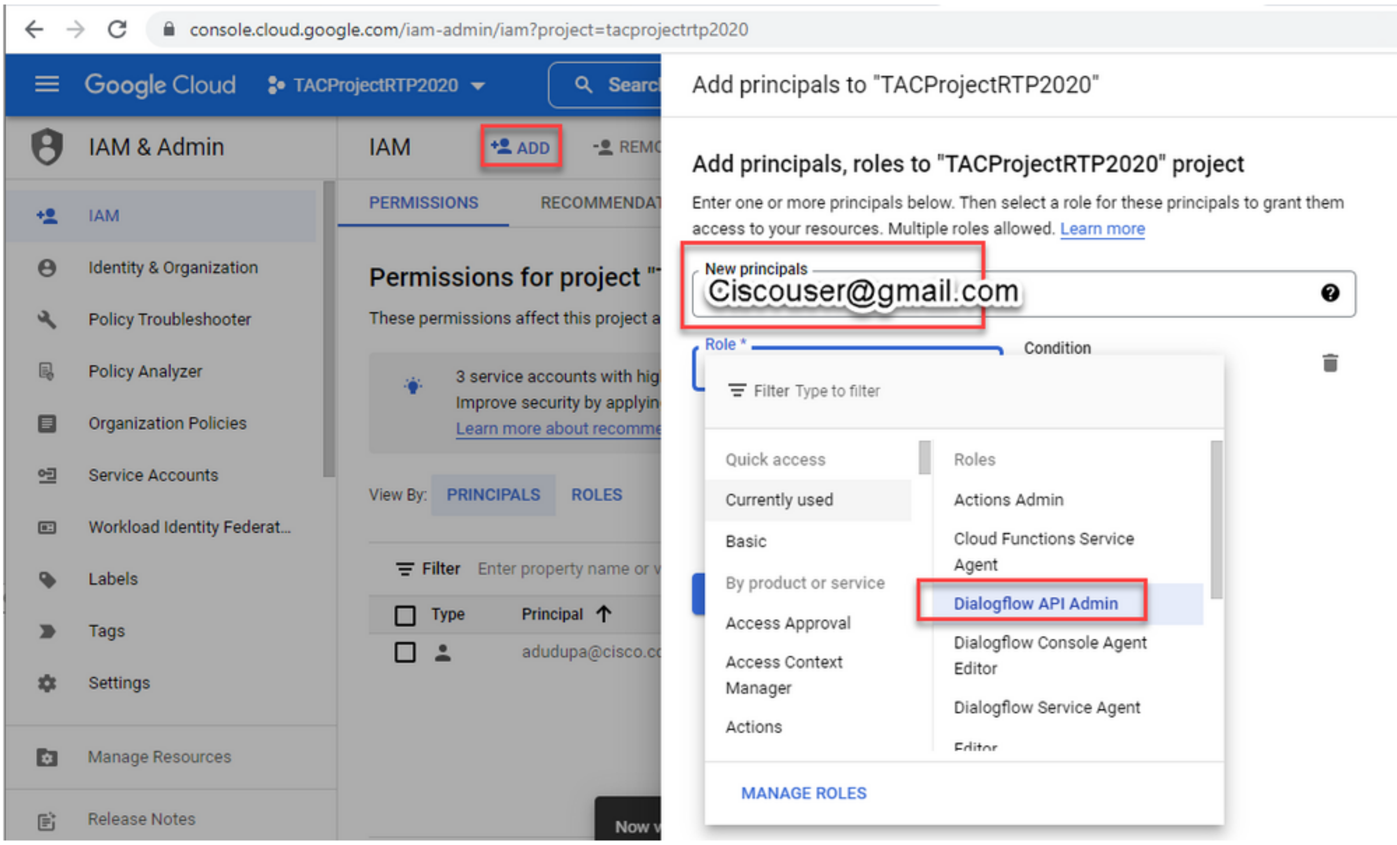
Step 2. Navigate to Google Console and in the Google Project, create an IAM user and add these roles:

- Dialogflow API admin

- Service Account Token Creator

- Service Account user





Add principals to "TACProjectRTP2020"

Add principals, roles to "TACProjectRTP2020" project

Enter one or more principals below. Then select a role for these principals to grant them access to your resources. Multiple roles allowed. Learn more

New principals: Ciscouser@gmail.com

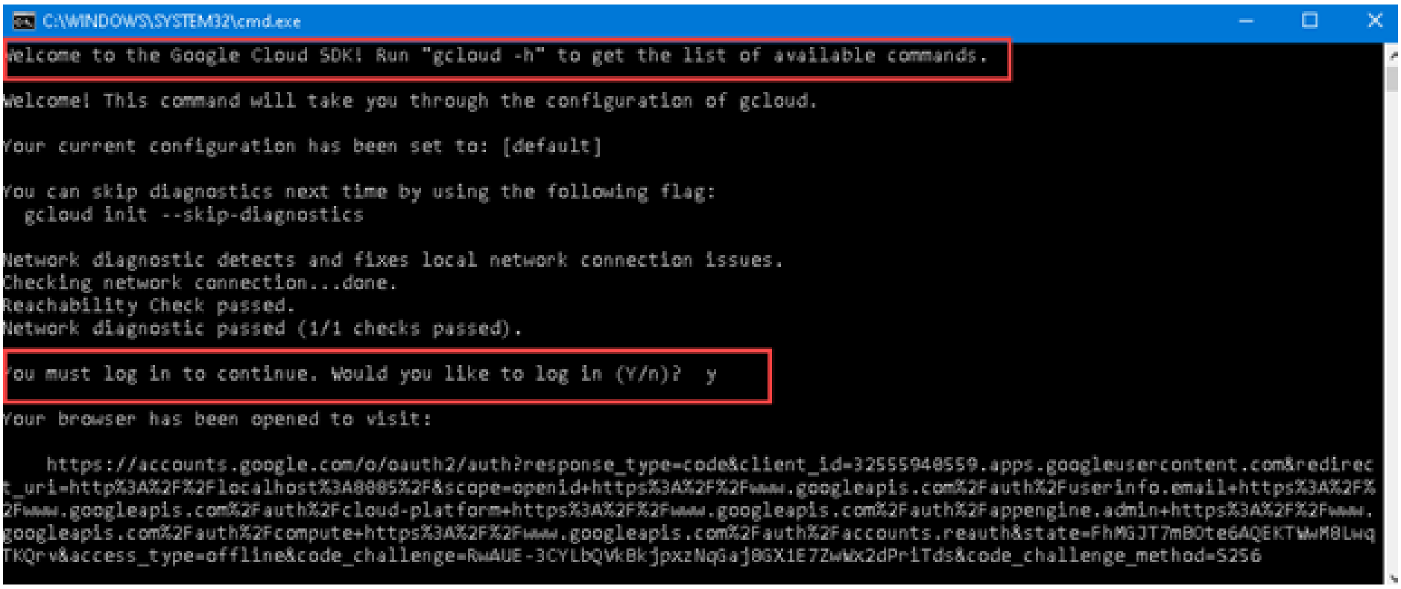
Role *: Dialogflow API Admin

Permissions for project "

These permissions affect this project a

3 service accounts with hig
Improve security by applyin
Learn more about recomme

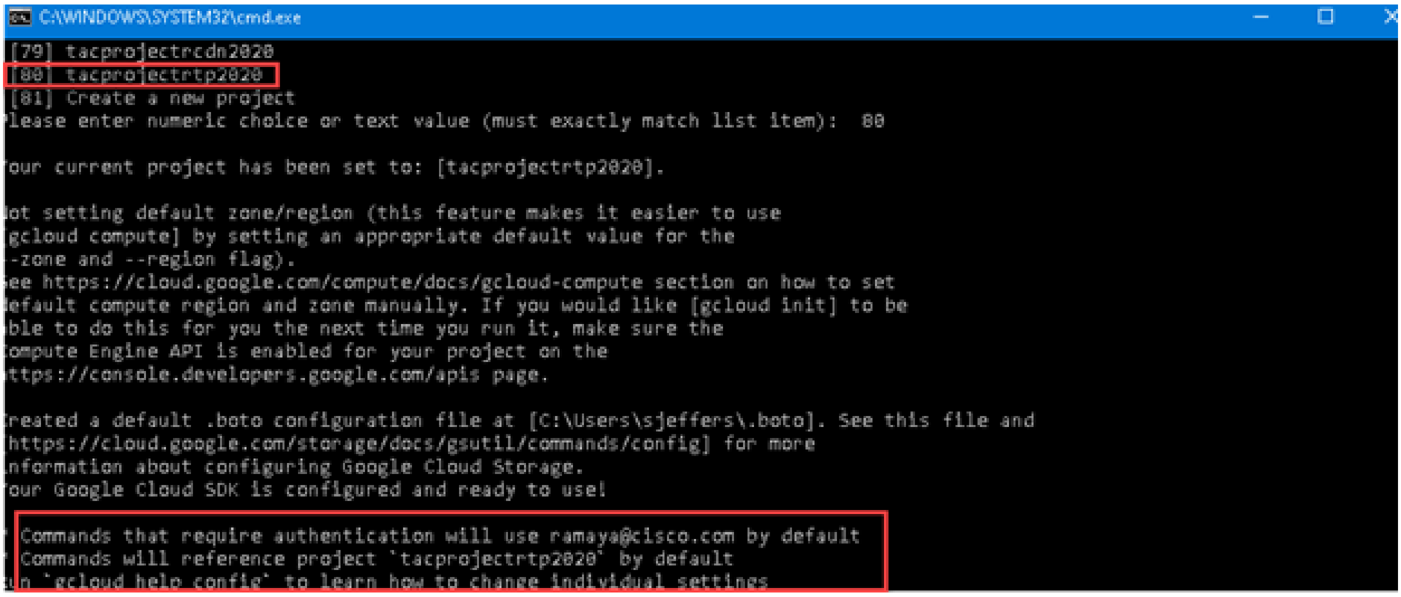
Step 3. Install and configure Google SDK on your system (This can be installed in any server that has access to Google Console). For more information, see Google SDK Quickstart.



C:\WINDOWS\SYSTEM32\cmd.exe

```
Welcome to the Google Cloud SDK! Run "gcloud -h" to get the list of available commands.

Welcome! This command will take you through the configuration of gcloud.

Your current configuration has been set to: [default]

You can skip diagnostics next time by using the following flag:
  gcloud init --skip-diagnostics

Network diagnostic detects and fixes local network connection issues.
Checking network connection...done.
Reachability Check passed.
Network diagnostic passed (1/1 checks passed).

You must log in to continue. Would you like to log in (Y/n)?  y

Your browser has been opened to visit:

    https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555940559.apps.googleusercontent.com&redirec
t_uri=http%3A%2F%2Flocalhost%3A8085%2F&scope=openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email+https%3A%2F%
2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.
googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=FhMGJT7mBOte6AQEKTWwM8Lwq
TKQrv&access_type=offline&code_challenge=RwAUE-3CYLbQVkBkjpxzNqGaj8GX1E7ZwWx2dPriTds&code_challenge_method=S256
```

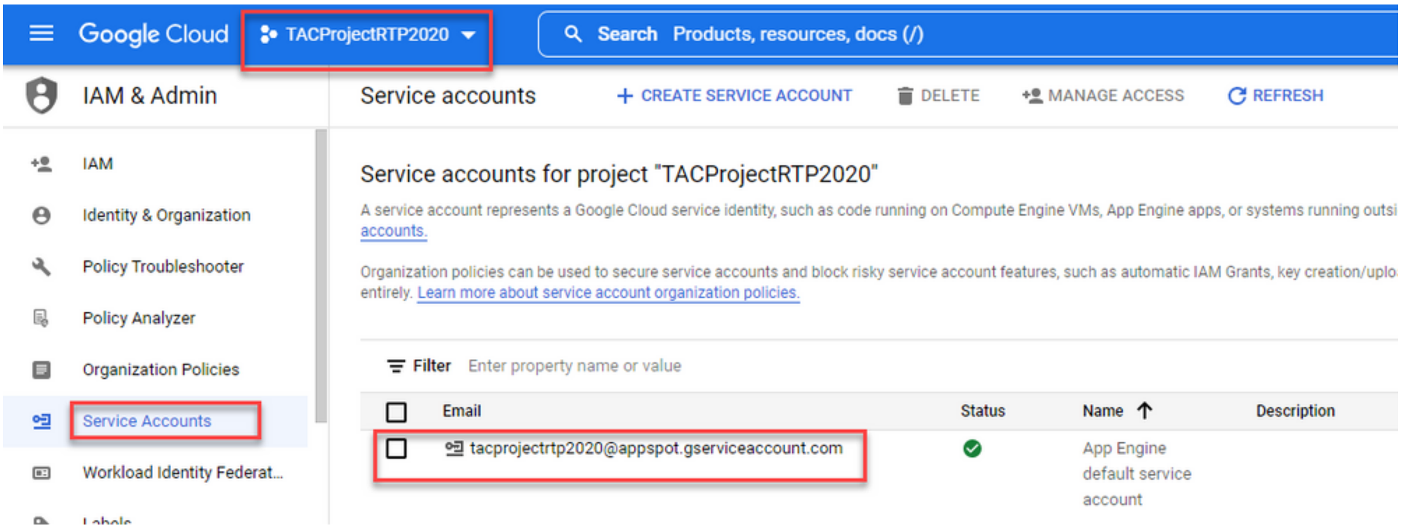
Log in with the previous created user credentials and confirm the project.



```
[79] tacprojectrcdn2020
[80] tacprojectrtp2020
[81] Create a new project
lease enter numeric choice or text value (must exactly match list item):  80

our current project has been set to: [tacprojectrtp2020].

ot setting default zone/region (this feature makes it easier to use
gcloud compute] by setting an appropriate default value for the
-zone and --region flag).
ee https://cloud.google.com/compute/docs/gcloud-compute section on how to set
efault compute region and zone manually. If you would like [gcloud init] to be
ble to do this for you the next time you run it, make sure the
ompute Engine API is enabled for your project on the
ttps://console.developers.google.com/apis page.

reated a default .boto configuration file at [C:\Users\sjeffers\.boto]. See this file and
https://cloud.google.com/storage/docs/gsutil/commands/config] for more
nformation about configuring Google Cloud Storage.
our Google Cloud SDK is configured and ready to use!

* Commands that require authentication will use ramaya@cisco.com by default
* Commands will reference project `tacprojectrtp2020` by default
un `gcloud help config` to learn how to change individual settings
```

Step 4. Run the command: gcloud auth print-access-token --impersonate-service-account=Service Account ID

Note: Use the service account that was used to create the project



Service accounts for project "TACProjectRTP2020"

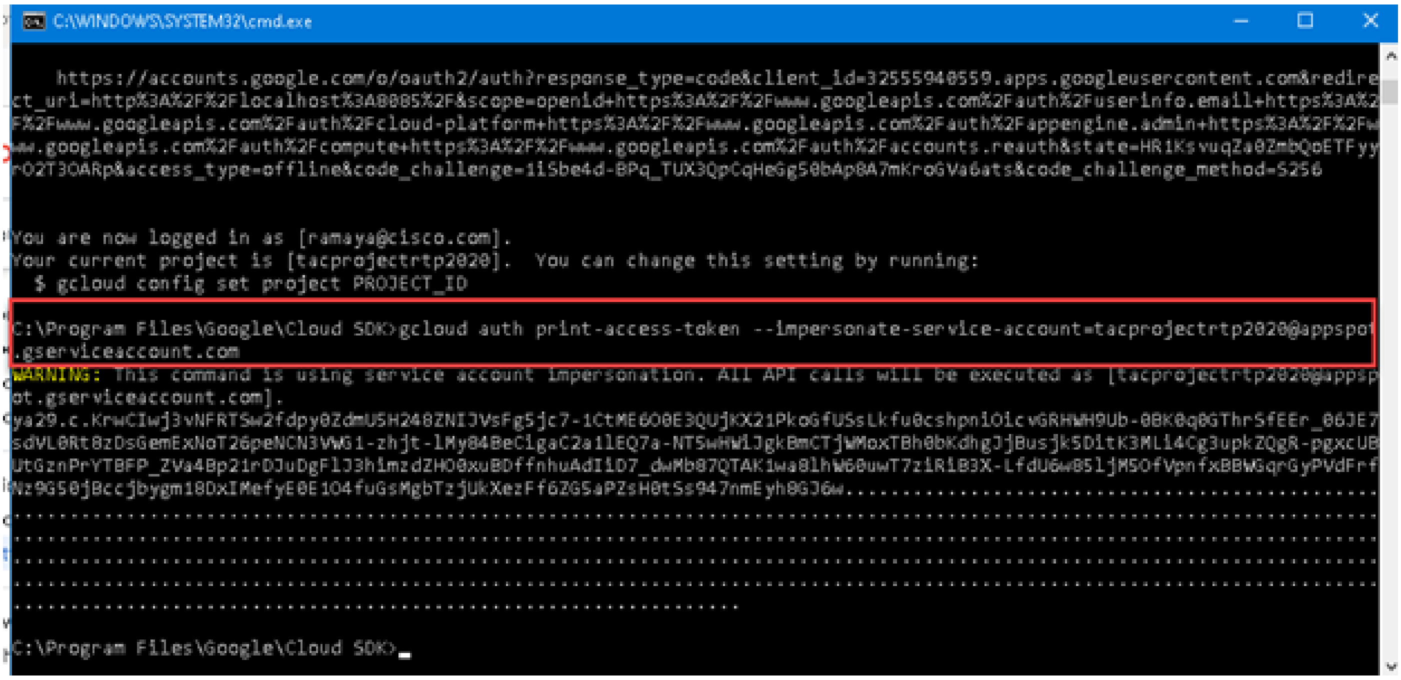
A service account represents a Google Cloud service identity, such as code running on Compute Engine VMs, App Engine apps, or systems running outsi accounts.

Organization policies can be used to secure service accounts and block risky service account features, such as automatic IAM Grants, key creation/uplo entirely. Learn more about service account organization policies.

□	Email	Status	Name ↑	Description
□	tacprojectrtp2020@appspot.gserviceaccount.com	✓	App Engine default service account	

For example:

gcloud auth print-access-token --impersonate-service-account=tacprojectrtp2020@appspot.gserviceaccount.com



```
    https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555940559.apps.googleusercontent.com&redire
ct_uri=http%3A%2F%2Flocalhost%3A8085%2F&scope=openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email+https%3A%2
F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fw
ww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=HR1KsvuqZa0ZmbQoETFyy
rO2T3OARp&access_type=offline&code_challenge=1iSbe4d-BPq_TUX3QpCqHeGg50bAp8A7mKroGVa6ats&code_challenge_method=S256


You are now logged in as [ramaya@cisco.com].
Your current project is [tacprojectrtp2020].  You can change this setting by running:
  $ gcloud config set project PROJECT_ID

C:\Program Files\Google\Cloud SDK>gcloud auth print-access-token --impersonate-service-account=tacprojectrtp2020@appspot
.gserviceaccount.com
WARNING: This command is using service account impersonation. All API calls will be executed as [tacprojectrtp2020@appsp
ot.gserviceaccount.com].
ya29.c.KrwCIwj3vNFRTSw2fdpy0ZdmU5H248ZNIJVsFg5jc7-1CtME6O0E3QUjKX21PkoGfUSsLkfu0cshpniOicvGRHWH9Ub-0BK0q0GThrSfEEr_06JE7
sdVL0Rt8zDsGemExNoT26peNCN3VWG1-zhjt-lMy84BeC1gaC2a1lEQ7a-NTSwHW1JgkBmCTjWMoxTBh0bKdhgJjBusjk5DitK3MLi4Cg3upkZQgR-pgxcUB
UtGznPrYTBFP_ZVa4Bp2irDJuDgFlJ3himzdZHO0xuBDffnhuAdIiD7_dwMb07QTAK1wa0lhW60uwT7ziRiB3X-LfdU6w05ljM5OfVpnfxBBWGqrGyPVdFrf
Nz9G50jBccjbygm18DxIMefyE0E1O4fuGsMgbTzjUkXezFf6ZG5aPZsH0tSs947nmEyh0GJ6w...............................................
........................................................................................................................
........................................................................................................................
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................................................................

C:\Program Files\Google\Cloud SDK>_
```

For more information, see Impersonate Service Accounts

Step 5. Copy the token generated, so you can use it in a later step.

Step 6. Open the Postman tool.

Step 7. Add headers

Content-type Application/Jason

Authorization: Bearer{space}{ And add the token generated with the previous Google command}.

Step 8. Add the method and the URL. Replaced the region and the project id in the URL:

Method: POST

URL: https://<regionId>-dialogflow.googleapis.com/v2beta1/projects/<projectId>/locations/<regionID>/conversationProfiles

For example: https://us-central1-dialogflow.googleapis.com/v2beta1/projects/tacprojectrtp2020/locations/us-central1/conversationProfiles

Step 9. Add the body and click send.

name and displayname: This is any name you want to give to the profile.

agent: is the agent id of you Dialogflow CX agent.

{

"name": "TACCXTest",

"automatedAgentConfig": {

"agent": "projects/tacprojectrtp2020/locations/us-central1/agents/5cca975a-bbb3-40d0-aa2a-1bf453d9bf5c"

},

"displayName": "TACCXTest",

"humanAgentAssistantConfig": {

"messageAnalysisConfig": {

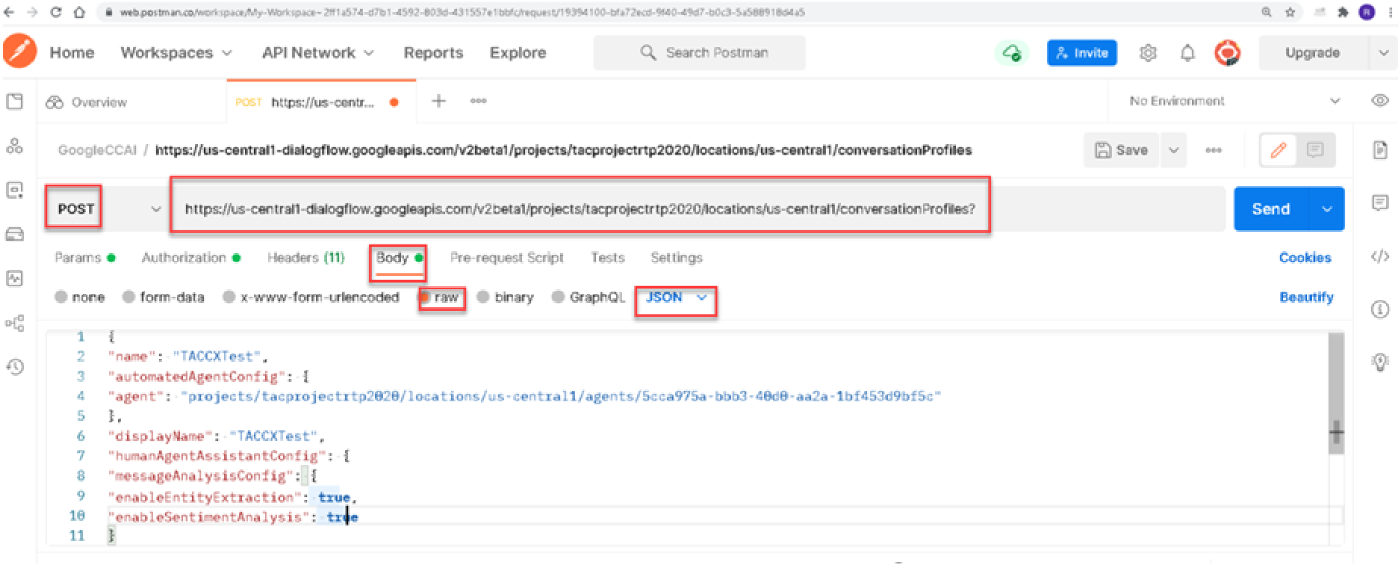
"enableEntityExtraction": true,

"enableSentimentAnalysis": true

}

}

}



GoogleCCAI / https://us-central1-dialogflow.googleapis.com/v2beta1/projects/tacprojectrtp2020/locations/us-central1/conversationProfiles

POST https://us-central1-dialogflow.googleapis.com/v2beta1/projects/tacprojectrtp2020/locations/us-central1/conversationProfiles?

○ none ○ form-data ○ x-www-form-urlencoded ● raw ○ binary ○ GraphQL JSON

```
{
"name": "TACCXTest",
"automatedAgentConfig": {
"agent": "projects/tacprojectrtp2020/locations/us-central1/agents/5cca975a-bbb3-40d0-aa2a-1bf453d9bf5c"
},
"displayName": "TACCXTest",
"humanAgentAssistantConfig": {
"messageAnalysisConfig": {
"enableEntityExtraction": true,
"enableSentimentAnalysis": true
}
```

Here is the response:

{

"name": "projects/tacprojectrtp2020/locations/us-central1/conversationProfiles/dCv4lC1uQlO36mwSUa3cjg",

"displayName": "TACCXTest",

"automatedAgentConfig": {

"agent": "projects/tacprojectrtp2020/locations/us-central1/agents/5cca975a-bbb3-40d0-aa2a-1bf453d9bf5c/environments/draft"

},

```
  "humanAgentAssistantConfig": {
    "notificationConfig": {},
    "messageAnalysisConfig": {
      "enableEntityExtraction": true,
      "enableSentimentAnalysis": true
    }
  },
  "languageCode": "en-US"
}
```

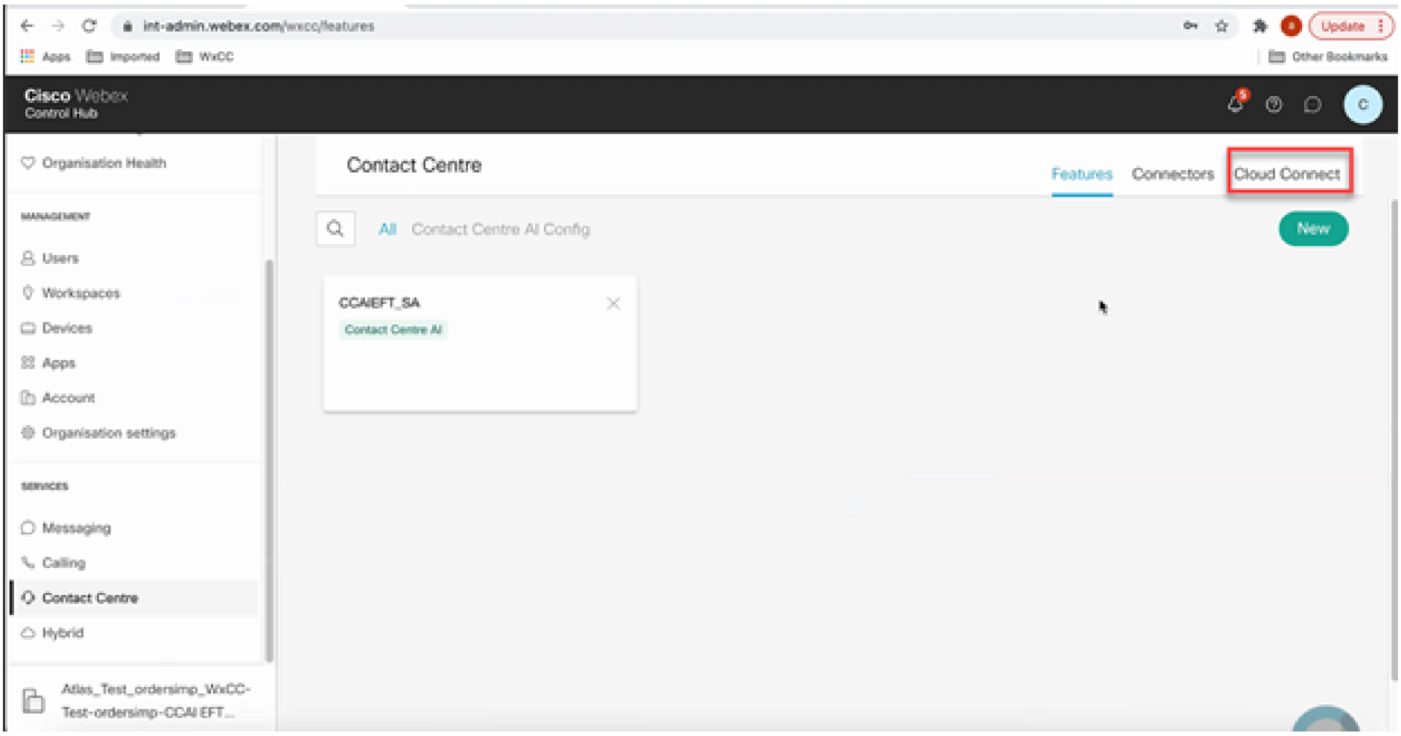
This is the conversation profile: **projects/tacprojectrtp2020/locations/us-central1/conversationProfiles/dCv4lC1uQlO36mwSUa3cjg**

Webex Control Hub Configuration

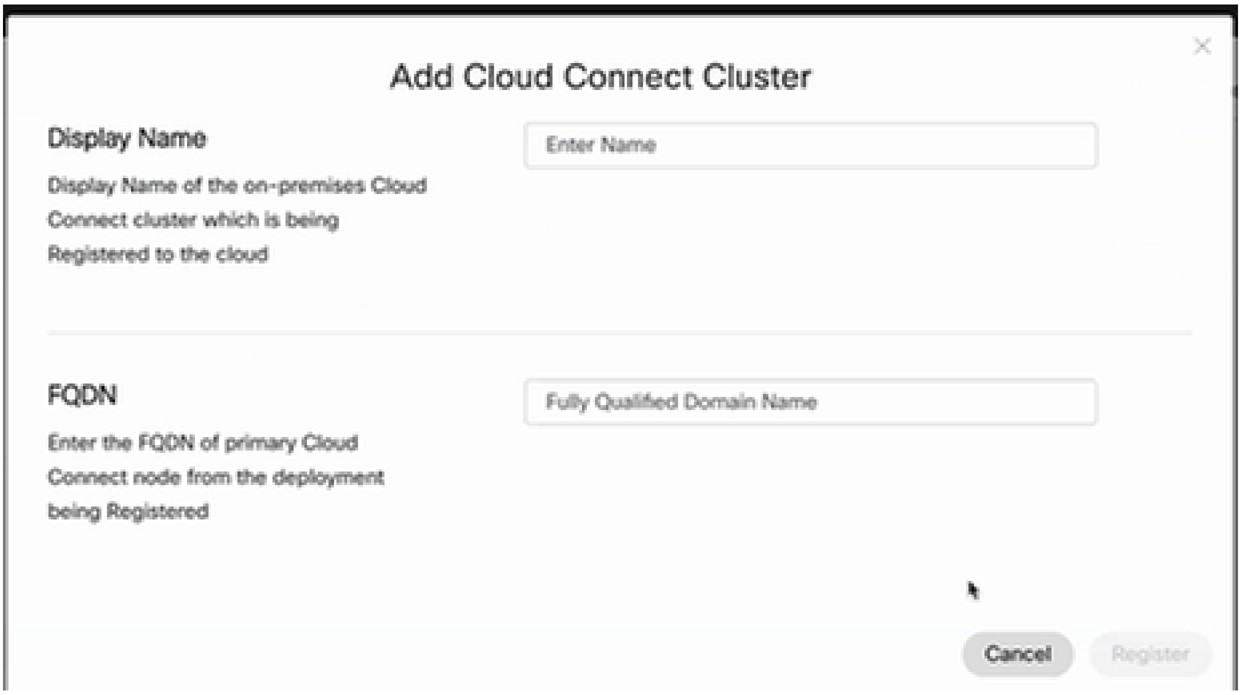
Create a CCAI configuration in Cisco Webex Control Hub at Control Hub . A CCAI configuration leverages CCAI Connectors to invoke the CCAI services. For details, visit the *Configure Contact Center AI* article at Webex Help Center

Step 1. Ensure that the Cloud Connect publisher and subscriber are installed. For more information, visit the *Install Cloud Connect* section in *Cisco Unified Contact Center Enterprise Installation and Upgrade Guide*.

Step 2. Log in to Webex Control Hub. Navigate to Contact Center and click **Cloud Connect**.



Step 3. On Cloud Connect window enter the name and the Fully Qualified Domain Name (FQDN) of Primary Cloud connect.



Add Cloud Connect Cluster

Display Name

Display Name of the on-premises Cloud Connect cluster which is being Registered to the cloud

Enter Name

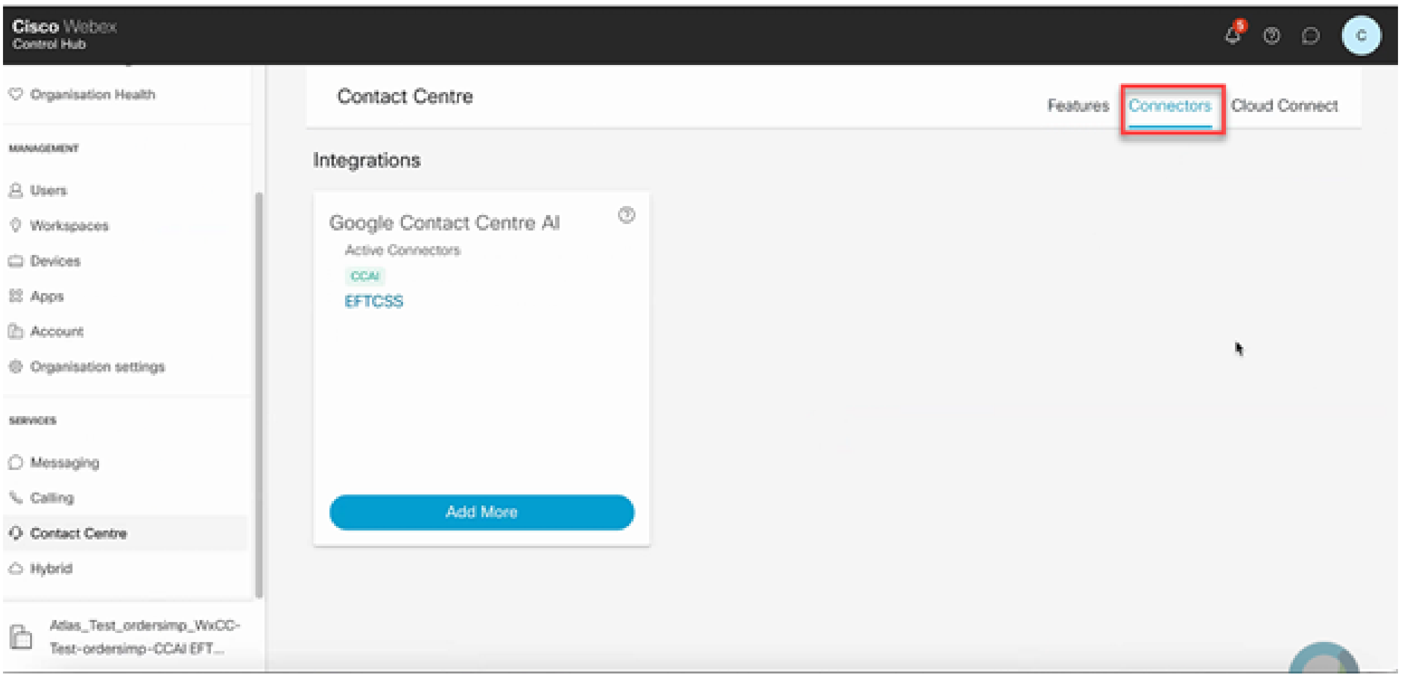
FQDN

Enter the FQDN of primary Cloud Connect node from the deployment being Registered

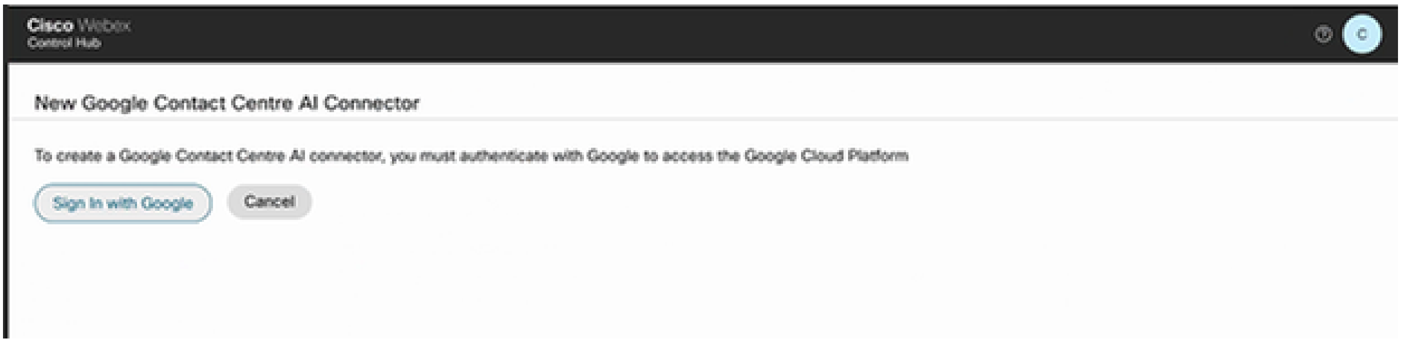
Fully Qualified Domain Name

Step 4. On Cloud Connect window enter the name and the FQDN of Primary Cloud connect and click **Register**.

Step 5. Add a Connector. On the Contact Center window select the **Connectors** tab.

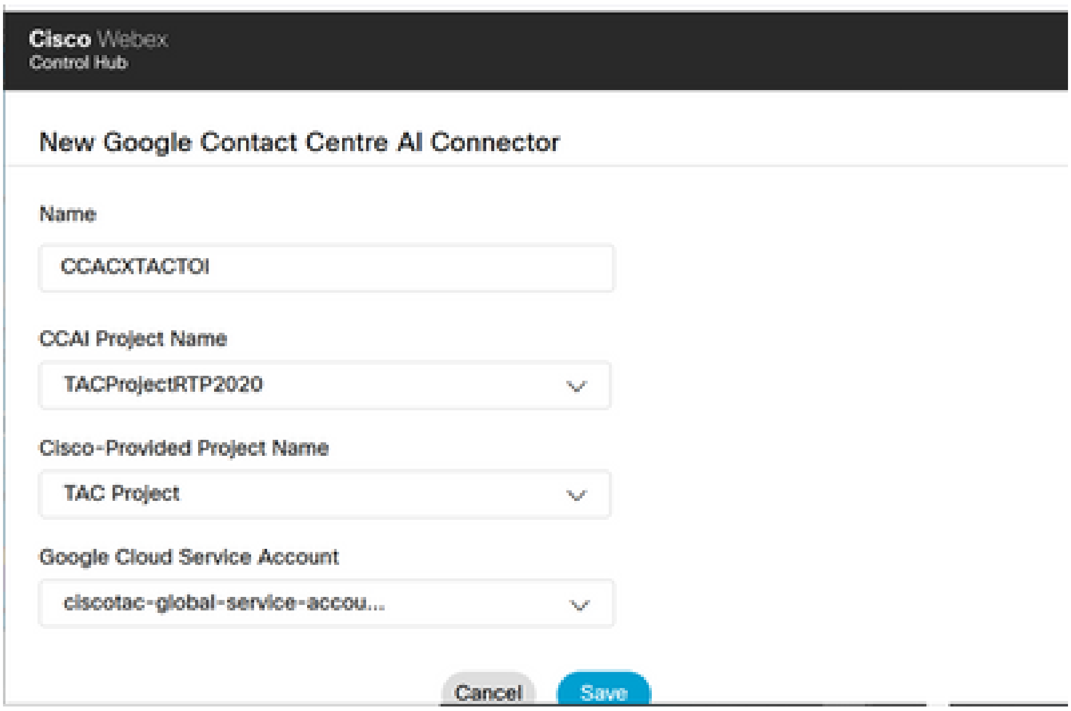


Step 6. If a connector is already added and you need to add one more, click **Add More**. Sign in with Google and provide the information requested.



New Google Contact Centre AI Connector

To create a Google Contact Centre AI connector, you must authenticate with Google to access the Google Cloud Platform



New Google Contact Centre AI Connector

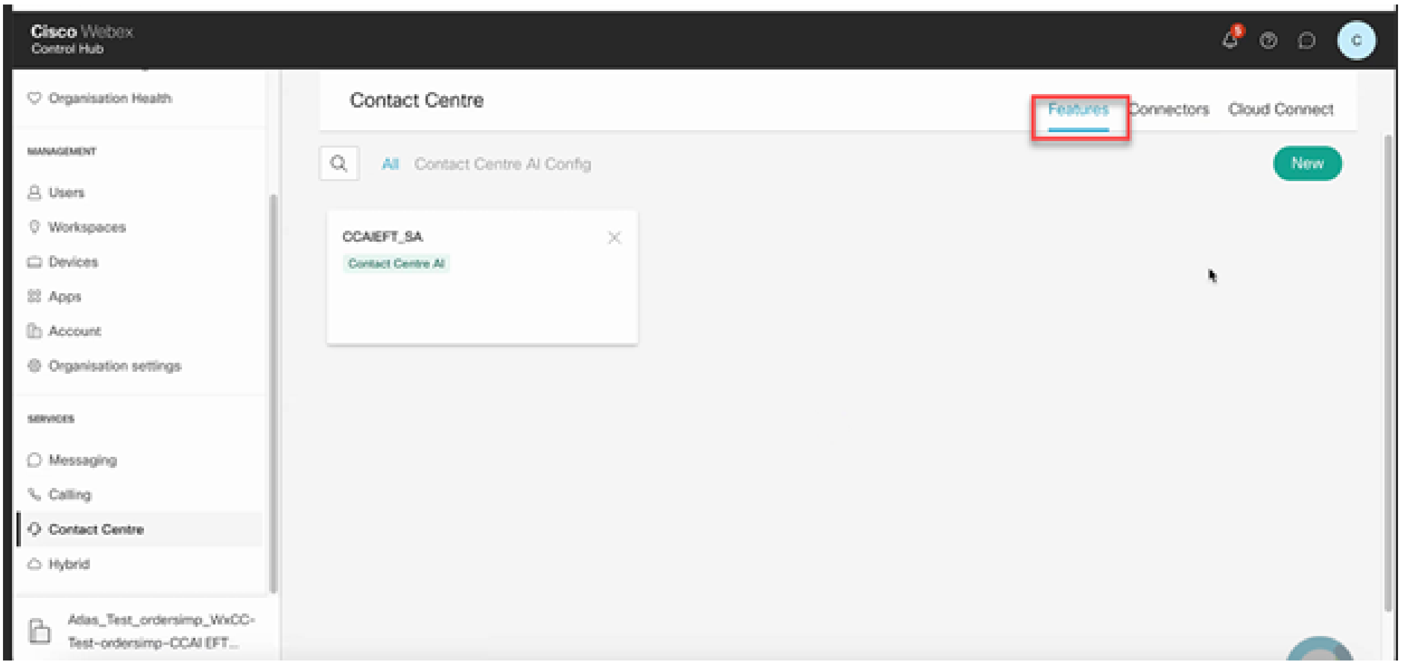
Name: CCACXTACTOI

CCAI Project Name: TACProjectRTP2020

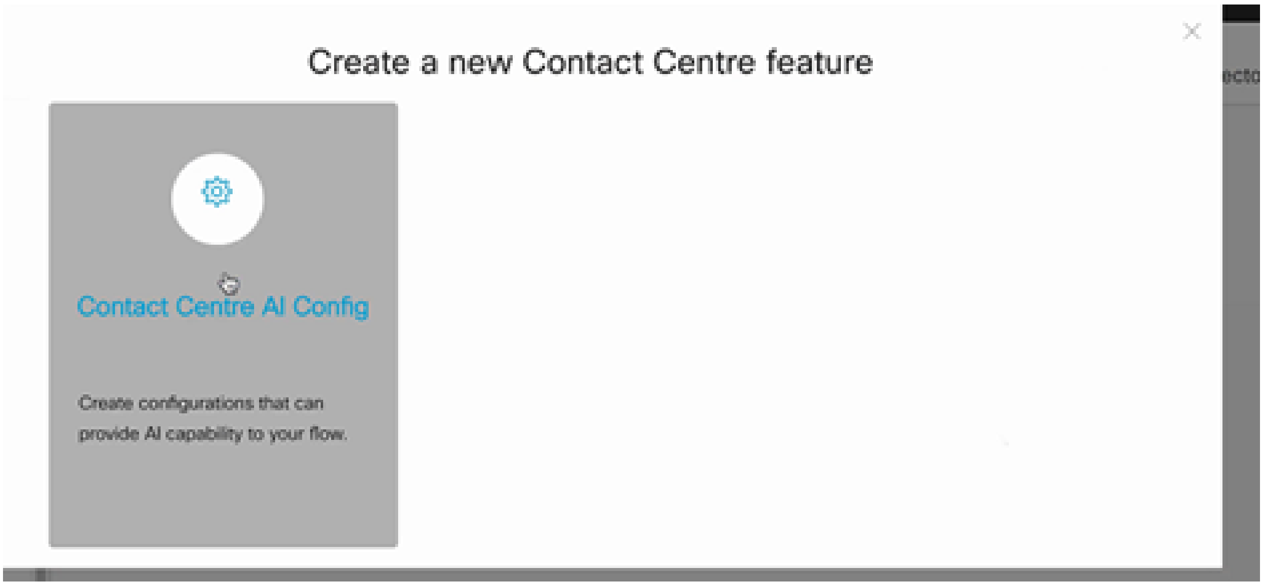
Cisco-Provided Project Name: TAC Project

Google Cloud Service Account: ciscotac-global-service-accou...

Step 7. Now add the features. On the **Contact Center** page, click **Features** and click **New**.



Step 8. You are now in the Create a New Contact Center Feature page. Click **Contact Center AI Config**.

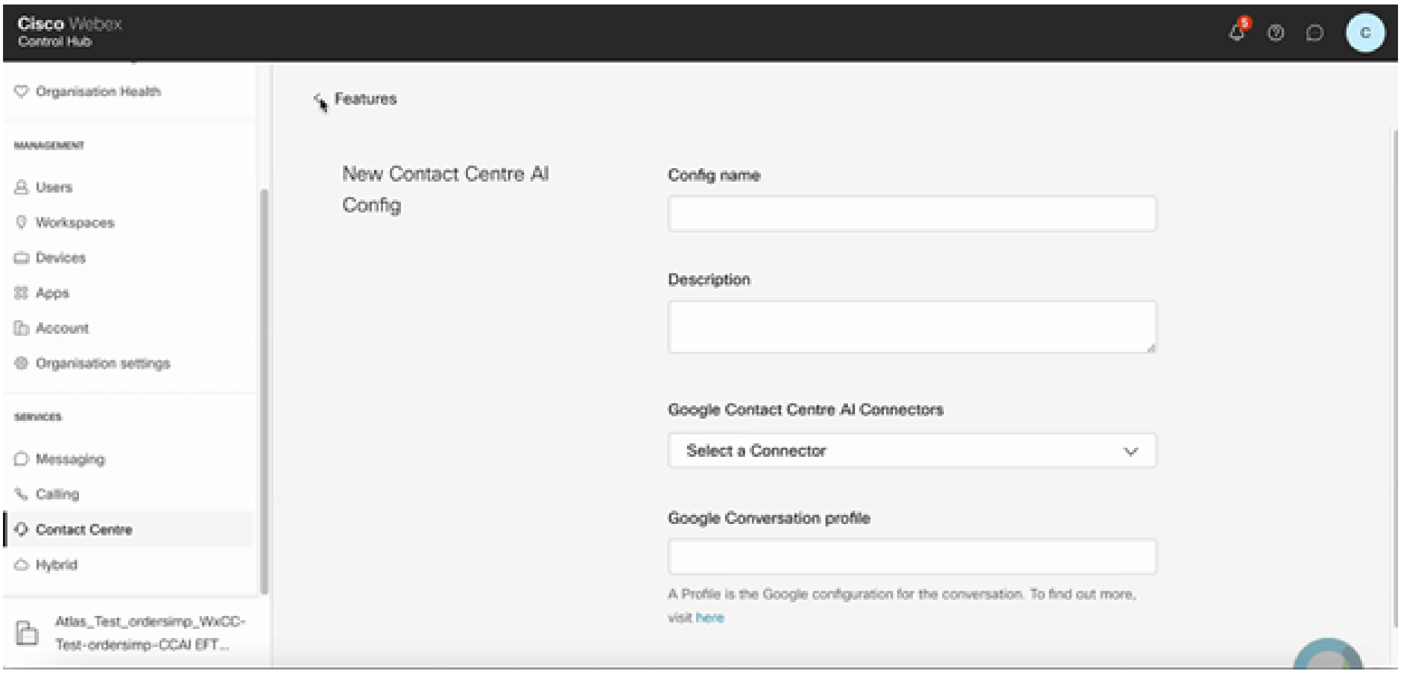


Create a new Contact Centre feature

Contact Centre AI Config

Create configurations that can provide AI capability to your flow.

Step 9. Provide the features information, select the connector already added and the Google Profile created.



New Contact Centre AI Config

Config name

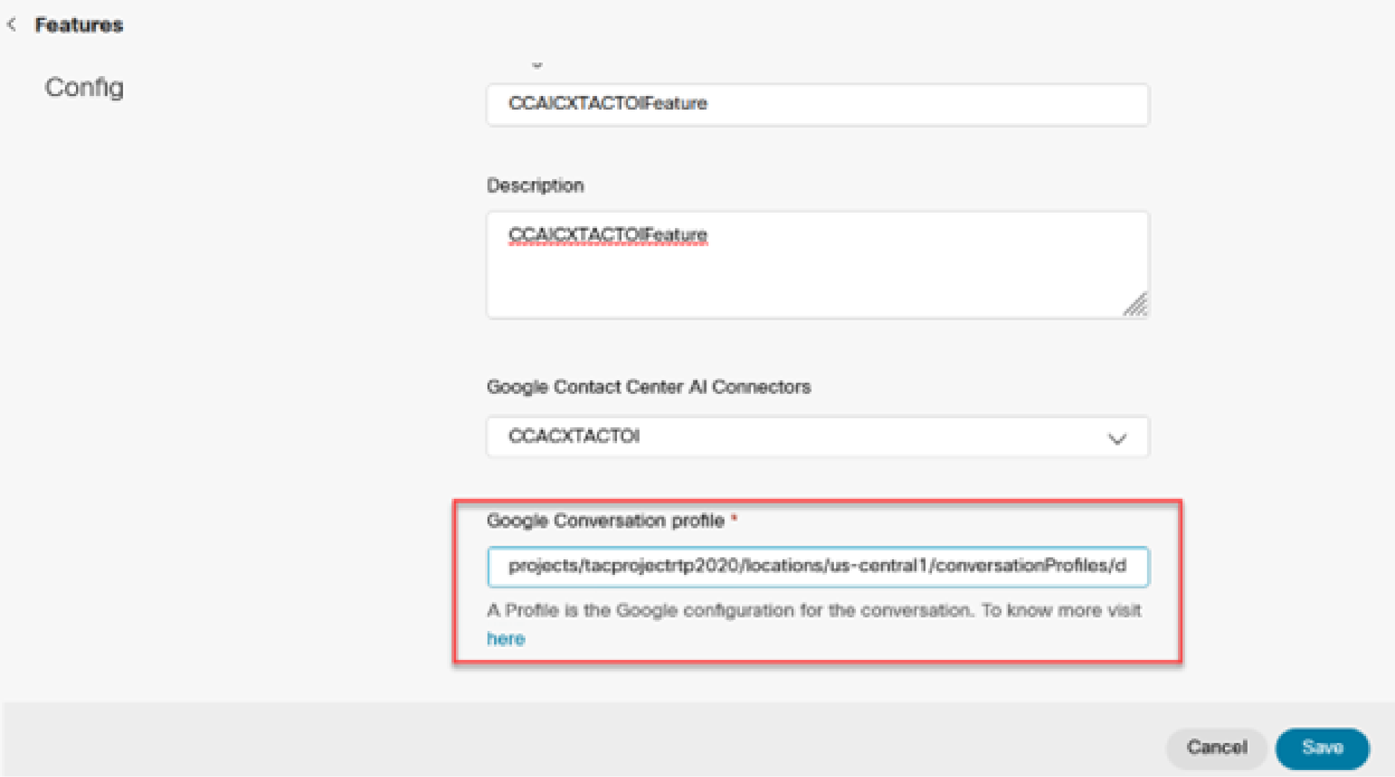
Description

Google Contact Centre AI Connectors

Select a Connector

Google Conversation profile

A Profile is the Google configuration for the conversation. To find out more, visit here



< Features

Config

CCAICXTACTOIFeature

Description

CCAICXTACTOIFeature

Google Contact Center AI Connectors

CCACXTACTOI

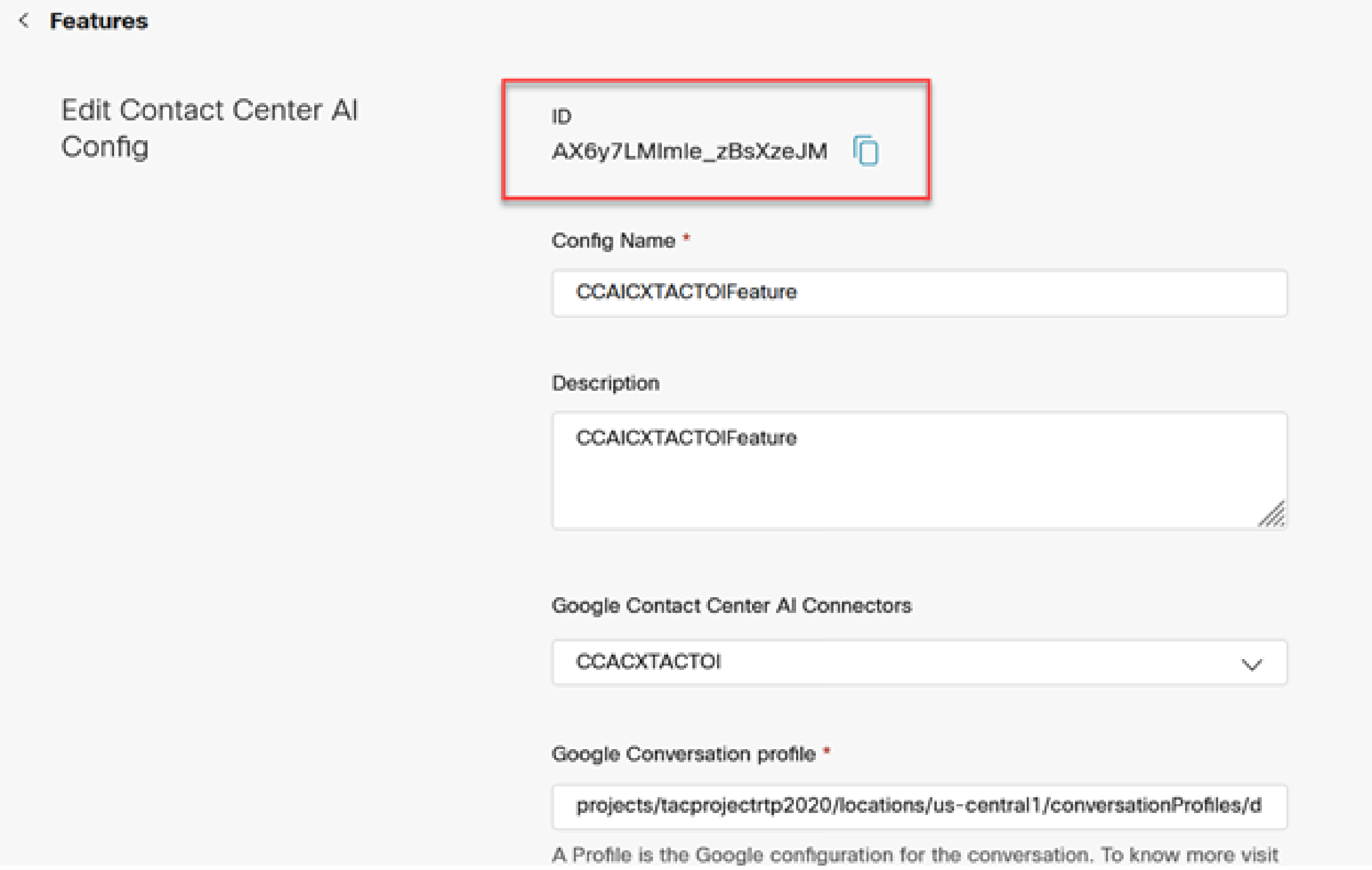
Google Conversation profile *

projects/tacprojectrtp2020/locations/us-central1/conversationProfiles/d

A Profile is the Google configuration for the conversation. To know more visit here

In this example, this is the Config id to be used in the call studio application, if this is not the default virtual agent:

AX6y7LMImle_zBsXzeJM



< Features

Edit Contact Center AI Config

ID

AX6y7LMImle_zBsXzeJM

Config Name *

CCAICXTACTOIFeature

Description

CCAICXTACTOIFeature

Google Contact Center AI Connectors

CCACXTACTOI

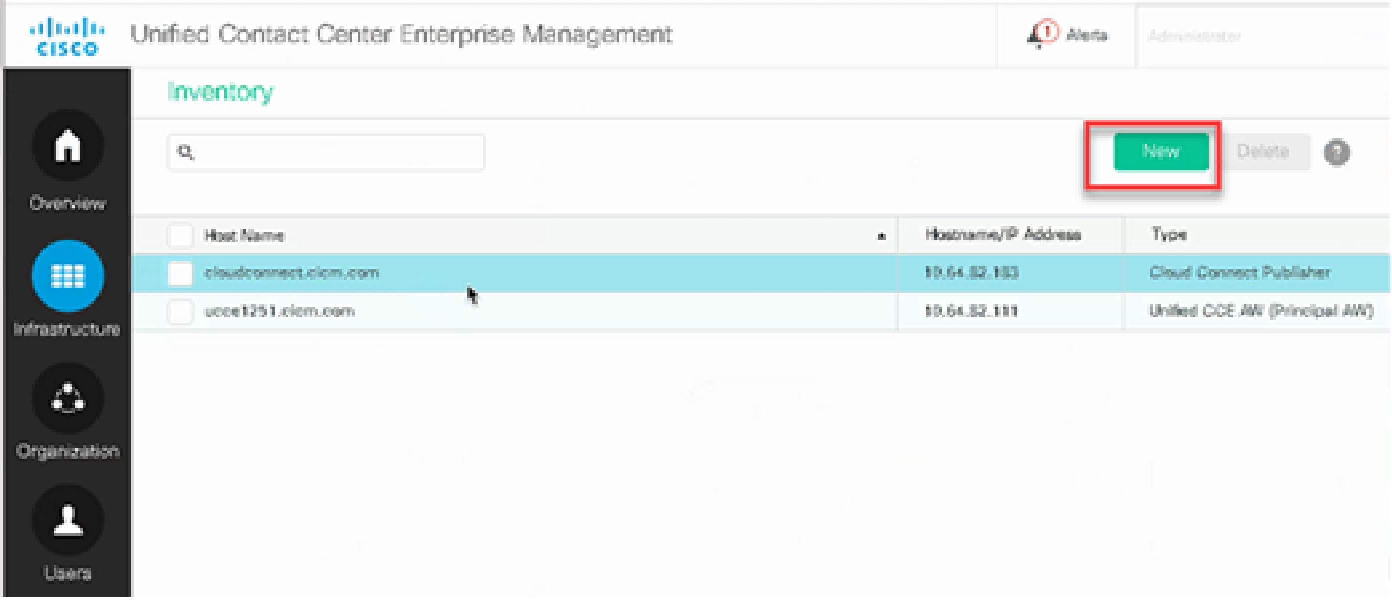
Google Conversation profile *

projects/tacprojectrtp2020/locations/us-central1/conversationProfiles/d

A Profile is the Google configuration for the conversation. To know more visit

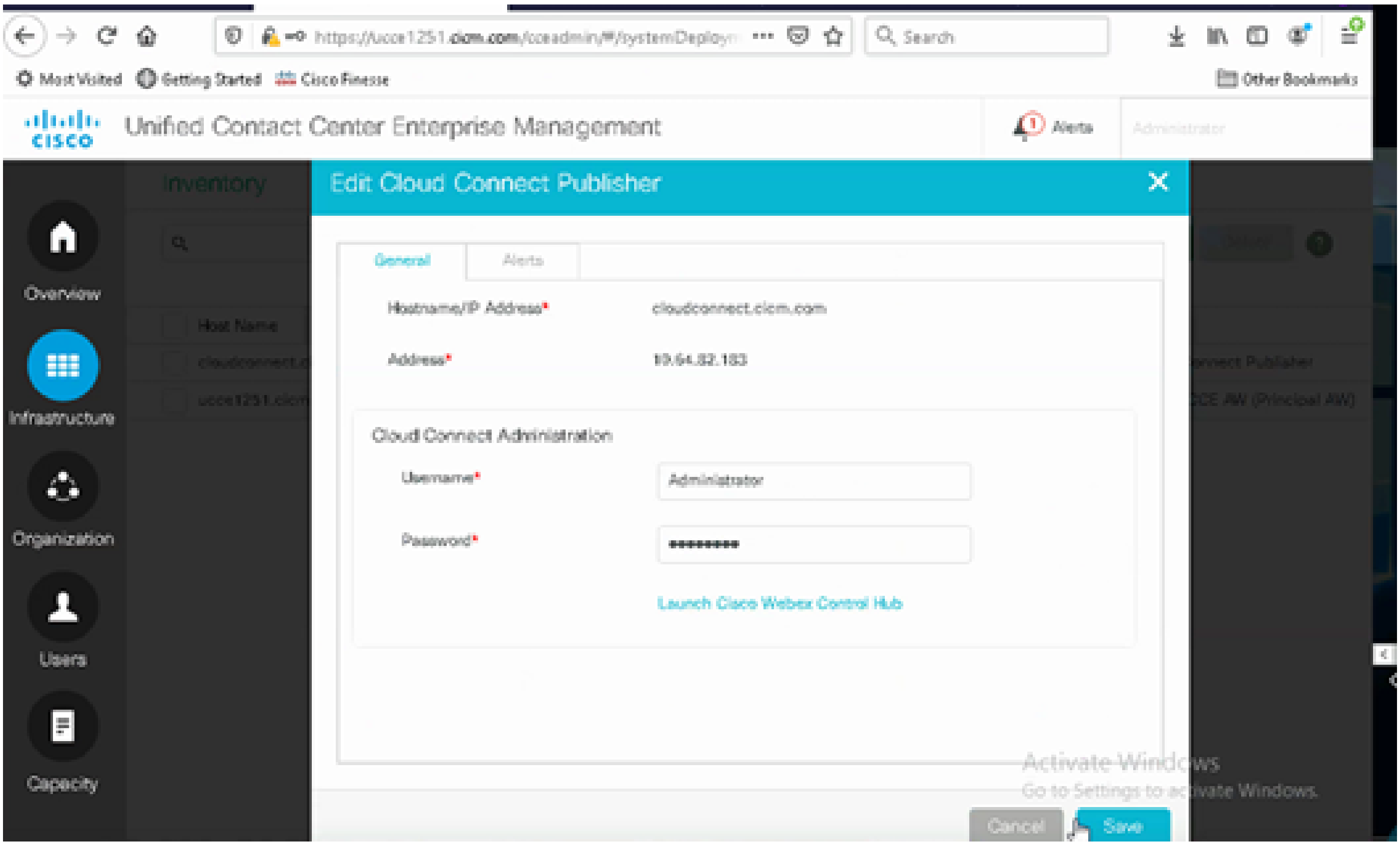
CCE Configuration

Step 1. On UCCE AW, open Cisco Web Administration tool and navigate to Inventory. Click **New**.



Host Name	Hostname/IP Address	Type
cloudconnect.clcm.com	10.64.82.183	Cloud Connect Publisher
ucce1251.clcm.com	10.64.82.111	Unified CCE AW (Principal AW)

Step 2. Add Cloud Connect and provide the FQDN and credentials.



Edit Cloud Connect Publisher

Hostname/IP Address* cloudconnect.clcm.com

Address* 10.64.82.183

Cloud Connect Administration

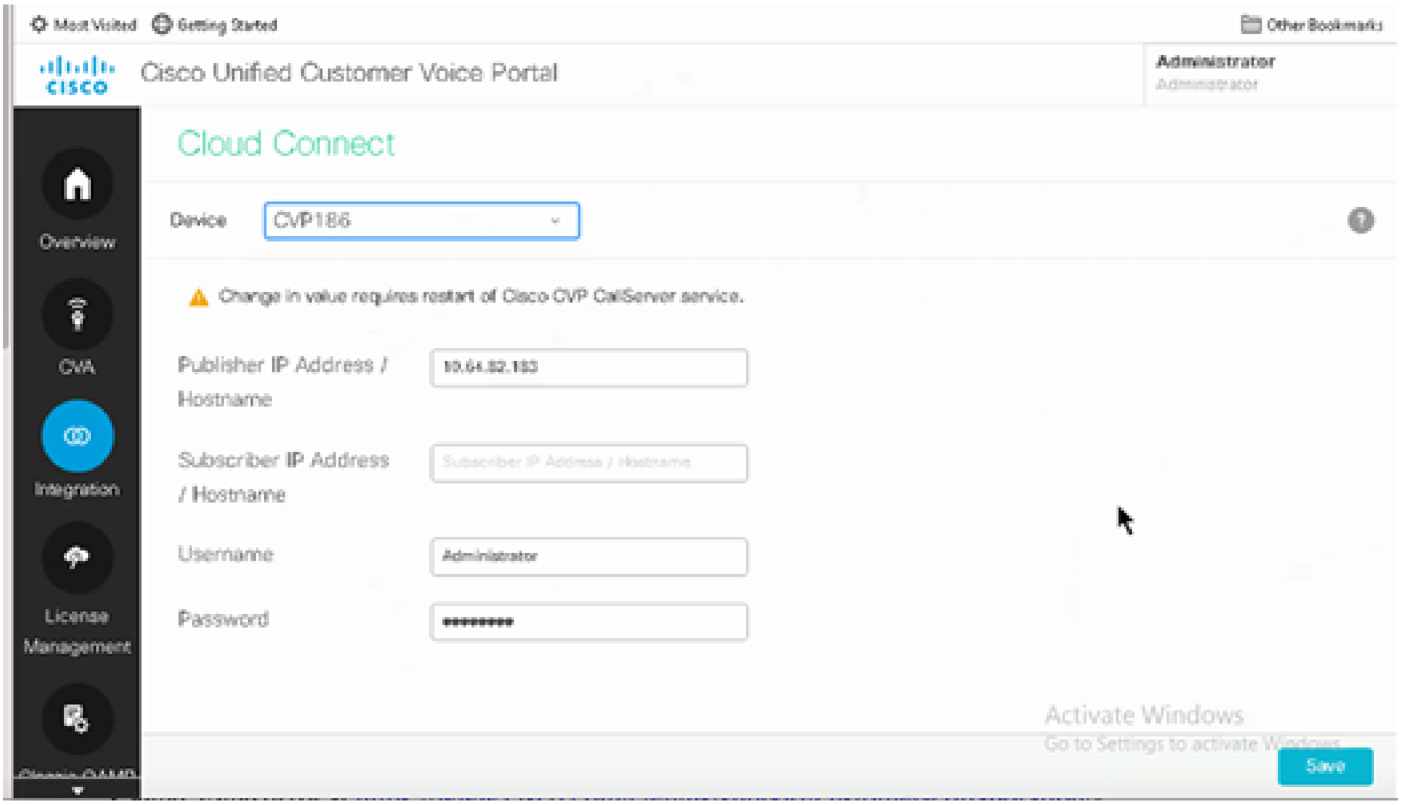
Username* Administrator

Password* ●●●●●●●●●

Launch Cisco Webex Control Hub

Note: Refer to these documents for Package CCE certificate exchange: Self-Signed Certificates in a PCCE Solutions and Manage PCCE Components Certificate for SPOG. For Unified CCE refer to Self-Signed Certificate Exchanged on UCCE.

Step 3. For UCCE configure Cloud Connect in the CVP Operations Console (OAMP). For details visit the section *Configure CVP Devices for Cloud Connect* in the *Administration Guide for Cisco Unified Customer Voice Portal*.



Cloud Connect

Device: CVP186

⚠ Change in value requires restart of Cisco CVP CallServer service.

Publisher IP Address / Hostname: 10.64.82.183

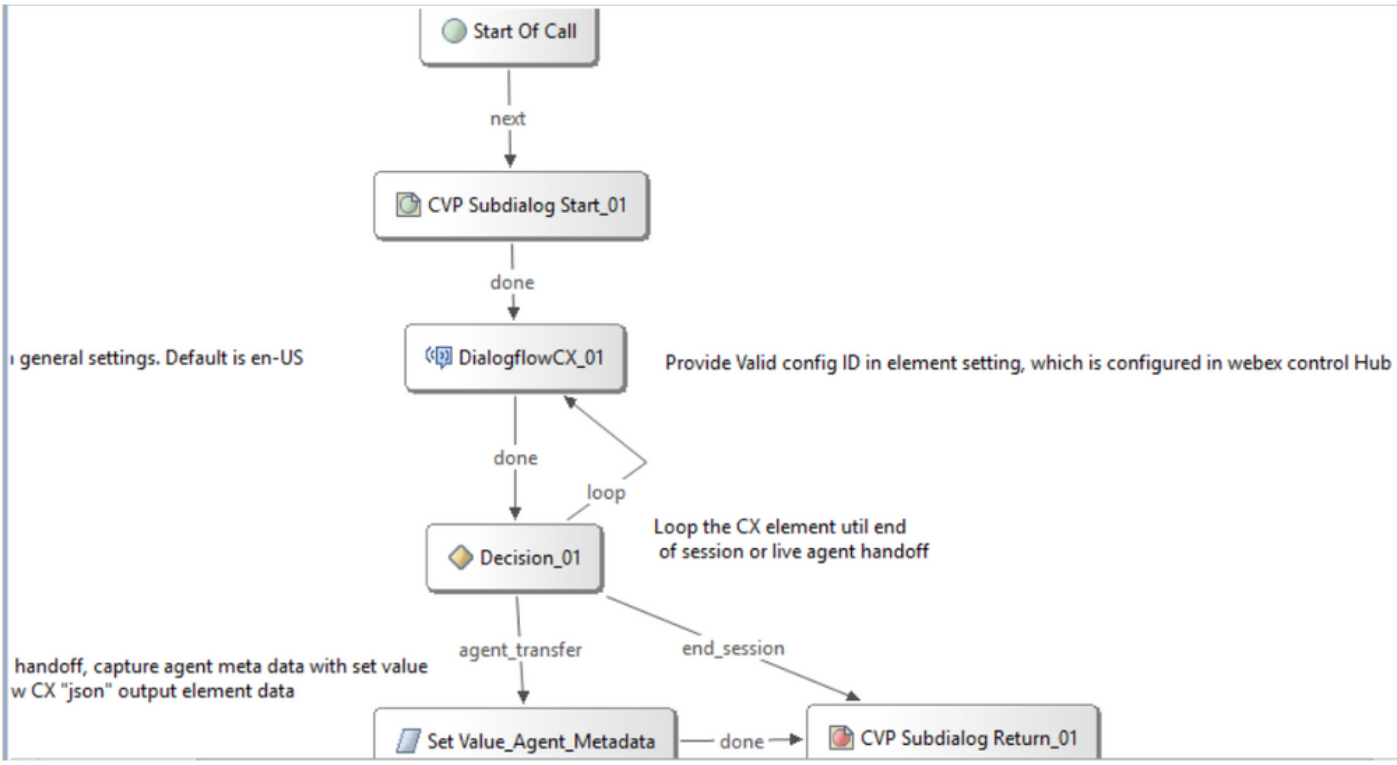
Subscriber IP Address / Hostname: Subscriber IP Address / Hostname

Username: Administrator

Password: ●●●●●●●●●

Step 4. Import the Cloud Connect certificate to the CVP server. For details, visit the section *Import Cloud Connect Certificate to Unified CVP Keystore* in the [Configuration Guide for Cisco Unified Customer Voice Portal.](#)

Step 5. Open CVP Call Studio application and create a CVP application usin the CX element as shown in the image.



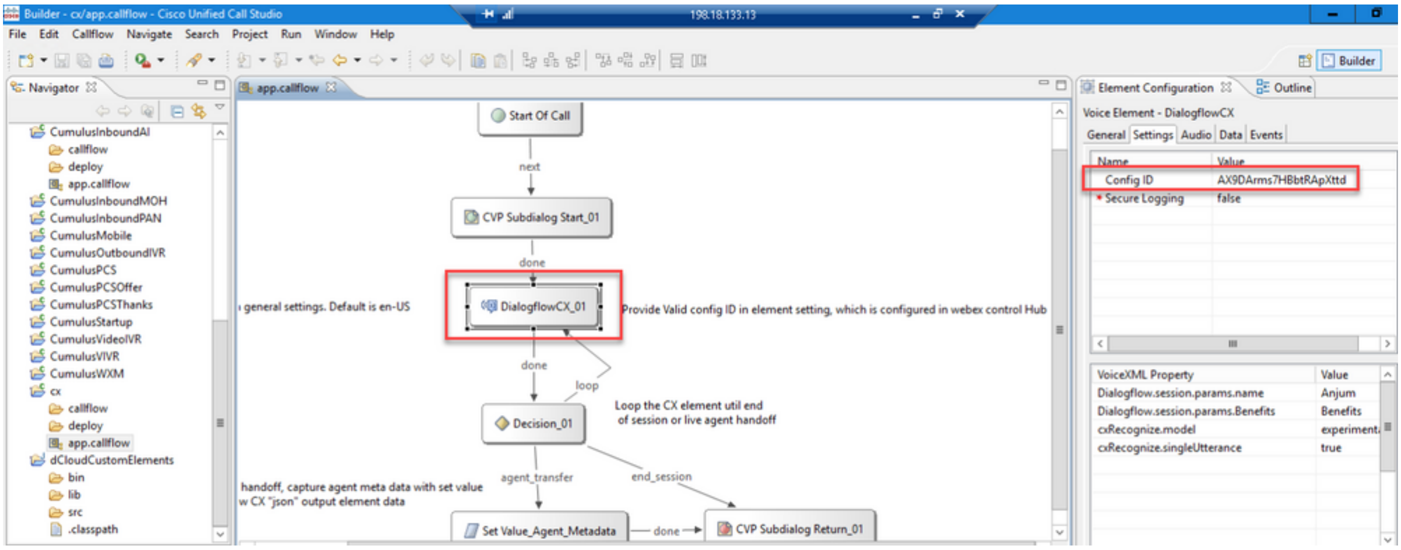
ı general settings. Default is en-US

Provide Valid config ID in element setting, which is configured in webex control Hub

Loop the CX element util end of session or live agent handoff

handoff, capture agent meta data with set value w CX "json" output element data

Step 6. Click the CX element and add the Config id originated from the Control Hub features.



ı general settings. Default is en-US

Provide Valid config ID in element setting, which is configured in webex control Hub

Loop the CX element util end
of session or live agent handoff

handoff, capture agent meta data with set value
w CX "json" output element data

Name	Value
Config ID	AX9DArms7HBbtRApXttd
* Secure Logging	false

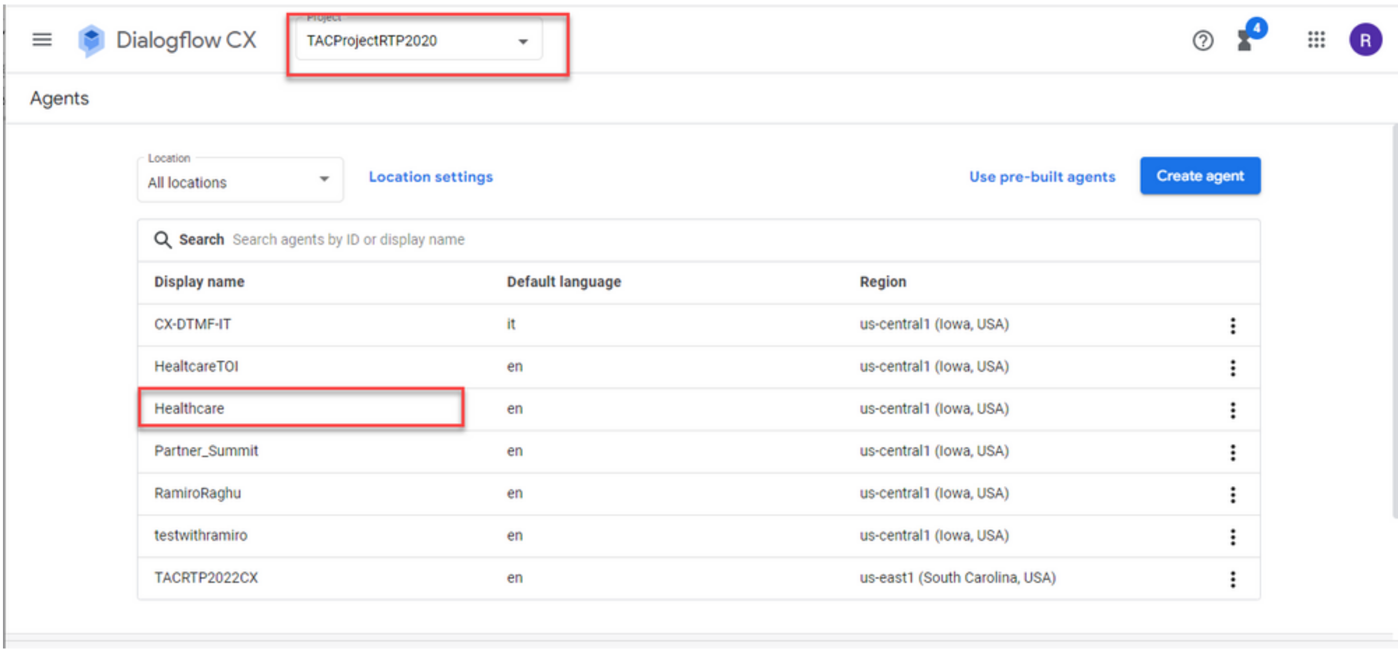
VoiceXML Property	Value
Dialogflow.session.params.name	Anjum
Dialogflow.session.params.Benefits	Benefits
cxRecognize.model	experiment.
cxRecognize.singleUtterance	true

Dialogflow CX Agent Welcome Event

Create a welcome event to be played to the caller when a call is initiated.

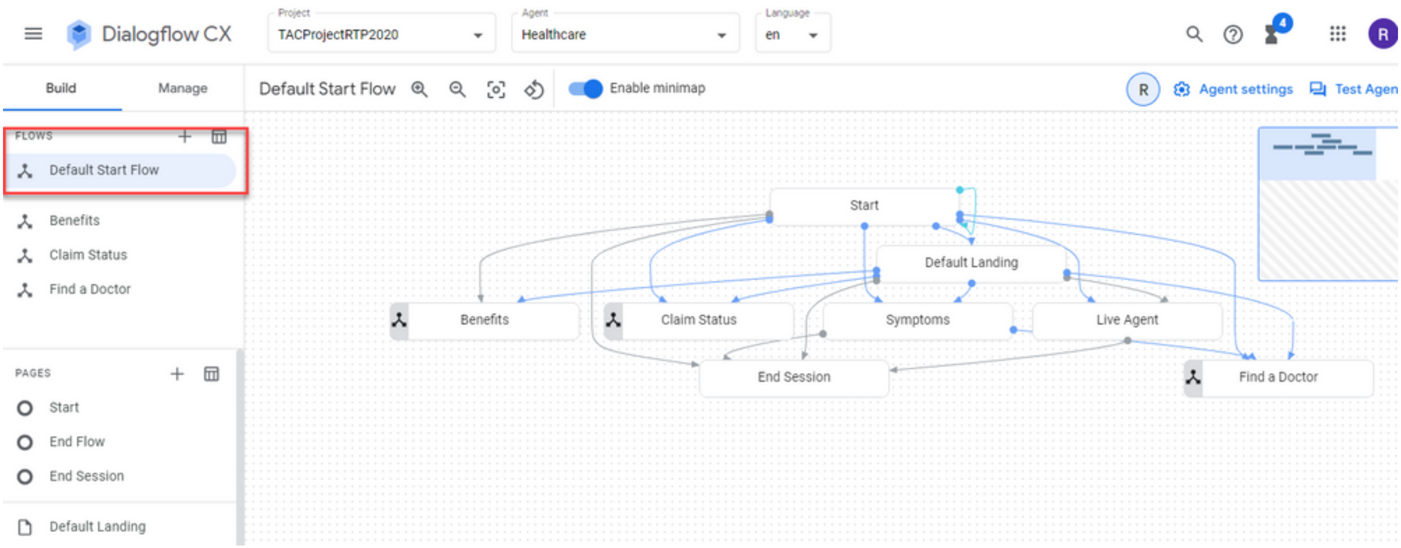
Step 1. Open https://dialogflow.cloud.google.com/cx/projects.

Step 2. Select the project and agent for which the welcome event is to be configured.



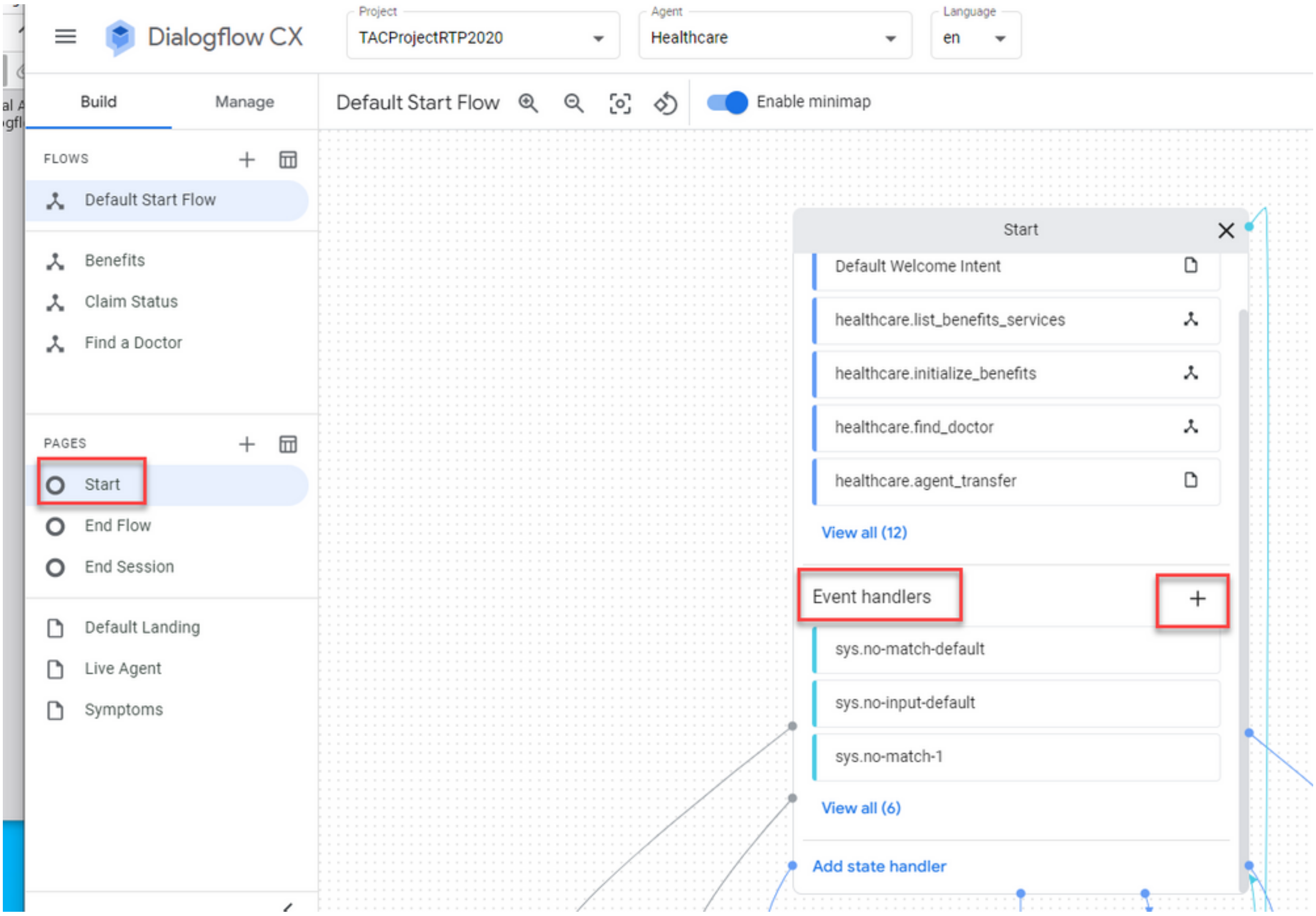
Display name	Default language	Region
CX-DTMF-IT	it	us-central1 (Iowa, USA)
HealtcareTOI	en	us-central1 (Iowa, USA)
Healthcare	en	us-central1 (Iowa, USA)
Partner_Summit	en	us-central1 (Iowa, USA)
RamiroRaghu	en	us-central1 (Iowa, USA)
testwithramiro	en	us-central1 (Iowa, USA)
TACRTP2022CX	en	us-east1 (South Carolina, USA)

Step 3. In the Google Dialogflow CX Agent screen, click **Default Start Flow** in the left panel.



Step 4. Click **Start** > **Event handlers**.

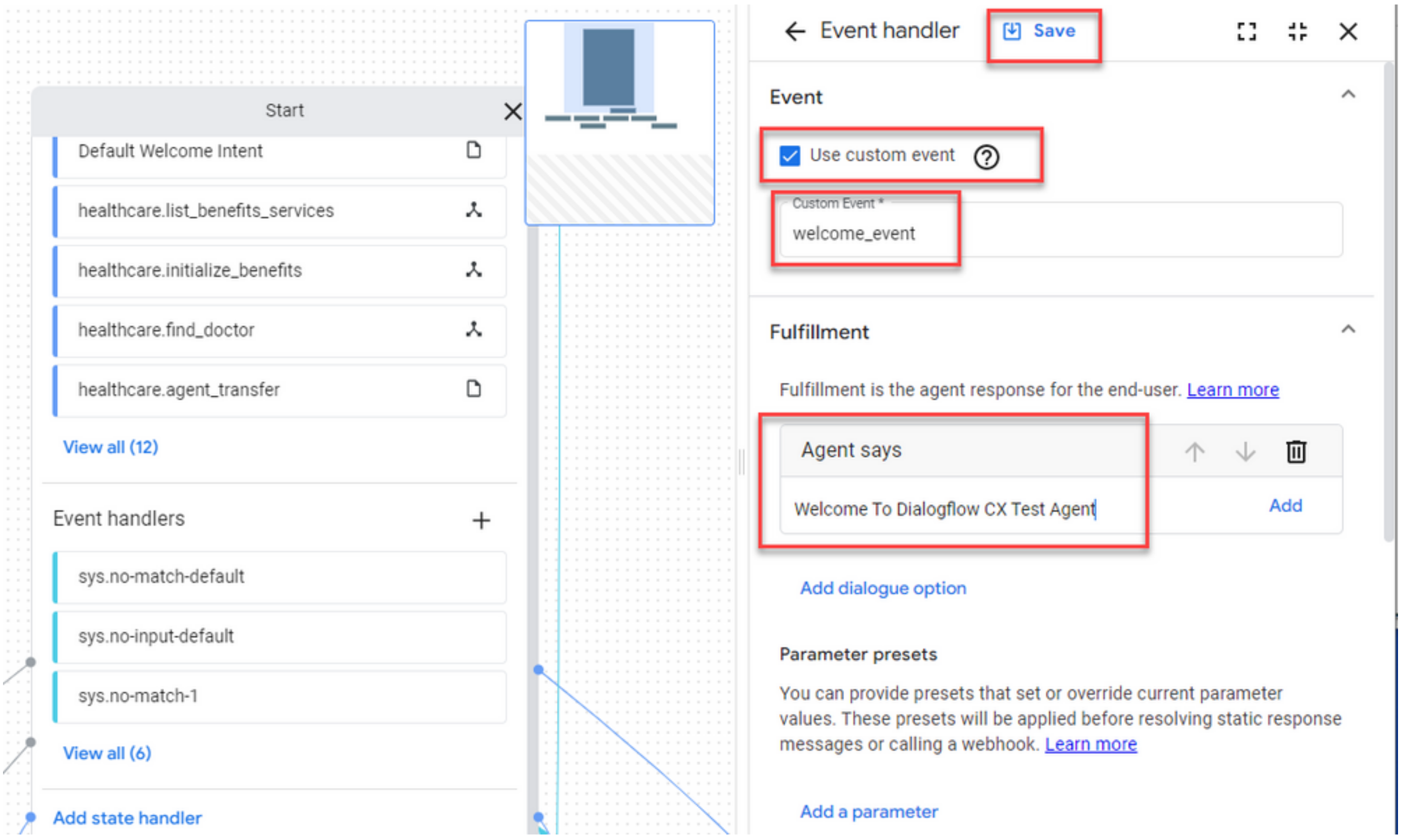
Step 5. In the right panel, click **Add event handler**.



Step 6. Check the Use custom event box.

Step 7. In the Custom Event box, type **welcome_event**.

Step 8. In the Agent says box, type the welcome message to be played.


Start
Default Welcome Intent
healthcare.list_benefits_services
healthcare.initialize_benefits
healthcare.find_doctor
healthcare.agent_transfer
View all (12)
Event handlers
sys.no-match-default
sys.no-input-default
sys.no-match-1
View all (6)
Add state handler
Event handler
Save
Event
☑ Use custom event
Custom Event *
welcome_event
Fulfillment
Fulfillment is the agent response for the end-user. Learn more
Agent says
Welcome To Dialogflow CX Test Agent
Add
Add dialogue option
Parameter presets
You can provide presets that set or override current parameter values. These presets will be applied before resolving static response messages or calling a webhook. Learn more
Add a parameter

Step 9 Save the changes

Verify

There is currently no verification procedure available for this configuration.

Troubleshoot

There is currently no specific information to troubleshoot available for this configuration.

Related Information

- Cisco Contact Center Dialogflow CX Features Guide 12.6(1)
- What is Dialogflow CX?
- Introduce pages and transitions in Dialogflow CX - YouTube
- Create a single-flow conversational agent - YouTube
- Create a multi-flow agent with Dialogflow CX - YouTube
- Technical Support & Documentation - Cisco Systems