Amazon Connect CTI Adapter v5 for Salesforce Lightning

Setup and Installation Guide

September, 2020

Notices

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Abstract

This guide details the integration between Amazon Connect and Salesforce Lightning. It covers the installation, configuration, and operation of the two primary components of the integration: the Amazon Connect CTI Adapter for Salesforce and the AWS Serverless Application Repository for Amazon Connect Salesforce integration.

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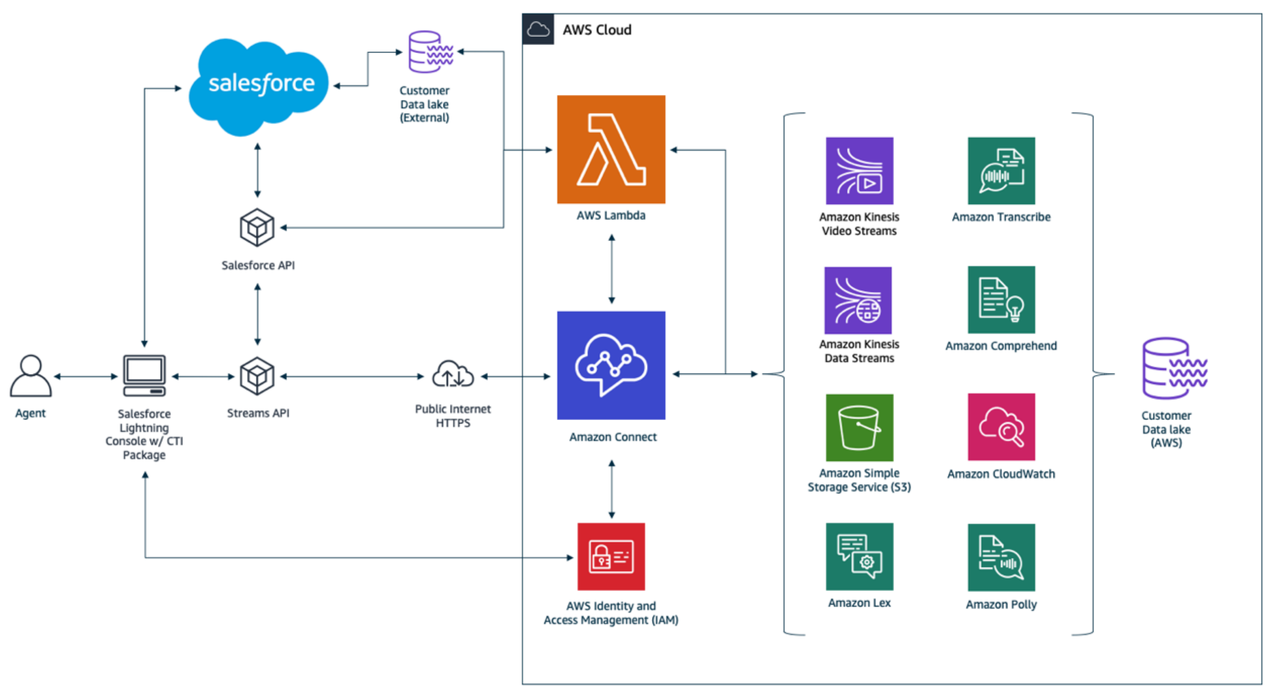
- Setup CTI Flows for High Volume Sales
    - Configuring the CTI Flow
- Appendix F - CTI Flow Blocks

Introduction

The Amazon Connect CTI integration consists of two components, a managed Salesforce package and an AWS Serverless application deployed to your AWS environment. The managed package provides the core CTI integration between Amazon Connect and Salesforce. The Serverless repository adds to the core CTI integration by providing additional tools that provide access and analysis of data from both platforms. With these components, customers can build a deep integration between Amazon Connect and Salesforce.



Release Notes

5.3 September 2020

- **Bugfix**: Fix the issue that caused ACSFCCP_CallRecordingTask component to not work.

5.1 Late August 2020

- **Bugfix**: Ensure "Get App View" CTI Flow block doesn't break the sidebar
- **Enhancement**: Add "queueARN" field to "Dial Number" CTI Flow block
- **Bugfix**: Ensure some required CTI Flow block fields are not shown as "optional"
- **Bugfix**: Ensure "Save (or Create) a Record" block works as expected
- **Bugfix**: Fix the validation error on "CallDurationInSeconds" field in "Create a Task" block
- **Bugfix**: Fix phantom scrollbar on Windows machines
- **Bugfix**: Fix issue where copying contact attributes to clipboard doesn't work
- **Bugfix**: Fix issue where "saveLog" CTI Flow block throws an error
- **Bugfix**: Fix issue with onOffline Flow event not firing
- **Bugfix**: Fix various omnichannel presence sync bugs
- **Bugfix**: Ensure the CCP default dimensions are adjusted to CCPv2 defaults
- **Feature:** Add block "Set Agent Status By Name on Connect."

5.0 August 2020

- **This release has new features and updates:** Please test and validate version 5.0 in your Salesforce sandbox before upgrading this in production.
- **CTI Flows:** CTI Flows replace Lightning CTI Extensions in allowing customers to build their agent for Lightning and Classic via a drag drop UI. Many of the CTI blocks are similar to the Lightning CTI Extension script API calls and can be mapped similarly. Lightning CTI Extension scripts are NOT automatically migrated to CTI Flows. When upgrading the with existing scripts, it will give you the option to download the existing script for reference before building your CTI Flows. We strongly recommend you validate this install/upgrade in a test environment and fully test the CTI Flows against your previous scripts functionality. Please open a support ticket if there is additional functionality you require from your current scripting implementation.
- **Security Profile improvements:** AC Administrator, AC Agent, and AC Manager permission sets to enforces objects access and fields level (FLS) as per Salesforce security guideline for managed package. To Amazon Connect Objects and fields, user should either one of Amazon Connect permission sets AC Administrator, AC Agent, and AC Manager.
- **Attributes:** Amazon Connect CCP (Contact Control Panel) in Lightning Classic now display an overlay for showing attributes consistently.
- **AWS Secrets Manager** support for storing Salesforce credentials.
- **VPC Support**: ability to place Lambdas in VPC
- **New Salesforce API integration:** Exposed new operations in sfinvokeapi read or create Salesforce records(query queryOne, createChatterPost, createChatterComment, lookup_all, delete)
- **Upgrade:** Amazon Connect Streams API bumped up to version 1.5.
- **Bugfix:** Task creation issue for non connect users - Fixed task trigger apex code, added a validation before security access check for Amazon managed package objects
- **Bugfix:** Contact interaction fixed.
- **Other minor bugfixes and improvements**

4.5 April 2020

- **This release has new features and updates:** Please test and validate version 4.5 in your Salesforce sandbox before upgrading this in production.

- **Installation / Configuration:** AC_Administrator permission set has been added to manage CTI Configuration in addition to AC_Manager and AC_Agent. See documentation for further information.
- **API:** Updated support for CCPv2 in Classic/Console. See documentation for Call Center settings.
- **Bugfix:** Updated attribute display to resolve duplicated attributes.
- **Security:** Improved control access at the object-level, the record-level, and at the field level.

4.4 March 2020

- **This release has significant new features and updates:** Please test and validate version 4.4 in your Salesforce sandbox before upgrading this in production.
- **Documentation:** Guide has been rewritten and restructured based on feedback.
- **Installation / Configuration:** Improved installation and configuration guide
- **Installation / Configuration:** Added Enhanced Agent Logout functionality to Lightning.
- **API:** Updated to the latest Amazon Connect Streams and Chat libraries
- **API:** Additional extensibility methods provided
- **Setup:** Improved Presence Sync Rule editor
- **Setup:** CTI Adapter validation is performed upon initialization and will inform the user of common misconfigurations.
- **Setup:** Additional CTI Script examples are provided.
- **Setup:** The ability to place the lightning transcript view on Task, Contact Channel, and Contact Channel Analytics object has been added.
- **Bugfix:** Updated whitelisting steps to address login popup issue.
- **Bugfix:** OmniChannel workload data not being usable has been resolved
- **Bugfix:** CTI Attribute issue when processing multiple pieces of contact attribute data has been resolved.
- **Bugfix:** The call transcript now scrolls within a fixed region rather than consuming vertical space.
- **Bugfix:** Finding Task Record in Classic/Console fixed.
- **Security:** The ability to create, update, and delete AC_CtiAdapter, AC_CtiScript, AC_CtiAttribute and AC_PresenceSyncRule records has been removed from the AC_Agent permission set.

4.2 December 2019

- **This release has significant new features and updates:** Please test and validate version 4.2 in your Salesforce sandbox before upgrading this in production.
- **Installation / Configuration**: Improved installation and configuration guide
- **API**: Lightning CCP Extension scripts and reference guide
- **Setup**: A default CTI adapter and scripts for click-to-dial, voice contact pop, and chat contact pop are not included in the base installation.
- **Editor**: A more robust script editor is included for use in CTI adapter / script configuration.
- **Bugfix**: SSO issue has been resolved

4.1 November 2019

- **This release has significant new features and updates:** Please test and validate version 4.1 in your Salesforce sandbox before upgrading this in production. As we look to simplify documentation, this release introduces a new **Amazon Connect CTI Adapter v4 for Salesforce Lightning** setup and installation guide. Please review this setup guide in detail to see all the latest changes for Lightning CTI Adapter installations.
- **Classic and Console CTI setup guide:** Please use the **Amazon Connect CTI Adapter v4 for Salesforce Classic** setup and installation guide for Classic and Console CTI Adapter installations.
- **Amazon Connect Chat and Contact Control Panel (CCP) v2:** support for Amazon Connect chat and integration of CCP v2. CCP v2 is required for Lightning CTI Adapter installations. CCP v1 is still supported for Classic / Console CTI Adapter installations.
- **Historical and Real-Time Reporting:** updated historical metric functionality with additional metrics and dashboards. Added real-time metrics and dashboards. This functionality requires an update of AWS Serverless Lambda functions for Salesforce.
- **Lightning CCP Extensions and configuration:** We have revamped the approach for the Call Center config and have added a new AC CTI Adapters Lighting config page.
- **High Velocity Sales:** CTI Adapter integration supported for Salesforce High Velocity Sales product.

Key Benefits and Requirements

Key Benefits

The key benefits of the Amazon Connect CTI Adapter are:

- **Amazon Connect Voice and Chat:** ability to take voice and chat calls in the salesforce agent experience and advanced screen pop on the incoming phone number, case, account or contact. Agents can also click to dial a number within their contacts.

- **Single Sign-On support:** seamless login with Connect and Salesforce with any standard SAML 2.0 provider.

- **Call disposition and activity management:** configure post call workflows to support your Agent's after call work.

- **Call logging and recording:** Voice and chat interactions can be logged as Salesforce activities and Amazon Connect call recordings can be played within the Salesforce.

- **Omnichannel Presence Sync:** enable Salesforce chat, sms and email to share presence with Amazon Connect. Amazon Connect will know when an agent is handling a Salesforce chat and make them unavailable for a voice call, and vice versa.

- **CTI Flows:** easily customize and extend behaviors within the CTI Adapter such as screenpop and activity management. Default flows along with the API guide provide key examples.

- **High-velocity sales (HVS):** using Salesforce HVS, enable your inside sales team to follow a repeatable pre-define sales cadence for your business. It enables sales managers and reps to work on prioritize list of prospects and follow best sequence of sales outreach activities defined by your sales process.

The key benefits of the AWS Serverless Application Repository for Salesforce are:

- **Access Salesforce Data:** easily inject salesforce data into the customer experience. Businesses can offer personalized greetings and dynamic routing based on customer information, create new objects, update existing records, and delete items based on customer choices in the IVR.

- **Contact center real-time reports:** display real-time contact center metrics within Salesforce from Amazon Connect.

- **Contact center historical reports:** display historical contact center metrics within Salesforce from Amazon Connect.

- **Contact analytics:** transcribe voice calls and perform analysis of the conversations using AI to surface sentiment, keywords, syntax, entities, etc.

We recommend that you initially install and configure the package into your Salesforce sandbox. This will allow you to test the integration, become more familiar with it, and modify it to your needs prior to deploying it to your production org.

If you are using Lighting, you can get a head start by working through the [Build an Amazon Connect Integration Salesforce Trailhead].

Requirements

To successfully deploy, configure, and implement the Amazon Connect integration with Salesforce, you must ensure that the following requirements and prerequisites are in place before.

Prerequisites - Amazon Connect CTI Adapter

In order to successfully install and configure the Amazon Connect CTI Adapter from the AppExchange you will need:

1. Salesforce

    a. Salesforce org with Lightning experience

    b. My Domain configured and deployed to users

2. An Amazon Connect instance

3. SAML Details (If using SAML)

Prerequisites - AWS Serverless Application Repository for Salesforce

In order to successfully install and configure the Salesforce functions from the Serverless Application Repository, you will also need:

1. A Kinesis stream configured for your Amazon Connect contact trace records (CTRs)

2. Salesforce:

   a. An API user account

   b. A new Connected App

Browser Compatibility

Amazon Connect requires WebRTC to enable soft-phone voice media stream and Websockets to enable soft-phone signaling. Consequently, users are required to use the latest version of either Google Chrome or Mozilla Firefox. For more information, please see the Amazon Connect documentation.

Salesforce Lightning Support

Please note that following features are currently not supported in Salesforce Lightning:

- Outbound Campaign Calls using Salesforce Omni can be routed to the agent, but the automated screen pops and the dialing of the phone number will not work. The agent will have to click on the record links to open the records and use Salesforce's Click-to-Dial feature to make the phone call.

- Lightning Standard Navigation is not currently supported in App Options for the Amazon Connect CTI Adapter.

Installation

The Amazon Connect integration with Salesforce consists of two components: The CTI Adapter Managed Package, which is available at no cost in the AppExchange Marketplace, and the AWS Serverless application package for Salesforce, which provides additional features beyond the baseline CTI integration.

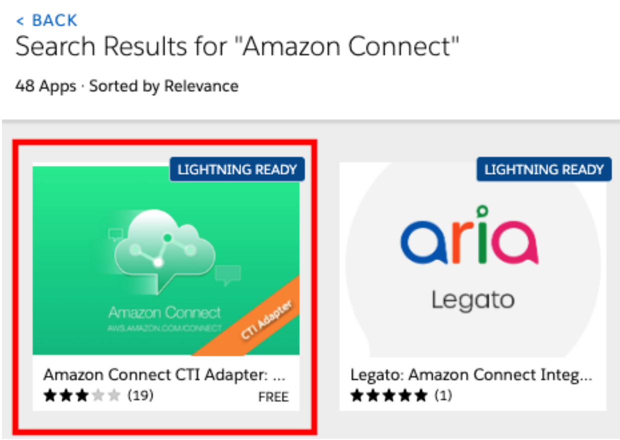
Installing CTI Adapter Managed Package from AppExchange

The Amazon Connect CTI Adapter for Salesforce provides the core integration between the two platforms. It embeds the Amazon Connect Contact Control Panel into Salesforce which provides telephony control as well as access to event data coming from Amazon Connect. Using this adapter, you can configure screen pops based on customer data, automate contact center telephony functions like click-to-dial, and establish presence syncing rules for integration with Salesforce Omni-Channel. This is the base of the integration.

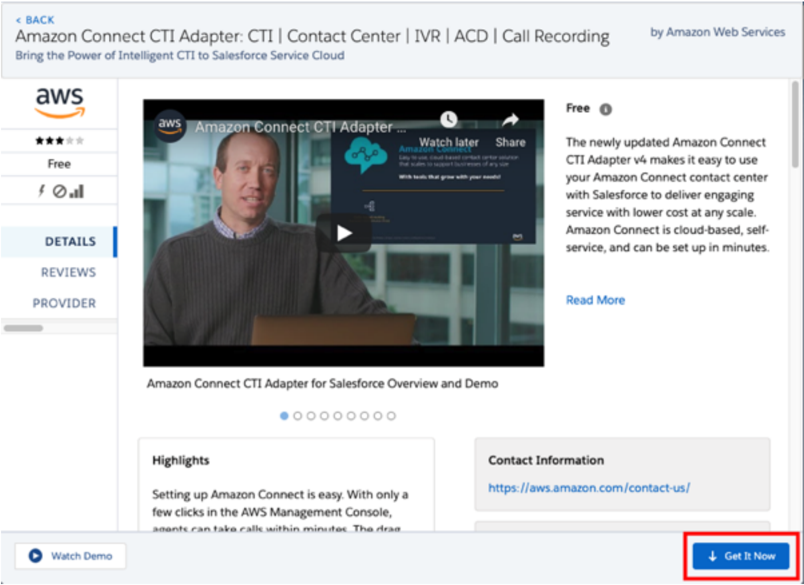
Installing the Package

The first step in the deployment of the integration is to install the Amazon Connect CTI Adapter managed package from the AppExchange Marketplace.

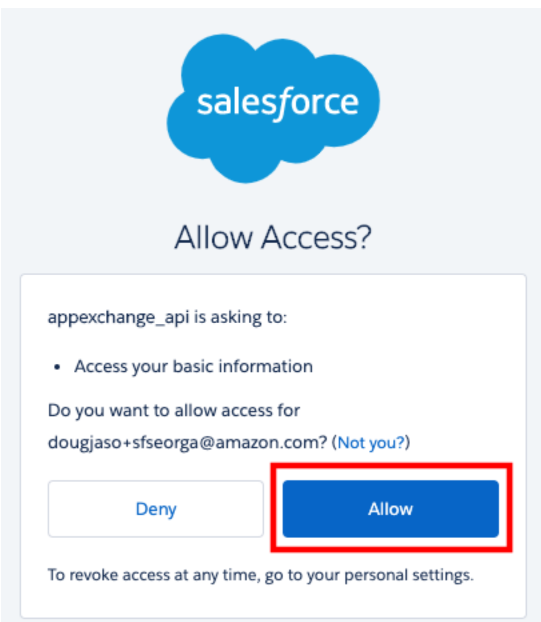
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find**, type **AppExchange** (the results will populate without hitting enter)
3. Select **AppExchange Marketplace** from the links provided
4. In the AppExchange window, enter **Amazon Connect** into the **Search AppExchange** field and press enter
5. In the **Search Results**, select **Amazon Connect CTI Adapter**



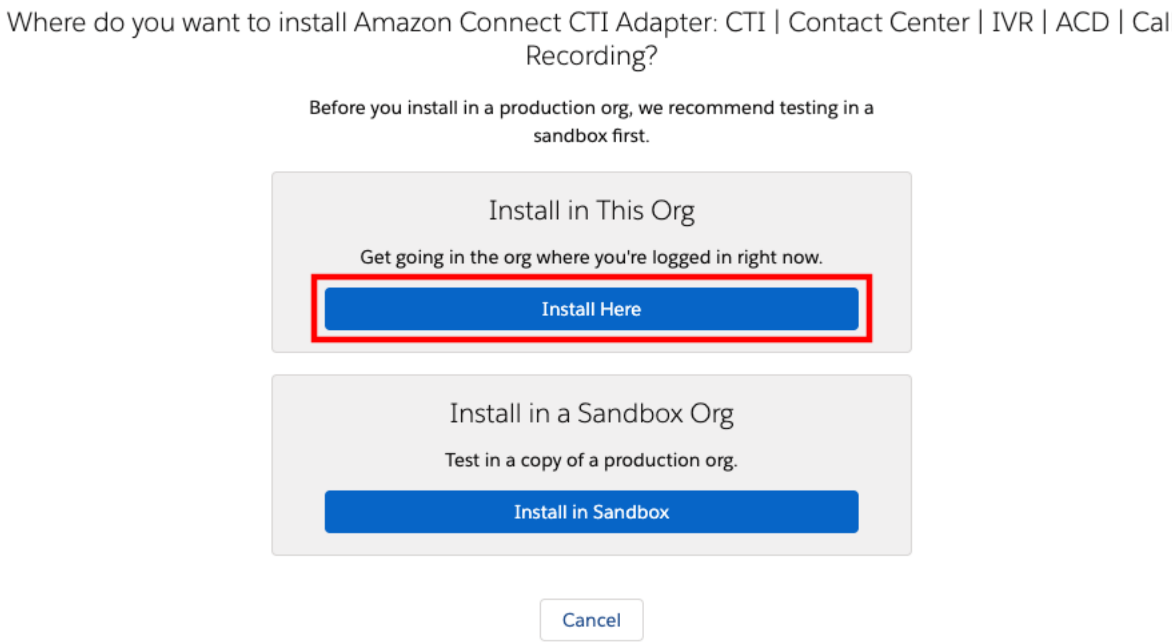
6. On the **Amazon Connect CTI Adapter** detail page, select **Get It Now**



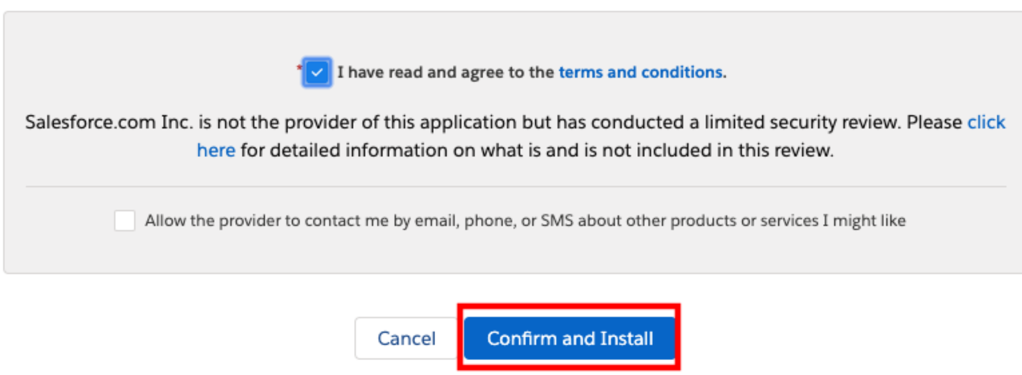
7. If you are presented with the Log In to AppExchange screen, select **Open Login Screen**. You should then be presented with an Allow Access Screen. Choose **Allow**



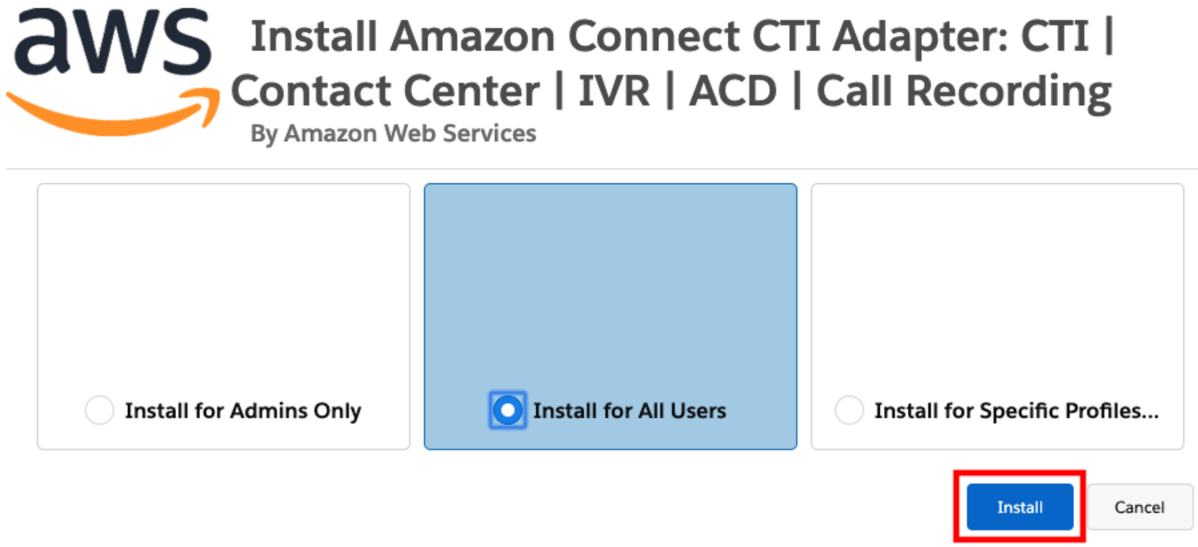
8. On the **Where do you want to install Amazon Connect CTI Adapter** page, choose the **Install Here** button in the Install in This Org section



9. On the **Confirm installation details** screen, fill out the **Tell us about yourself** form, check the box to **agree with the terms and conditions**, and optionally select the box to **allow the provider to contact you**. Then select **Confirm and Install**

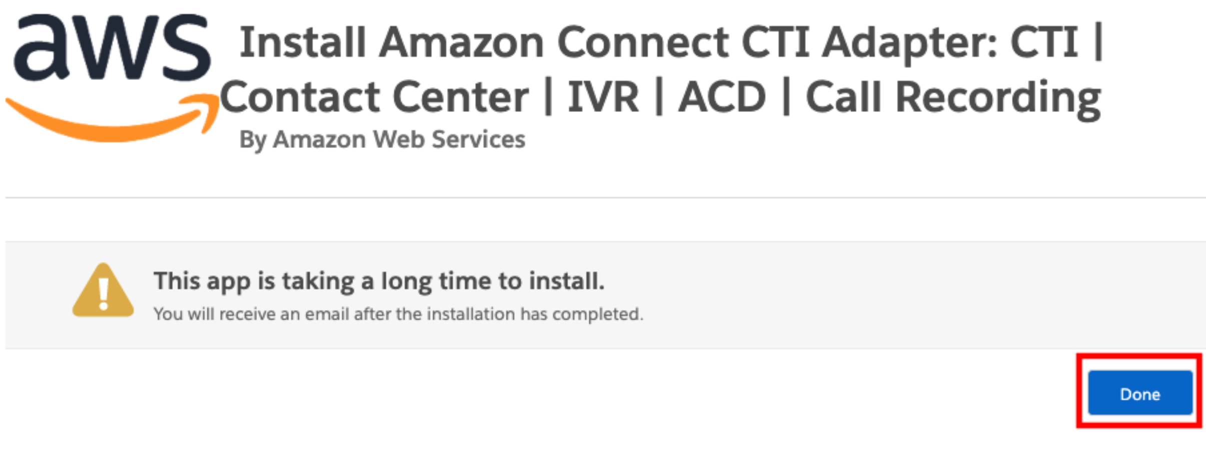


10. Select **Install for All Users**, then choose **Install**



11. The CTI Adapter will take some time to install. While it installs, you will be presented with the **This app is taking a long time to install screen.**

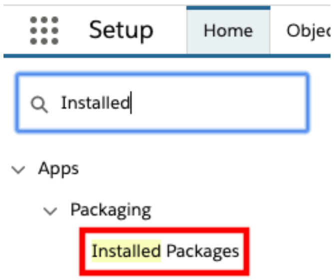
12. Choose **Done**.



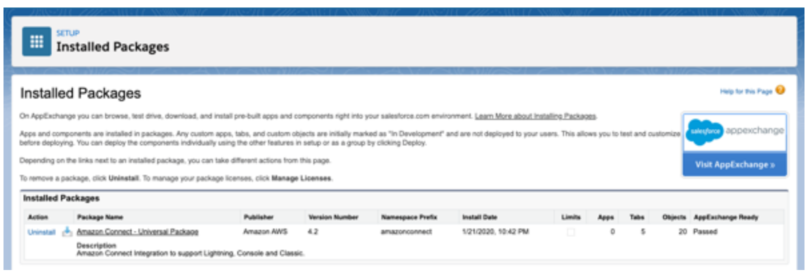
13. Once you receive confirmation that the **installation has completed** via email, return to the browser

14. Close the **Amazon Connect CTI Adapter** detail page (if still open)

15. In Quick Find, enter **Installed**, then select Installed Packages from the result



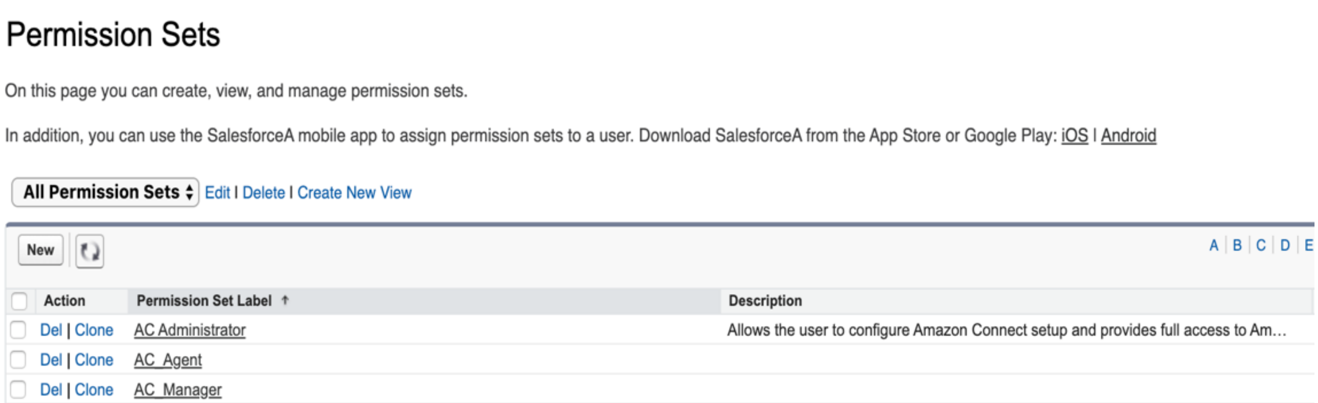
16. Once the **Installed Packages** page opens, validate that the **Amazon Connect -- Universal Package** is installed



Set Access Permissions

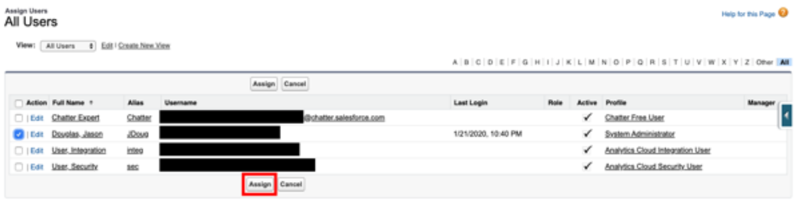
All users must be assigned the required permission set to access Salesforce metadata. The Amazon Connect CTI Adapter includes two Permission Sets, one for agents and one for managers, that grant users the appropriate access for their role. More information on assigning user permissions can be found in the [Salesforce help documentation](#).

1. Log in into your Salesforce org and go to **Setup**
2. In **Quick Find**, enter **Permission** and select **Permission Sets** from the results
3. Choose **AC_Administrator**, **AC_Agent** or **AC_Manager** as appropriate for the user(s)



4. Choose **Manage Assignments**.
5. Choose **Add Assignments**.

6. Select the users to assign the permissions, then choose **Assign**.



7. Repeat these steps as needed for all users

AC_Administrator

Org Level Object Sharing Model	Object Access	Read	Create	Edit	Delete	View All	Modify All
Public	AC Agent Performance	☑	☑	☑	☑	☑	☑
Public	AC Contact Channel Analytics	☑	☑	☑	☑	☑	☑
Public	AC Contact Channels	☑	☑	☑	☑	☑	☑
Public	AC Contact Trace Records	☑	☑	☑	☑	☑	☑
Public	AC CTI Adapters	☑	☑	☑	☑	☑	☑
Public	AC CTI Attributes	☑	☑	☑	☑	☑	☑
Public	AC CTI Scripts	☑	☑	☑	☑	☑	☑
Public	AC Events	☑	☑	☐	☐	☐	☐
Public	AC Historical Queue Metrics	☑	☑	☑	☑	☑	☑
Public	AC Presence Sync Rules	☑	☑	☑	☑	☑	☑
Public	AC Queue Metric Events	☑	☑	☐	☐	☐	☐
Public	AC Real Time Queue Metrics	☑	☑	☑	☑	☑	☑
Private	AC Voicemail Drops	☑	☑	☑	☑	☑	☑
Public	Amazon Connect Call Campaigns	☑	☑	☑	☑	☑	☑

AC_Manager

Org Level Object Sharing Model	Object Access	Read	Create	Edit	Delete	View All	Modify All
Public	AC Agent Performance	☑	☐	☐	☐	☑	☐
Public	AC Contact Channel Analytics	☑	☐	☐	☐	☑	☐
Public	AC Contact Channels	☑	☑	☑	☐	☑	☐
Public	AC Contact Trace Records	☑	☐	☑	☐	☑	☐
Public	AC CTI Adapters	☑	☐	☐	☐	☐	☐
Public	AC CTI Attributes	☑	☐	☐	☐	☐	☐
Public	AC CTI Scripts	☑	☐	☐	☐	☐	☐
Public	AC Events	☑	☑	☐	☐	☐	☐
Public	AC Historical Queue Metrics	☑	☐	☐	☐	☑	☐
Public	AC Presence Sync Rules	☑	☐	☐	☐	☑	☐
Public	AC Queue Metric Events	☑	☑	☐	☐	☐	☐
Public	AC Real Time Queue Metrics	☑	☐	☐	☐	☑	☐
Private	AC Voicemail Drops	☑	☑	☑	☑	☑	☑
Public	Amazon Connect Call Campaigns	☑	☑	☑	☐	☑	☐

AC_Agent

Org Level Object Sharing Model	Object Access	Read	Create	Edit	Delete	View All	Modify All
Public	AC Agent Performance	☑	☐	☐	☐	☑	☐
Public	AC Contact Channel Analytics	☑	☐	☐	☐	☑	☐
Public	AC Contact Channels	☑	☑	☑	☐	☑	☐
Public	AC Contact Trace Records	☑	☐	☑	☐	☑	☐
Public	AC CTI Adapters	☑	☐	☐	☐	☐	☐
Public	AC CTI Attributes	☑	☐	☐	☐	☐	☐
Public	AC CTI Scripts	☑	☐	☐	☐	☐	☐
Public	AC Events	☑	☑	☐	☐	☐	☐
Public	AC Historical Queue Metrics	☑	☐	☐	☐	☑	☐
Public	AC Presence Sync Rules	☑	☐	☐	☐	☑	☐
Public	AC Queue Metric Events	☑	☑	☐	☐	☐	☐
Public	AC Real Time Queue Metrics	☑	☐	☐	☐	☑	☐
Private	AC Voicemail Drops	☑	☑	☑	☑	☑	☑
Public	Amazon Connect Call Campaigns	☑	☑	☑	☐	☑	☐

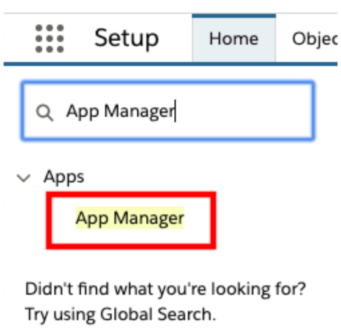
Configure the Lightning Experience

In this guide, we will configure the CTI Adapter for Service Console (Lightning Experience). You may use the same procedure described in this section for other applications.

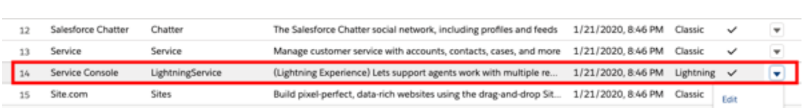
Configure Service Console

First, you need to add the CTI softphone to your Service Console.

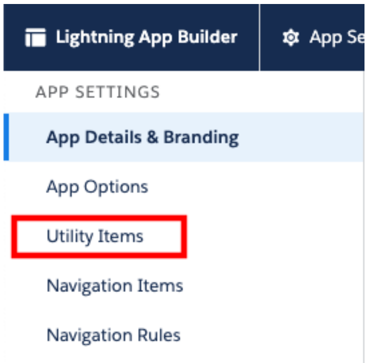
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** box, type **App Manager**, then choose **App Manager** from the result list.



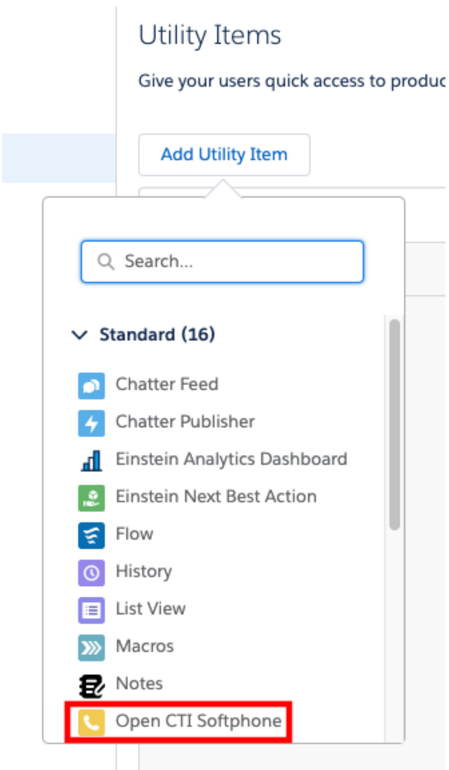
3. Expand the drop-down menu associated to Service Console and select **Edit**.



4. Once the **Lightning App Builder** opens, select **Utility Items** from the left Navigation



5. Choose **Add Utility Item**, then select **Open CTI Softphone**.



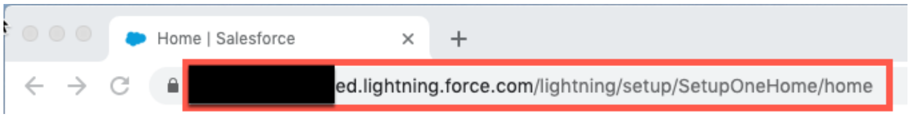
6. Change the Label, if desired, then choose **Save**.

Whitelist Your Salesforce Org with Amazon Connect

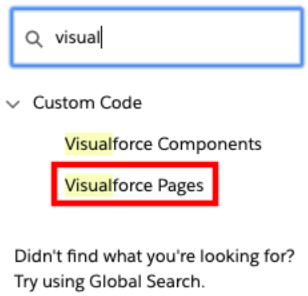
In order to embed the Amazon Connect Contact Control Panel (CCP) into your Service Console, you need to whitelist two (2) domains for your org with Amazon Connect. This allows for cross domain access to the underlying resources required for the CCP to function.

1. Log in into your Salesforce org and go to **Setup**

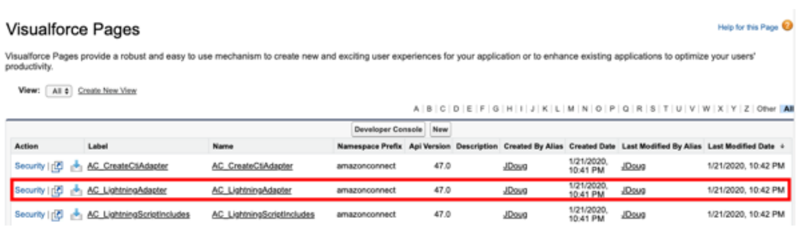
2. Copy the entire URL of this page and past it to a text document.



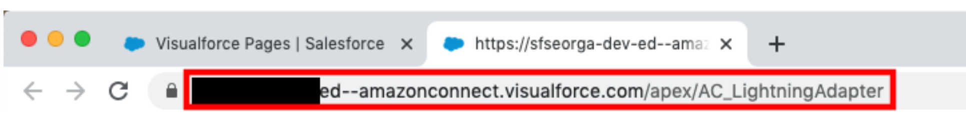
3. In the **Quick Find** field, type **visual**, then select **Visual Force Pages** from the results



4. Choose the **AC_LightningAdapter** Visualforce page



5. On the Visualforce detail page, select the **Preview** button. This will open a new browser tab showing the page content, which should only be a button labelled Sign in to CCP. Copy the entire URL of this page and past it to a text document.



6. In a new browser tab, login to the [**AWS console**]

7. Navigate to the [Amazon Connect Console]

8. Validate that you are in the correct **AWS region** for your instance, then select your instance alias from the list of instances

9. Choose **Application Integration** from the left navigation

10. Select + Add origin

11. In the Enter origin URL field, enter the URL of the page that you copied in step 2. Only enter the url through the .com, for example:

    `https://XXXXXXXX-dev-ed-.lightning.force.com`

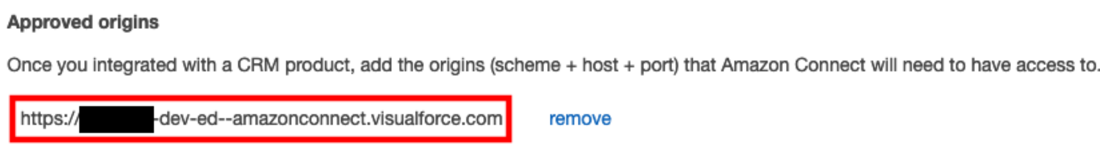
12. Select Add. You should see your org domain listed in the Approved origins section.

13. Select + Add origin

14. In the Enter origin URL field, enter the URL of the visualforce page that you copied in step 5. Only enter the url through the .com, for example:

    `https://XXXXXXXX-dev-ed--amazonconnect.visualforce.com`

15. Select Add. You should see your org domain listed in the Approved origins section

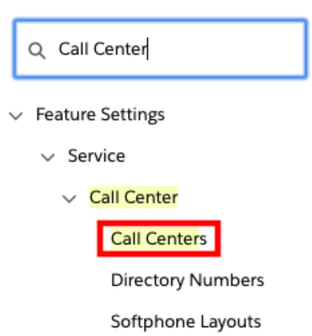


Modify the Call Center

Now that you have whitelisted the org in the Amazon Connect Console, you will need to modify the Call Center that was configured in Salesforce when the AppExchange package was installed. Once you complete the configuration, you add users to the Call Center to provide access to it.

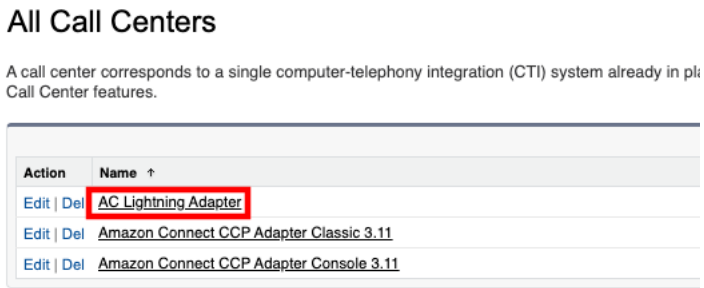
1. Log in into your Salesforce org and go to **Setup**

2. In the **Quick Find** field, enter **Call Center**, then select **Call Centers** from the result list



3. If you see the **Say Hello to Salesforce Call Center** page, select **Continue**

4. Select **AC Lightning Adapter**



5. On the **AC Lightning Adapter** detail page, select **Edit**

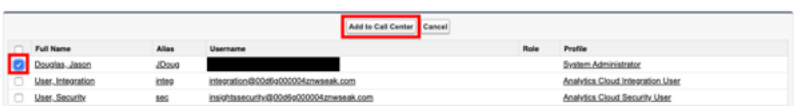
6. Next, change the values for **Softphone Height to 570** and the **Softphone Width to 330**, and choose **Save.**

7. Once you return to the AC Lightning Adapter detail page, choose **Manage Call Center Users** in the Call Center Users section

8. On the **AC Lightning Adapter: Manage Users** page, select **Add More Users**.

9. Set filters (if desired) and then choose **Find**.

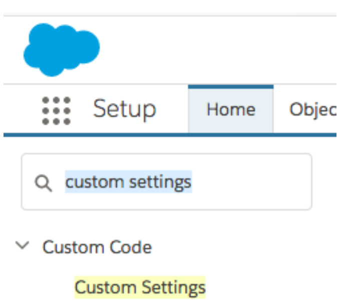
10. Select the checkbox next to the user to add, then choose **Add to Call Center**.



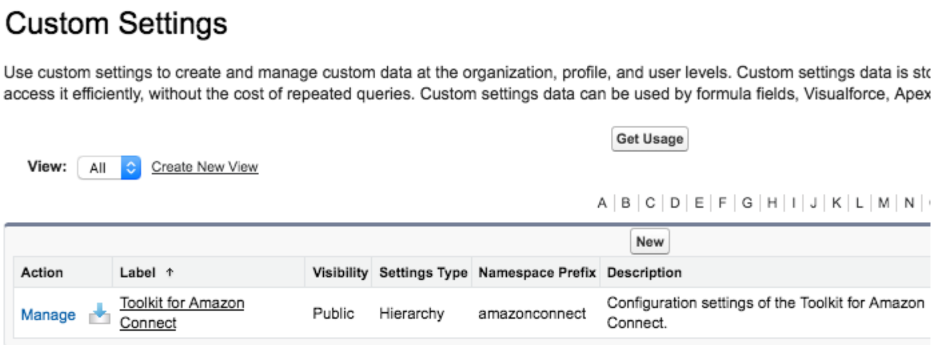
11. Repeat the steps to add more users.

Configure the Toolkit settings

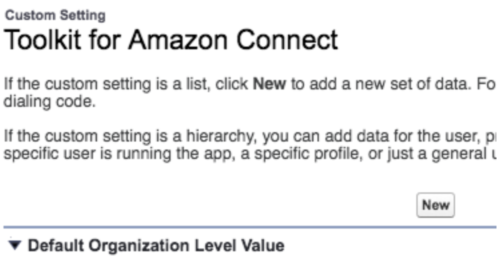
1. Navigate to **Setup** then in type **Custom Settings** in Quick Find



2. Next to the Toolkit for Amazon Connect custom setting, choose **Manage**

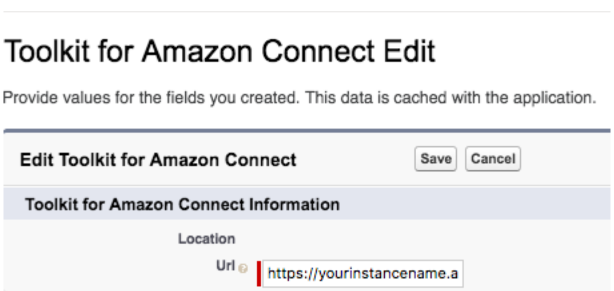


3. Select **New**



4. On the following page, provide the URL to your Amazon Connect instance. The value of the URL field would be in the form of:

```
https://your-instance-alias.awsapps.com
```



5. Select **Save**

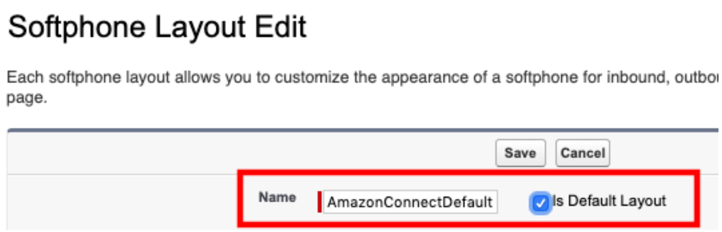
Create the Softphone Layout

Next, we need to create a softphone layout for the solution. The softphone layout settings will tell the console what resources are available for screenpop by default and what to do under different match conditions.

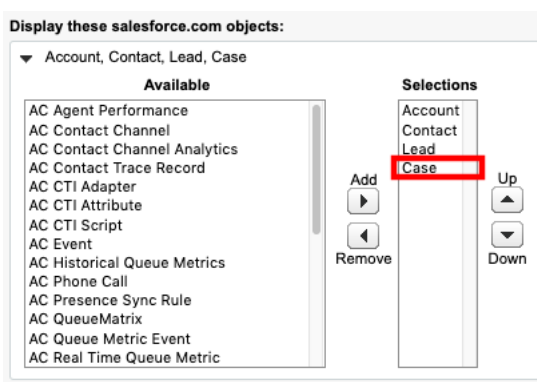
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** box, type **Softphone**, then choose **Softphone Layouts** from the results

3. If you are presented with the Get Started message, choose **Continue**
4. On the Softphone Layouts page, choose **New**

5. Enter a name for the layout, such as **AmazonConnectDefault**, then select the **Is Default Layout** checkbox.



6. Expand **Display these salesforce.com objects** and select objects that CTI Connector should be able to search, for a screen-pop query. In this example, Case has been added to the default selection, allowing search and screen-pop by CaseID.



7. If desired, configure the search behavior to your requirements

8. Additionally, validate the Screen Pop settings. Please note that the default behavior is to not pop a screen if there is more than one result

9. Once you have configured the search behavior, choose **Save**

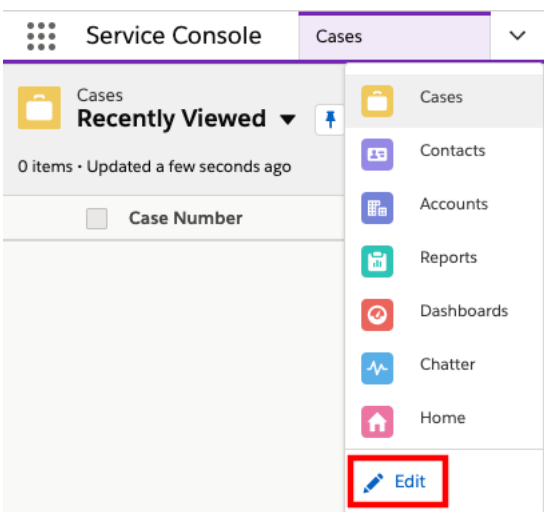
Initial CTI Adapter Configuration

Once we have setup the Call Center, we need to do a final configuration of the CTI Adapter before we can test the basic configuration. This will tie the Lightning CTI adapter settings to the Call Center.

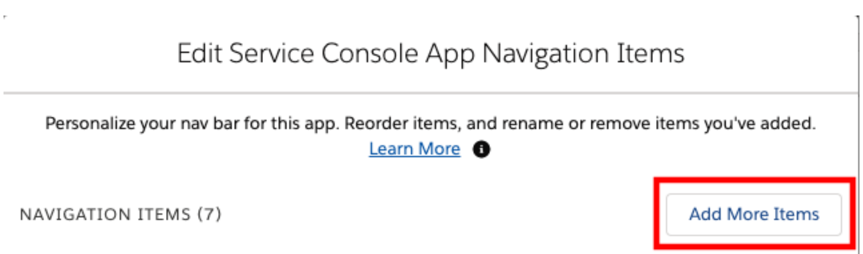
Add the CTI Adapter Console App

1. Log in into your Salesforce org and go to the **Service Console**

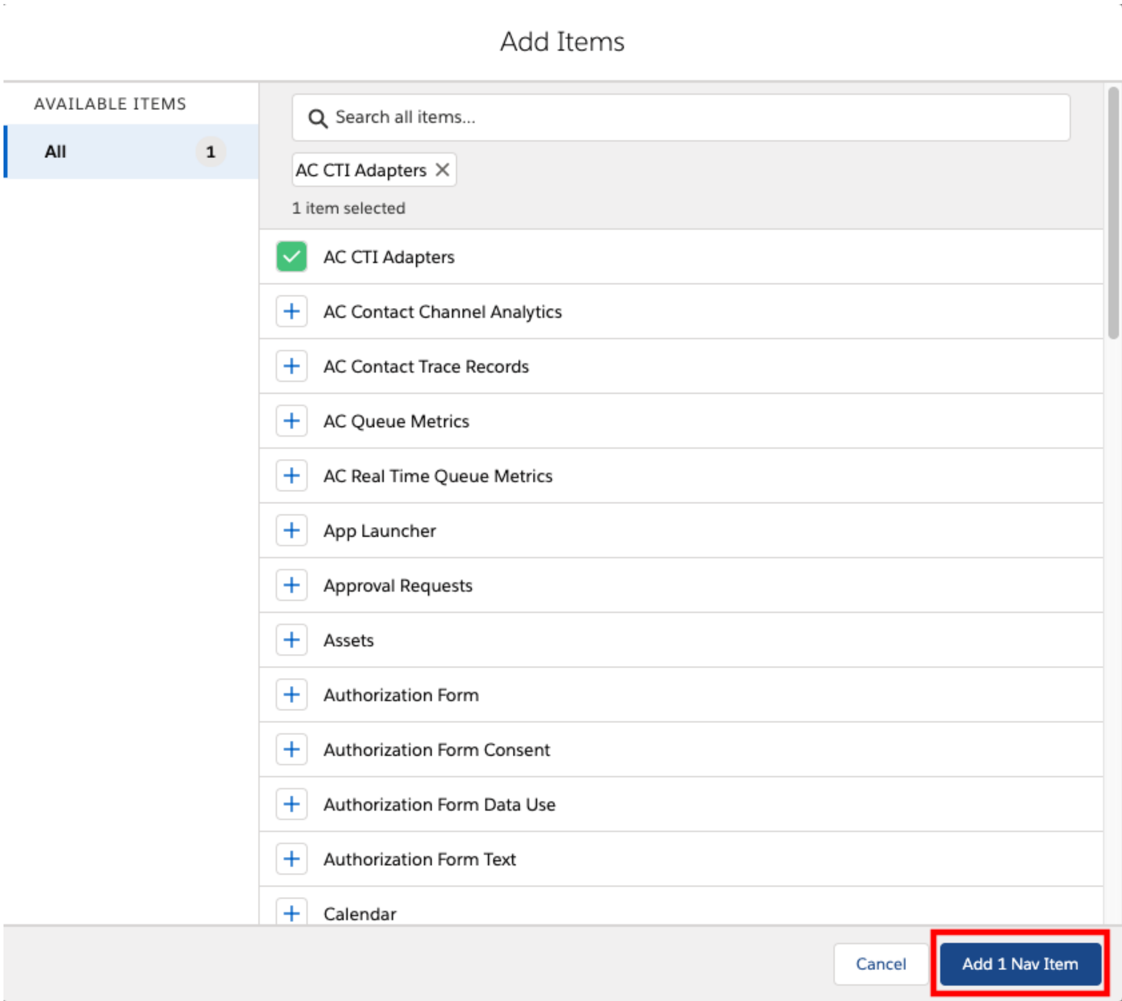
2. Expand the **navigation menu** by selecting the down arrow and choose **Edit**.



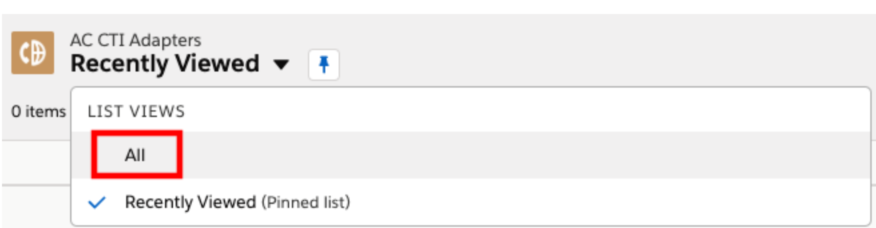
3. On the Edit Service Console App Navigation Items page, select **Add More Items**



4. Select the **+** next to **AC CTI Adapters** and select the **Add 1 Nav Item** button



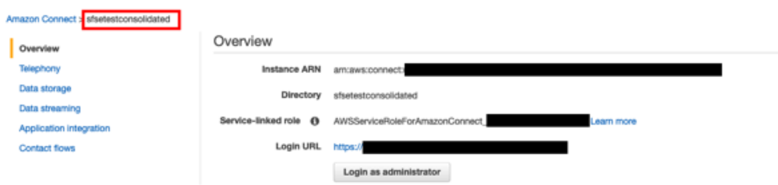
5. If desired, move the **AC CTI Adapters** button up in the navigation Items menu by dragging it up or down the list, then choose **Save** to save changes
6. Select **AC CTI Adapters** from navigation menu
7. If Recently Viewed is selected, select the drop-down and select **All** from the List Views menu.



8. If no ACLightningAdapter entry exists, then select the new button to configure your AC CTI adapters, otherwise select the **ACLightningAdapter**
9. Fill out or confirm the Details as follows:

10. CTI Adapter Name: **ACLightningAdapter**

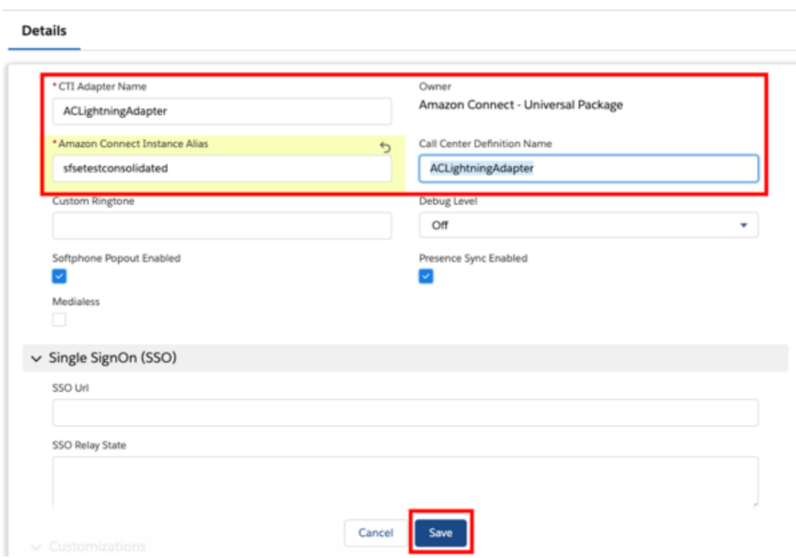
11. Amazon Connect Instance Alias: The alias of your Amazon Connect Instance. You can find this in the Amazon Connect Console as shown below



12. Amazon Connect Instance Region: This is the region that your Amazon Connect instance is deployed in. For this field, you will enter the region code. For example, if you have deployed your Amazon Connect instance in US East (N. Virginia), you would enter us-east-1. For a list of region codes, please refer to the [AWS Service Endpoints] reference

13. Call Center Definition Name: **ACLightningAdapter Note:** This is the value of the Internal Name in the call center in the Call Center definition

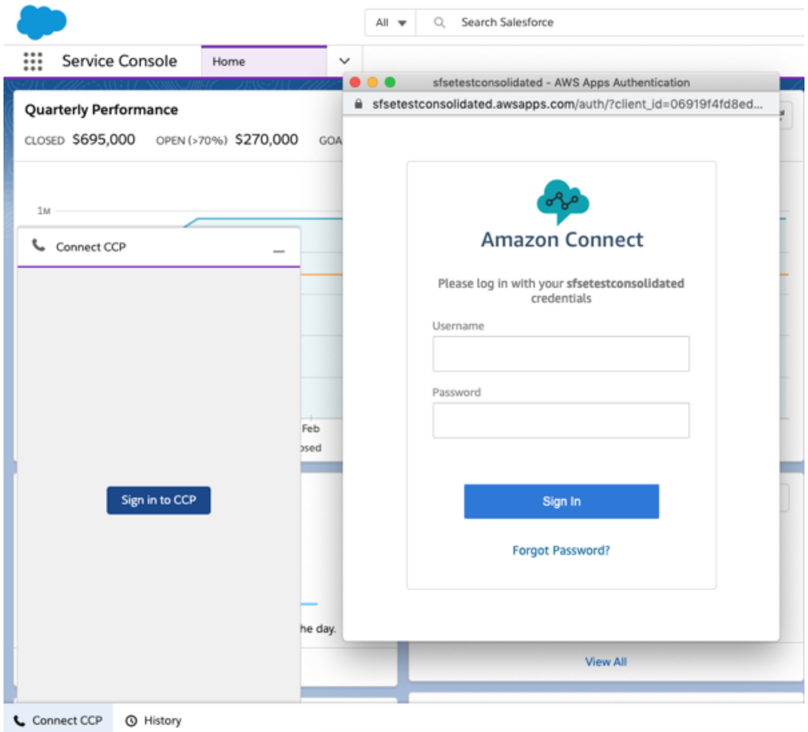
14. Leave all other settings at the default for now, and choose Save



15. **Refresh** the browser

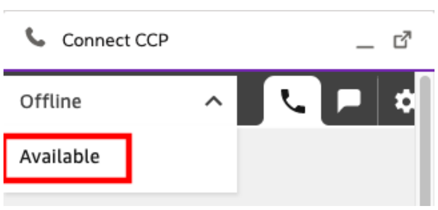
16. In the bottom left corner of the Service Console, select the CTI Softphone icon

17. Select the **Sign in to CCP** button. A new window will pop up. Enter your Amazon Connect login credentials and select **Sign In**. Make sure to allow Microphone access (if asked by browser) **NOTE:** At this point, this process will only work for Amazon Connect instances configured for local user storage. If you are configuring SAML, please follow the SAML setup process in the [Single Sign On Settings] section before continuing.

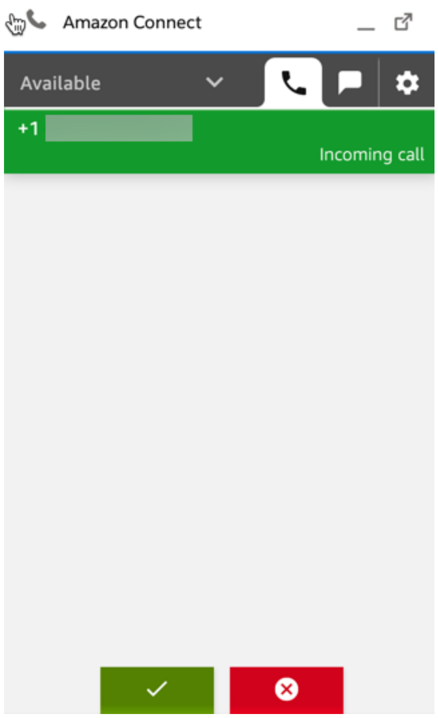


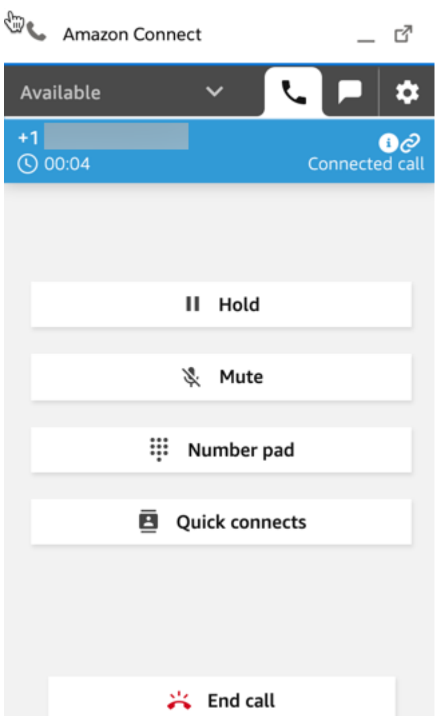
18. Once Login is successful, the pop-up window will automatically close.

19. Expand the status menu and choose Available



20. Make an inbound phone call to your Amazon Connect instance. The CCP will alert you to the incoming call and allow you to accept it. Once you do, the call will be connected



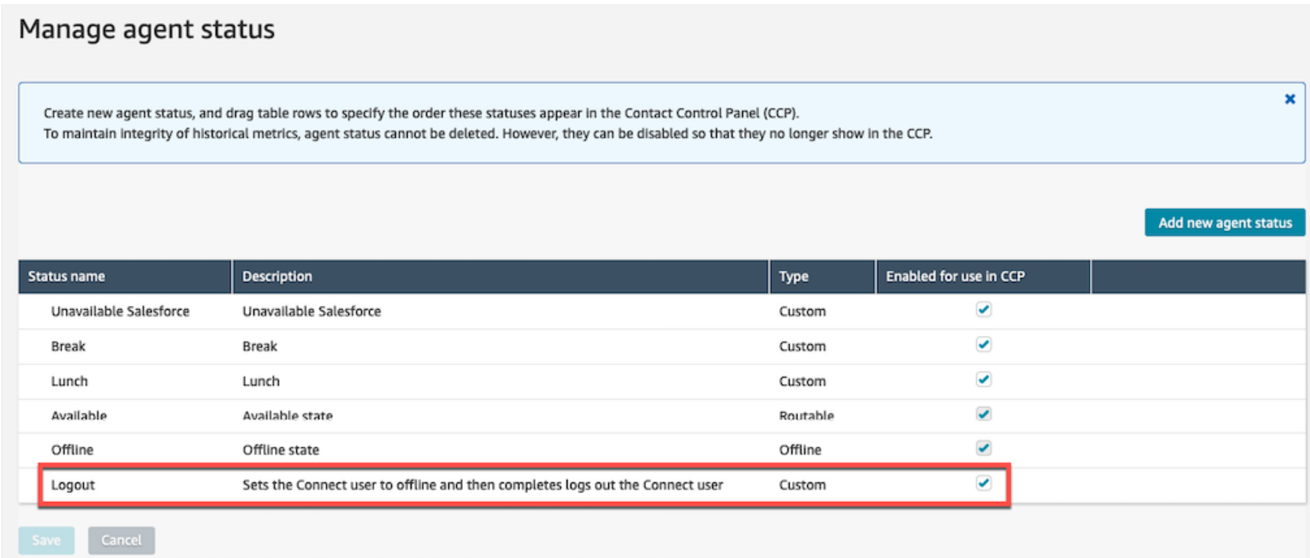


21. **End the call** and clear the contact

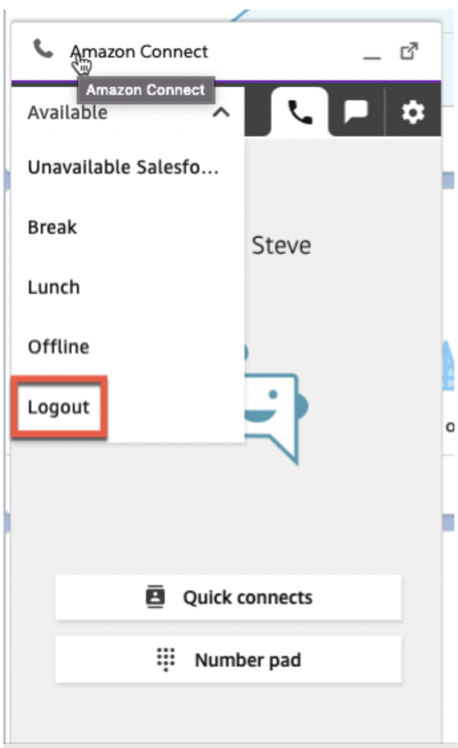
22. Set your agent back to **Available**

Enhanced Agent Logout

You can configure an agent status within "Manage agent status" with "Logout" (case-sensitive) in the status name to enable enhanced agent logout. When the agent selects that logout status in the Contact Control Panel, it will first set the agent in an offline status. It will then logout the agent in Connect and the AWS Console. Here is an example of the agent status configured within Connect:



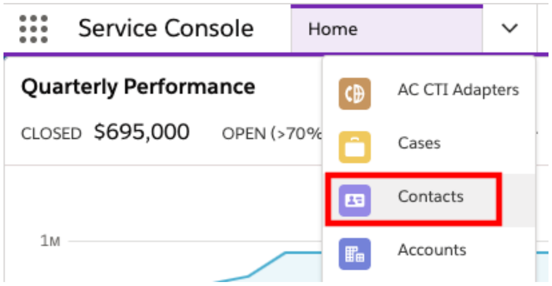
Here is an example of an agent selecting the "Logout" status within the Contact Control Panel:



Validate Basic Screenpop

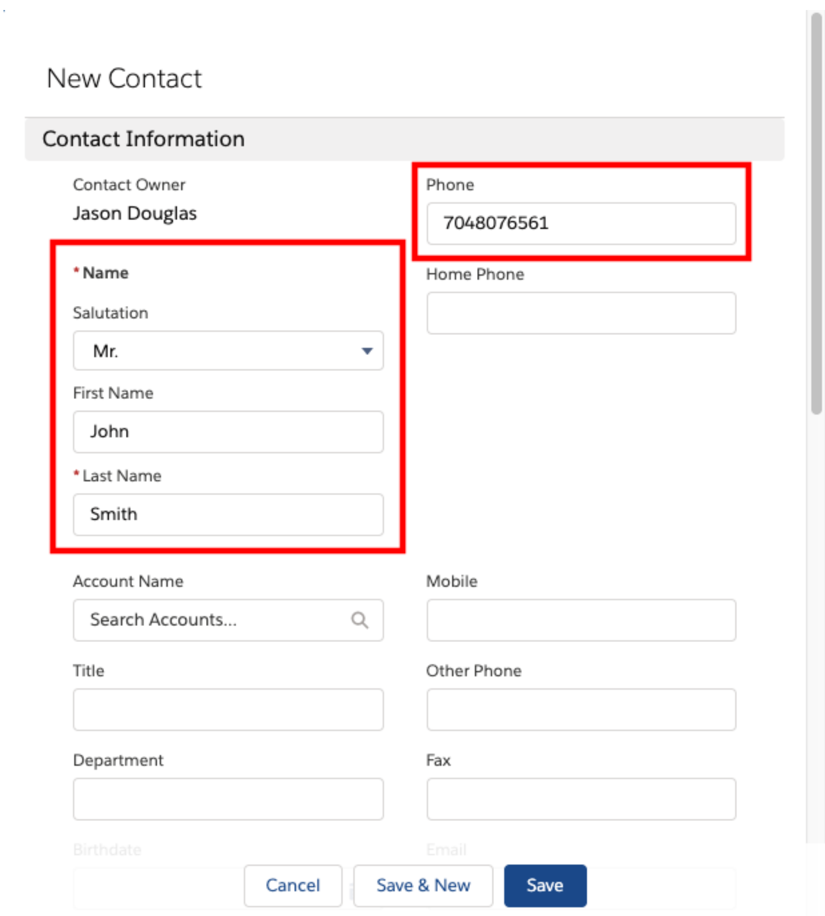
Next, we will add a contact to Salesforce that has your phone number assigned to it. This will allow us to validate the basic screenpop functionality that is provided with the CTI adapter.

1. Select **Contacts** from the dropdown menu



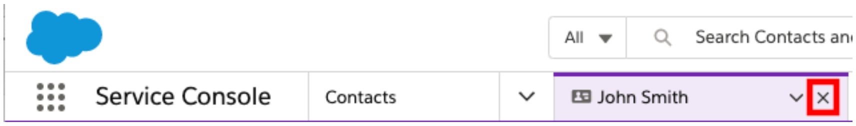
2. Select **New** from top-right corner

3. Complete the required fields. Make sure that your phone number is entered for the Phone field.



4. Select **Save**

5. Close the Contact tab by selecting the X next to the name of the contact that you just created



6. **Refresh** your browser
7. Place another phone **call** into your instance
8. The new contact should automatically pop-up as it has been recognized by incoming phone number.

Installing the Amazon Connect Salesforce Lambda Package

The Amazon Connect Salesforce Lambda package adds considerable capability to the integration. It includes data connectivity between Amazon Connect and Salesforce for typical tasks like lookups, case creation, and updates. Additionally, it adds new features like real-time and historical data imports, contact trace record imports, recording import, transcription, and contact analytics functions. These capabilities are configurable and can be activated or deactivated on a call-by-call basis.

The Amazon Connect Salesforce Lambda package is delivered via the AWS Serverless Application Repository. The AWS Serverless Application Repository enables you to quickly deploy code samples, components, and complete applications. Each application is packaged with an AWS Serverless Application Model (SAM) template that defines the AWS resources used. There is no additional charge to use the Serverless Application Repository - you only pay for the AWS resources used in the applications you deploy.

Prerequisite Configuration and Data Collection

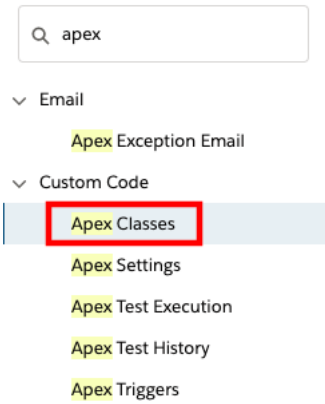
In order to successfully deploy and utilize the functions in the Amazon Connect Salesforce Lambda package, you will need to validate and configure some items in your Salesforce Org and gather some information from your Amazon Connect instance.

- Check your Salesforce API version
- Create a new Connected App
- Create a new API user
- Gather Amazon Connect information

As you are preparing to deploy the package, it is a good idea to open a text editor and note information as you configure the environment. We will point out the items you will need to provide.

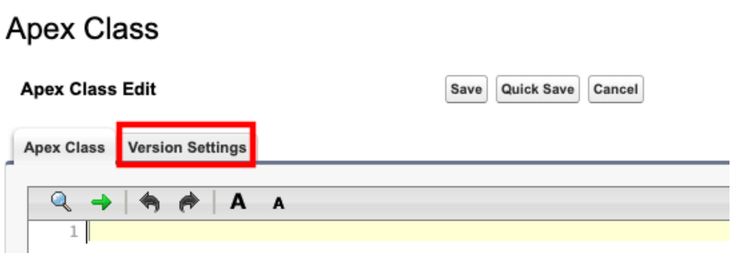
Check your Salesforce API Version

1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** field, type **apex**, then select **Apex Classes** from the results

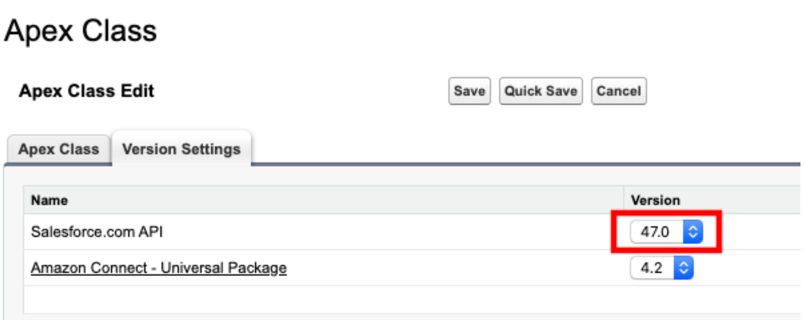


3. Select New

4. Select the Version Settings tab



5. Note the Salesforce.com API version in your notepad

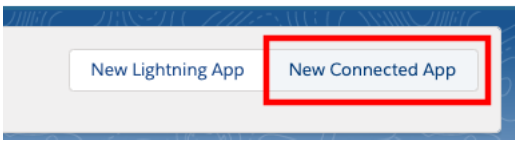


Create a New Connected App

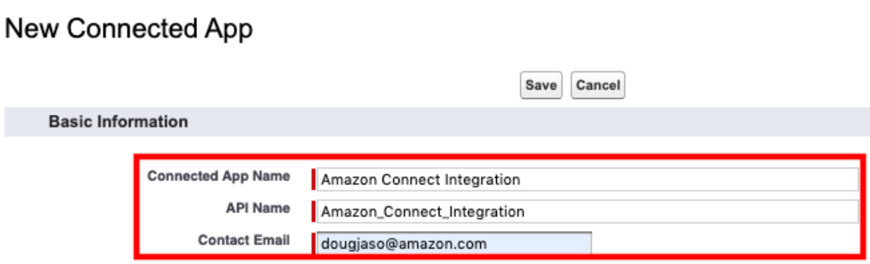
To leverage the full potential of the integration, Salesforce data needs to be accessed from AWS environment. The package comes with a set of pre-built AWS Lambda functions to lookup, update and create Salesforce objects within Amazon Connect Contact Flows. These Lambda function access Salesforce using the Salesforce REST API.

To get access to the environment, a Connected App must be configured with OAuth settings enabled.

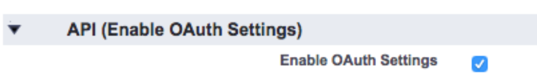
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** field, type **app manager**, then select **App Manager** from the results
3. In the upper right corner, select **New Connected App**



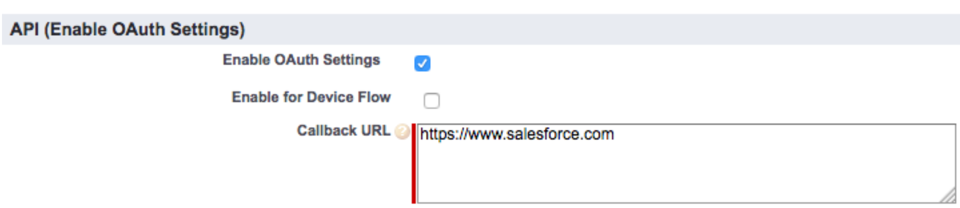
4. On the New Connected App form, enter a name for the Connected App, such as **Amazon Connect Integration** and press tab. This will populate the API Name automatically. Then provide a contact email address



5. Select the checkbox to **Enable OAuth Settings**

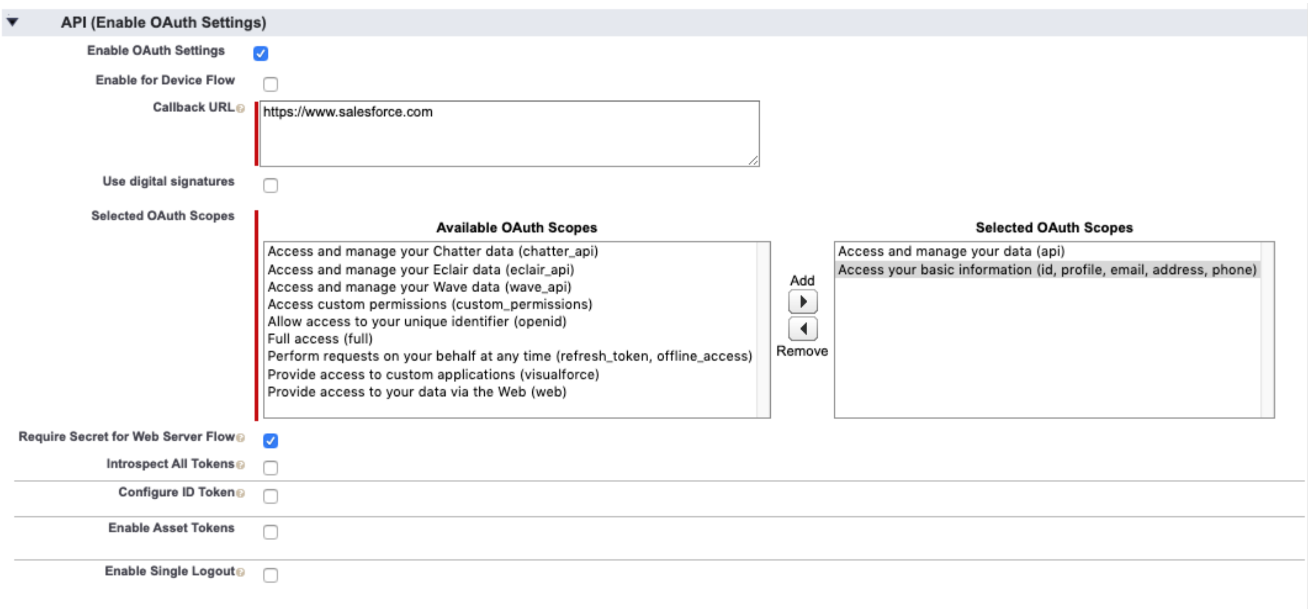


6. Set the **Callback URL** to https://www.salesforce.com

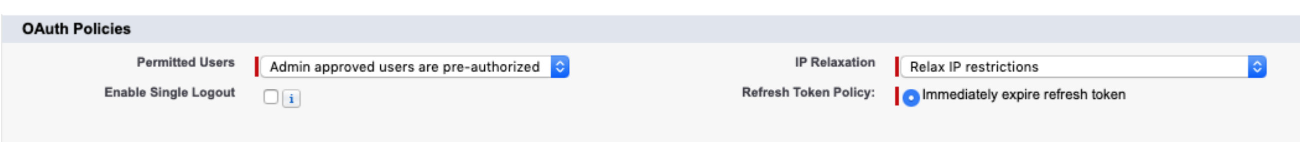


7. In the Selected OAuth Scopes section, select the following and add them to the Selected OAuth Scopes:
8. Access and manage your data (api)

9. Access your basic information (id, profile, email, address, phone)
10. Select the checkbox for Require Secret for Web Server Flow
11. The **API (Enable OAuth Settings)** section should now look like this



12. Select **Save** at the bottom of the screen.
13. Select **Continue** on the New Connected App page
14. You should now be at the new app's page
15. Copy the value for **Consumer Key** to your notepad
16. Select **Click to reveal** next to Consumer Secret and copy the value to your notepad
17. At the top of the detail page, select **Manage**
18. On the Connected App Detail page, select the **Edit Policies** button
19. Set Permitted Users to **Admin approved users are pre-authorized** and choose OK on the pop-up dialog
20. Set IP Relaxation to **Relax IP restrictions**
21. The OAuth Policies section should now look like the following

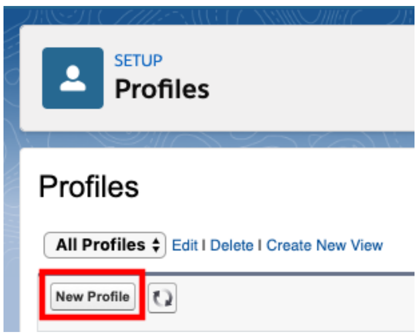


22. Select **Save**

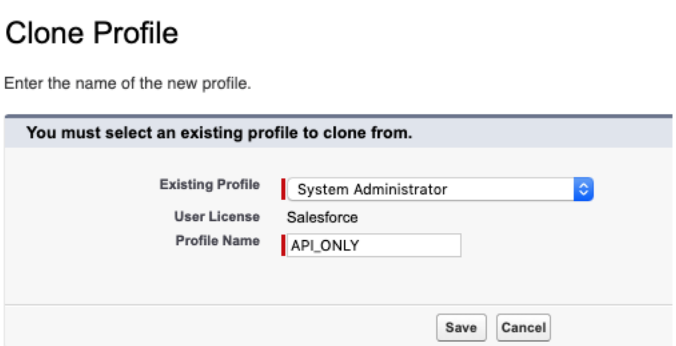
Create a new API user

The Lambda functions authenticate with Salesforce via user credentials. It is a common practice to create an API user account for this purpose.

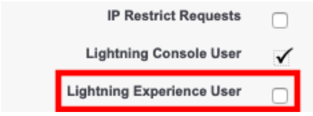
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** field, type **profiles**, then select **Profiles** from the results
3. Select New Profile



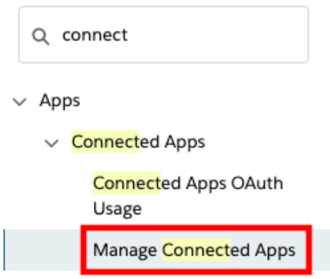
4. Provide a Profile Name, such as **API_ONLY**
5. From the **Existing Profile** dropdown, select **System Administrator NOTE:** You're advised to use a full Salesforce License for the user to be able to set the below permissions and have full access to avoid any other errors.



6. Select **Save** to create the new profile
7. Once the new profile page opens, select the **Edit** button
8. Scroll down to the Administrative Permissions section
9. If the Lightning Experience User checkbox is selected, clear it



10. Scroll down to the **Password Policies** section at the bottom of the page
11. Set **User password expire in** to **Never expires NOTE:** Failure to this may lead to production outages.
12. Select **Save**
13. In the **Quick Find** field, type **connect**, then select **Manage Connected Apps** from the results



14. Select the app you have created earlier, **Amazon Connect Integration**
15. In the profiles section, select **Manage Profiles**
16. Select the new **API_Only** profile that you just created
17. Select **Save** at the bottom of the page
18. In the **Quick Find** field, type **users** then select **Users** from the results
19. Select New User
20. Set the required fields as:
    a. Last Name: apiuser
    b. Alias: apiuser
    c. Email: provide a valid email address
    d. Username: apiuser@<yoursalesforcedomain>.com
    e. Nickname: apiuser
21. On the right-hand side, set **User License** to **Salesforce**
22. Set Profile to API_ONLY

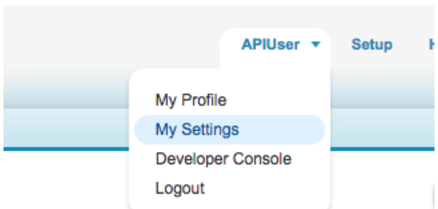
23. Choose **Save**

24. A confirmation email with an **activation link** will be sent to the email address provided. Choose the link to activate your user and set their password

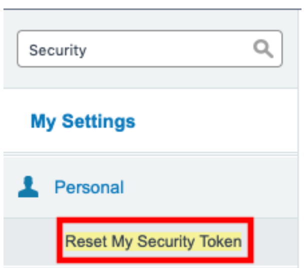
25. Fill out the form to set a password for the API user

26. Select **Change Password**. The API user will log into the Salesforce Classic view

27. Access the API user's personal settings by selecting the username in the top right corner, then choose **My Settings**



28. In the **Quick Find** field, type **security** then select **Reset My Security Token** from the results



29. Select **Reset Security Token**. Your security token will be emailed to you

30. Copy the security token from the email to your notepad

Gather Information from Your Amazon Connect Instance

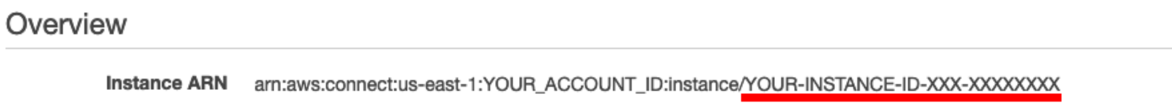
The last thing to do before you can install the Amazon Connect Salesforce Lambda Package is gather some details about your Amazon Connect instance. These will be used during the package installation.

1. In a new browser tab, login to the **[AWS console]()**

2. Navigate to the [Amazon Connect Console]()

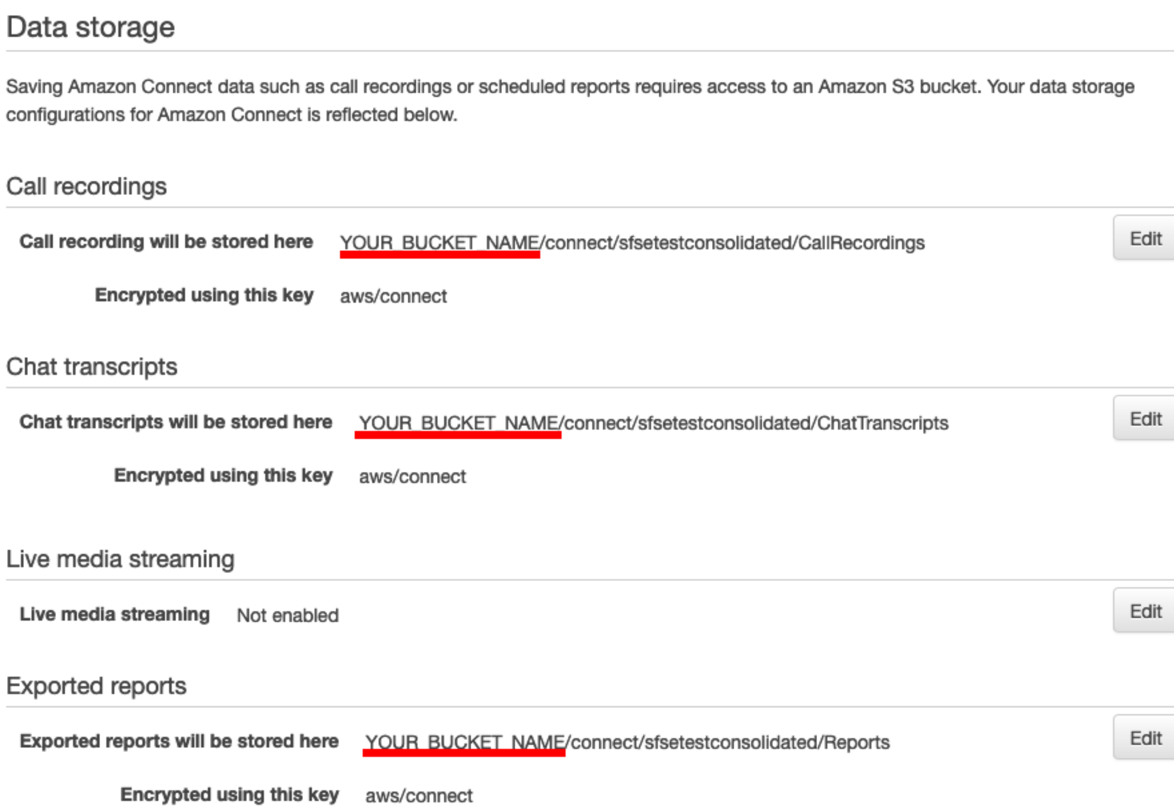
3. Select your Instance Alias

4. On the Overview page for your instance, copy the string following instance/ in the Instance ARN and paste it to your notepad. This is your Instance ID.



5. In the left nav, select **Data storage**

6. On the **Data storage** page, copy the S3 bucket names for your Call recordings and Exported Reports. The bucket name is everything preceding the first / in the XX will be stored here sections

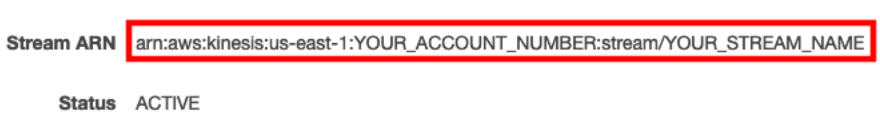


7. In the left nav, select **Data streaming**

8. Note the name of the Kinesis stream configured in the Contact Trace Records section, then select **Create a new Kinesis Stream**. This will take you to the list of Kinesis streams configured in this region.

9. Select the **Kinesis stream name** that matches what was configured in the previous step

10. On the stream detail page, copy the entire value for Stream ARN

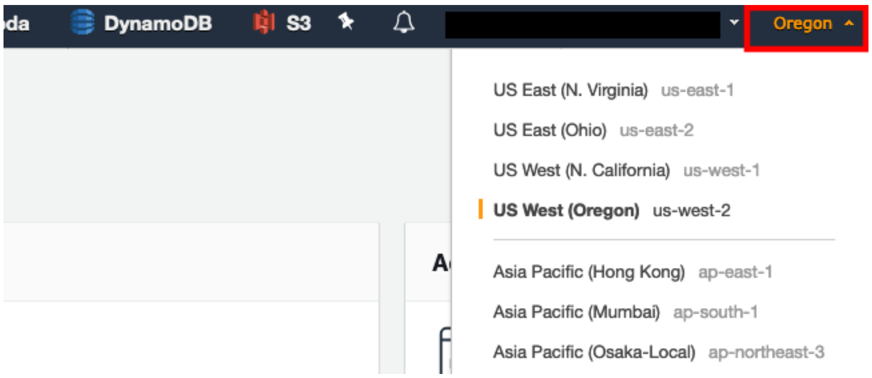


Store Salesforce Credentials in AWS Secrets Manager

To ensure that your Salesforce credentials are secure, the Lambdas require that the credentials are stored in AWS Secrets Manager. AWS Secrets Manager is a highly secure service that helps you store and retrieve secrets.

1. In a new browser tab, login to the AWS console

2. Make sure you are in the same region as your Amazon Connect instance. You can set the region by expanding the region selector in the upper right and choosing the region



3. Navigate to the [Secrets Manager console]

4. Select **Secrets**

5. Select **Store a new secret**

6. Select **Other types of secrets**

7. Make sure **Secret key/value** is selected

8. Enter key value pairs that match the following:

   a. **Key:** Password, **Value:** the password for the API user that you configured in the previous section

   b. **Key:** ConsumerKey, **Value:** the Consumer Key for the Connected App you created in the previous section

   c. **Key:** ConsumerSecret, **Value:** the Consumer Secret for the Connected App you created in the previous section

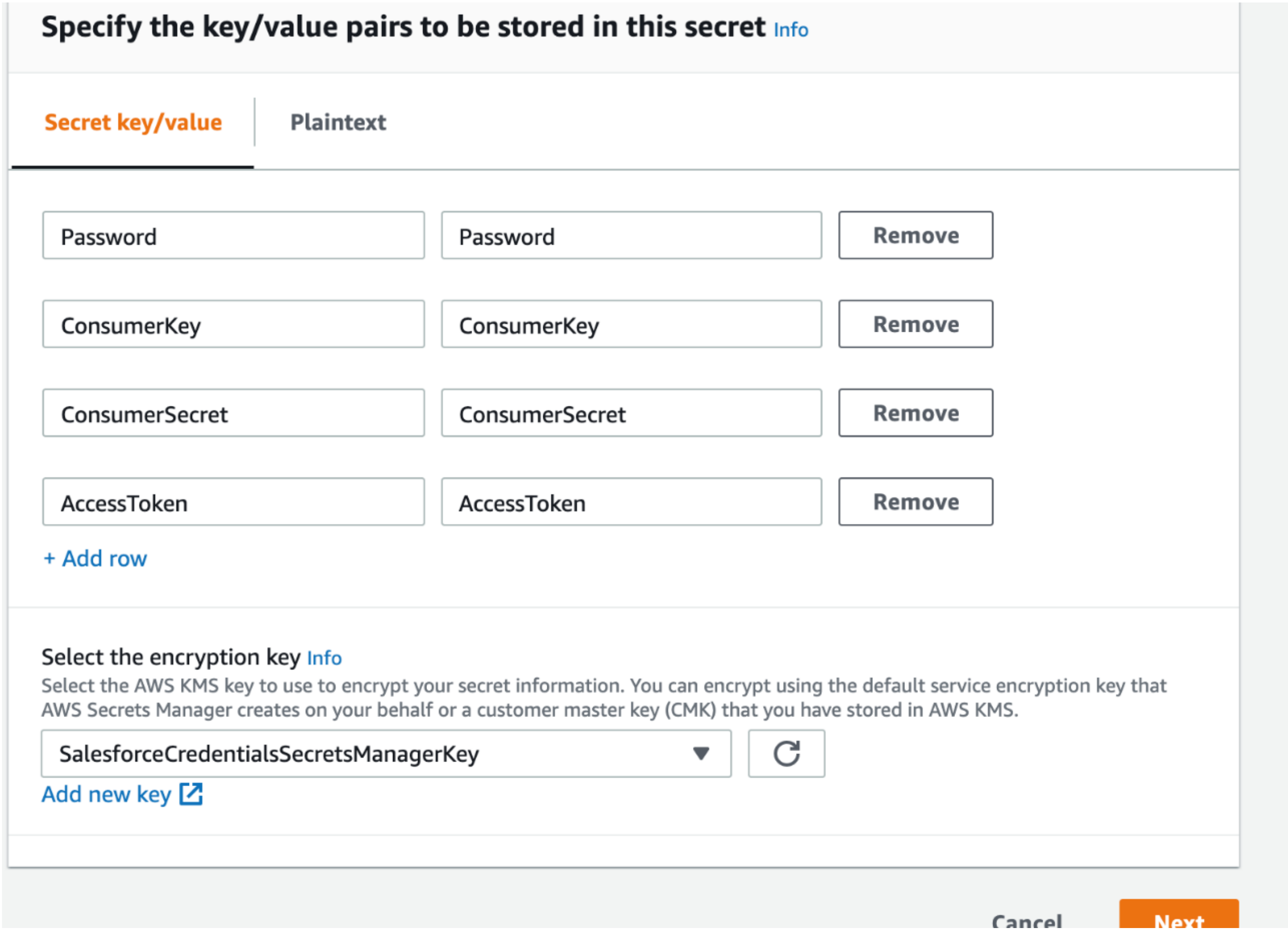
   d. **Key:** AccessToken, **Value:** this is the access token for the API user that you configured in the previous section

9. For the encryption key, click **Add new key**

10. Select **Create Key**

11. Make sure key type is set to **symmetric**

12. Give your key an **alias**, like *SalesforceCredentialsSecretsManagerKey*
13. Click Next
14. Select administrators you want to have access permission to change the key policy. Make sure you are being as restrictive as possible
15. Click Next
16. Select the users and roles you want to have access to the Salesforce credentials in Secrets Manager. Make sure you are being as restrictive as possible
17. Click Next
18. Click Finish
19. Click on the managed key that you just created (which is *SalesforceCredentialsSecretsManagerKey* in this case).
20. Note down the ARN. This is SalesforceCredentialsKMSKeyARN that will be used later when installing the Amazon Connect Salesforce Lambda package.
21. Navigate back to the Secrets Manager setup tab
22. Select the key you just created



23. Click Next

24. Give your secret a name, like *SalesforceCredentials*

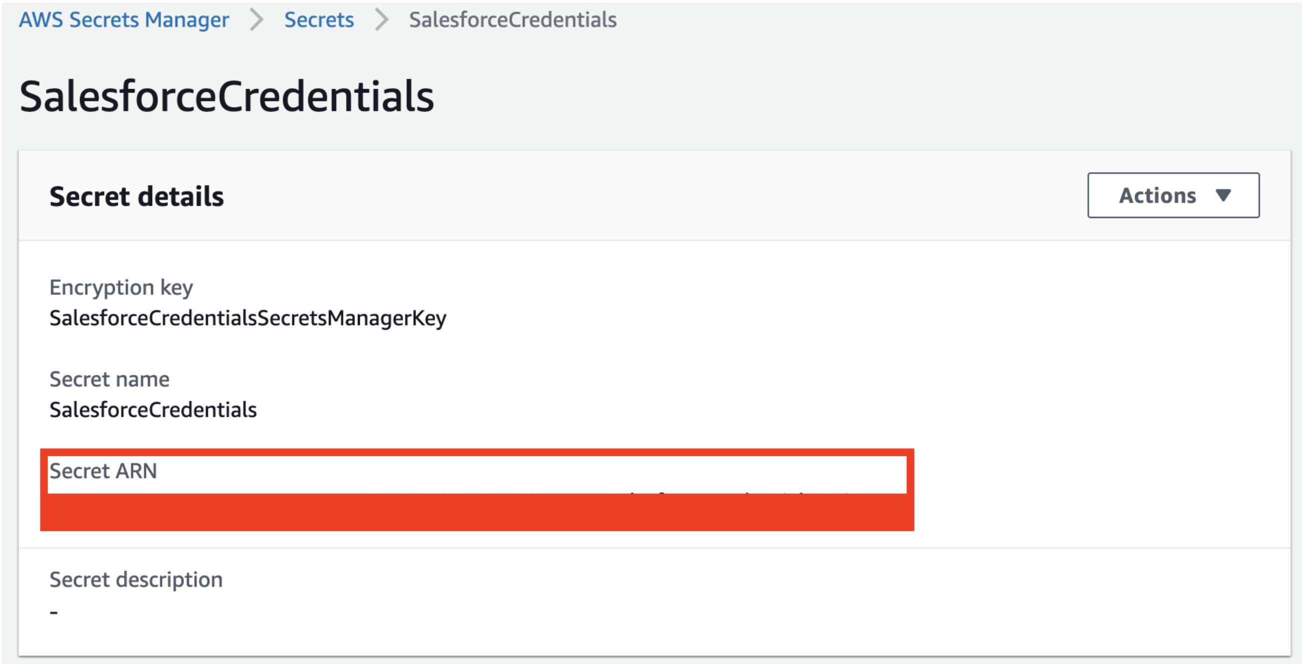
25. Click Next

26. Make sure **Disable automatic rotation** is disabled

27. Click Next

28. Click Store

29. Select the secret you just created, and copy the Secret ARN

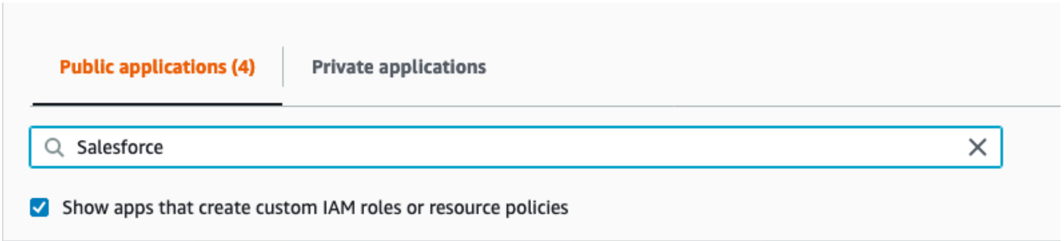


30. You should now have all of the information you need to install the package

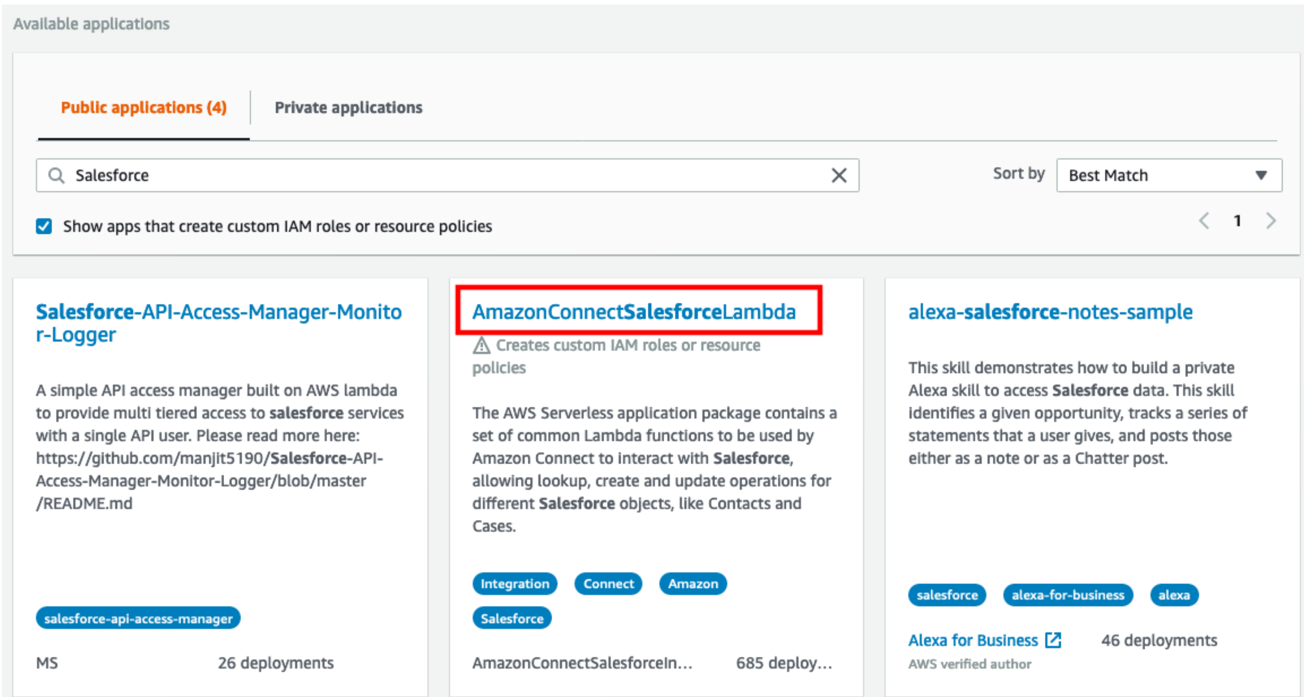
Install the Amazon Connect Salesforce Lambda package

1. In a new browser tab, login to the [AWS console]
2. Make sure you are in the same region as your Amazon Connect instance
3. Once you have selected the region, navigate to the [Amazon Connect Console]
4. Verify that the Amazon Connect instance that you wish to configure is listed
5. Once you have verified your Amazon Connect instance, Open the [Serverless Application Repository Console]
6. In the left navigation, select **Available Applications**

7. In the search area, make sure that **Public applications** is selected, check the box for **Show apps that create custom IAM roles or resource policies**, and enter **Salesforce** in the search field, this will automatically filter the available packages



8. Select AmazonConnectSalesForceLambda



9. When the Application loads, scroll down to the **Application settings** section

10. Fill in the parameters using the data you gathered in your notepad in the previous section using the following notes:

    a. **Application name:** You can accept the default here or change it as desired

    b. **CTRKinesisARN:** This is the ARN for the Kinesis stream that was configured for Contact Trace Record streaming in Amazon Connect. This is the complete ARN. Amazon Kinesis Firehose is not supported.

    c. **ConnectRecordingS3BucketName:** This is the name of the S3 bucket used to store recordings for your Amazon Connect instance. This is ONLY the bucket name, no sub-folders or suffixes

    d. **ConnectReportingS3BucketName:** This is the name of the S3 bucket used to store exported reports for your Amazon Connect instance. This is ONLY the bucket name, no sub-folders or suffixes

e. **HistoricalReportingImportEnabled:** true I false - if set to true, the package will include a feature to import Amazon Connect Queue and Agent Historical Metrics into your Salesforce Org. This feature requires you to provide **ConnectReportingS3BucketName**

f. **LambdaLoggingLevel:** DEBUG I INFO I WARNING I ERROR I CRITICAL - Logging level for Lambda functions

g. **PrivateVpcEnabled:** Set to true if functions should be deployed to a private VPC. Set VpcSecurityGroupList and VpcSubnetList if this is set to true.

h. **RealtimeReportingImportEnabled:** true I false - if set to true, the package will include a feature to publish Amazon Connect Queue Metrics into your Salesforce Org. This feature requires you to provide **AmazonConnectInstanceId**

i. **SalesforceAdapterNamespace:** This is the namespace for CTI Adapter managed package. The default value is **amazonconnect**. If a non-managed package is used, leave this field blank.

j. **SalesforceCredentialsKMSKeyARN:** This is the ARN for KMS customer managed key that you created in the previous section.

k. **SalesforceCredentialsSecretsManagerARN:** This is the ARN for the Secrets Manager Secret that you created in the previous section.

l. **SalesforceHost:** The full domain for your salesforce org. For example **https://mydevorg-dev-ed.my.salesforce.com**. Please make sure that the host starts with "https".

m. **SalesforceProduction:** true I false - True for Production Environment, False for Sandbox

n. **SalesforceUsername:** The username for the API user that you configured in the previous section

o. **SalesforceVersion:** This is the Salesforce.com API version that you noted in the previous section

p. **VpcSecurityGroupList:** The list of SecurityGroupIds for Virtual Private Cloud (VPC). Not required if PrivateVpcEnabled is set to false.

q. **VpcSubnetList:** The list of Subnets for the Virtual Private Cloud (VPC). Not required if PrivateVpcEnabled is set to false.

r. **AmazonConnectInstanceId:** You Amazon Connect Instance Id. Only required if you enable real time reporting

s. **AmazonConnectQueueMaxRecords:** Enter record set size for list queue query. Max is 100.

t. **CTREventSourceMappingMaximumRetryAttempts:** Maximum retry attempts on failure for lambdas triggered by Kinesis Events.

u. **AmazonConnectQueueMetricsMaxRecords:** Enter record set size for queue metrics query. Max is 100.

v. **PostcallCTRImportEnabled:** true | false - Set to false if importing CTRs into Salesforce should not be enabled on the package level. This setting can be disabled on a call-by-call basis.

w. **PostcallRecordingImportEnabled:** true | false - Set to false if importing call recordings into Salesforce should not be enabled on the package level. This setting can be disabled on a call-by-call basis.

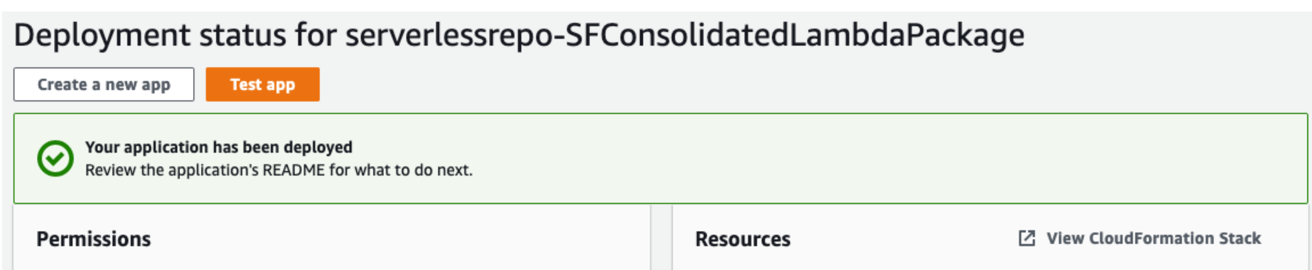
x. **PostcallTranscribeEnabled:** true | false - Set to false if post-call transcription should not be enabled on the package level. This setting can be disabled on a call-by-call basis.

y. **TranscribeOutputS3BucketName:** This is the S3 bucket where Amazon Transcribe stores the output. Typically, this is the same bucket that call recordings are stored in, so you can use the same value as found in **ConnectRecordingS3BucketName**. Not required if both PostcallRecordingImportEnabled and PostcallTranscribeEnabled set to false.

z. **TranscriptionJobCheckWaitTime:** Time between transcription job checks

11. Once you have completed the form, select **Deploy**

12. Deployment will take some time, with status updates being provided by the UI. Once it has completely deployed, you will receive a notification on the screen



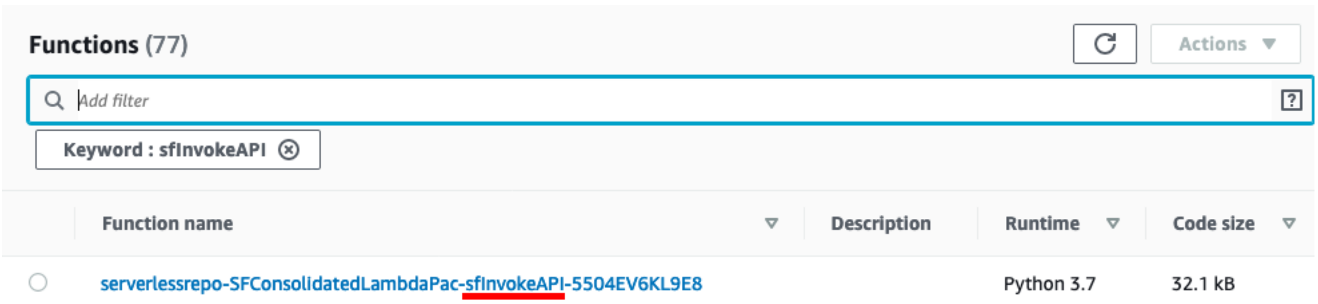
Test the Core Functionality

The package provides a core Lambda function (sfInvokeAPI) that supports multiple operations, like lookup, create and update. For the initial validation, sample events are provided within the function. Validating this function provides a good check that the installation and configuration is correct.

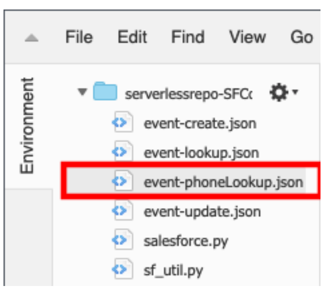
Validating the lambda functions requires the use of test events to simulate data coming into the function as it would in a typical deployment. Each function has a set of test event samples included to make validation easier.

Validate the core functionality

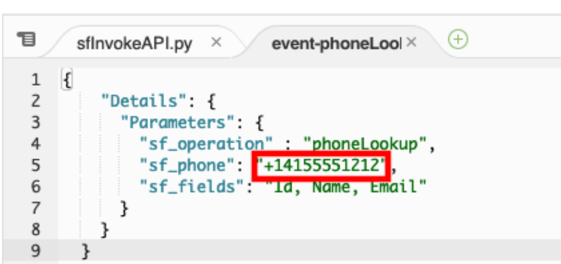
1. In a new browser tab, login to the **[AWS console]()**
2. Open the [AWS Lambda Console]()
3. In the Filter field, enter sfInvokeAPI and press enter, this will filter your list out to the core function that we just installed



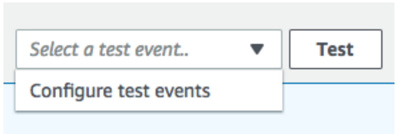
4. Select the **function name.** First, we will validate a phone number lookup.
5. In the Environment pane, double-click the event-phoneLookup.json file



6. The test even JSON will open in the Lambda editor
7. Modify the value for sf_phone to match the phone number of the test contact you created when you setup the CTI adapter or for any valid contact in your Salesforce org NOTE: The phone number must be in [E.164 format]()

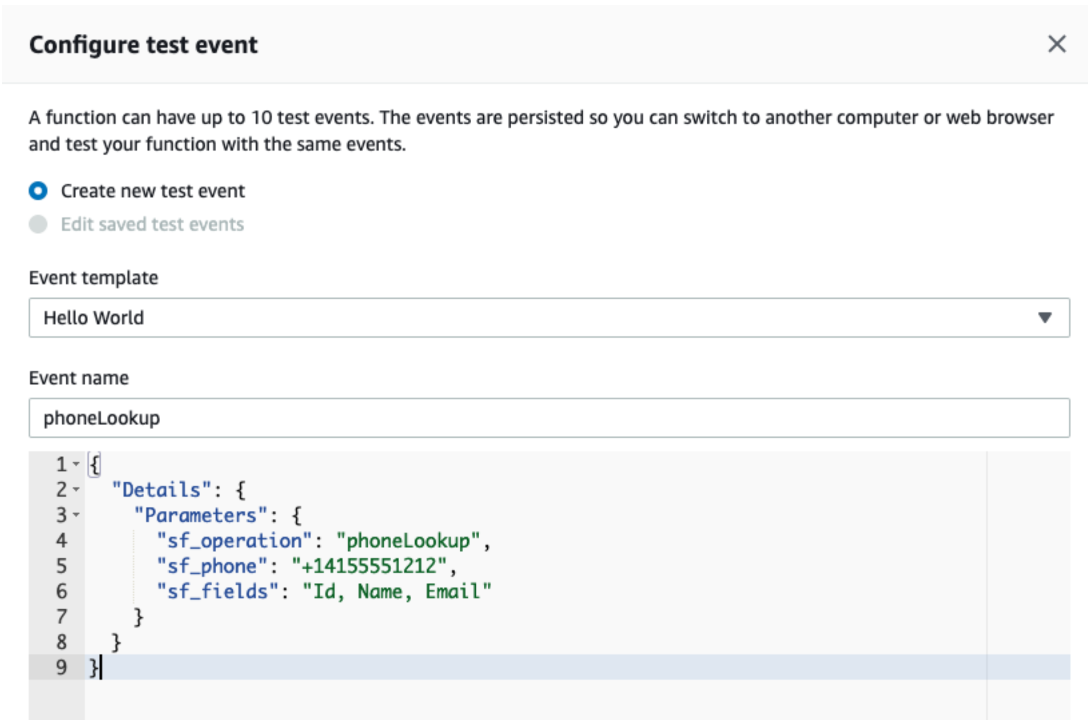


8. Select the entire JSON event and copy it, then close the **event-phoneLookup.json** tab.
9. In the top-right corner, select drop-down arrow next to **Test** and choose **Configure test events**



10. Select the radio button for **Create new test event** and provide an event name, for example: **phoneLookup**

11. Select the existing event JSON and **delete** it. Paste the modified JSON payload you copied from the **event-phoneLookup.json** file

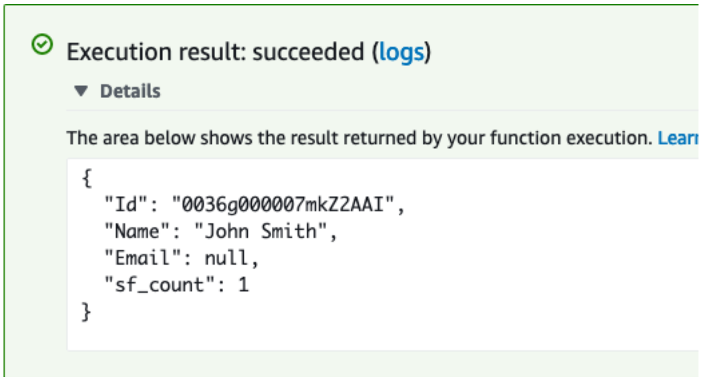


12. Select **Create** to save your test event

13. By default, your new test event should be selected in the drop-down list to the left of the Test button.

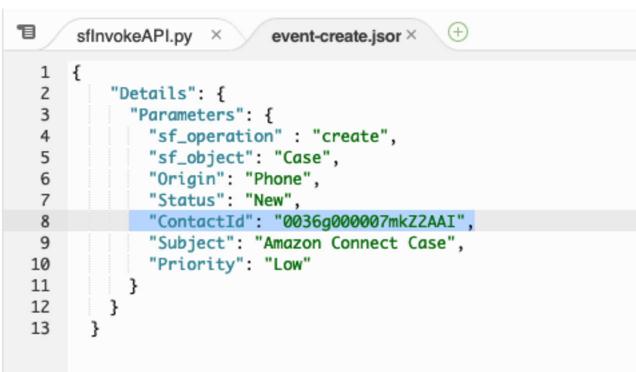
14. Select **Test**

15. If successful, the result will contain fields defined in "sf_fields" parameter in the invocation event



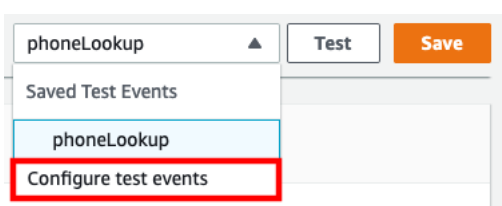
16. Copy the value for the **Id** key in the response. Next, we are going to use that Id to create a Case in Salesforce.

17. In the Environment pane, double-click the **event-create.json** file. Replace the existing ContactId value with the ID value you copied previously.



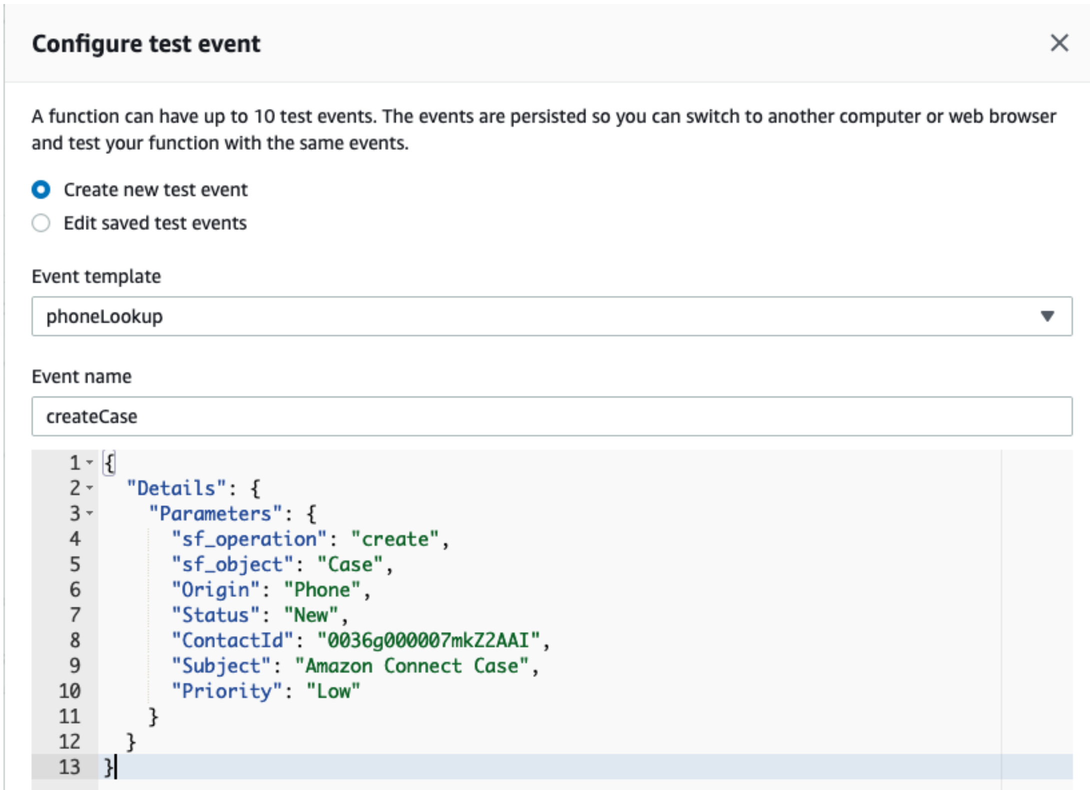
18. Select the entire JSON event and copy it, then close the **event-create.json** tab.

19. In the top-right corner, select drop-down arrow next to **Test** and choose **Configure test events**



20. Select the radio button for **Create new test event** and provide an event name, for example: **createCase**

21. Select the existing event JSON and **delete** it. Paste the modified JSON payload you copied from the **event-create.json** file

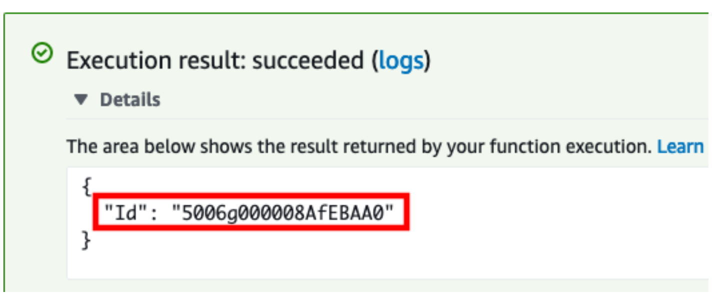


22. Select **Create** to save your test event

23. By default, your new test event should be selected in the drop-down list to the left of the Test button.

24. Select **Test**

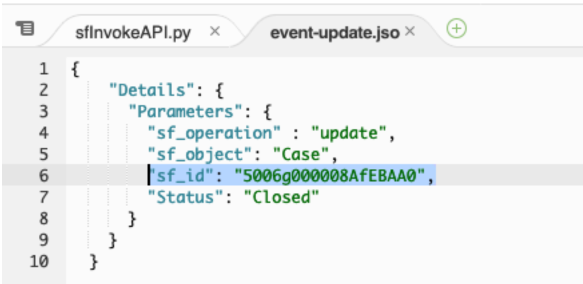
25. If successful, the result will contain the Case Id



26. Copy the value for the **Id** key in the response.

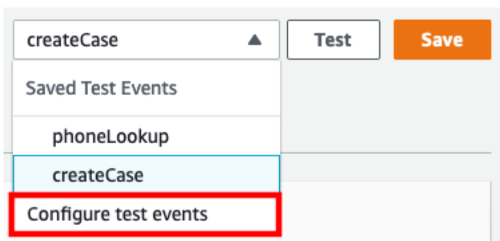
27. When we created the case, the **Status was set to New** and the **Priority to Low**. We are going to use the update operation to close the case.

28. In the Environment pane, double-click the **event-update.json** file and replace the existing Case Id in "sf_id" parameter with the new one you copied from the last test result



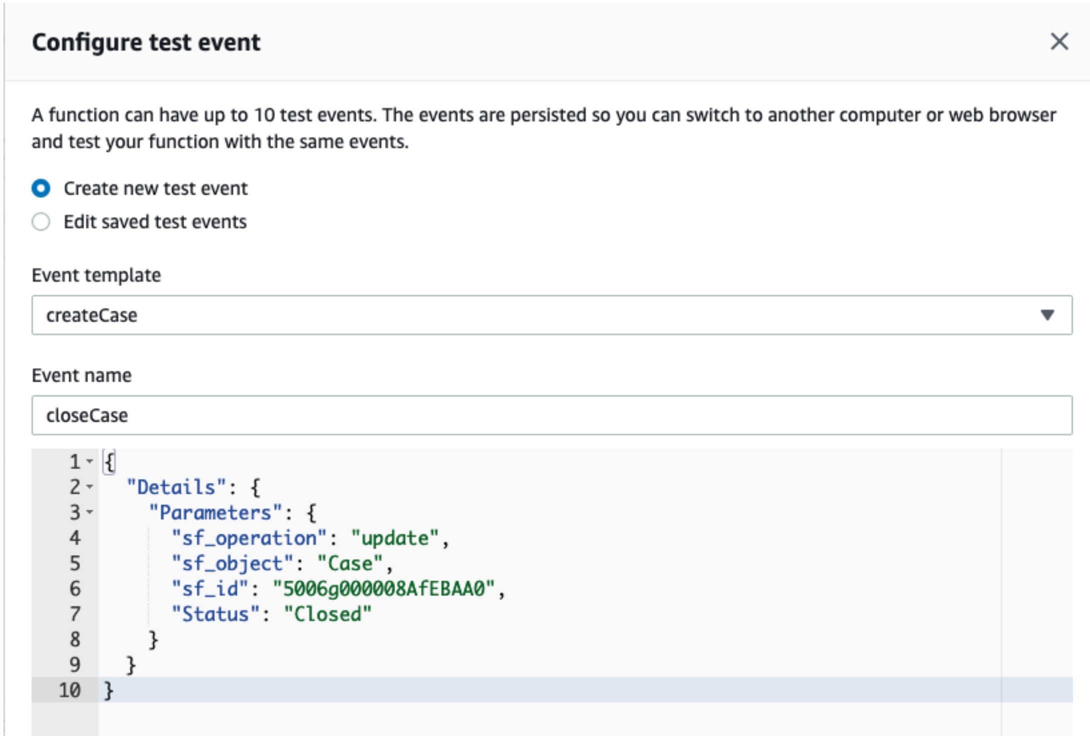
29. Select the **entire JSON event** and copy it, then close the **event-update.json** tab.

30. In the top-right corner, select drop-down arrow next to **Test** and choose **Configure test events



31. Select the radio button for **Create new test event** and provide an event name, for example: **updateCase**

32. Select the existing event JSON and **delete** it. Paste the modified JSON payload you copied from the **event-update.json** file

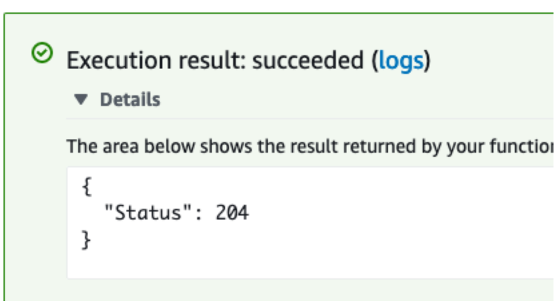


33. Select **Create** to save your test event

34. By default, your new test event should be selected in the drop-down list to the left of the Test button.

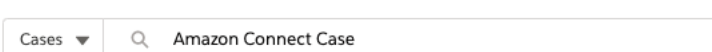
35. Select **Test**

36. If successful, the result will be the **HTTP 204** No Content success status response code



37. Log in into your Salesforce org and go to the **Service Console**

38. In the search box, change the object type to Cases and type Amazon Connect Case, then press enter



39. You should find 1 case opened by the API user, and the status should be closed

Cases
1 Result

Case Number	Subject	Status	Date/Time Opened	Case Owner Alias
00001026	Amazon Connect Case	Closed	1/23/2020, 10:13 PM	apiuser

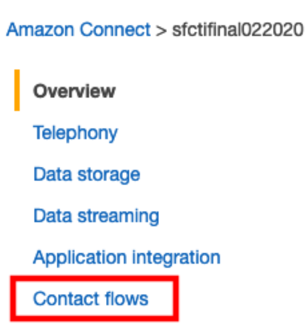
40. You have completed core function validation

Allow Amazon Connect to Access the sfInvokeAPI Lambda Function

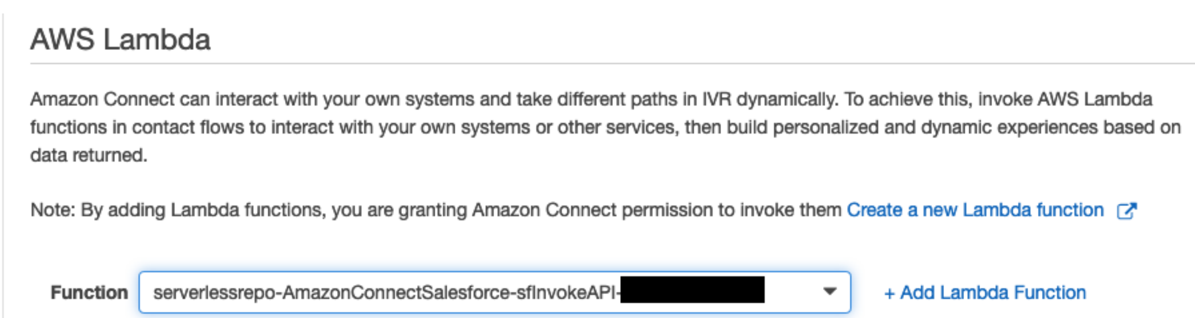
Once you have validated function, you can use the Amazon Connect console to add the sfInvokeAPI Lambda function to your Amazon Connect instance. This automatically adds resource permissions that allow Amazon Connect to invoke the function.

Add the Lambda function to your Amazon Connect instance

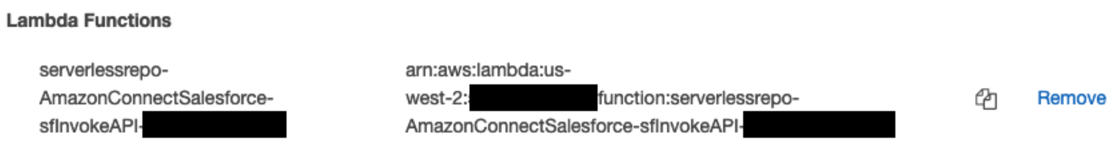
1. In a new browser tab, login to the **[AWS console]**
2. Navigate to the [Amazon Connect Console]
3. Select your **Instance Alias**
4. In the navigation pane, choose **Contact flows**.



5. For **AWS Lambda**, select the function that includes sfInvokeAPI in the name



6. Choose **Add Lambda Function**. Confirm that the ARN of the function is added under **Lambda Functions**.



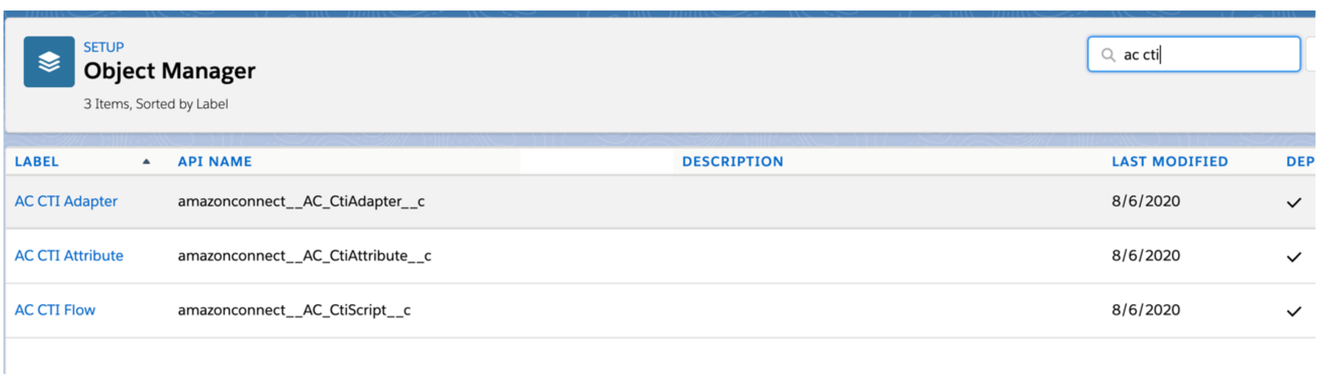
7. The AWS Lambda function has been added to your Amazon Connect instance.

Upgrading from an Earlier Version

If you are upgrading from an earlier version of CTI Adapter, there are a few additional things you need to do.

1. Go to the **Setup** section and search for **Object Manager**.

2. In Object Manager section, search for "AC CTI"



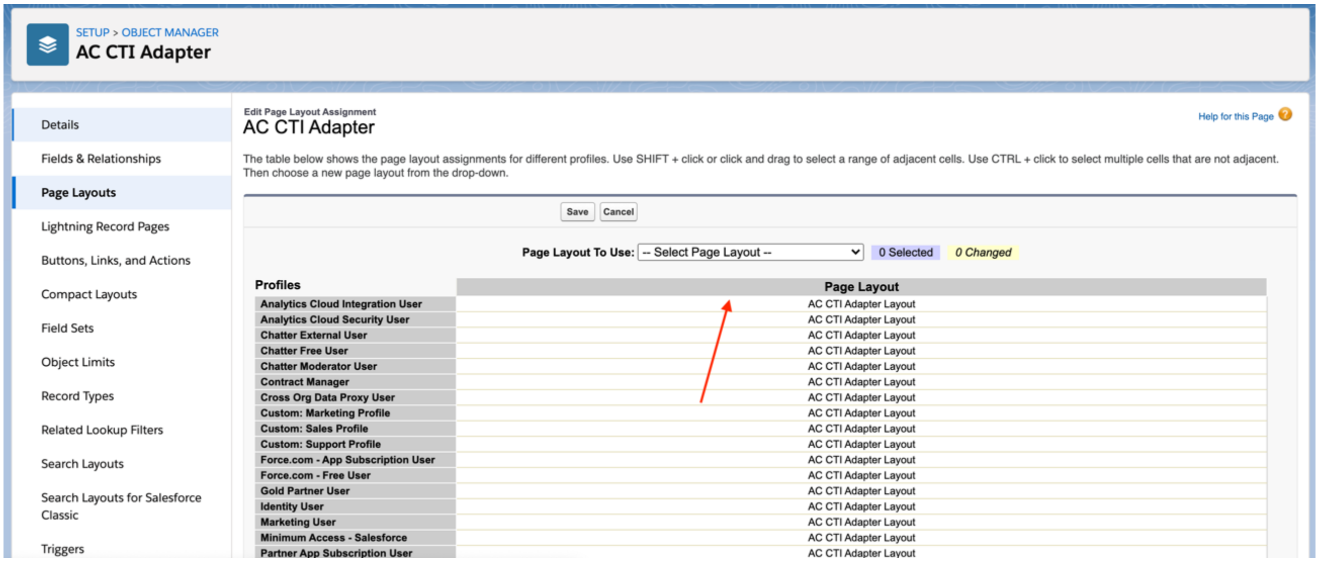
3. Open up **AC CTI Adapter**

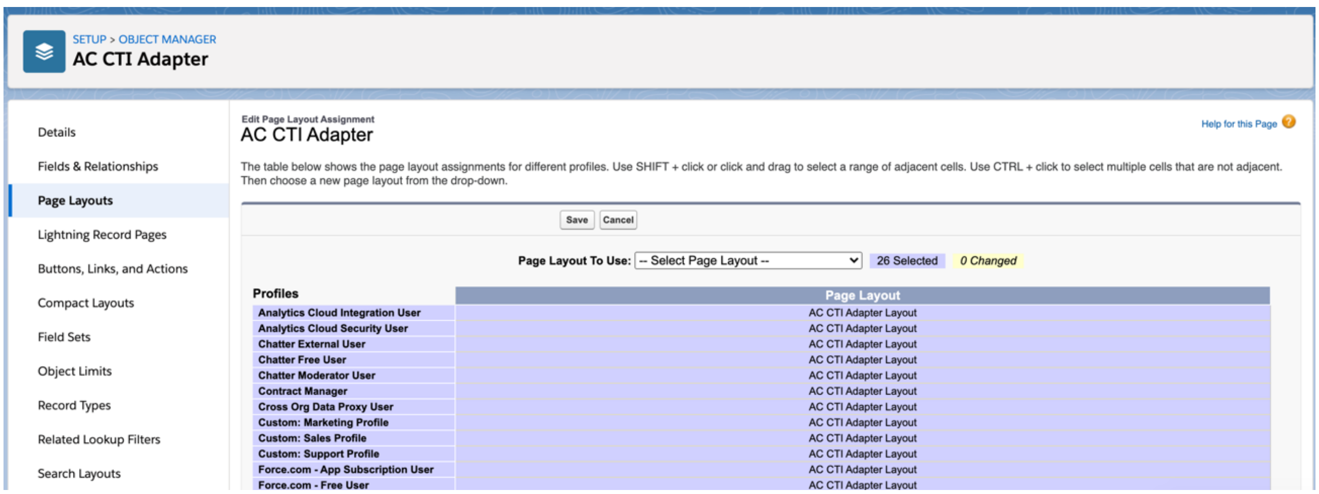
4. On the left sidebar, click on **Page Layouts**

5. Click on **Page Layout Assignment**

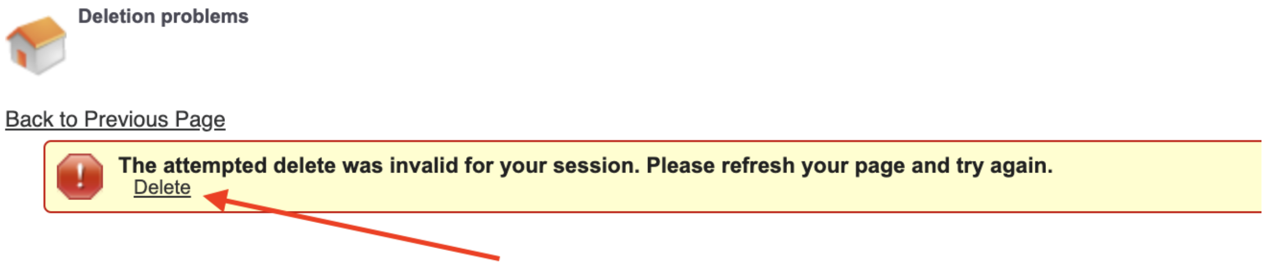
6. On the next page, click on **Edit Assignments**

7. Click on the grey bar at the top of the table to select all rows.

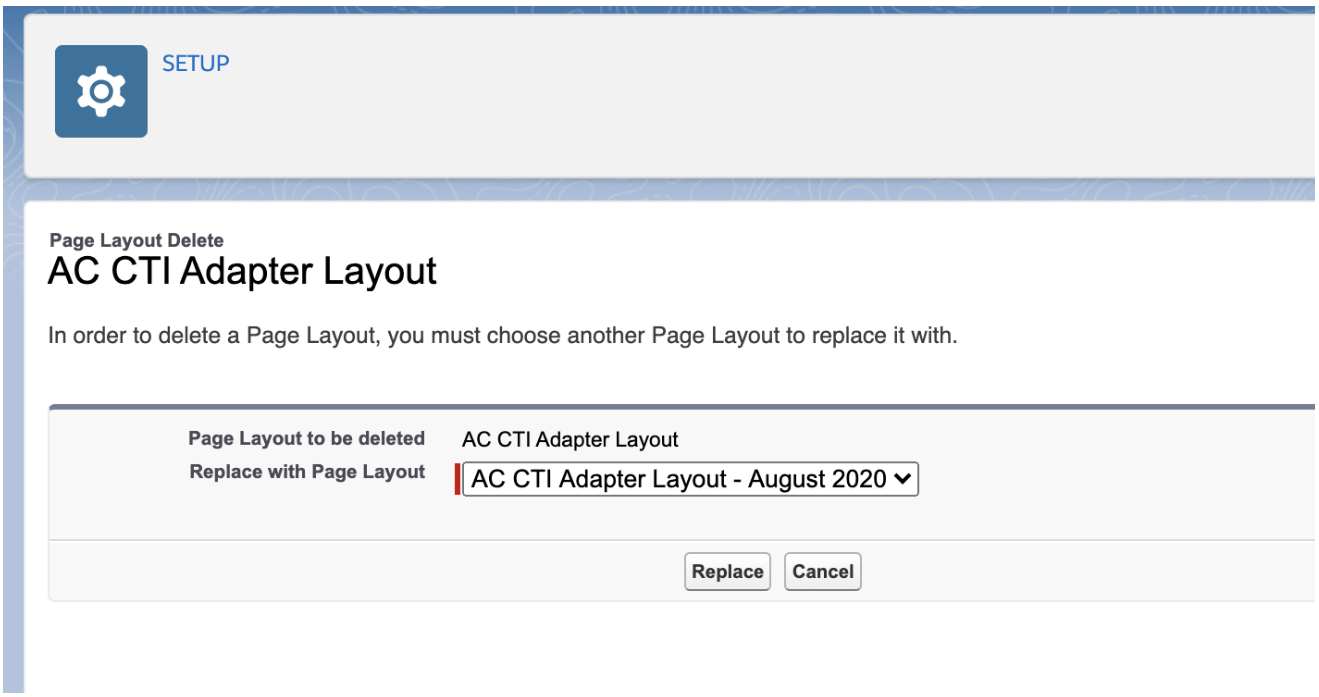




8. Open the **Page Layout to Use** dropdown and select **AC CTI Adapter Layout -- August 2020**.
9. Click **Save** and go back to **Page Layouts**.
10. Click on the dropdown next to the item labelled **AC CTI Adapter Layout** and click **Delete**.
11. Confirm **Yes** in the next dialogue where you will be asked "Are you sure?"
12. If you see a screen titled **Deletion Problems**, find and click **Delete**.

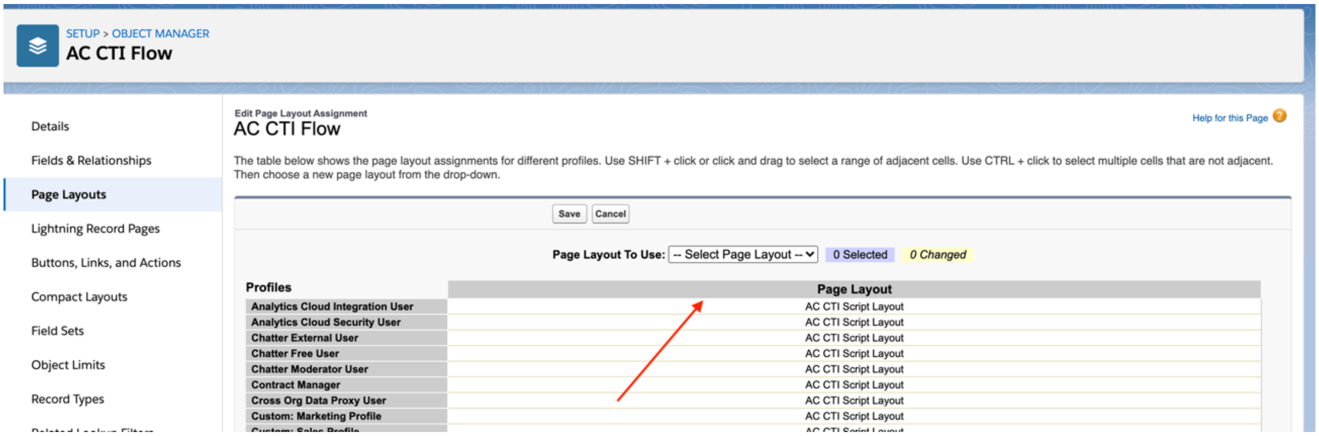


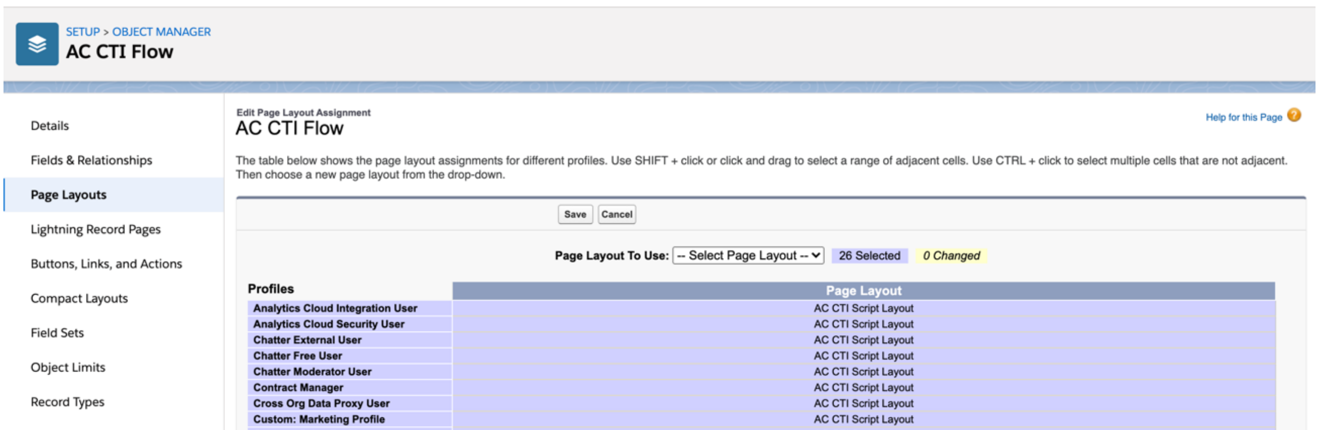
13. You will be asked which layout you want to replace it with. Select **AC CTI Adapter Layout -- August 2020** and click **Replace.**



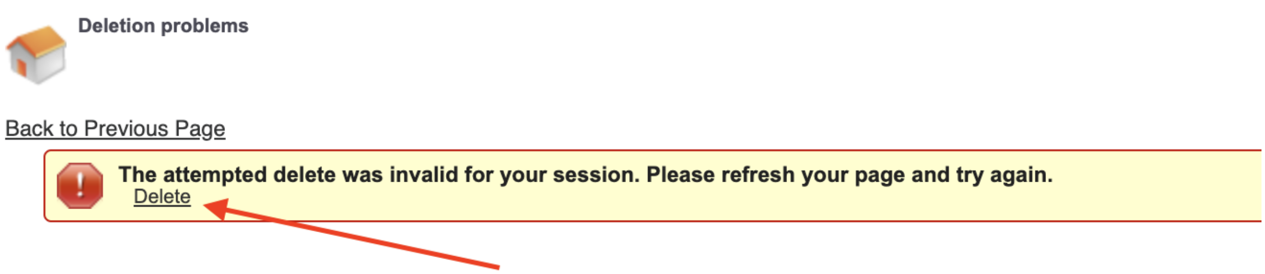
Now we are going to do the same thing for **AC CTI Script Layout**.

1. Open up **AC CTI Script Layout**
2. On the left sidebar, click on **Page Layouts**
3. Click on **Page Layout Assignment**
4. On the next page, click on **Edit Assignments**
5. Click on the grey bar at the top of the table to select all rows.

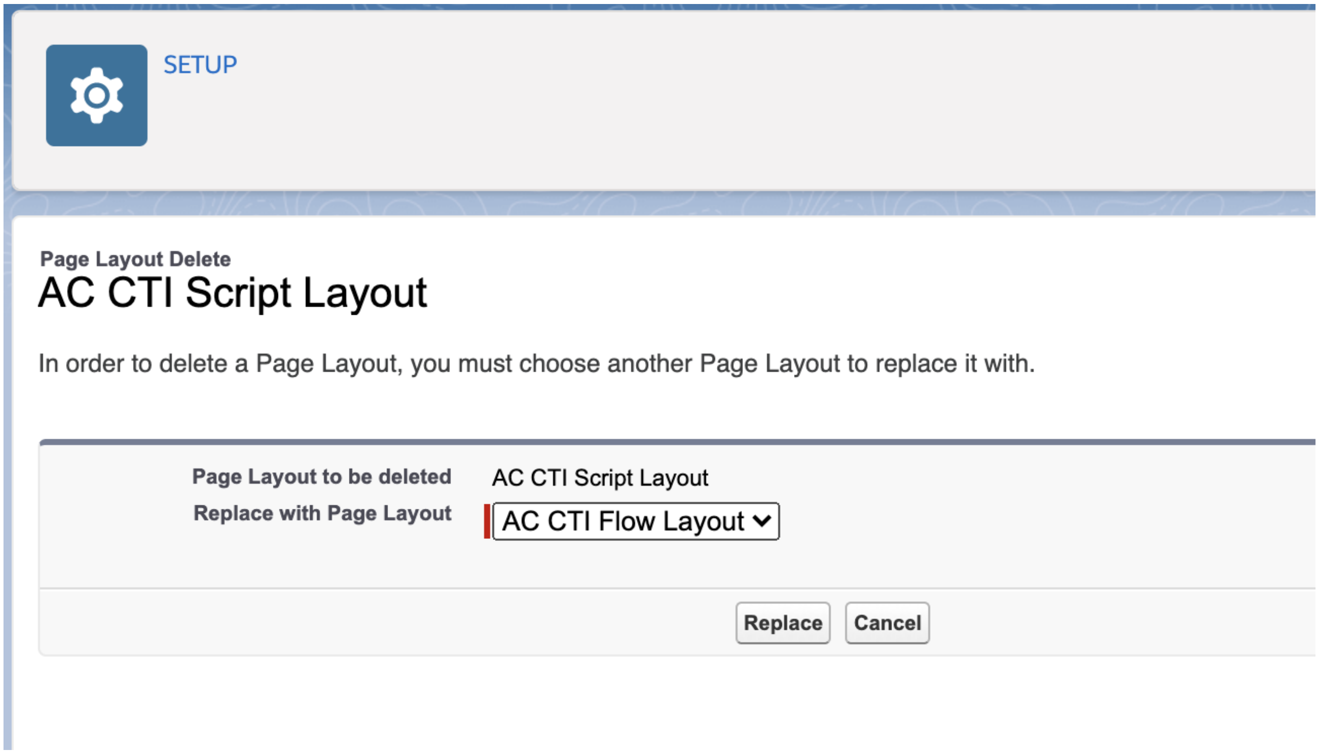




6. Open the **Page Layout to Use** dropdown and select **AC CTI Flow Layout**.
7. Click **Save** and go back to **Page Layouts**.
8. Click on the dropdown next to the item labelled **AC CTI Script Layout** and click **Delete**.
9. Confirm **Yes** in the next dialogue where you will be asked "Are you sure?"
10. If you see a screen titled **Deletion Problems**, find and click **Delete**.



11. You will be asked which layout you want to replace it with. Select **AC CTI Flow Layout** and click **Replace.**



12. Go to your **CTI Adapter**.

13. Click on any of the CTI Flows and scroll down to the section labeled **CTI Flow**. You should see something like this:

14. Click **Download** and save your script before clicking **Continue**.

15. Use the CTI Block primitives in the editor to re-create your script as a CTI Flow.

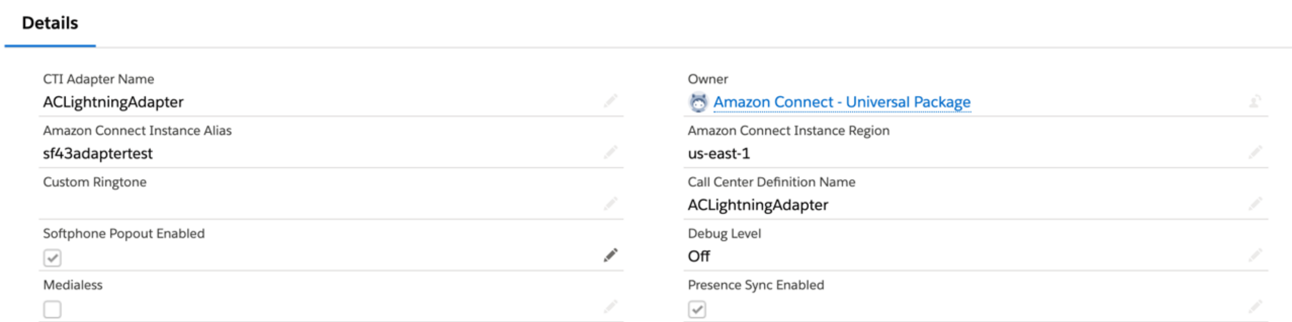
16. Refer to the Sample Flows in the Appendix of this manual.

Configuring and Using CTI Adapter Features

The CTI Adapter installed by the managed package provides a number of features that change or enhance the functionality of the integration. By default, many of these features have been configured during install with a default setting. This section will detail the options available.

CTI Adapter Details

The CTI Adapter configuration begins with the adapter details. These fields provide the basic information needed to relate the Adapter to the call center configuration in Salesforce and, ultimately, to the agents and supervisors that will be using the platform.



Update the CTI Adapter Details

1. **CTI Adapter Name:** provide a unique name for this CTI adapter definition

2. **Amazon Connect Instance Alias:** This was configured in a previous section. This is the instance alias for your Amazon Connect instance.

3. **Amazon Connect Instance Region:** This is the code for the region that you have deployed your Amazon Connect instance to. This is required for the Amazon Connect chat APIs to work correctly. If you do not use the chat feature of Amazon Connect, this field is not necessary

4. **Custom Ringtone:** This allows for overriding the built-in ringtone with any browser-supported audio file accessible by the user.

5. **Call Center Definition Name:** This was configured in a previous section. This is the internal name of the Call Center configured in Salesforce setup. This value links the CTI Adapter to the Call Center, and ultimately to the agents.

6. **Softphone Popout Enabled:** Salesforce supports softphone pop out in Console and Lightning Experience modes. When the softphone is popped out, it opens in a new

browser window external to the Salesforce UI. This is helpful in use cases where the call controls are regularly needed but the agent also needs full access to the entire console.

7. **Debug Level:** For future use

8. **Medialess:** Amazon Connect supports running in VDI environments, however best practice is to send the actual audio stream via a separate CCP. Selecting the medialess option will configure the Salesforce CCP to run in medialess mode, which provides the data that Salesforce needs for screenpop while the audio is streamed to a local CCP.

9. **Presence Sync Enabled:** This setting allows the adapter to use the presence rules to sync state from Amazon Connect to Salesforce Omni-Channel.

Single Sign On Settings

The Amazon Connect CTI Adapter supports single sign on(SSO) via SAML integration. This allows customers that use a SAML provider for authentication into Amazon Connect. You will need the SSO URL for your provider and the Relay State settings for your Amazon Connect instance.

For general information on configuring SAML for Amazon Connect, please refer to: Amazon Connect Administrator Guide: Configure SAML for Identity Management in Amazon Connect.

If you wish to use **Salesforce** as your identity provider for Single Sign On, please follow the setup instructions in Appendix B - Configuring Salesforce as Your Identity Provider .

For information about configuring specific SAML providers to work with Amazon Connect:

- AWS Single Sign-On
- Okta

Once you have your SAML integration working with Amazon Connect, you will need to create the Amazon Connect Single Sign On URL and validate that it works correctly, then configure the Lightning CTI adapter and login the agent.

Identify the SSO URL components

In order to authenticate with Amazon Connect, you need your IdP login URL from your SAML provider and a relay state URL that will redirect the authenticated user to your Amazon Connect instance.

Your IdP Login URL will resemble the following (Salesforce is shown):

```
https://m******run-dev-ed.my.salesforce.com/idp/login?app=0sp0N000000
```

The 'RelayState' will be in the following format:

```
https://console.aws.amazon.com/connect/federate/{InstanceId}?destinat
```

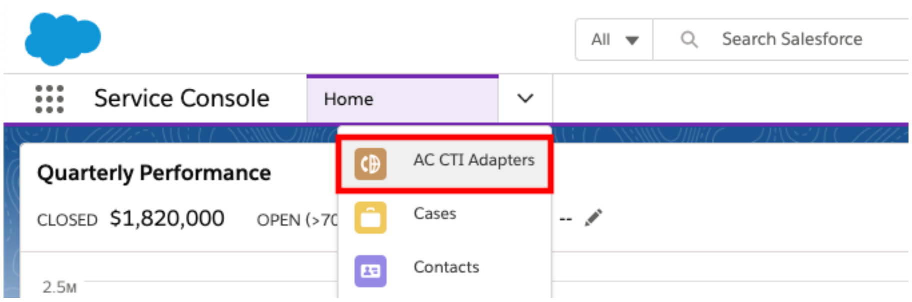
Please note that "console.aws.amazon.com" refers to US-East-1 region (N. Virginia). If your Amazon Connect instance is in a different region, please use the region Console URL. For example:

```
https://us-west-2.console.aws.amazon.com/connect/federate/{InstanceId
```

Configure the CTI Lightning Adapter in Salesforce

Now we are ready to complete the last step in the configuration process: Adding the SSO settings to the Lightning Adapter. This will configure the adapter to authenticate via SSO and redirect to the Amazon Connect Contact Control Panel once authentication completes.

1. Log in into your Salesforce org and go to the **Service Console**
2. Expand the **navigation menu** by selecting the down arrow and choose **AC CTI Adapters**.



3. Select **ACLightningAdapter**
4. Scroll down to the Single SignOn (SSO) section and choose the pencil icon of either field to edit

5. For the SSO Url, paste your IdP login URL up to the first question mark (if one exists). A couple of examples are provided: Salesforce:

   ```
   https://m******run-dev-ed.my.salesforce.com/idp/login?app=0sp0N000
   ```

   Microsoft ADFS:

   ```
   https://sts.yourcorp.com/adfs/ls/idpinitiatedsignon.aspx
   ```

6. Paste this portion of the URL into the **SSO Url** field

7. For the SSO Relay State: IF you had a question mark in your login URL, paste everything AFTER the question mar into the SSO Relay state field, then add &RelayState= to the end, and append your relay state URL. For example:

```
app=0sp0N000000Caid&RelayState=https://console.aws.amazon.com/conn
```

   IF you did not have a Question Mark, then enter &RelayState= into the SSO Relay State field and append your relay statue URL to it. For example:

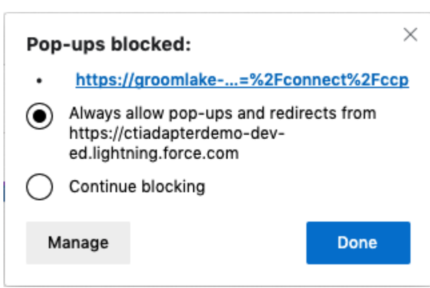
```
&RelayState=https://console.aws.amazon.com/connect/federate/instan
```

8. Example of a completed SSO section (Salesforce is shown)

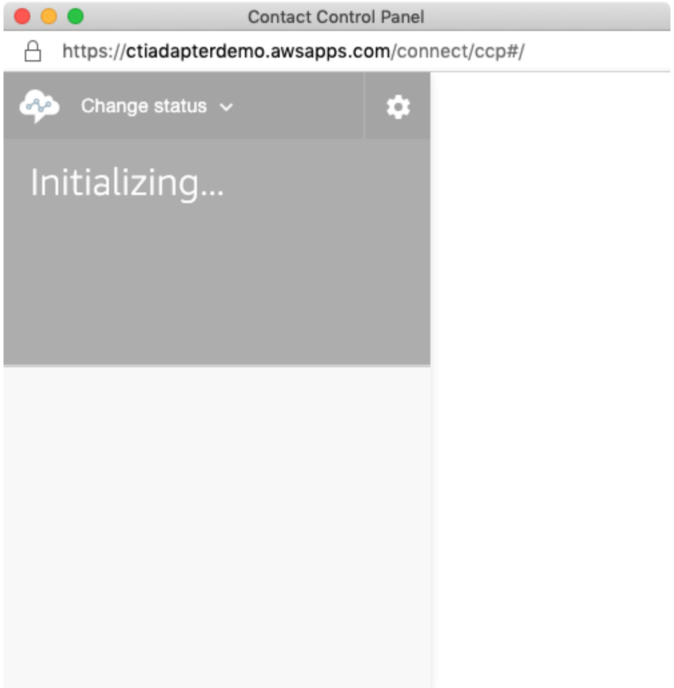
9. Choose **Save**

10. **Refresh** your browser to make the changes take effect

    a. **NOTE:** If you receive a blocked popup warning, select the warning and change the setting to always allow popups from your Salesforce org, then refresh the browser again

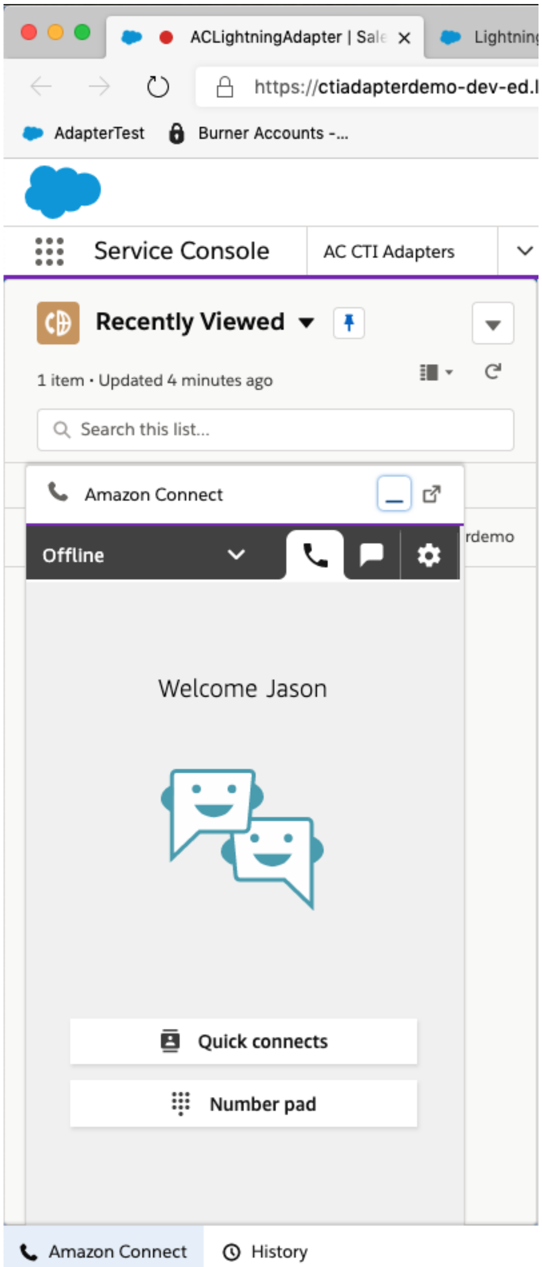


11. After a few seconds, a new window should pop up for a moment. This window is performing the authentication and setting your session cookie. Once it does this, it will close automatically.



12. Once the authentication window closes, select the **phone icon** in the console toolbar to open the CCP Note: You may also receive popups to allow notifications and microphone access. Please accept both.

13. You should now see the authenticated and logged in CCP



14. SSO Configuration is complete

CTI Attributes

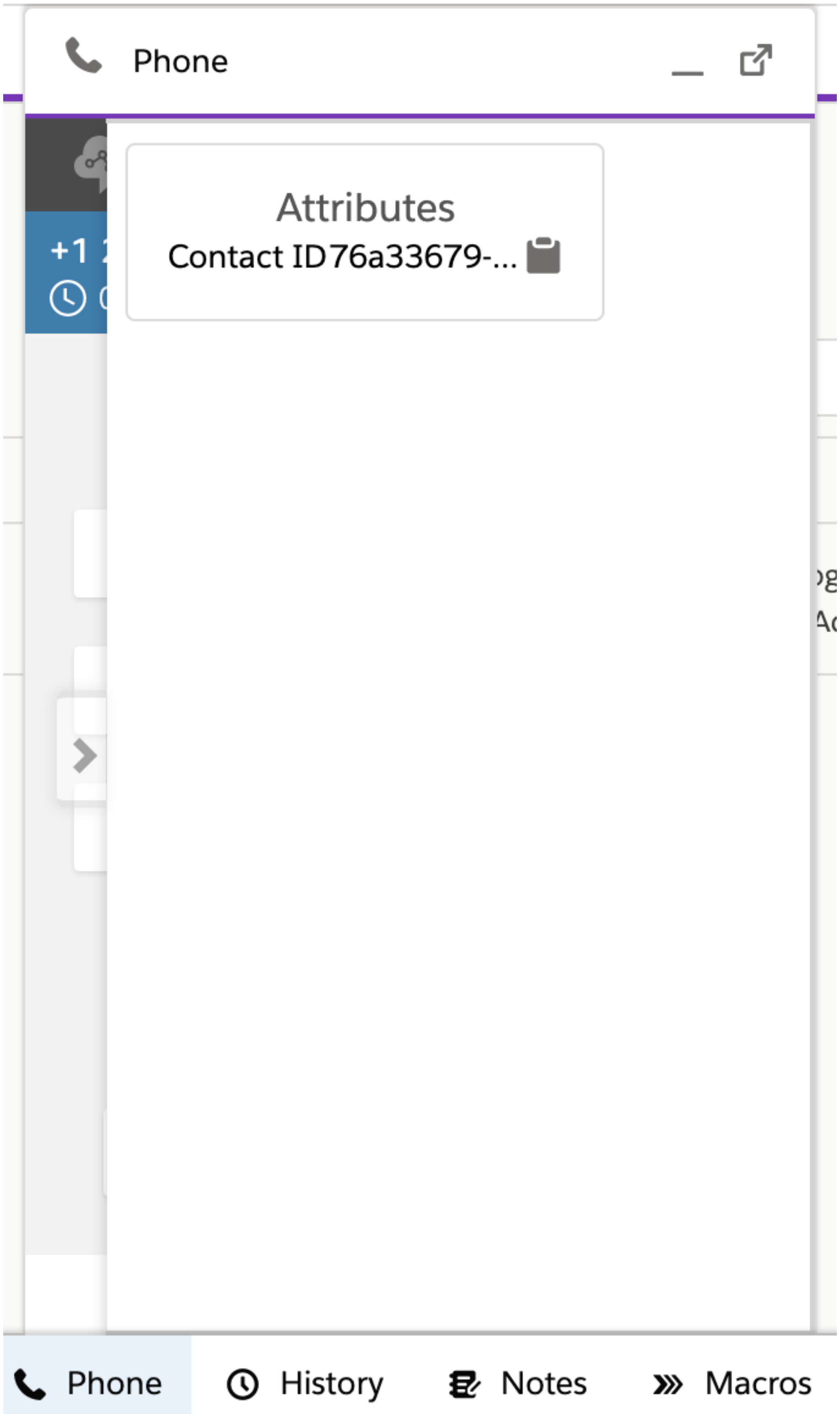
CTI Attributes provide the ability to reference and display contact attribute data within the Amazon Connect Contact Control Panel (CCP). This allows for easy access to data or URLs that may be necessary for agents to perform tasks external to Salesforce. Adding attributes does not import data directly into Salesforce. Instead, it is simply available in the CCP for the life of the contact.

Attribute Properties

When configuring CTI attributes, you will need to complete the configuration with the following information:

- **CTI Attribute Name:** the user-friendly name that will identify this attribute configuration. This is not the name or key of the attribute itself.
- **Label:** will be displayed in the CCP as the label for the attribute value.
- **Display:** indicates how this attribute should be displayed. Options are:
    - --None--: this attribute will not be displayed, however it will be available for use. Typically, this is used to define attributes that will be used in URLs.
    - Key-Value: the attribute label and value will both be displayed as a key-value pair
    - Key: only the label is displayed. This can be used to create sections in the attribute list. For example, you could have an "Address" label followed by individual attributes for street, city, state, country, postal code, etc
    - Value: only the value is displayed. This can be used when displaying several values under one section or when displaying a URL that needs no label.
- **Type:** indicates if this is a text or URL attribute
- **Style:** allows you to specify a CSS style rule for the display of this attribute. The style will apply to both the label and the value.
- **Format:** the format allows you to define which contact attributes will be used in the value of this CTI attribute. Contact attributes are referenced by their key name enclosed in double curly braces. For example, an Amazon Connect contact attribute of accountId would be referenced as {{accountId}}.
- **Active (checkbox):** indicates if this CTI attribute is active
- **Default Value:** value to be displayed if the contact attribute referenced is not found

Once you set the CTI attributes, you access them by choosing the appropriate icon during a connected contact

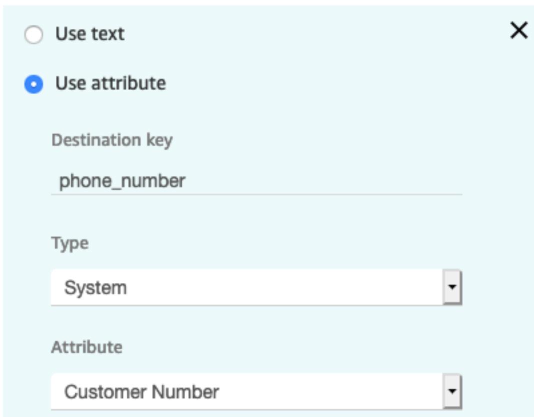


CTI Attributes Example Walkthrough

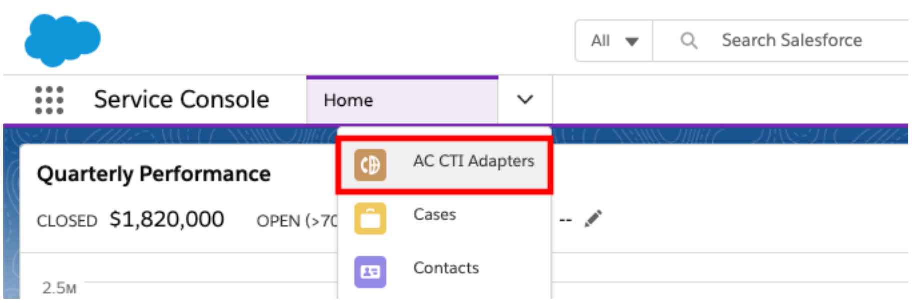
Since there are endless use cases for CTI attributes, this guide will walk through a couple examples that show you how both text and hyperlink based attributes are configured, presented, and used. These examples are not intended to remain in your configuration and are instead designed to provide you with the experience of configuring a functional attribute.

Adding a Text-based CTI Attribute

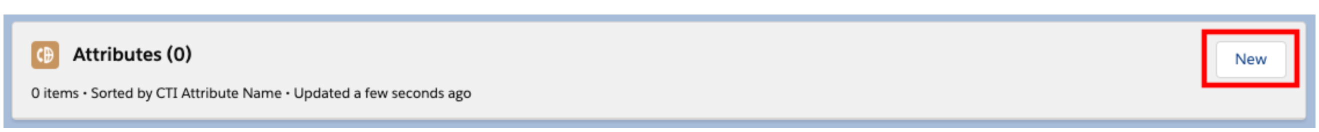
In this example, we will walk through creating a new CTI Attribute based on a contact attribute named "phone_number" and add it to the CCP. In our scenario, the contact flow has set this attribute using input from the customer to indicate their phone number of record. In order for this example to work, your contact flow must also set a contact attribute named "phone_number"



1. Log in into your Salesforce org and go to the **Service Console**
2. Expand the **navigation menu** by selecting the down arrow and choose **AC CTI Adapters**.

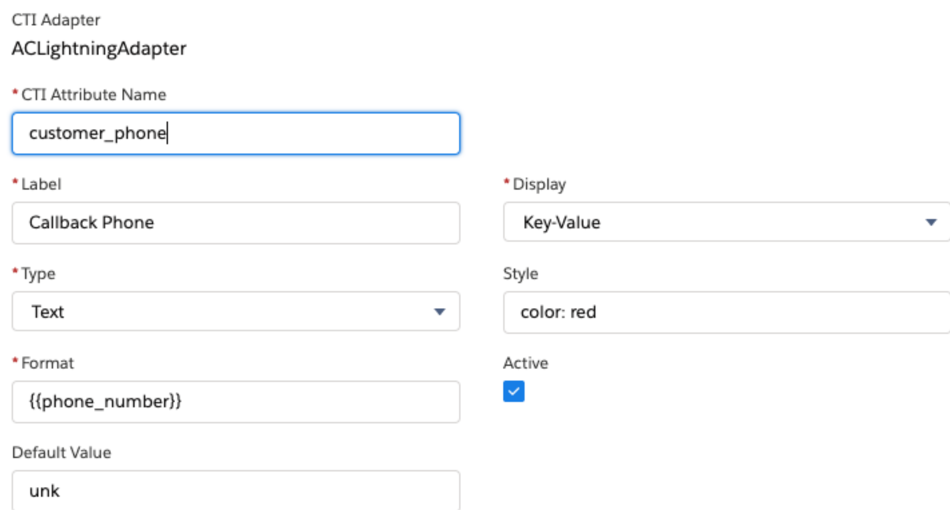


3. Select **ACLightningAdapter**
4. Scroll down to the **Attributes** section and select New

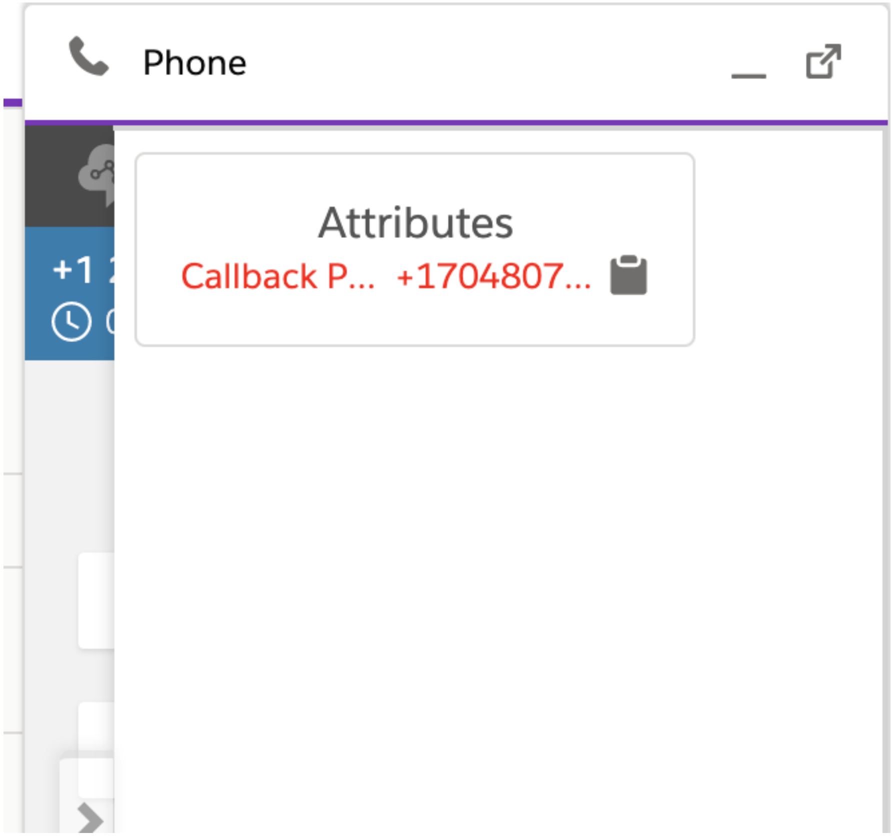


5. Provide a **CTI Attribute Name** value, for example: customer_phone
6. Provide the **Label** name, for example: Callback Phone

7. Select the **Display** option, in this case: Key-Value
8. Select Text as the **Type**
9. For **Style**, enter the following: color: red
10. In the **Format** field, enter {{phone_number}} to reference the incoming contact attribute
11. Set **Default Value** to unk
12. Choose Save



13. Refresh your browser
14. Place a new call into your Amazon Connect instance and accept the call as an agent
15. Once the call is connected, select the text attribute icon to expand the CTI Attributes

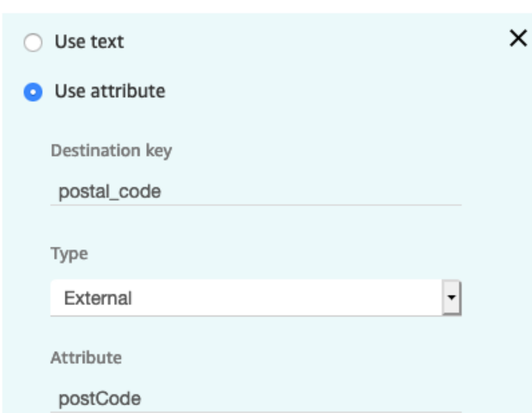


16. Note the Style formatting. Also note that you can quickly copy the content of the attribute by selecting the clipboard icon.

17. Disconnect the contact.

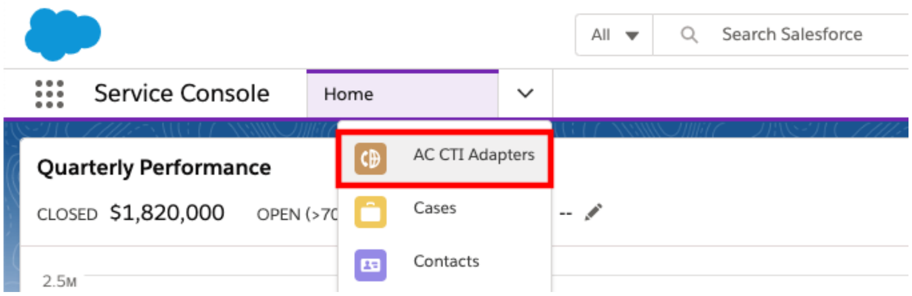
Adding a Hyperlink-based CTI Attribute

In this example, we will walk through creating a new hyperlink CTI Attribute that incorporates a contact attribute named "postal_code" and add it to the CCP. In our scenario, the contact flow has set this attribute using a data query into Salesforce. In order for this example to work, your contact flow must also set a contact attribute named "postal_code"



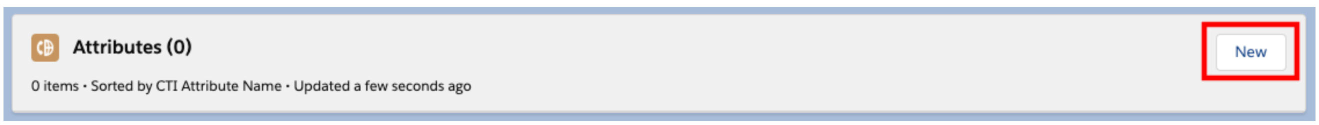
1. Log in into your Salesforce org and go to the **Service Console**

2. Expand the **navigation menu** by selecting the down arrow and choose **AC CTI Adapters**.



3. Select **ACLightningAdapter**

4. Scroll down to the **Attributes** section and select New



5. Provide a **CTI Attribute Name** value, for example: postal_code

6. Provide the **Label** name, for example: MapIt

7. Select the **Display** option, in this case: Key-Value

8. Select Hyperlink as the **Type**

9. Leave **Style** blank

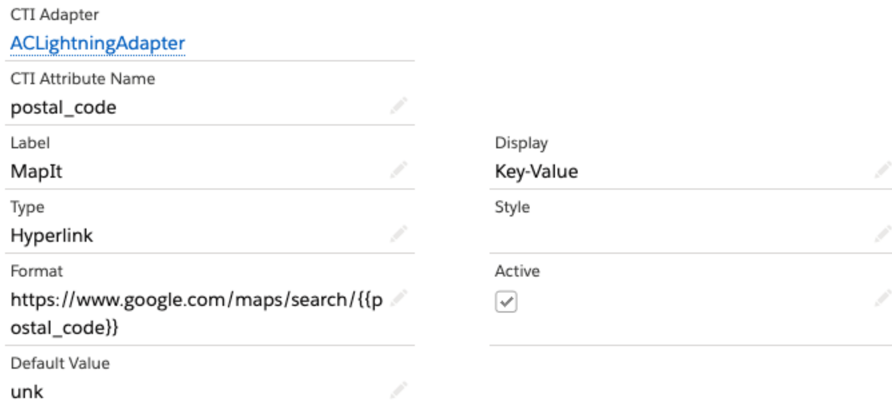
10. In the **Format** field, enter

    `https://www.google.com/maps/search/{{postal_code}}`

    to append the incoming contact attribute to the URL

11. Set **Default Value** to unk

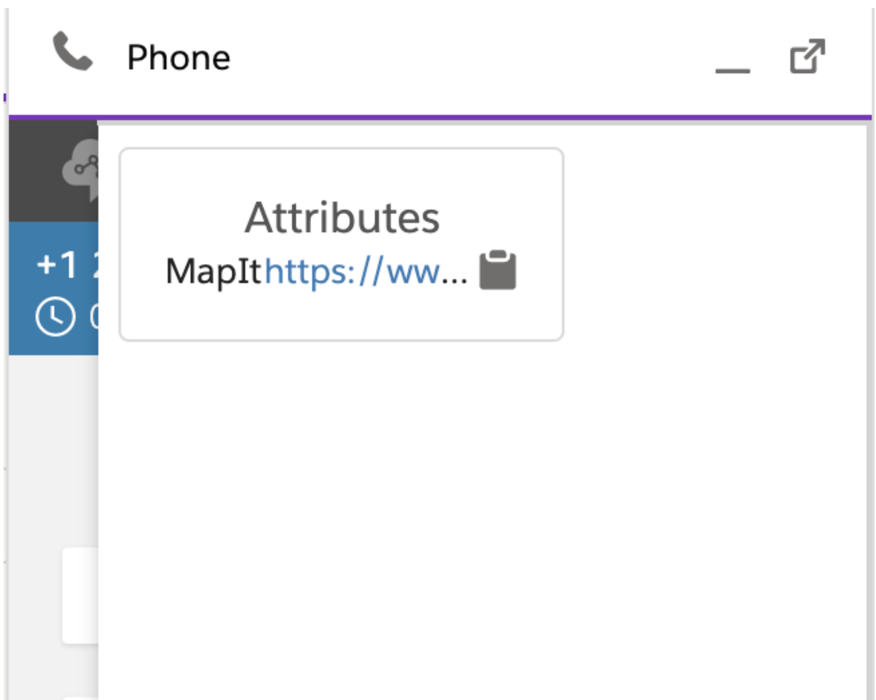
12. Choose Save



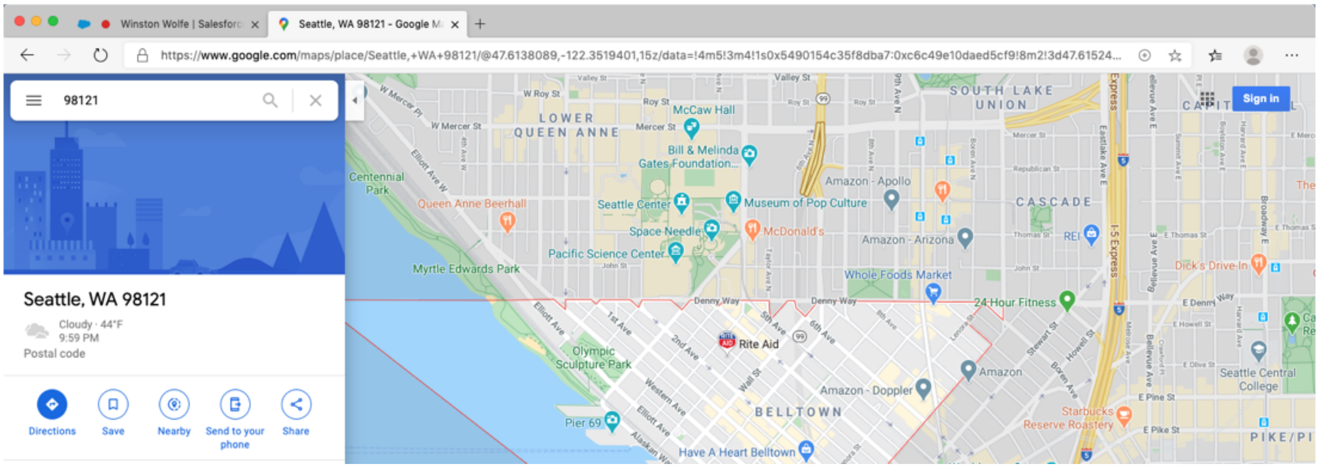
13. Refresh your browser

14. Place a new call into your Amazon Connect instance and accept the call as an agent

15. Once the call is connected, select the hyperlink attribute icon to expand the CTI Attributes



16. Select the URL and observe the page load



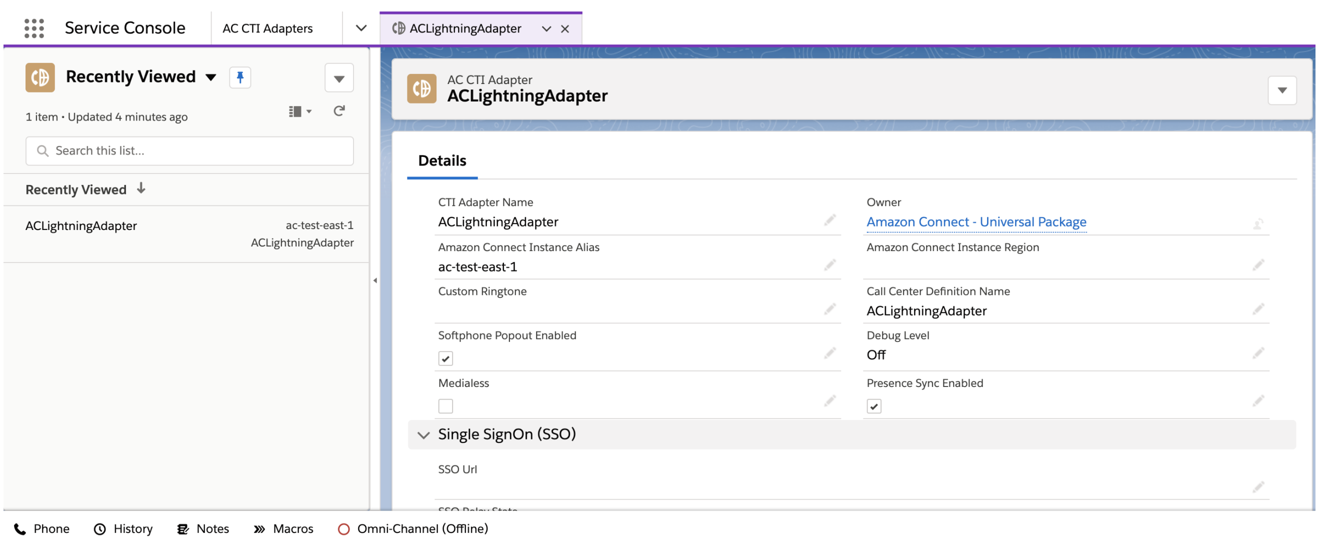
17. Disconnect the contact.

CTI Attribute Additional Features

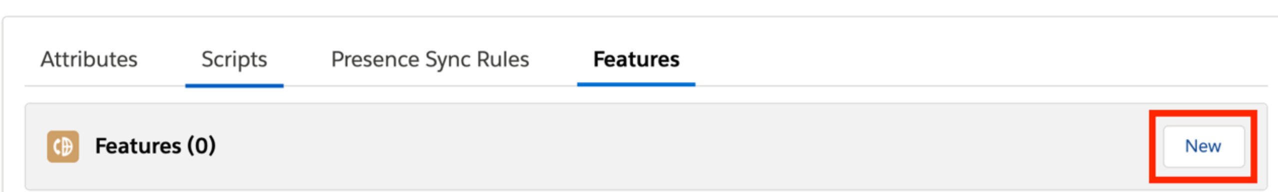
Enabling CTI Attribute Additional Features

The additional CTI Attribute features allow you to further customize CTI Attributes.

1. In Service Console, navigate to your CTI Adapter



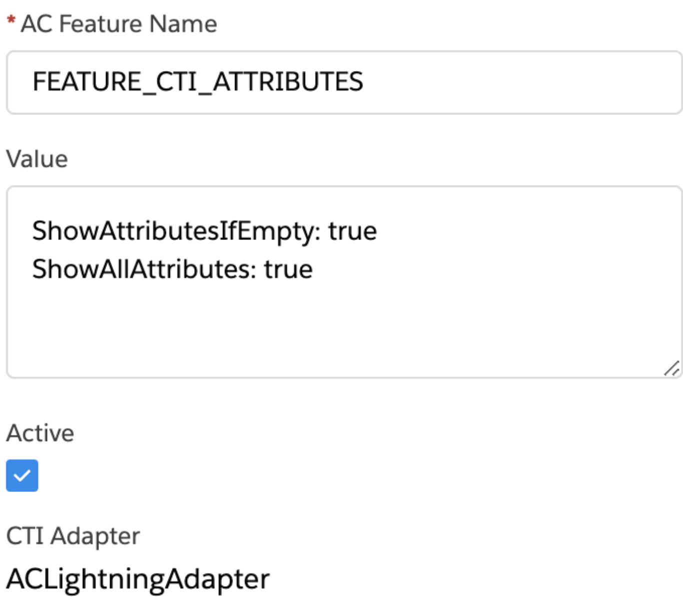
2. Scroll down to the features section of your AC CTI Adapter and select **new**



3. Set the AC Feature Name to **FEATURE_CTI_ATTRIBUTES**

4. Fill the value text box to contain the following settings:

   a. **ShowAttributesIfEmpty** (Boolean, default true): show attributes text box when contact has no attributes




```
b.  **ShowAllAttributes** (Boolean, default false): show all attribu
```

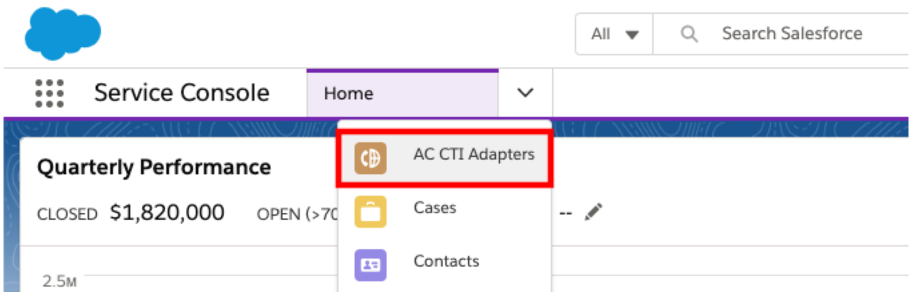
5. Select **Save**

CTI Flows

The CTI Adapter provides a mechanism to customize the behavior of the adapter based on your business needs without needing to edit the underlying Visualforce pages, which could negatively impact overall adapter function. This is accomplished through CTI Flows.

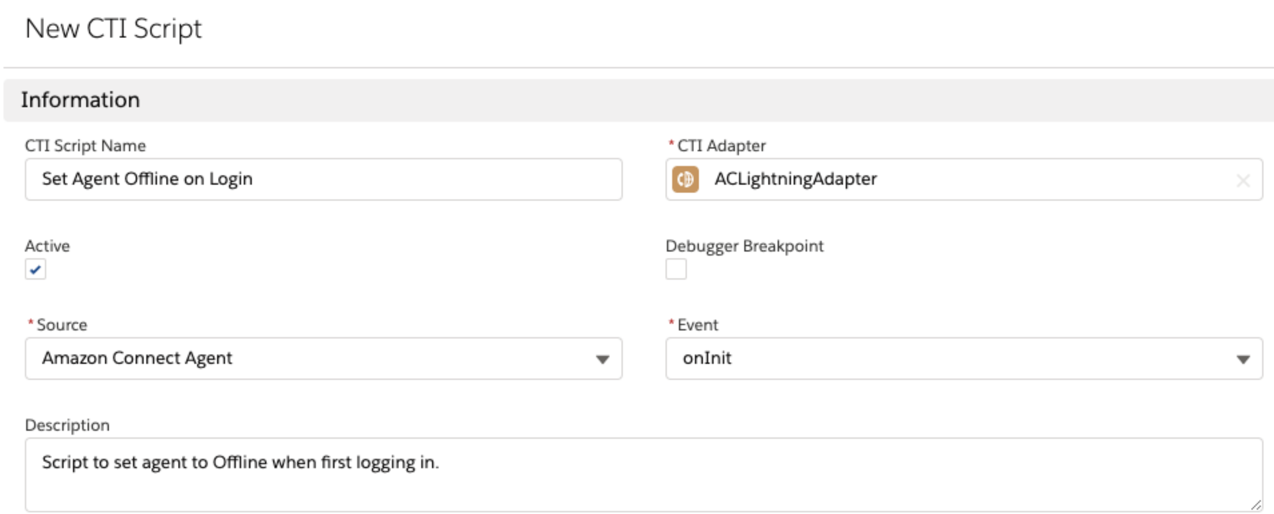
A CTI Flow consist of "actions" that represent an API call to parts of Salesforce or Amazon Connect API. Like a JavaScript function, each action can take inputs and provide outputs, or returns values, that you can use from other actions.

To create a new CTI Flow, log in into your Salesforce org and go to the **Service Console.** Expand the **navigation menu** by selecting the down arrow and choose **AC CTI Adapters**.



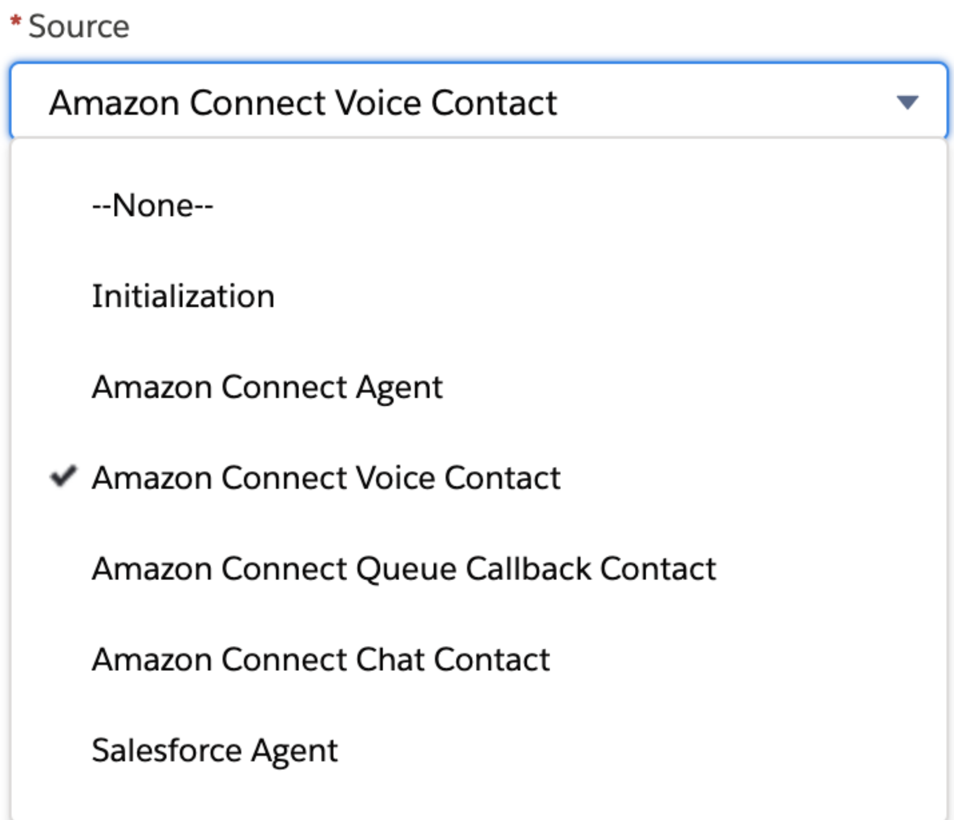
Select **ACLightningAdapter.** Scroll down to the **CTI Flows** section and select New to create a new CTI Script.

Provide a user-friendly name in the **CTI Flow Name** field. And click **Save**.



This will take you to a form where you can fill in name and adapter of the CTI Flow. There are a couple of fields that you may be unfamiliar with: **Source** and **Event**.

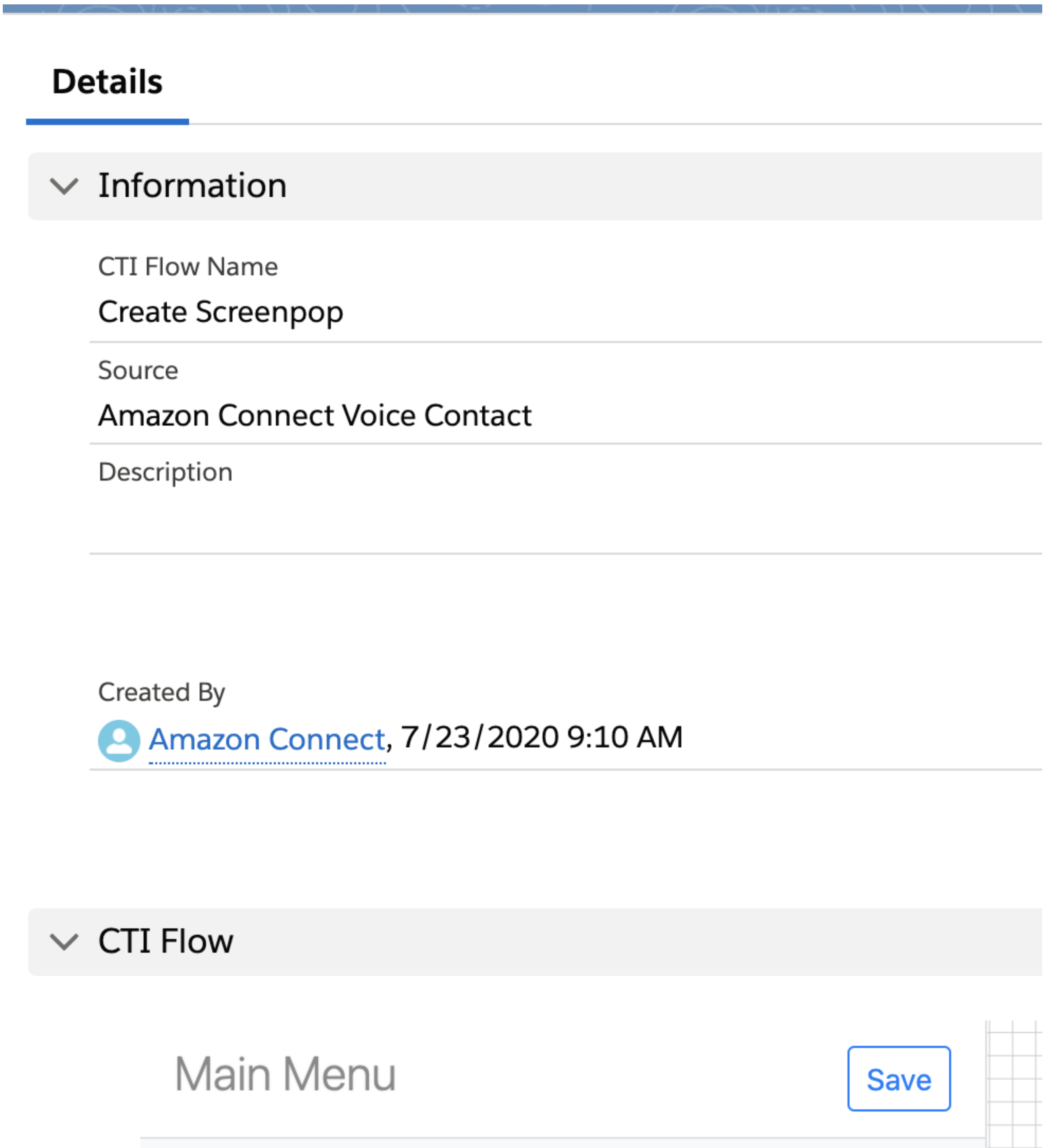
Let's look at **Source** field first.



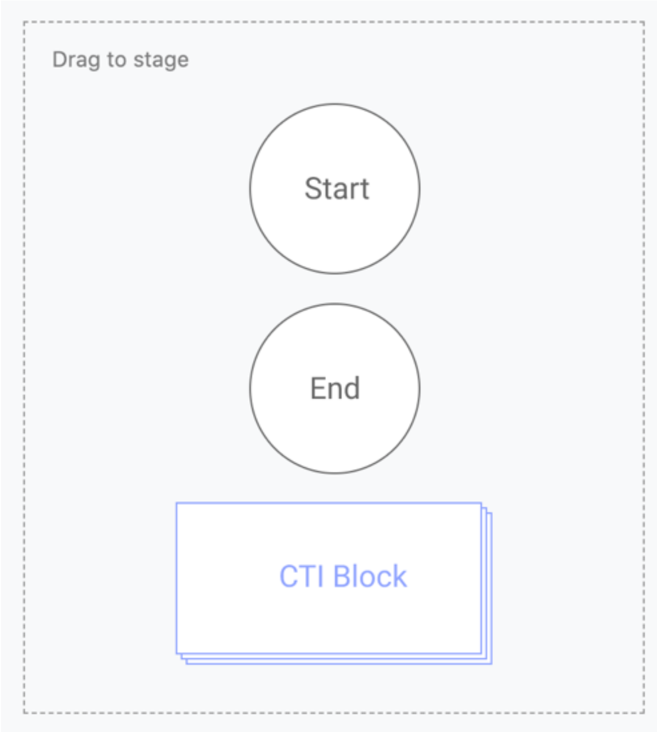
You can think of Source as the "origin" of the CTI Flow. There are currently 7 sources: Initialization, an Agent on Connect, Voice Contact on Connect, Queue Callback Contact on Connect, Chat on Connect, Salesforce Agent or Salesforce UI.

Each source comes with a set of events that you can hook into, i.e. your CTI Flow will be executed when one of these events fire. Typically, you will have only one flow for a combination of a source and an event. (You can find out more about sources and events in Appendix C - CTI Flow Sources and Events

For the purposes of this example, we selected **Amazon Connect Voice Contact** source and **onConnecting** event. Now click Save and on the next page scroll down till you find the **CTI Flow** section.

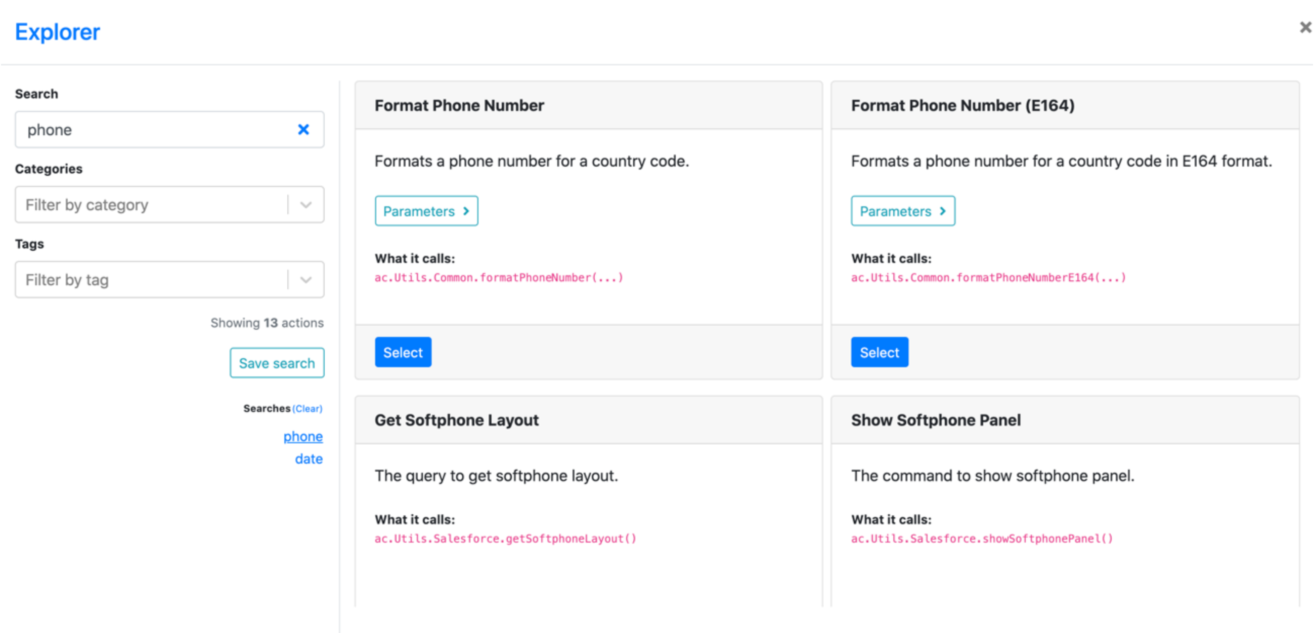


Let's build a CTI Flow that opens a screenpop in Salesforce when a voice call comes.

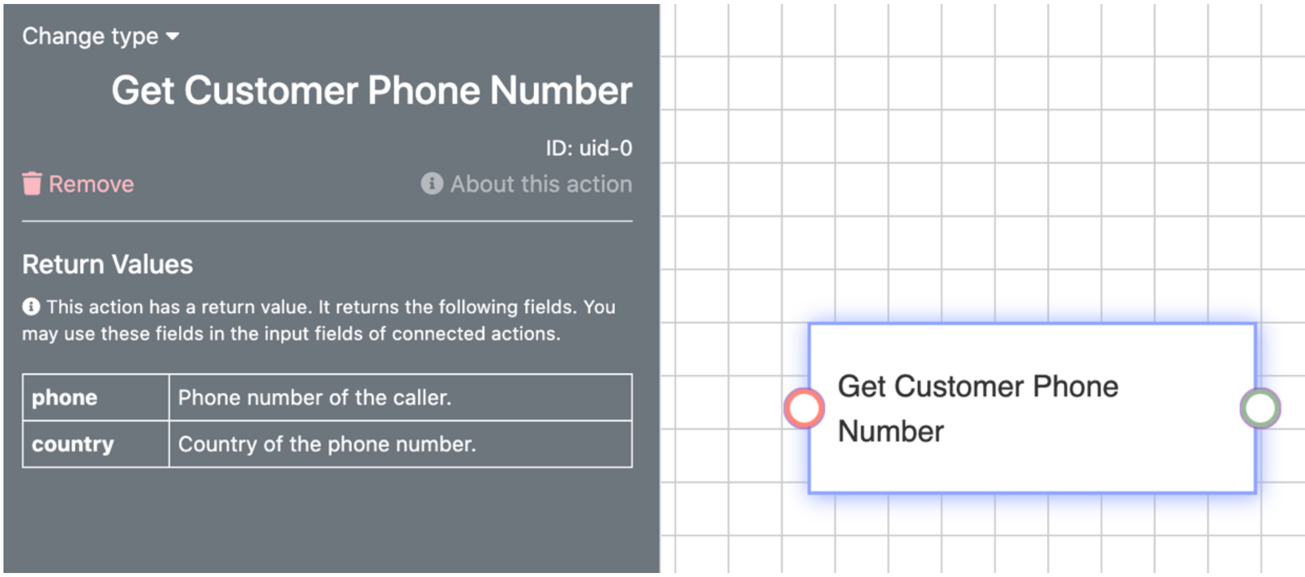


You can start using by dragging the item called **CTI Block** from the sidebar in the Main Menu over the stage, which is marked by a grid pattern.

When you drop the block, you will see a modal titled **Explorer**. This modal contains a list of actions you can choose from.



In the **Search** field, search for **Phone** and Select the action called **Get Customer Phone Number** from the results on the right.

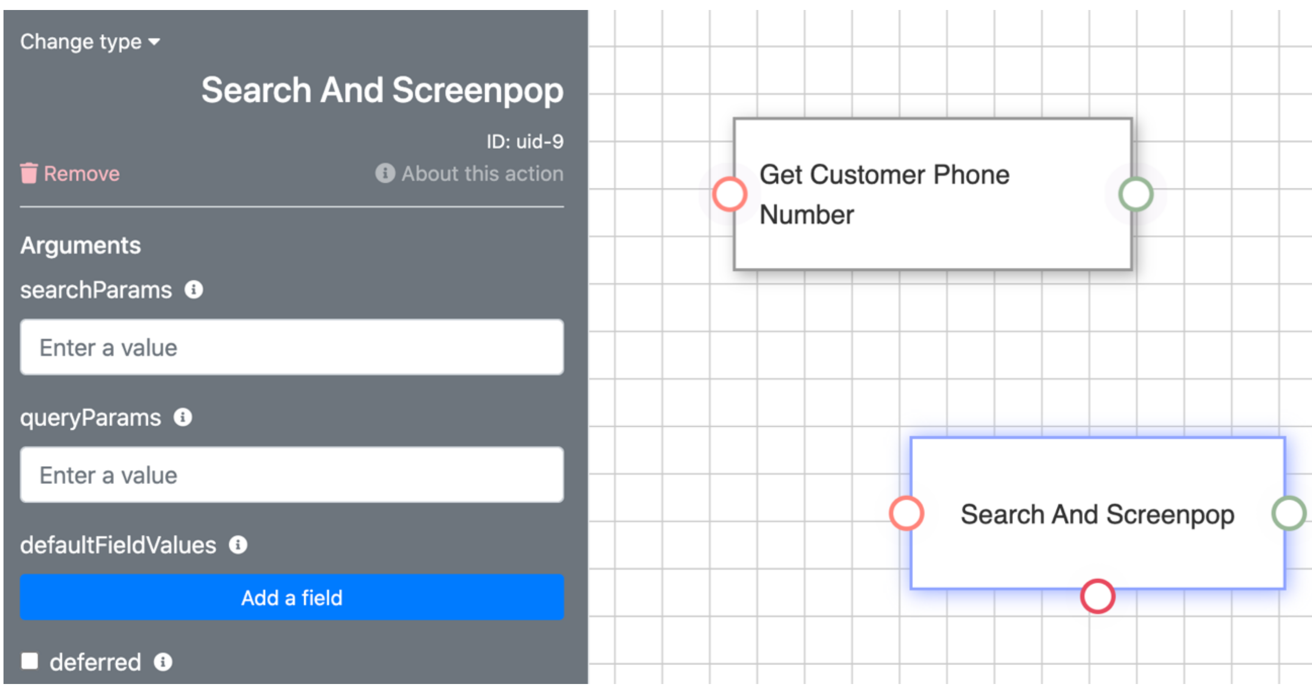


You should now see a block on the stage for the action you selected, and the sidebar will display some information about this action, including its return value.

(Note: If you'd like to change the label of the action, doubleclick on it. This will open a text editor. Make your changes and when you're finished click outside the node to save your label.)

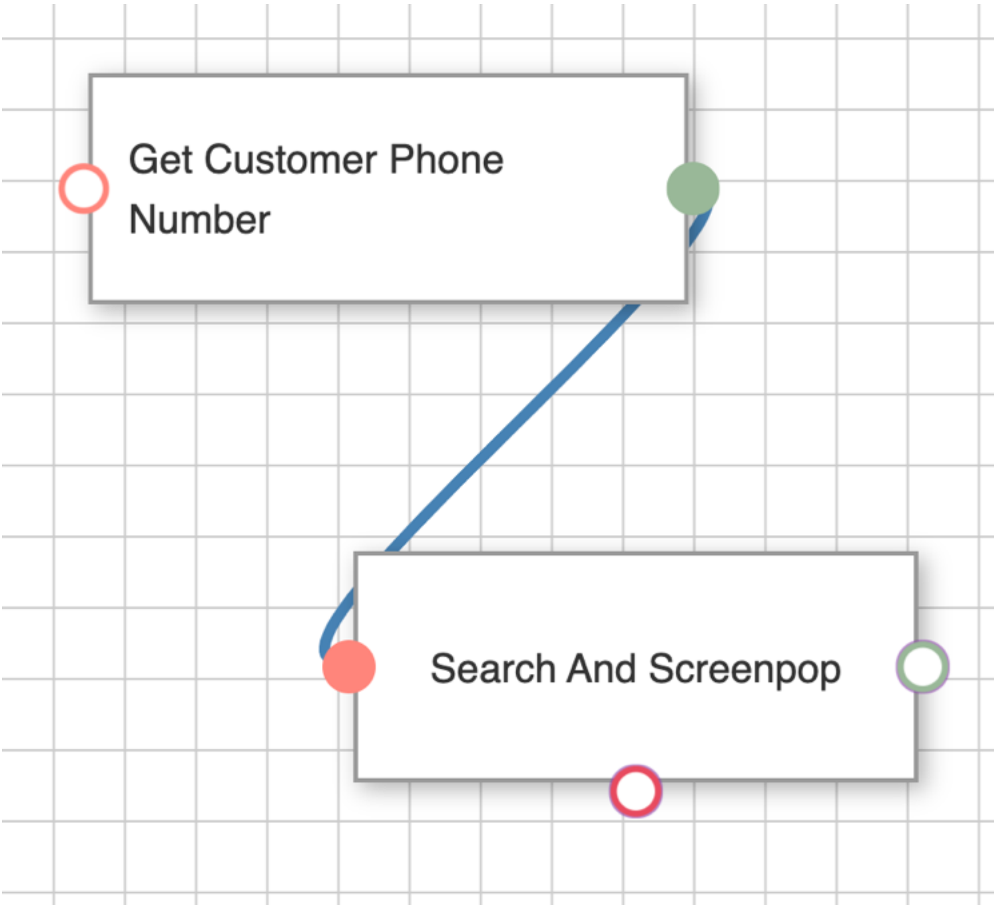
Some actions can be configured using input fields to provide arguments to function calls, as well. This action does not have any input fields, and returns two values ---- **phone** and **country**.

Now let's drag another CTI Block over the stage and find an action called **Search and Screenpop**.



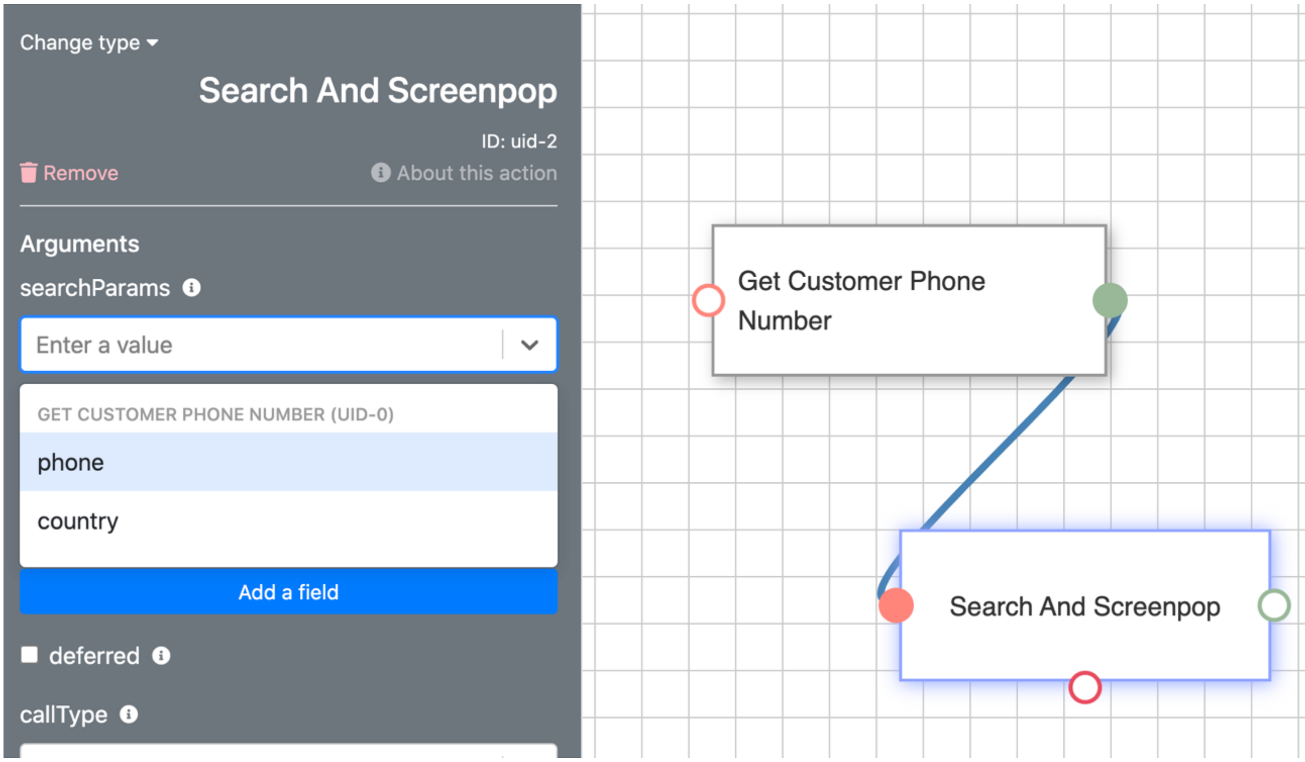
Connect these blocks by clicking the green socket (green means "done") on **Get Customer Phone**, which will display a blue line that tracks your mouse cursor around the stage.

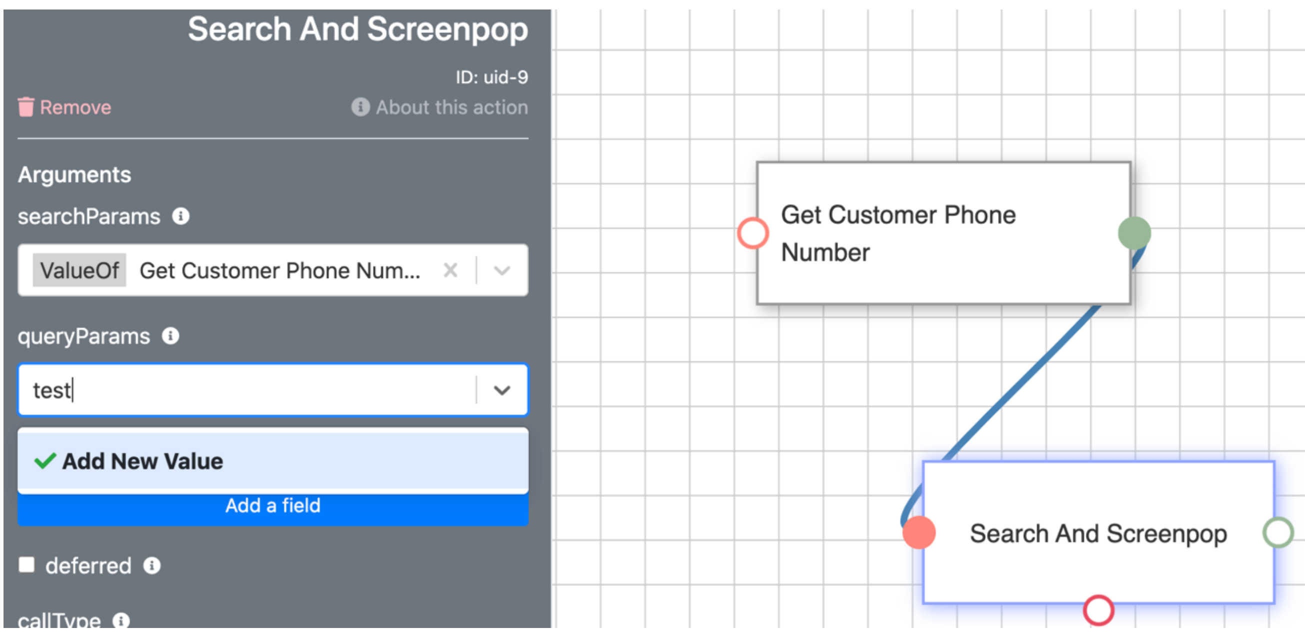
Now, click on the pink socket, i.e. the **input** socket, which is to the left of the **Search and Screenpop** block. If the connection is successful, the sockets fill turn into a solid color and the blue line will connect them. (There are some restrictions on which sockets you can connect together. For example, you cannot connect output of an action to its own input socket or connect two inputs.) If you are not happy with this connection, you can hover over it and double click to remove.



Now we'd like to get the phone number of the customer and use it in **Search and Screenpop**. Here is a tip: if two actions are connected, you can use the return values of the first action in the input fields of the next action. (You can even use the return values of actions connected to the last action, and the ones connected to that, and so on.)

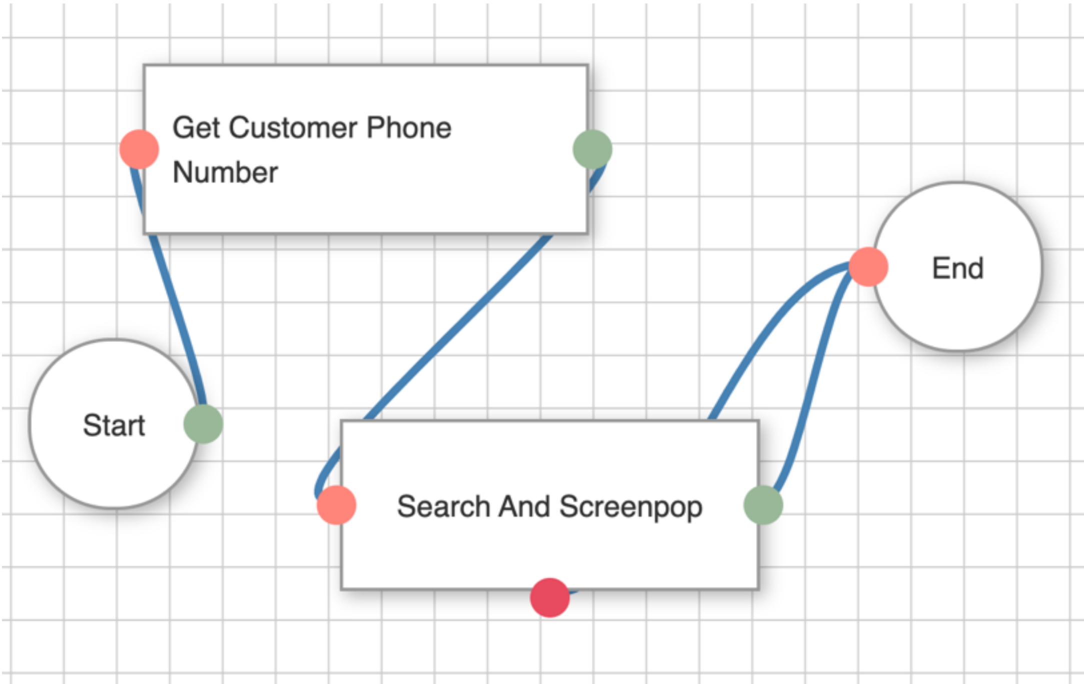
This action has only two options, and we want to use the one called "phone" for this field.





If you want to enter a custom input value, you can type that, and select **Add New Value** from the dropdown.

And make sure to set **callType** to "inbound." Finally, add the **Start** and **End** nodes and connect everything together.



When you're finished, click **Save** in the sidebar. That's it. You created your first CTI Flow.

To test your flow, go to your **Service Console**, and make a call from a number that is in the profile of a Contact. As the call is displayed in your CCP dashboard, Salesforce will pop open the contact of the caller in a separate tab.

Presence Sync Rules

The CTI Adapter supports bidirectional synchronization of agent state between Amazon Connect and Salesforce Omnichannel. This allows you to tightly control agent availability for different contact/media types dependent on current agent state. This section of the guide assumes that you have Omnichannel configured appropriately. If you do not and wish to test this function, please refer to the section Configure Salesforce Omnichannel for Testing .

NOTE: In order for Presence Sync to work, the CTI Adapter must be configured to allow it. See CTI Adapter Details

for more information.

Presence Sync Rules are evaluated based on specific events. The available events are:

- **Connect Agent State Change:** The Connect agent's state has changed.
- **Salesforce Agent State Change:** The Salesforce agent's state has changed.
- **Salesforce Agent Logout:** The Salesforce agent has logged out.
- **Salesforce Work Accepted:** The Salesforce agent has accepted work.

- **Salesforce Workload Changed:** The Salesforce agent's workload has changed.

Once the event is triggered, the CTI adapter will evaluate the provided criteria. The criteria is established by comparing Operand A, using standard comparator options, against Operand B. Possible options for Operand A and B are:

- **Connect Agent New State:** The Connect agent's new state value
- **Connect Agent Old State:** The Connect agent's old (previous) state value
- **Salesforce Agent New State:** The Salesforce agent's new state value
- **Salesforce Service Channel:** The service channel upon which the Salesforce agent has accepted work
- **Salesforce Previous Workload:** The Salesforce agent's previous workload
- **Salesforce Previous Workload Pct:** The Salesforce agent's pervious workload expressed as a percent of configured capacity
- **Salesforce New Workload:** The Salesforce agent's new workload
- **Salesforce New Workload Pct:** The Salesforce agent's new workload expressed as a percent of configured capacity
- **Salesforce Configured Capacity:** The Salesforce agent's configured capacity
- **Static Value:** The user may provide a value. For example, a custom agent state name or other alphanumeric value. When Static Value is selected a "Value" field becomes visible to accept the users static value input.

Available comparators are:

- **Equal to:** Are Operand A and Operand B equal
- **Not equal to:** Are Operand A and Operand B not equal
- **Greater than:** Is Operand A greater than Operand B
- **Greater than or equal to:** Is Operand A greater than or equal to Operand B
- **Less than:** Is Operand A less than Operand B
- **Less than or equal to:** Is Operand A less than or equal to Operand B

Configuring Statuses

Presence Sync Rules require statuses in both Amazon Connect and Salesforce. In this example, we will add two additional statuses to each side of the configuration and prepare rules that sync both clients to the same state regardless of which agent sets the status. Essentially, you will configure the status sync similar to the following example:

When a sets status to b Set x to y

Amazon Connect sets status to Available Omnichannel to Available Omnichannel sets status to Available Amazon Connect to Available Amazon Connect sets status to Working -- Phone Omnichannel to Working -- Phone Omnichannel sets status to Working -- Media Amazon Connect to Working - Media

Create Presence Statuses in Amazon Connect

Agents are responsible for setting their status in the Contact Control Panel (CCP). Typically, the only time an agent's status changes is when they manually change it in the CCP however Presence Sync Rules can automate the process when conditions are met.

Amazon Connect provides two default status values:

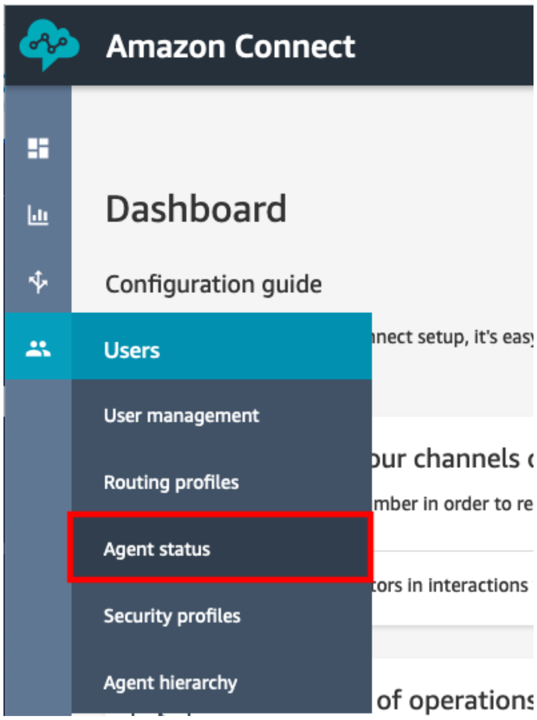
- Available
- Offline

You can change the name of these values, and you can add new ones. For example, you might add a status for Lunch, and another for Training. These and the default status values will be used for reporting, metrics, and resource management.

Note: When you add a new status, it will always be **Custom**, not routable.

Create an Amazon Connect status

1. Login to your Amazon Connect instance as an Administrator
2. From the left navigation, choose **Users**, then select **Agent status**



3. Select **Add new agent status**

4. Provide a Status name and Description. Leave the Enabled checkbox selected.

Status name	Description	Type	Enabled for use in CCP	
Lunch	Lunch	Custom	✔	

5. Select Save. Repeat as desired for the remaining statuses that you wish to add.

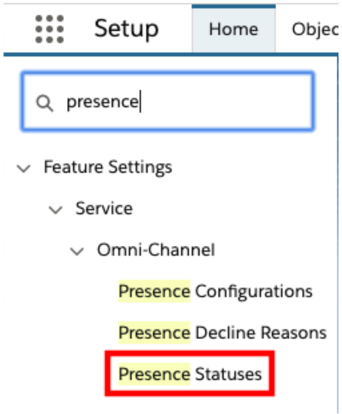
Create Presence Statuses in Salesforce

You will need to configure presence statuses to reflect the different presence states that you wish your Omni-Channel agents to enter. These do not need to match agent statuses in Amazon Connect exactly, but it does make it easier to track what you are doing.

Create a Salesforce presence status

1. Log in into your Salesforce org and go to **Setup**

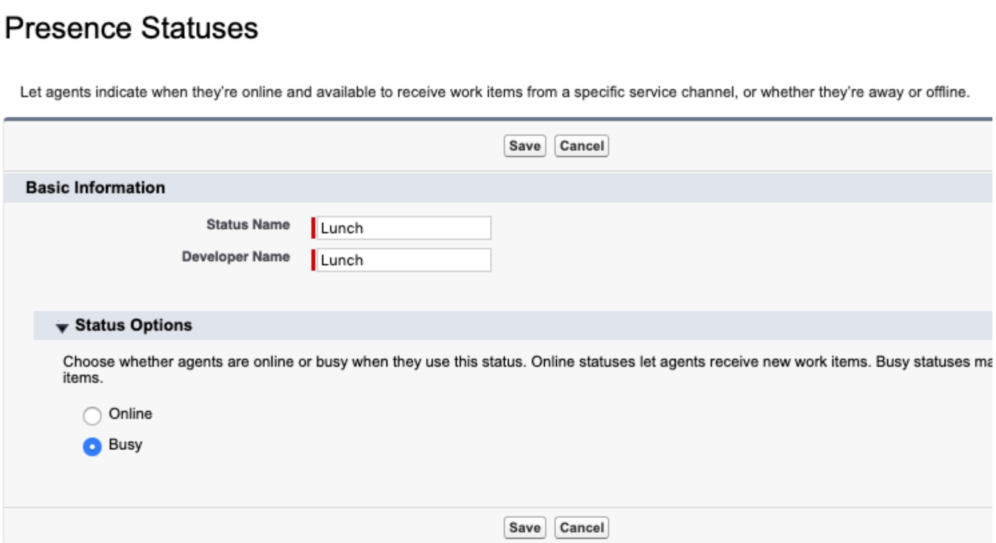
2. In the **Quick Find** field, enter presence and choose **Presence Statuses** from the results



3. In the Presence Statuses page, choose New
4. Provide a status name, for example Lunch
5. Set the Status options appropriately, for example, Busy

   a. For Online statuses, you will need to provide a channel. Please reference the [Omni-Channel documentation]() for details

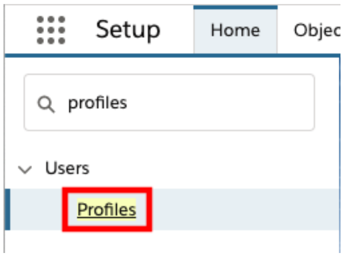
6. Choose Save



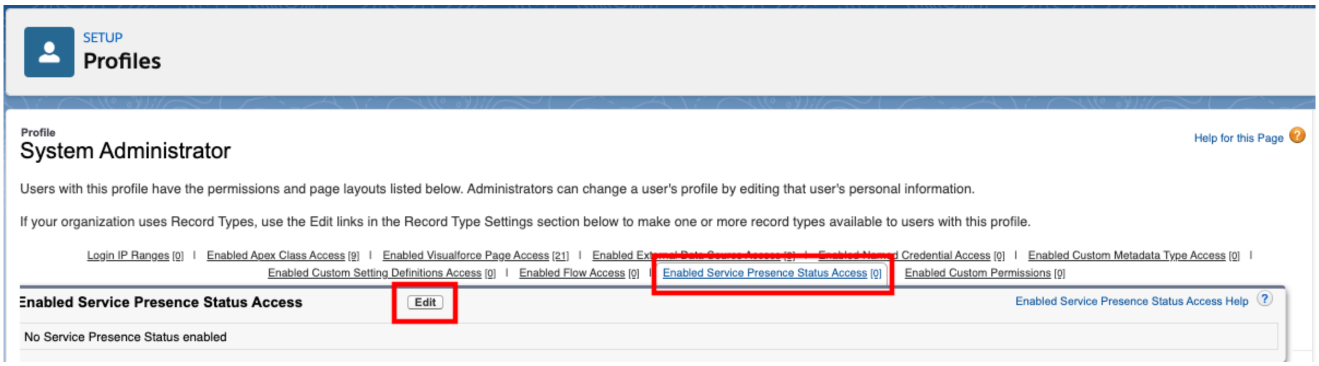
7. Repeat as necessary for all desired statuses

Configure Enabled Service Presences Status Access in Salesforce

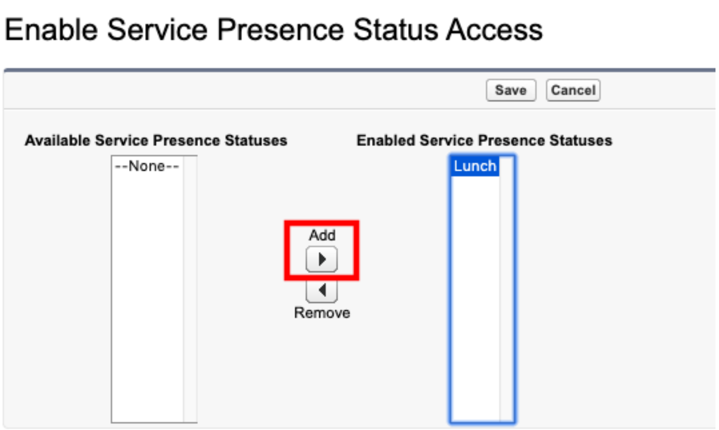
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** field, enter profiles and choose **Profiles** from the results



3. Select the profile assigned to your users
4. Hover over the Enabled Service Presence Status link and choose Edit



5. Select the available status from the left, then choose the Add button to add it the Enabled Service Presence Statuses field



6. Select Save
7. Repeat as necessary for other statuses or profiles.

Configure Presence Sync Rules

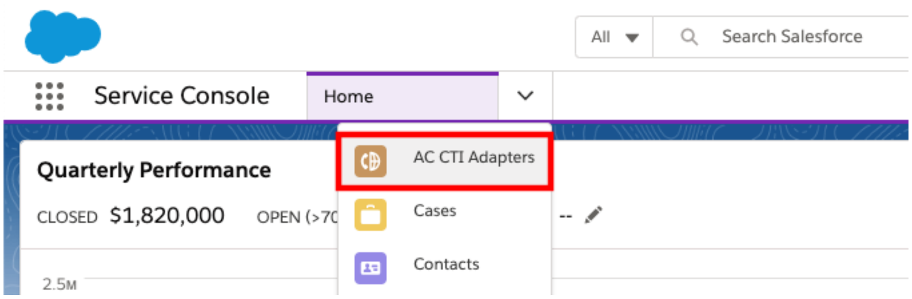
The CTI Adapter provides a rules-based presence status synchronization system allowing for flexibility in mapping agent states between Amazon Connect and Salesforce Omni-Channel.

Presence synchronization actions may be configured based upon manual agent state changes (agent goes on break), system agent state changes (answering a call), omnichannel agent work (agent accepts an email), and omnichannel workload changes (agent completes an email) as examples.

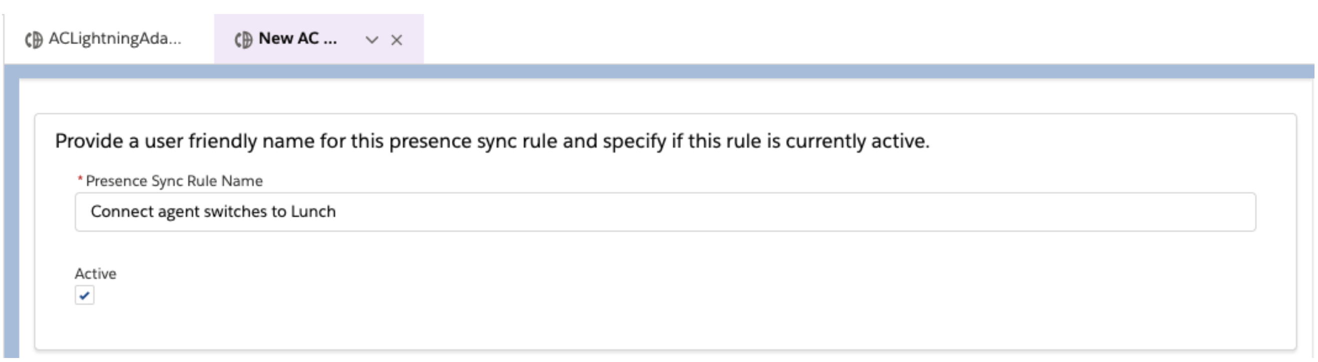
As the scope of presence sync rules can vary wildly, this example will show you how to change state based on Amazon Connect agent state change and Salesforce agent state change.

Create a Presence Sync Rule

1. Log in into your Salesforce org and go to the **Service Console**
2. Expand the **navigation menu** by selecting the down arrow and choose **AC CTI Adapters**.



3. Select **ACLightningAdapter**
4. Scroll down to the **Presence Sync Rules** section
5. Select **New** to create a new presence sync rule
6. Provide a **Presence Sync Rule Name** to identify the use case of this rule. For example: Connect agent switches to Lunch

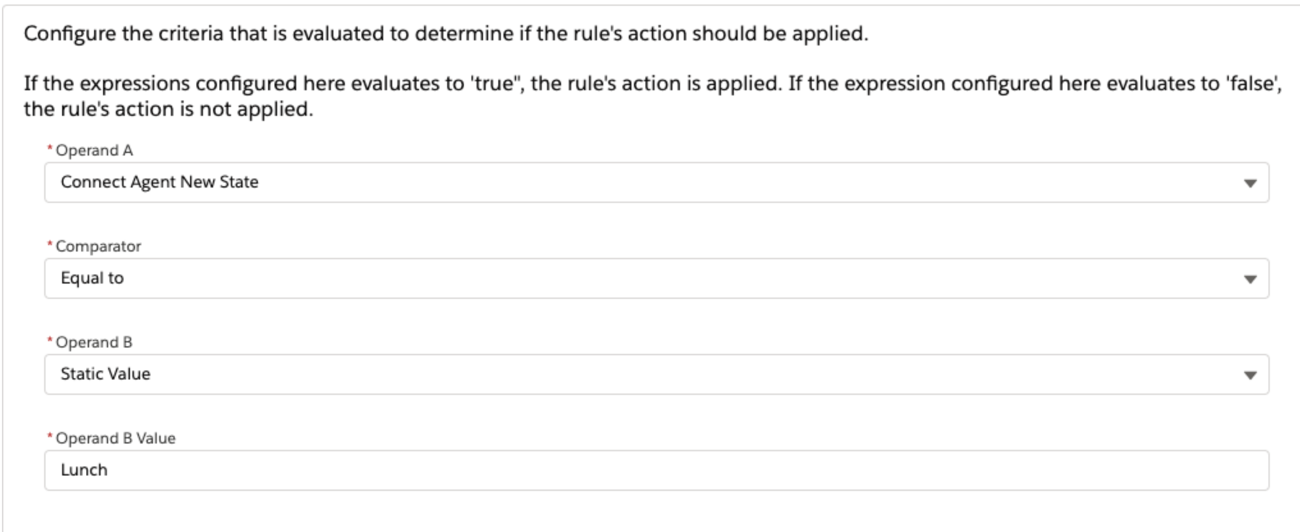


7. Select **Next**
8. For Source, select **Connect Agent State Change**, and select **Next**
9. For Operand A, choose **Connect Agent New State**

10. Set the Comparator to **Equal to**

11. Set Operand B to **Static Value**

12. For Operand B Value, enter **Lunch** (Or whatever state you have created in Amazon Connect)**



13. Select **Next**

14. For Destination, choose **Salesforce Agent State**

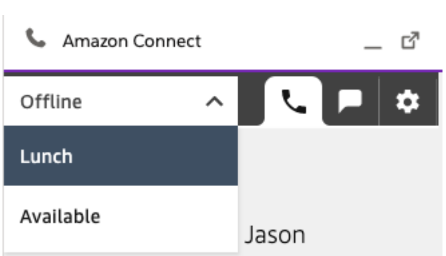
15. Set the Value to **Lunch** (Or whatever state you have configured in Salesforce) **NOTE:** the static value for Salesforce Omni-Channel status is the Developer Name, not the Status Name

16. Select **Save.**

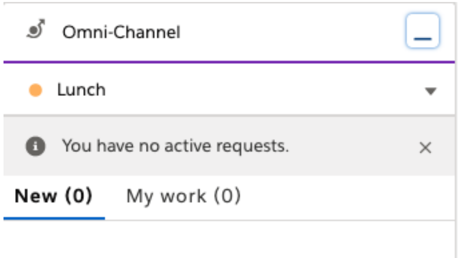
17. Refresh your browser

18. In the bottom left corner of the Service Console, select the CTI Softphone icon

19. Set your Amazon Connect agent status to Lunch



20. Observe that the Omni-Channel status switches to Lunch



21. Repeat this process as desired to configure your presence sync rules.

Configuring and Using AWS Serverless Application Repository for Salesforce Features

The AWS Serverless Application Repository for Salesforce includes a number of features that are enabled by default, however they are only activated as you need them or as you configure them. Some of these features can be configured to execute on a call by call basis, while others are set to execute periodically, such as historic report data import.

Accessing the Salesforce API from Amazon Connect Contact Flows Using AWS Lambda

The most commonly used feature of the AWS Serverless Application Repository for Salesforce is accessing/updating Salesforce data using the sfInvokeAPI Lambda function. This function allows an Amazon Connect contact flow to perform the following operations against your Salesforce org:

- **Lookup:** queries Salesforce for objects based on the parameters passed to it
- **Create:** creates a Salesforce object based on the parameters passed to it
- **Update:** updates a Salesforce object based on the parameters passed to it
- **Phone Lookup:** uses Salesforce Object Search Language (SOLS) to construct text-based search queries against the search index, which gives significant performance improvement when searching phone number fields.
- **Delete:** deletes a Salesforce object based on the parameters passed to it
- **Query:** executes a Salesforce Object Query Language (SOQL) query on the Salesforce instance. Can return multiple entries.

- **QueryOne:** executes a Salesforce Object Query Language (SOQL) query on the Salesforce instance. Returns result only when one entry is returned from the query.
- **CreateChatterPost:** creates a chatter post.
- **CreateChatterComment:** creates a chatter comment.

NOTE: naming of the Lambda function will vary based on template data, but sfInvokeAPI will always be a part of the name.

When you invoke this Lambda function from your contact flows, you will need to pass along parameters that inform the function as to which Salesforce operation you wish to execute, as well as pass along any required parameters. Depedning on your use case, this can require reference to the Salesforce REST API or the Salesforce Connect REST API documentation. The core parameters are:

- **sf_operation:** specifies with operation to run. Options are lookup, create, update, phoneLookup, query, queryOne, createChatterPost, createChatterComment
- **sf_object:** defines what type of object you are referencing. Examples include Case, Contact, Task, etc.
- **sf_fields:** the fields you want to receive back from Salesforce when an operation completes successfully
- **sf_id:** the unique identifier for a Salesforce object. Typically used in update operations
- **sf_phone:** contains the phone number used to search when performing a phone lookup

Salesforce Lookup

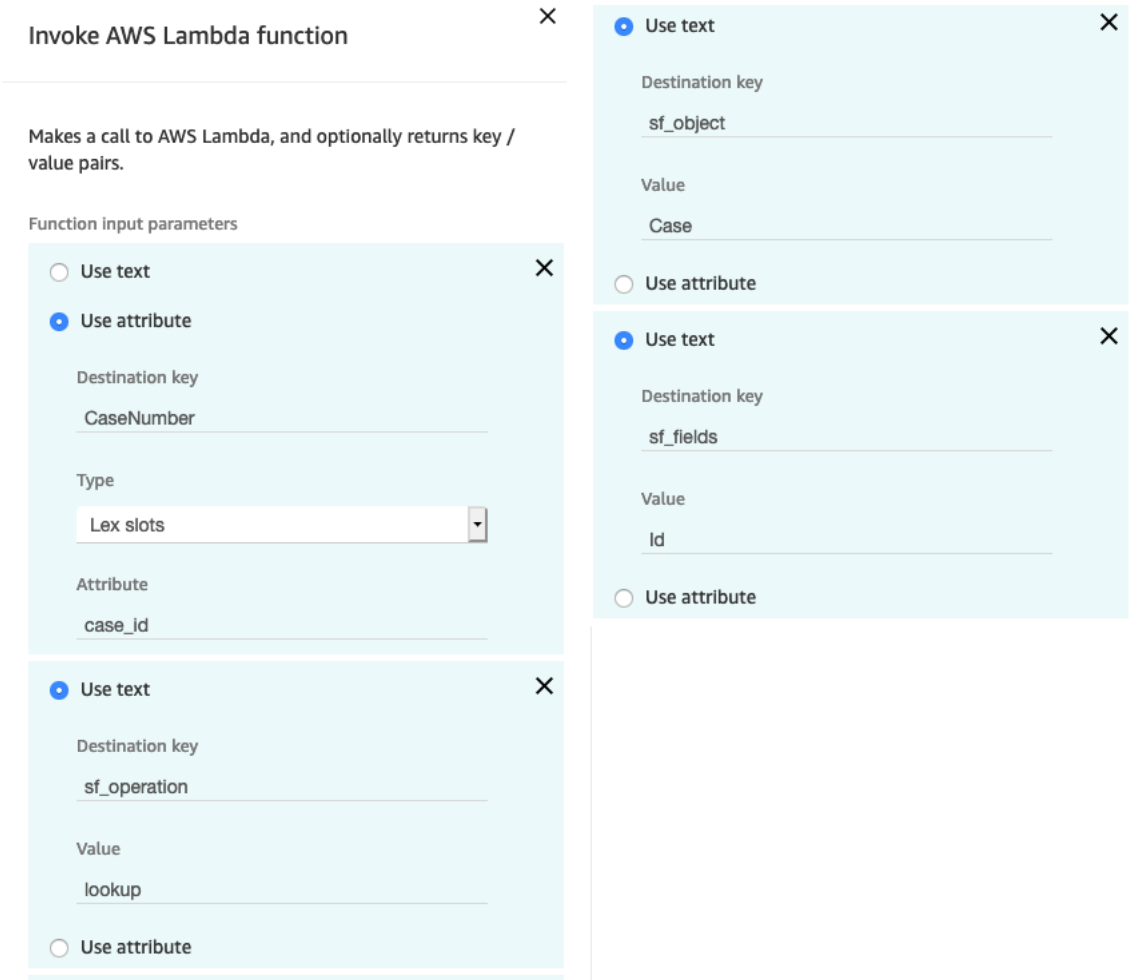
This operation is invoked by setting **sf_operation** to **lookup**. In this case, the Lambda function queries Salesforce for objects based on the parameters passed to it. For lookup, the following parameters are required:

- sf_object
- sf_fields

Any additional parameters passed will be evaluated as conditional arguments for the lookup.

Note that this operation only returns the first item of the query results. If you want to have all results returned from Salesforce, set **sf_operation** to **lookup_all**.

In the contact flow example below, we are looking for a specific case based on customer input.



This operation returns a response of:

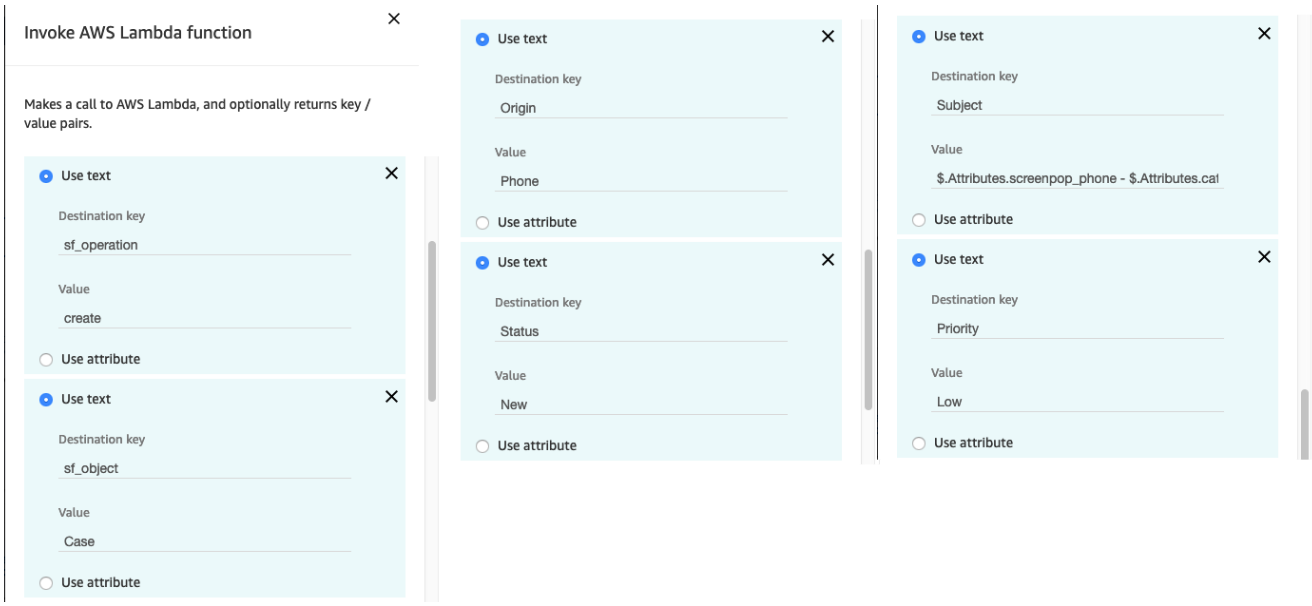
```
{
    "Id": "5006g00000AaIs7AAF",
    "sf_count": 1
}
```

Salesforce Create

This operation is invoked by setting **sf_operation** to **create**. In this case, the Lambda function creates a Salesforce object based on the parameters passed to it. For create, the following parameters are required:

- sf_object
- Specify additional parameters for the Salesforce object to be created. Please be sure to include all parameters required to create the Salesforce object.

In the contact flow example below, we creating a new case based on customer input.



This operation returns a response of:

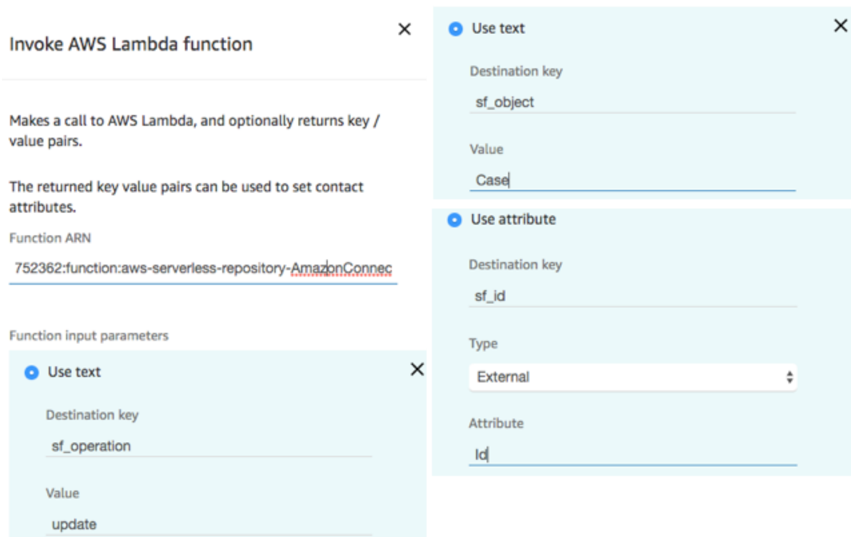
```
{
    "Id": "5006g00000BLqurAAD"
}
```

Salesforce Update

This operation is invoked by setting **sf_operation** to **update**. In this case, the Lambda function updates a Salesforce object based on the parameters passed to it. For update, the following parameters are required:

- sf_object
- sf_id
- Specify additional parameters for the Salesforce object to be created. Please be sure to include all parameters required to create the Salesforce object.

In the contact flow example below, we are updating a specific case.



This operation returns a response of:

```
{
    "Status": "204"
}
```

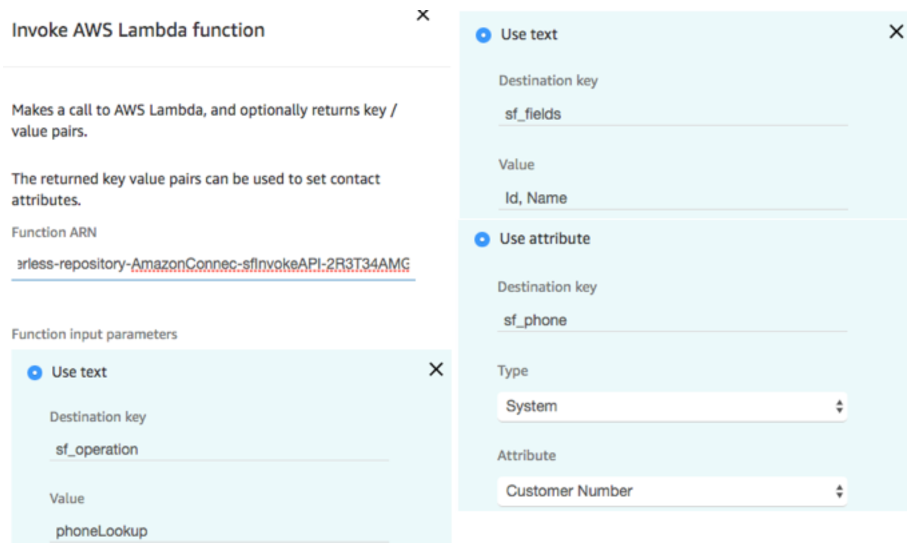
The "204" status indicates a success.

Salesforce Phone Lookup

This operation is invoked by setting **sf_operation** to **phoneLookup**. In this case, the Lambda function uses Salesforce Object Search Language (SOLS) to construct text-based search queries. For phoneLookup, the following parameters are required:

- sf_phone
- sf_fields

In the contact flow example below, we look for a customer by phone number.



This operation returns a response of:

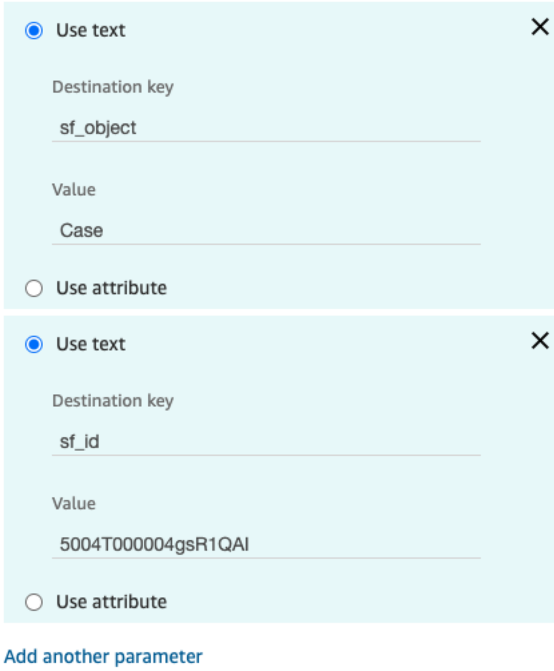
```
{
    "Id": "5006g00000BLqurAAD",
    "sf_count": "1",
    "Name": "Jim Smith"
}
```

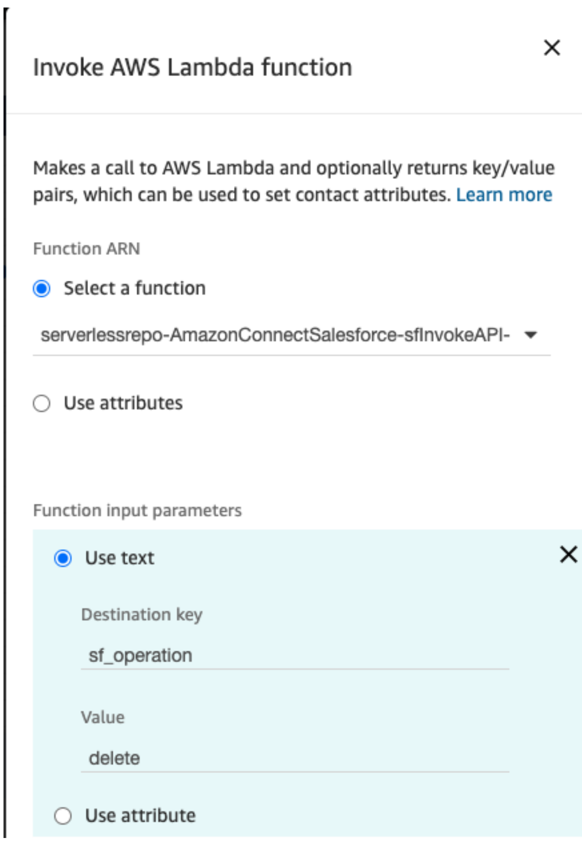
Salesforce Delete

This operation is invoked by setting **sf_operation** to **delete**. In this case, the Lambda function deletes a Salesforce object based on the parameters passed to it. For delete, the following parameters are required:

- sf_objejct
- sf_id

In the contact flow example below, we deleting an existing case based on customer input.





This operation returns a response of:

```
{
    "Response": "None"
```

```
}
```

Salesforce query

This operation is invoked by setting **sf_operation** to **query**. In this case, the Lambda function uses Salesforce Object Query Language (SOQL) to conduct a query against the Salesforce instance. For query, the following parameter is required:

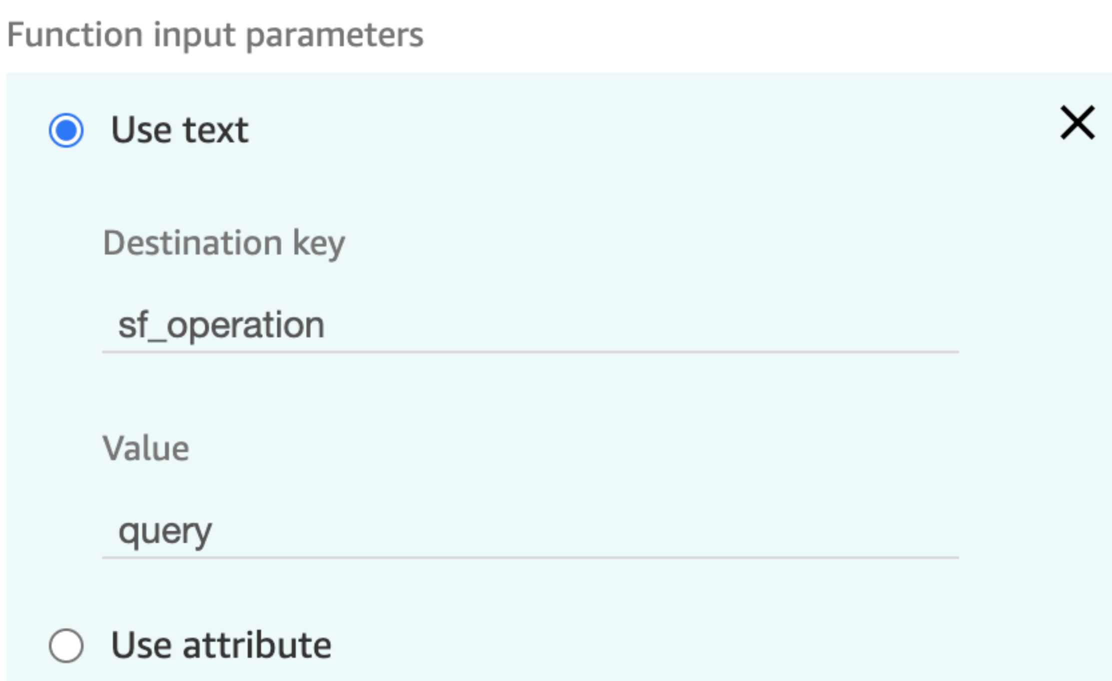
- query

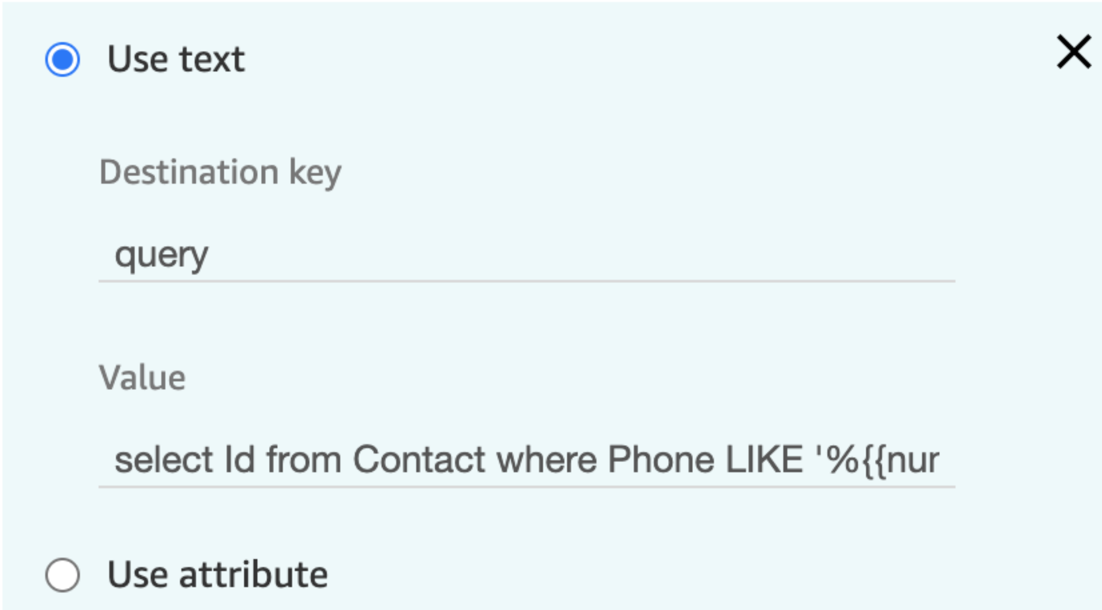
Any additional parameters will replace text values in the original query so that queries can be dynamic based on values stored within the contact flow. For example, the parameter set:

- query: "select {{field}} from {{object}}"
- field: "Id"
- object: "Task"

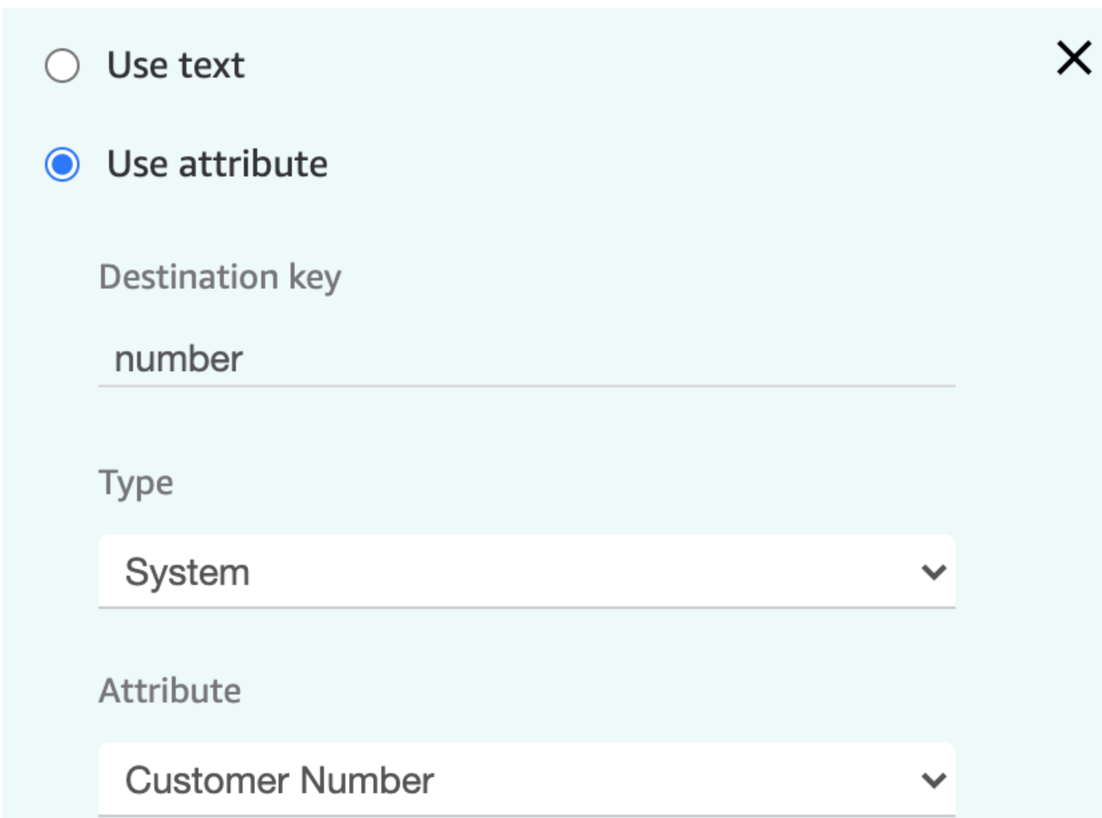
Will result in the query: "select Id from Task".

In the contact flow example below, we look for a customer by phone number.





(full text of the value is "select Id from Contact where Phone LIKE '%{{number}}%'")



This operation returns a response of:


```
{
    "sf_records": [
        { "Id": "00303000001RZfIAAW" }
```

```
    ],
    "sf_count": 1
}
```

Salesforce queryOne

This operation is invoked by setting **sf_operation** to **queryOne** (case sensitive). In this case, the Lambda function uses Salesforce Object Query Language (SOQL) to conduct a query against the Salesforce instance, returning a result only when one record is returned from the query. For query, the following parameter is required:

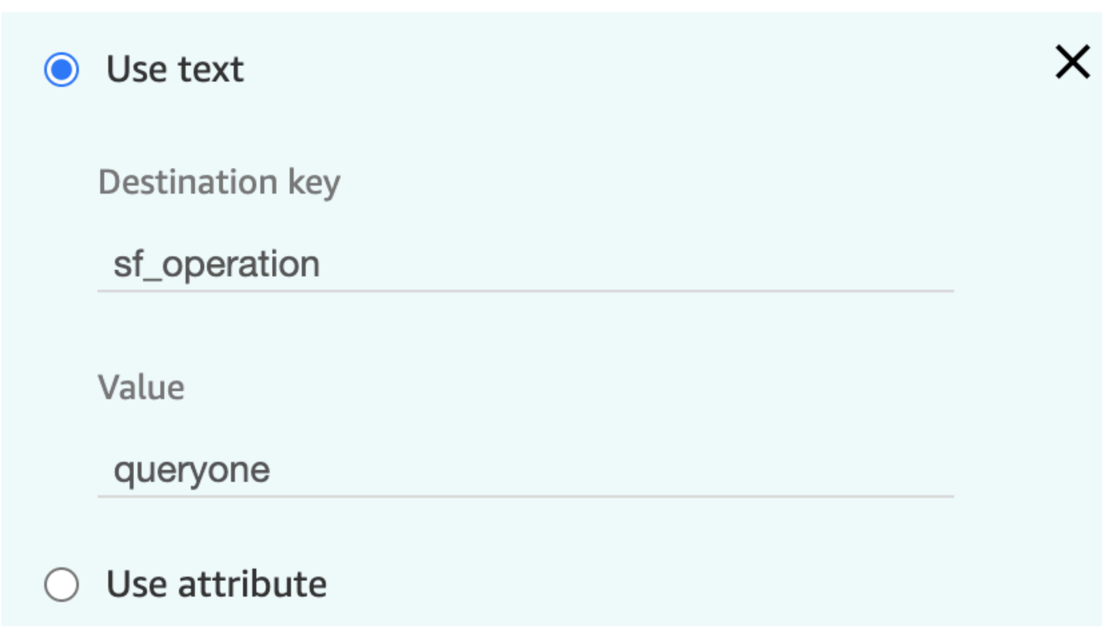
- query

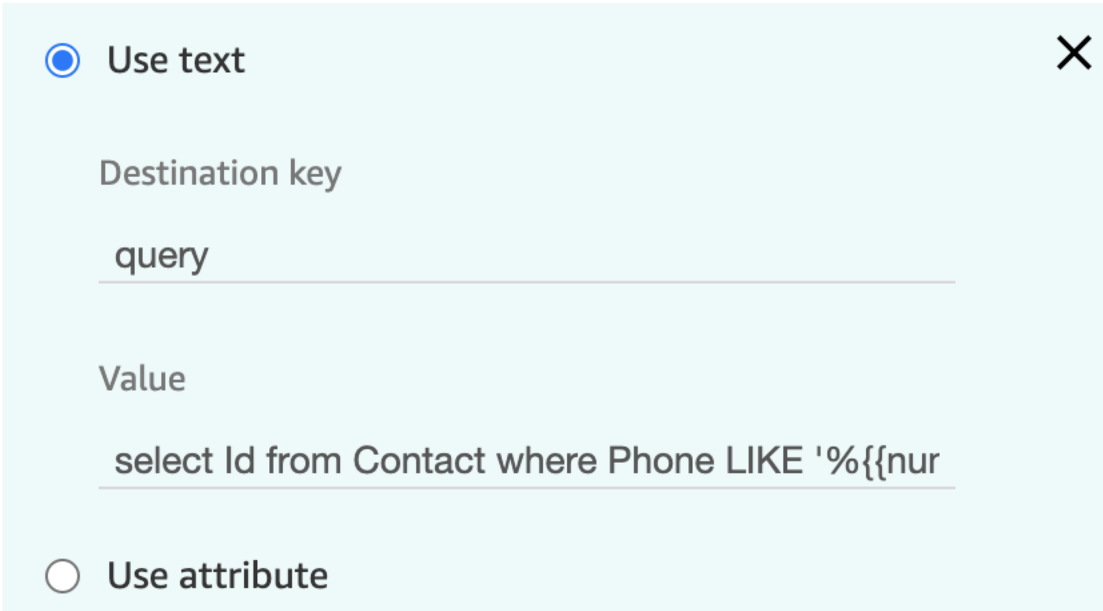
Any additional parameters will replace text values in the original query so that queries can be dynamic based on values stored within the contact flow. For example, the parameter set:

- query: "select {{field}} from {{object}}"
- field: "Id"
- object: "Task"

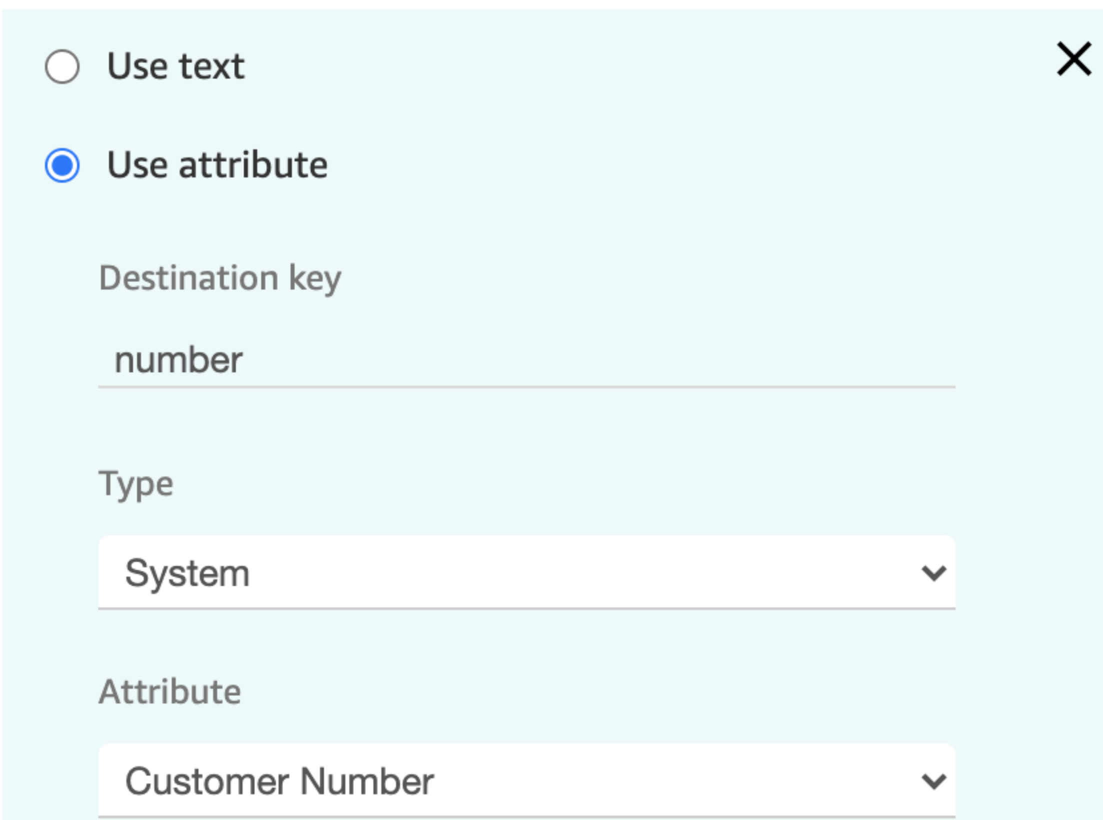
Will result in the query: "select Id from Task".

In the contact flow example below, we look for a customer by phone number.





(full text of the value is "select Id from Contact where Phone LIKE '%{{number}}%'")



This operation returns a response of:


```
{
    "Id": "00303000001RZfIAAW",
```

```
    "sf_count": 1
}
```

Salesforce createChatterPost

This operation is invoked by setting **sf_operation** to **createChatterPost** (case sensitive). In this case, the Lambda function uses the Salesforce Connect REST API to create a chatter post (see here). For createChatterPost, the following parameters are required:

- sf_feedElementType
- sf_subjectId
- sf_messageType
- sf_message

The following parameter is optional:

- sf_mention

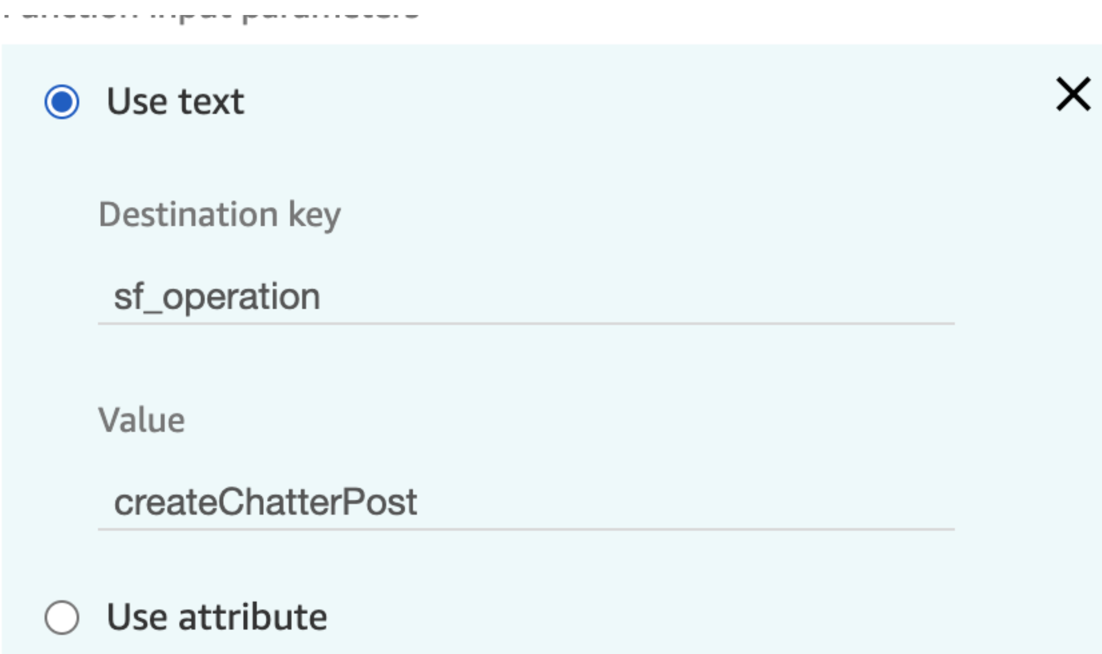
(refer to the api reference for value types)

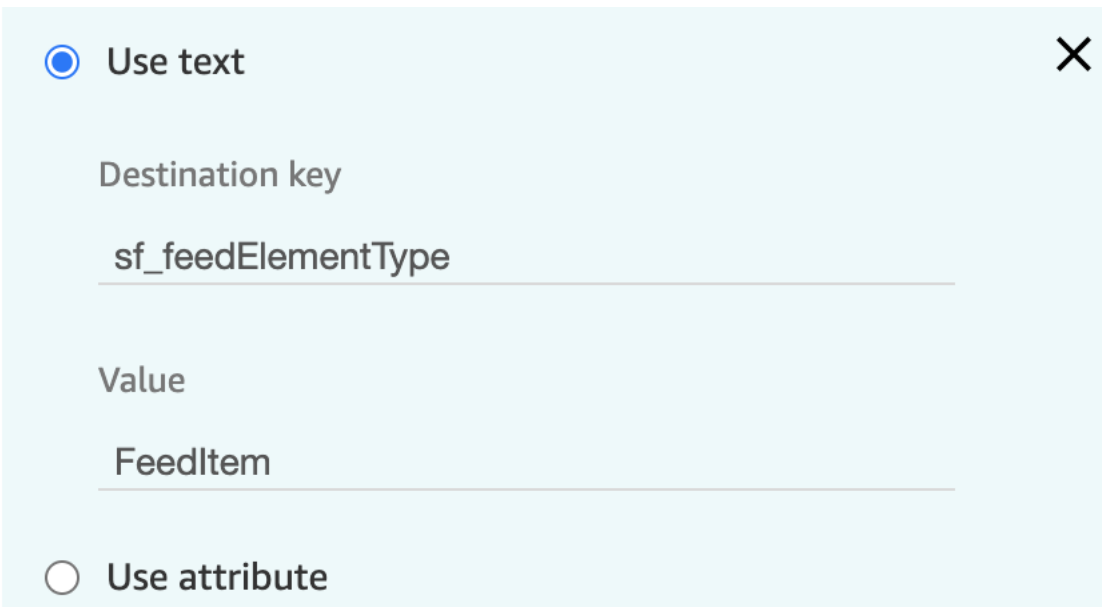
Any additional parameters will replace text values in the sf_message so that messages can be dynamic based on values stored within the contact flow. For example, the parameter set:

- sf_message: "Please help me with case {{caseId}}"
- caseId: 1234

Will result in the message: "Please help me with case 1234".

In the contact flow example below, we leave a chatter post on a contact.


Use text
Destination key
sf_operation
Value
createChatterPost
Use attribute


Use text
Destination key
sf_feedElementType
Value
FeedItem
Use attribute

Use text

Destination key

sf_subjectId

Value

00303000001RZflAAW

Use attribute

Use text

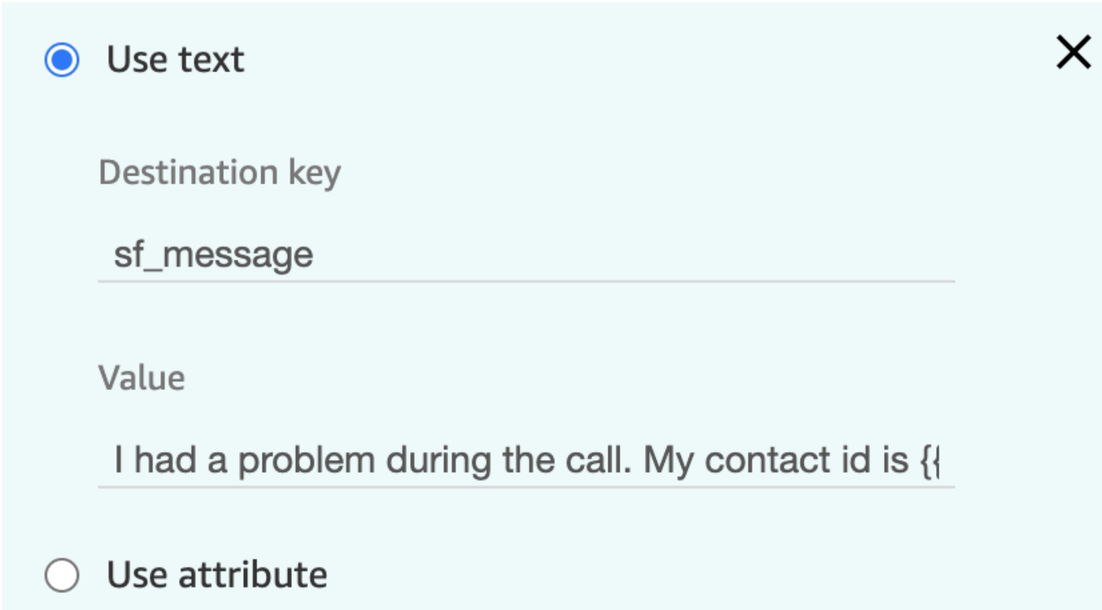
Destination key

sf_messageType

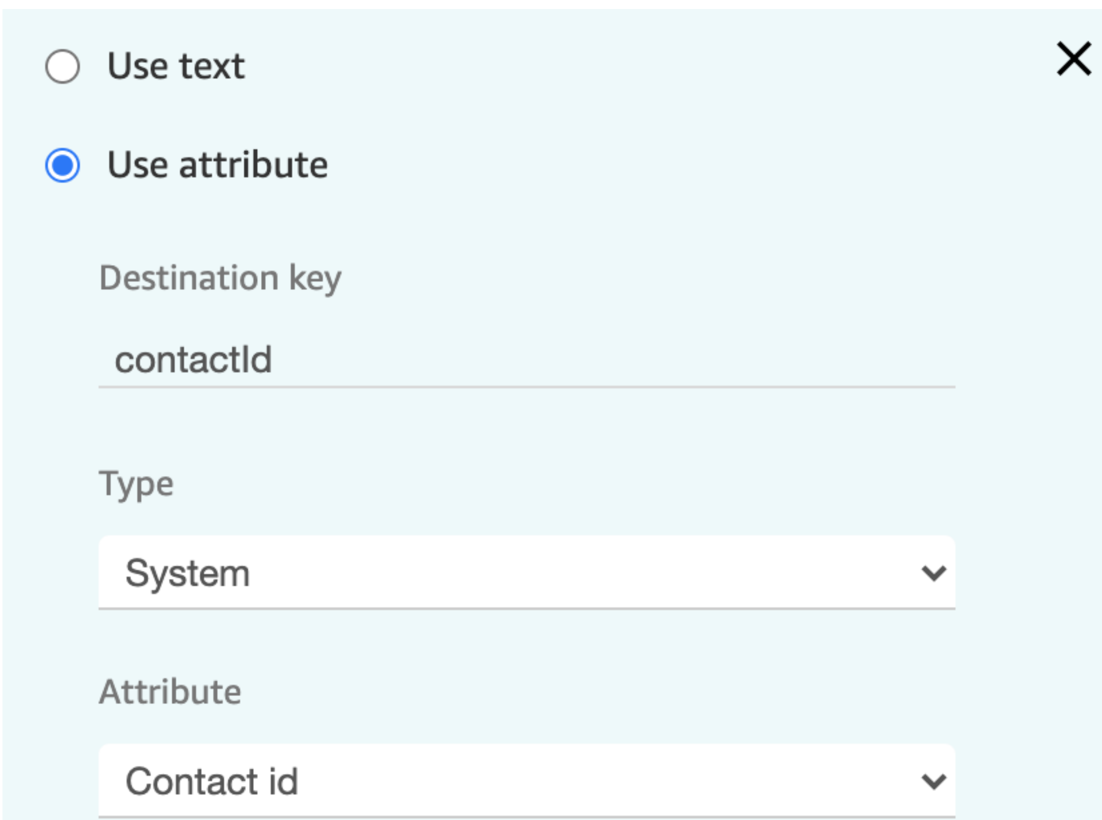
Value

Text

Use attribute



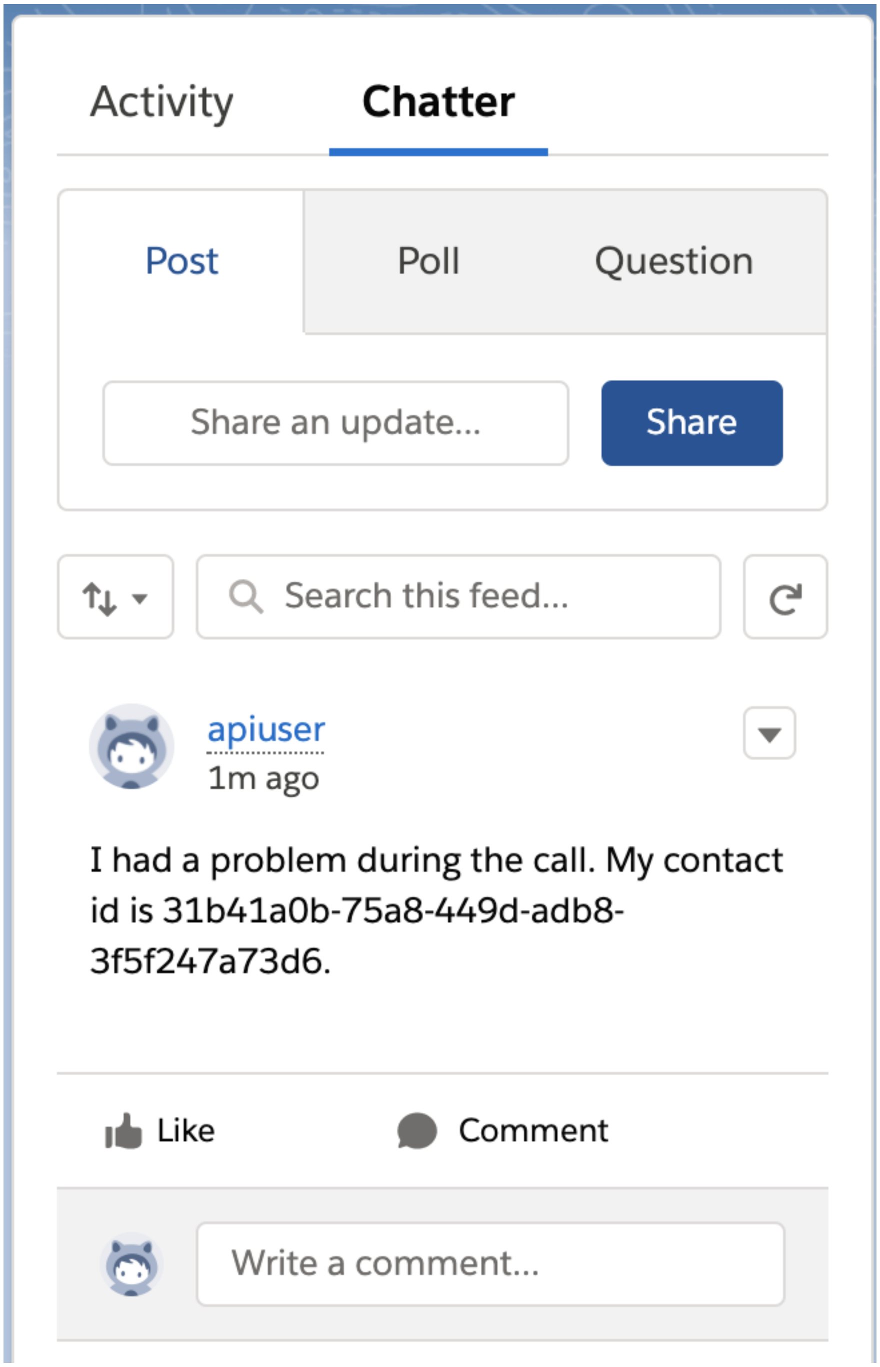
(full text of the value is "I had a problem during the call. My contact id is {{contactId}}.")



The operation returns a response of:

```
{
    "Id": "0D503000000ILY5CAO"
}
```

See the chatter post appear attached to the Subject:



Salesforce createChatterComment

This operation is invoked by setting **sf_operation** to **createChatterComment** (case sensitive). In this case, the Lambda function uses the Salesforce Connect REST to create a chatter comment (see here). For createChatterComment, the following parameters are required:

- sf_feedElementId

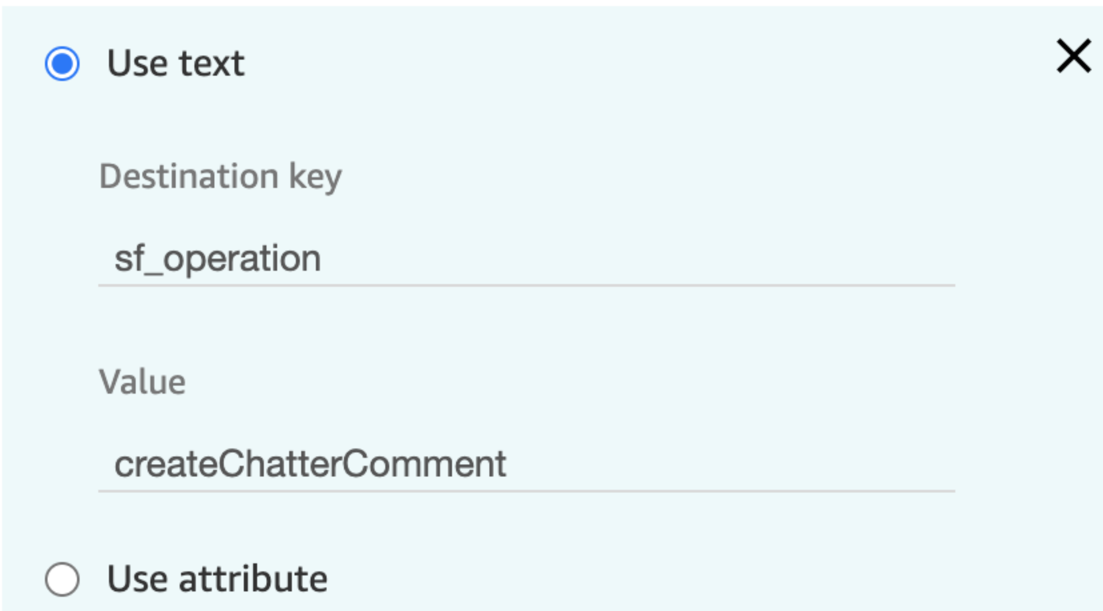
- sf_commentType
- sf_commentMessage

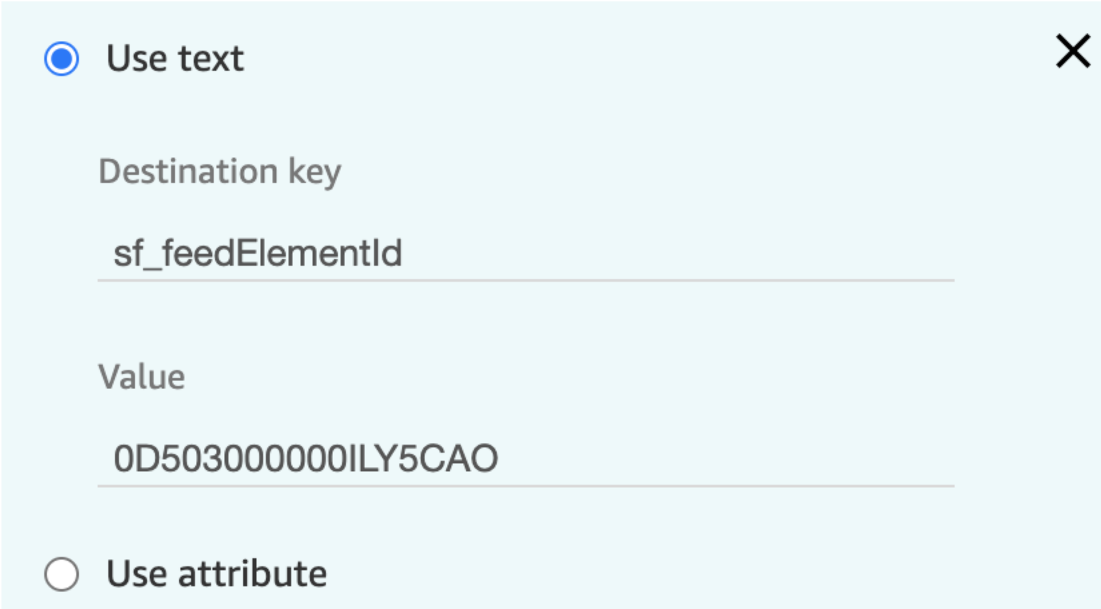
(refer to the api reference for value types)

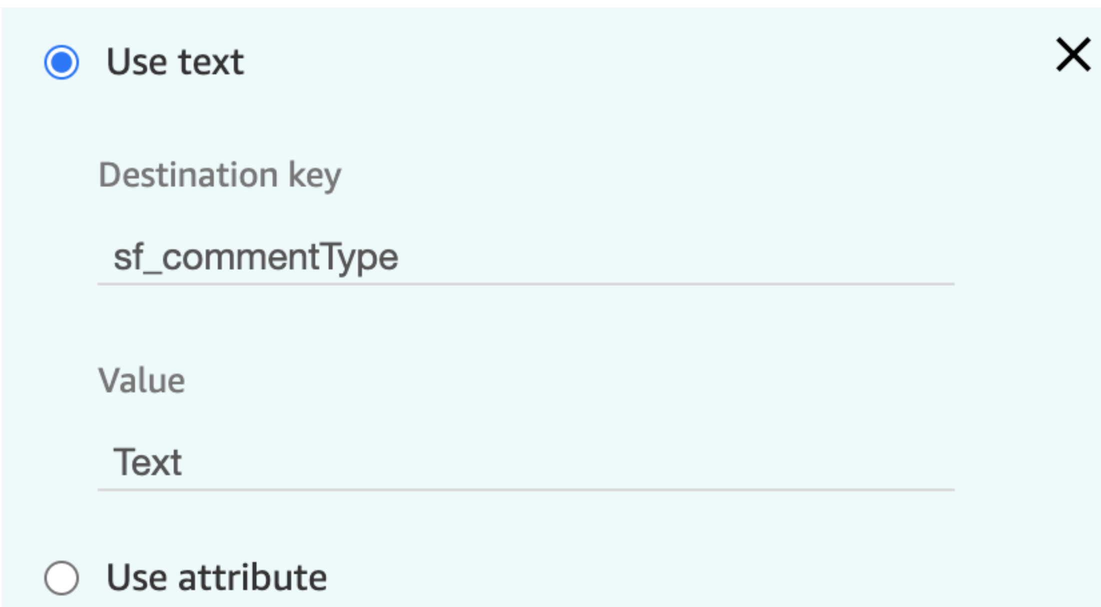
Any additional parameters will replace text values in the sf_commentMessage so that messages can be dynamic based on values stored within the contact flow. For example, the parameter set:

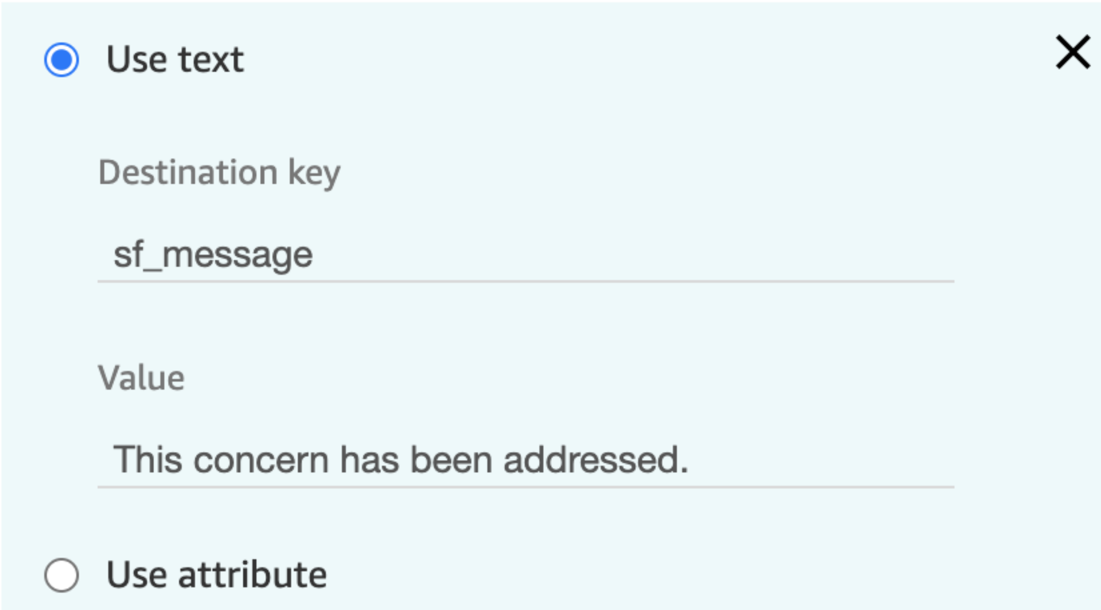
- sf_commentMessage: "Please help me with case {{ caseId }}"
- caseId: 1234

In the contact flow example below, we leave a comment on a chatter post.




Use text
Destination key
sf_feedElementId
Value
0D503000000ILY5CAO
Use attribute

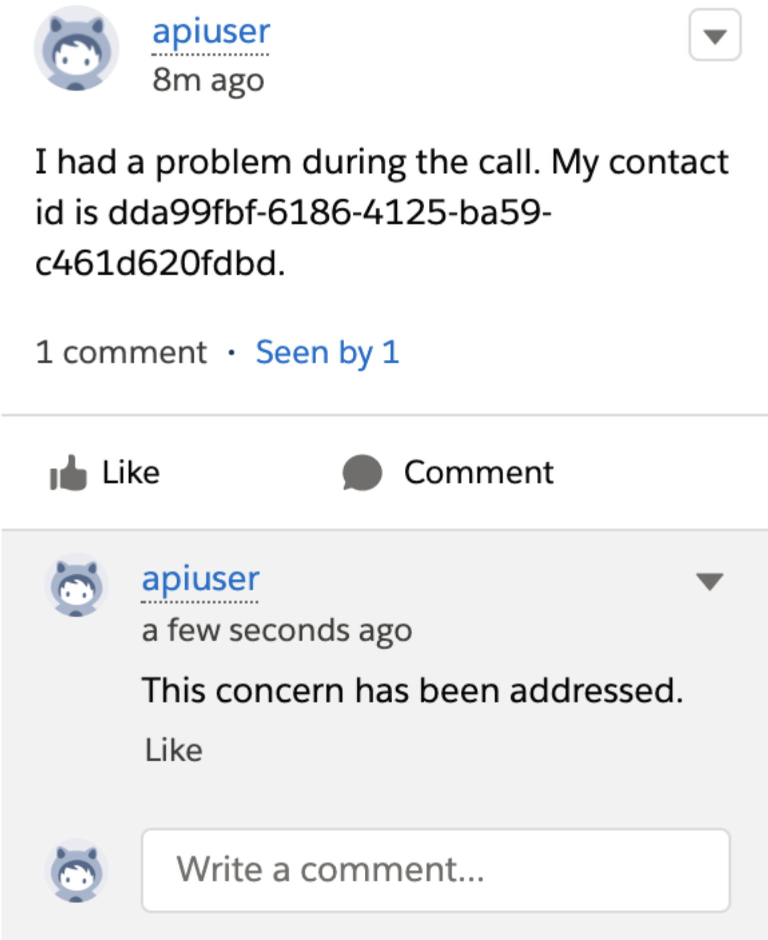

Use text
Destination key
sf_commentType
Value
Text
Use attribute



The operation returns a response of:

```
{
    "Id": "0D703000000ChhNCAS"
}
```

See the chatter post appear attached to the Subject:



Amazon Connect Historical Metrics in Salesforce

Amazon Connect can generate a number of historical metric reports to monitor efficiency and utilization, agent performance, and other information about your contact center. Amazon Connect provides you the ability to schedule execution and export of reports, in comma separated value (CSV) format, to the S3 bucket of your choice. This enables broad compatibility across many analytics and WFM tools.

With the AWS Serverless Repository for Salesforce, you can configure the automatic import of reporting data from Amazon Connect into Salesforce. Two different historical reports are available to transport Agent and Queue interval data from Amazon Connect to Salesforce. Once these have been configured and scheduled, you will begin to see data available in the reports that have been included with the CTI Adapter.

Configuring the AWS Services

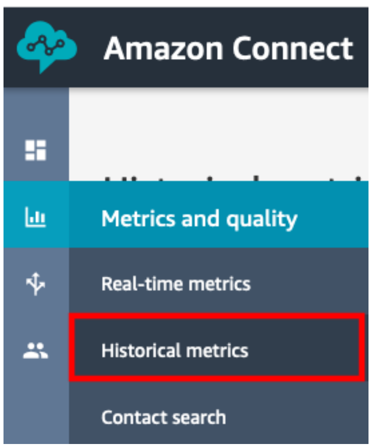
When you configure schedule reports to run in Amazon Connect, they are saved to your reporting Amazon S3 bucket upon execution. As a part of the schedule configuration, you can determine the frequency with which data is exported. The standard configuration is for execution every 30 minutes; however you can increase the interval time to suit your requirements.

Once you have the reports configured and scheduled, you will then need to activate the trigger for the reports bucket that will invoke an AWS Lambda function included in the AWS Serverless Repository for Salesforce. This function will process the report and import the data to Salesforce.

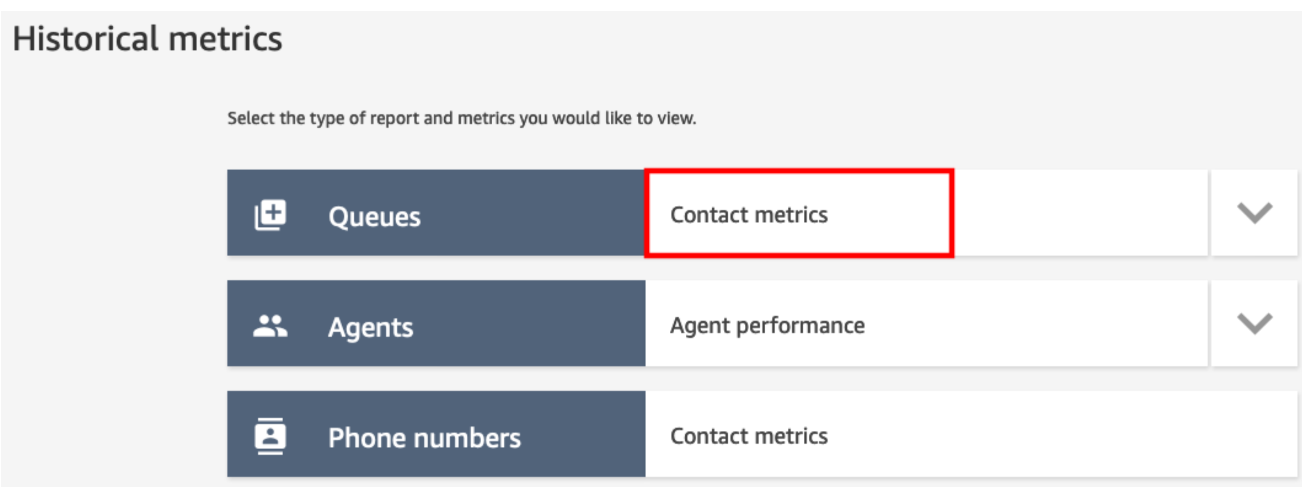
Configuring the Historical Reports in Amazon Connect

1. Login to your Amazon Connect instance as an Administrator

2. From the left navigation, choose **Metrics and Quality** then select **Historical metrics**



3. On the **Historical metrics** page, select Contact metrics



4. Once the **Historical metrics: Queues** report loads, select the cog in the upper right to edit the report

5. On the **Interval & Tim**e range tab, set the parameters as follows:

   a. Interval: 30 minutes

b. Time Zone: UTC

c. Time Range: Last 24 Hours

6. Leave the **Groupings** and **Filters** tabs set to their defaults
7. Select the **Metrics** Tab.
8. Select ALL selectable options EXCEPT:

a. Callback contacts handled

b. API contact handled

c. Callback Contacts

d. API Contacts

e. Contacts answered in 25 seconds

f. Contacts transferred out internal

g. Contacts transferred out external

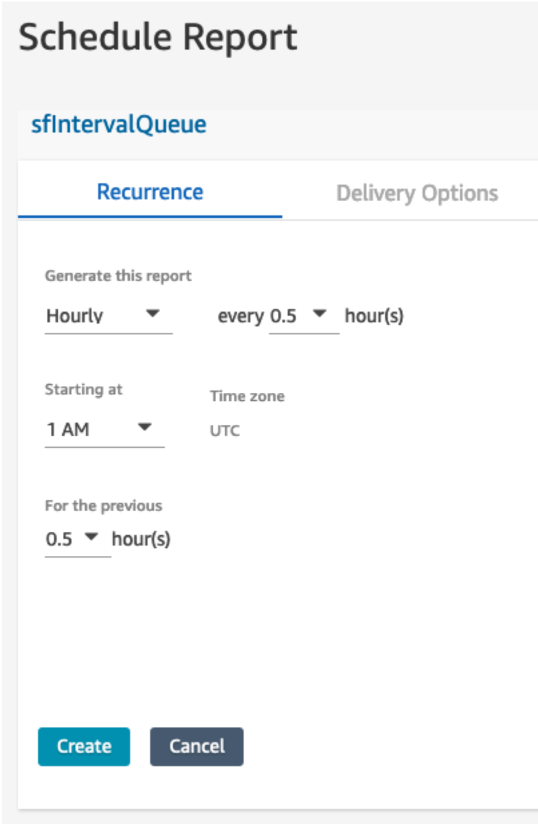
9. Select **Apply**
10. Once the report saves, select the dropdown menu next to the Save button and choose Schedule
11. Set the name as **sfIntervalQueue** and choose **Continue**
12. On the **Note** screen, choose **Continue**
13. On the **Recurrence** tab in the Schedule Report setup, set the options as:

a. Generate this report: Hourly

b. Every: 0.5 hour(s)

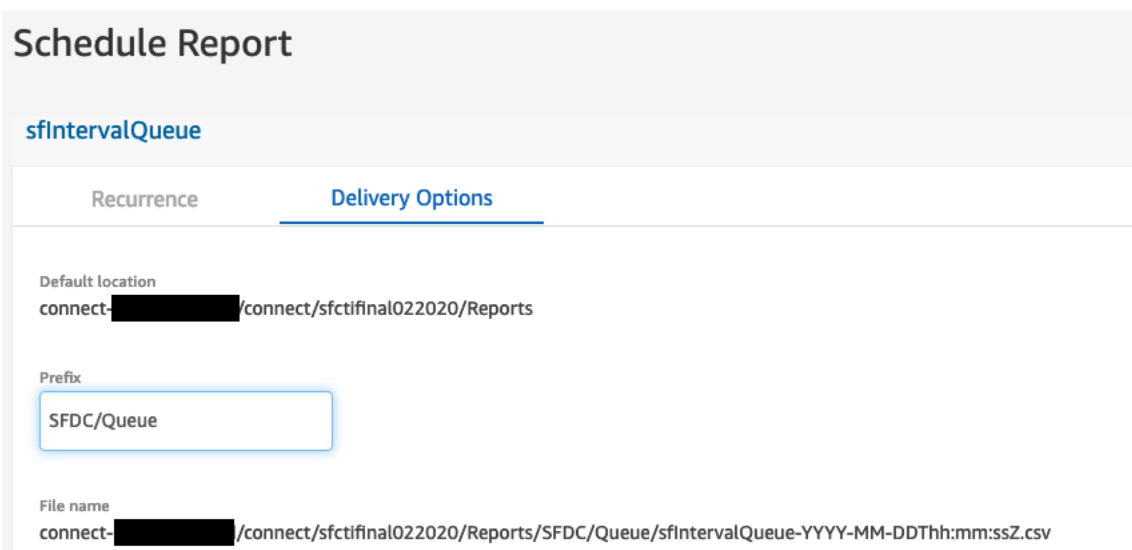
c. Starting at: 1AM

d. For the Previous: 0.5 hour(s)

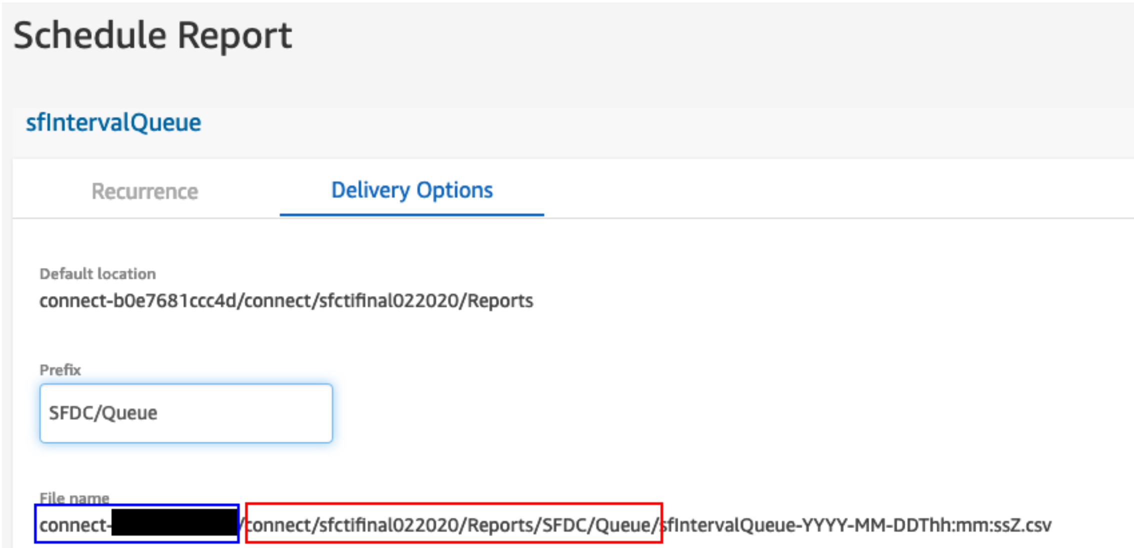


14. Select the **Delivery Options** tab

15. In the Prefix field, enter **SFDC/Queue**

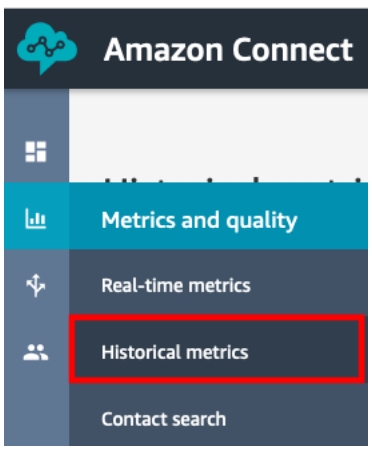


16. Note the File name. The file name contains the bucket, path, and filename that will be used when executing the report. You will use the **bucket name** and **path** in later steps.

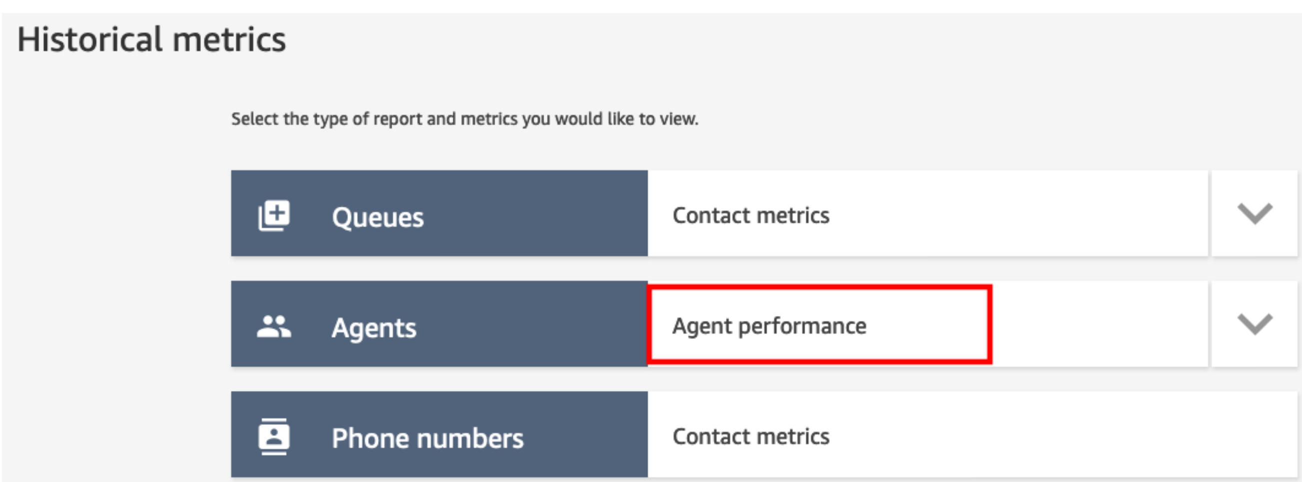


17. Choose **Create**

18. Once the report is created, from the left navigation, choose **Metrics and Quality** then select **Historical metrics**



19. On the **Historical metrics** page, select **Agent performance



20. Once the **Historical metrics: Agents** report loads, select the cog in the upper right to edit the report
21. On the **Interval & Tim**e range tab, set the parameters as follows:

    a. Interval: 30 minutes

    b. Time Zone: UTC

    c. Time Range: Last 24 Hours
22. Leave the **Groupings** and **Filters** tabs set to their defaults
23. Select the **Metrics** Tab.
24. Select ONLY the following metrics (deselect any others):
    - After contact work time
    - Agent on contact tome
    - Agent idle time
    - Non-Productive Time
    - Average after contact work time
    - Average handle time
    - Average customer hold time
    - Average agent interaction and customer hold time
    - Average agent interaction time
    - Contacts agent hung up first
    - Contacts consulted
    - Contacts handled
    - Contacts handled incoming
    - Contacts handled outbound
    - Contacts put on hold
    - Contacts hold disconnect
    - Contacts transferred out
    - Contacts transferred out internal

- Contacts transferred out external
- Error status time
- Agent answer rate
- Agent non-response
- Occupancy
- Online time
- Agent interaction and hold time
- Agent interaction time
- Average outbound agent interaction time
- Average outbound after contact work time

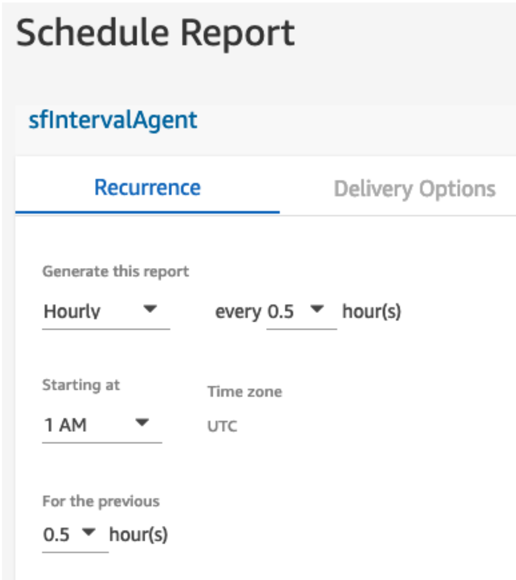
25. Select **Apply**
26. Once the report saves, select the dropdown menu next to the Save button and choose Schedule
27. Set the name as **sfIntervalAgent** and choose **Continue**
28. On the **Note** screen, choose **Continue**
29. On the **Recurrence** tab in the Schedule Report setup, set the options as:

    a. Generate this report: Hourly

    b. Every: 0.5 hour(s)

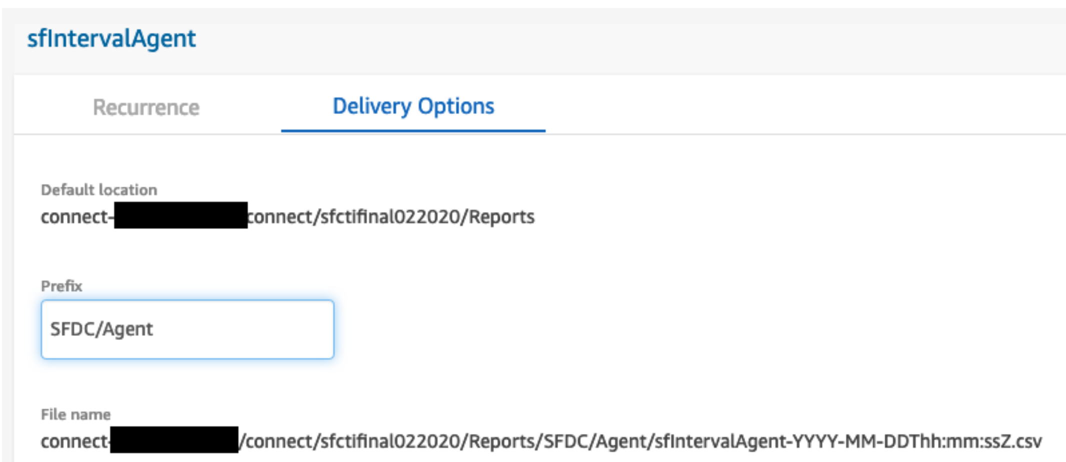
    c. Starting at: 1AM

    d. For the Previous: 0.5 hour(s)



30. Select the **Delivery Options** tab

31. In the Prefix field, enter **SFDC/Agent**



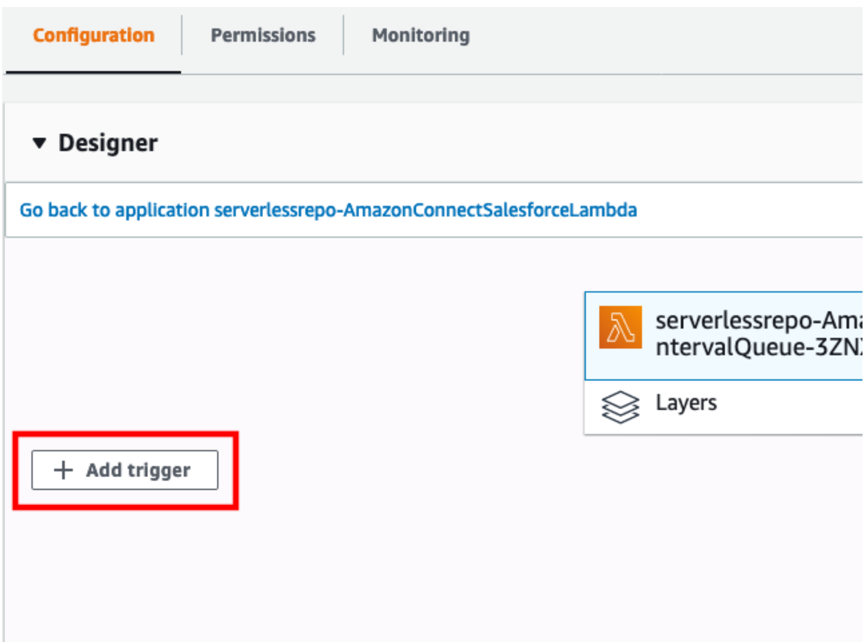
32. Note the File name. The file name contains the bucket, path, and filename that will be used when executing the report. You will use the **bucket name** and **path** in later steps.

33. Choose **Create**

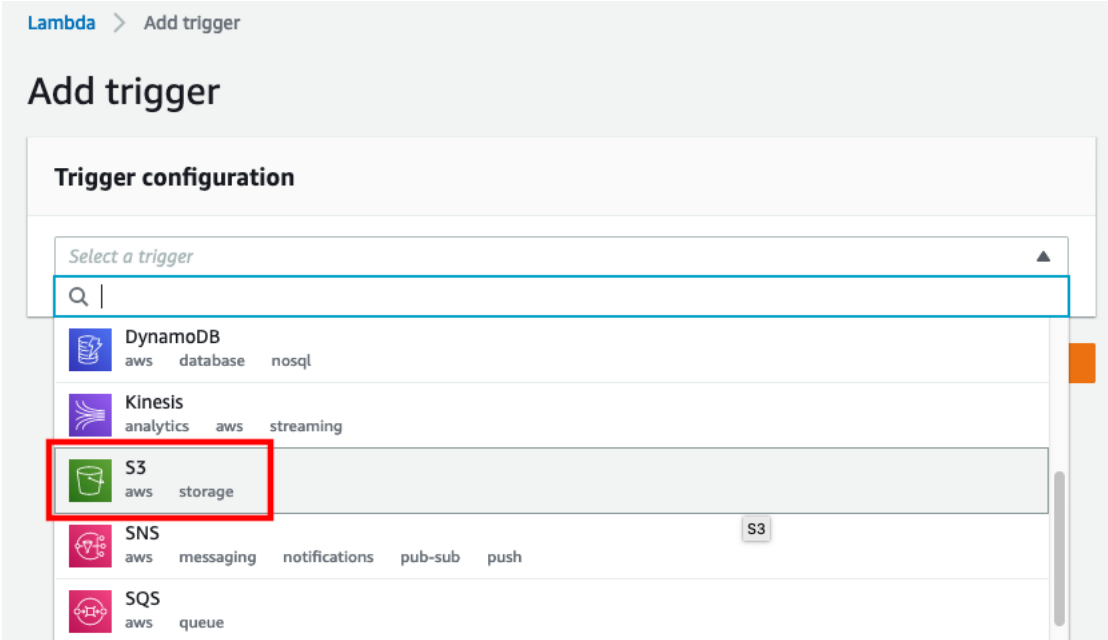
Once you have created the two reports and set their schedule, the next thing you will need to do is to configure a trigger that executes a Lambda function when the report is generated and stored in S3.

Creating the AWS Lambda Trigger for the Queue Data

1. In a new browser tab, login to the [AWS console]
2. Open the [AWS Lambda Console]
3. In the Add filter field of the AWS Lambda console, enter sfIntervalQueue and press enter to filter the list of functions
4. Select the Lambda function that includes sfIntervalQueue in the name
5. Expand the Designer section
6. Select Add trigger



7. In Trigger configuration, select S3 from the dropdown list



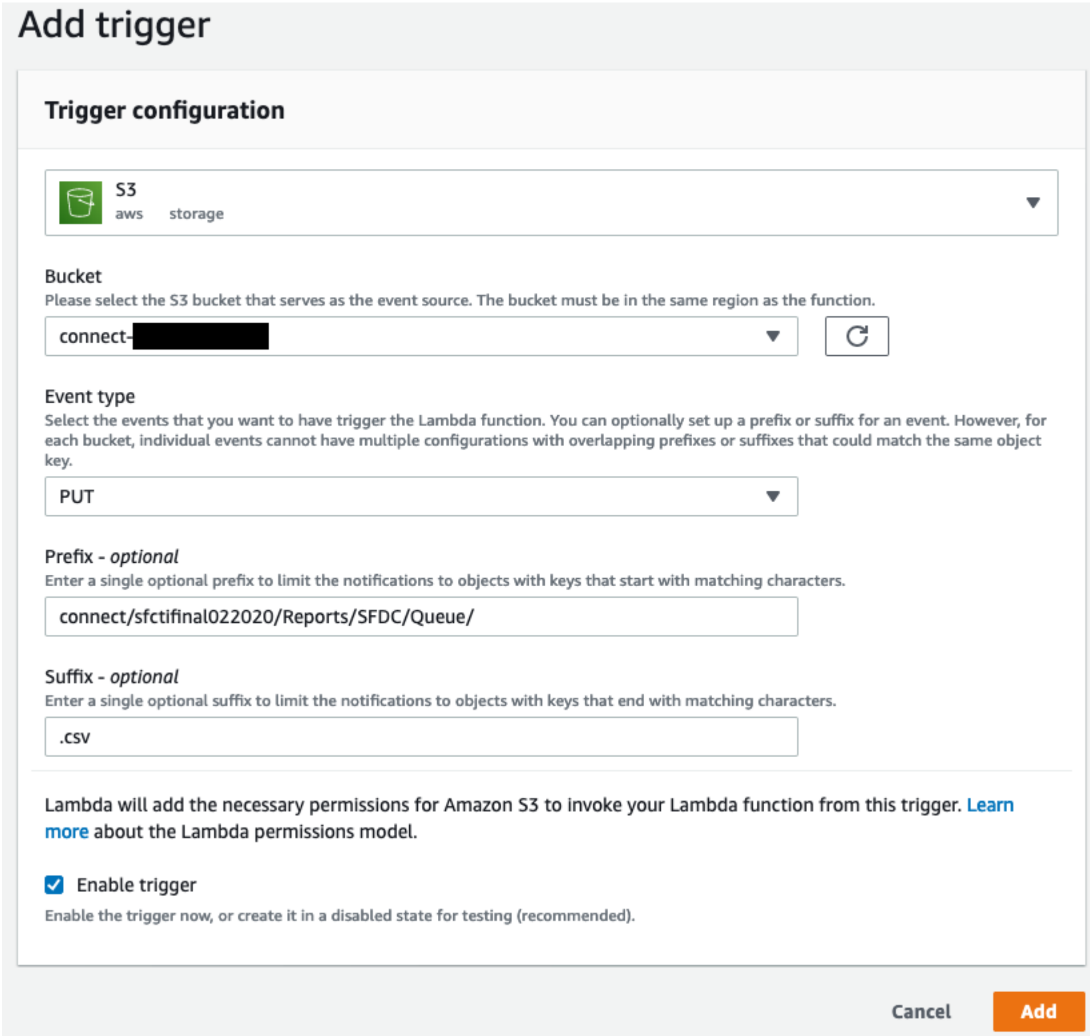
8. Referring to the notes from the report configuration earlier, select the appropriate bucket

9. Change the Event type to PUT

10. Referring to the notes from the report configuration earlier, set the Prefix to the path value for your report

11. Set the Suffix to .csv

12. The trigger configuration should now be similar to the following:

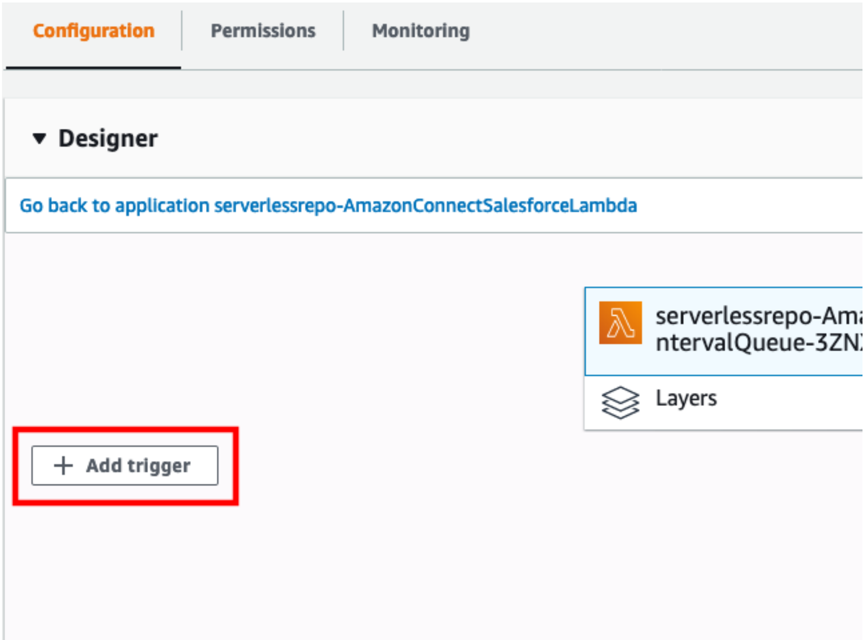


13. Select **Add**

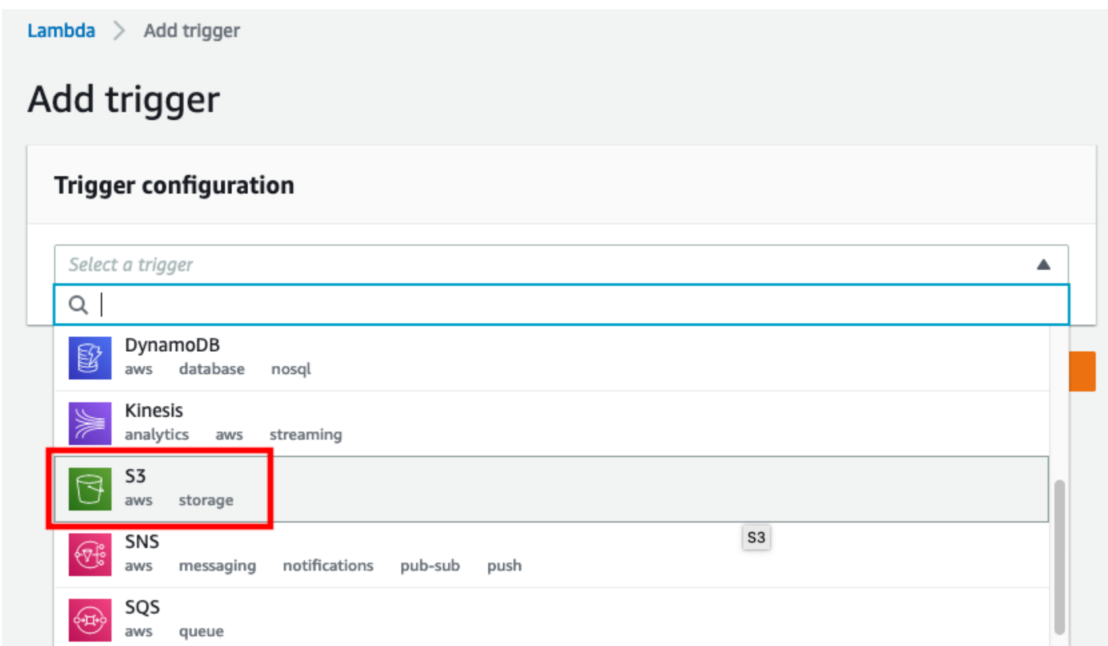
14. If everything has been configured correctly, you should receive a success message.

Creating the AWS Lambda Trigger for the Agent Data

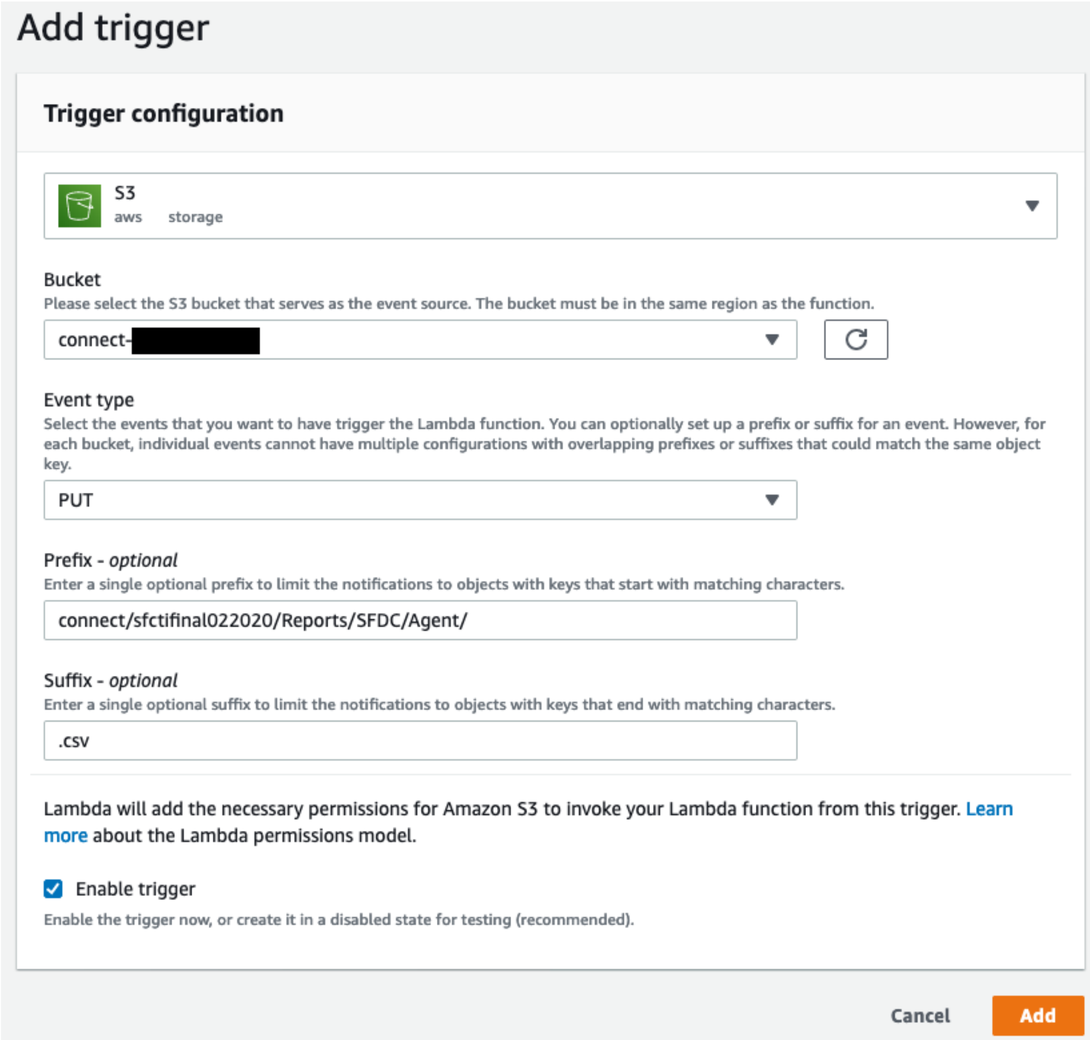
1. In a new browser tab, login to the [AWS console]
2. Open the [AWS Lambda Console]
3. In the Add filter field of the AWS Lambda console, enter sfIntervalAgent and press enter to filter the list of functions
4. Select the Lambda function that includes sfIntervalAgent in the name
5. Expand the Designer section
6. Select Add trigger



7. In Trigger configuration, select S3 from the dropdown list



8. Referring to the notes from the report configuration earlier, select the appropriate bucket
9. Change the Event type to PUT
10. Referring to the notes from the report configuration earlier, set the Prefix to the path value for your report
11. Set the Suffix to .csv
12. The trigger configuration should now be similar to the following:



13. Select **Add**

14. If everything has been configured correctly, you should receive a success message.

Verifying the Data Import in Salesforce

Once you have configured the reports and added the triggers, you should start to see data in Salesforce after ~30 minutes. The Amazon Connect CTI Adapter comes with a predefined set of reports. These reports can be customized and additional reports can be created by leveraging the imported data.

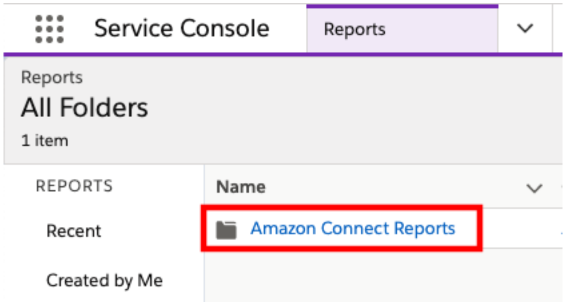
Viewing Amazon Connect Reports in Salesforce

1. Log in into your Salesforce org and go to the **Service Console**

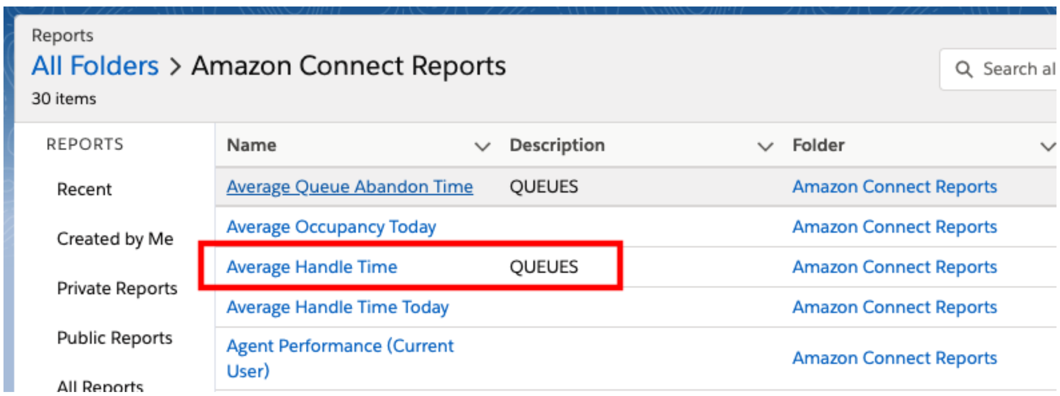
2. Expand the **navigation menu** by selecting the down arrow and choose **Reports**

3. In the left Navigation, select **All Folders**

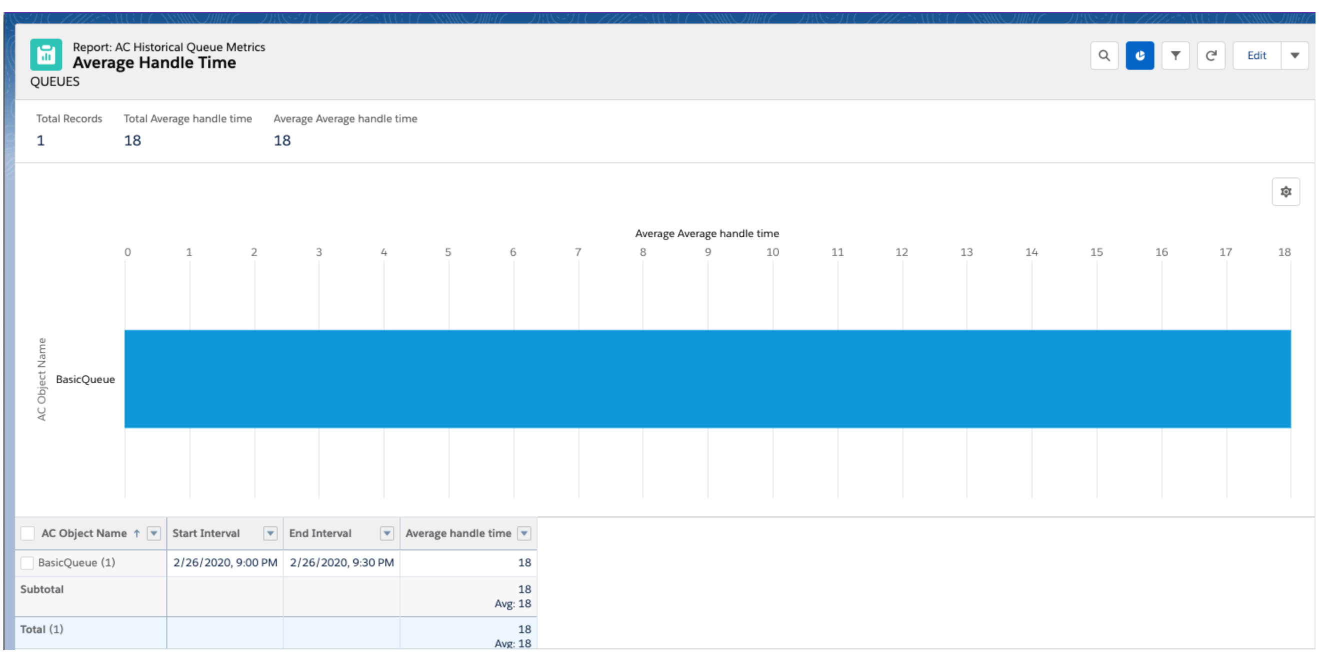
4. Select the **Amazon Connect Reports** folder



5. In the list of reports, choose Average Handle Time queue report



6. Once the report loads, you should see data (provided calls have queued in this Amazon Connect instance today)



Amazon Connect Real-Time Metrics in Salesforce

The CTI adapter includes real-time reporting tools which provide visibility into critical data which help improve the utilization of your agents and allows insight into overall queue performance. Once you have deployed the AWS Serverless Application Repository for Salesforce your Amazon Connect instance will push real-time metric data to Salesforce every 15 seconds. This data can be viewed from two tools that were included with the CTI Adapter installation.

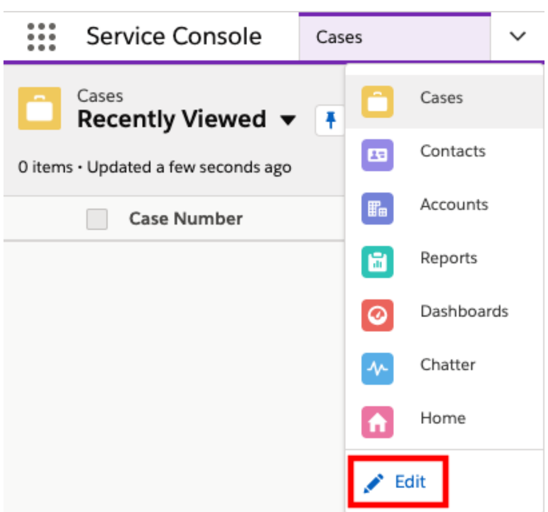
The first view, AC Queue Metrics queue provides details about current queue staffing and the distribution of contacts by queue. The second view, AC Real Time Queue Metrics, allows you to select a specific queue and view the real-time metrics for that queue.

Deployment and Configuration

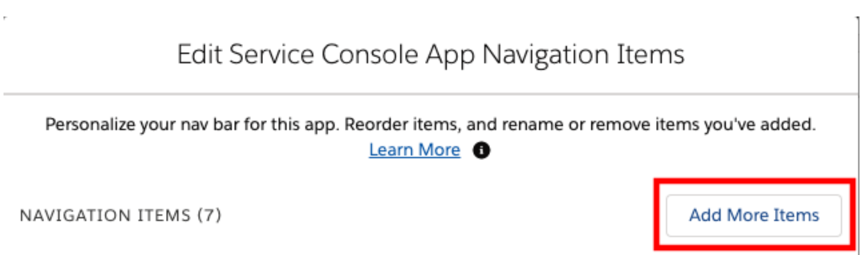
Once you have deployed the AWS Serverless Application Repository for Salesforce and provided the appropriate credentials, there is no further configuration required to make the data flow work. The only remaining task is to add the real-time views to your Salesforce console.

Adding Real-Time Reports to the Service Console

1. Log in into your Salesforce org and go to the **Service Console**
2. Expand the **navigation menu** by selecting the down arrow and choose **Edit**.



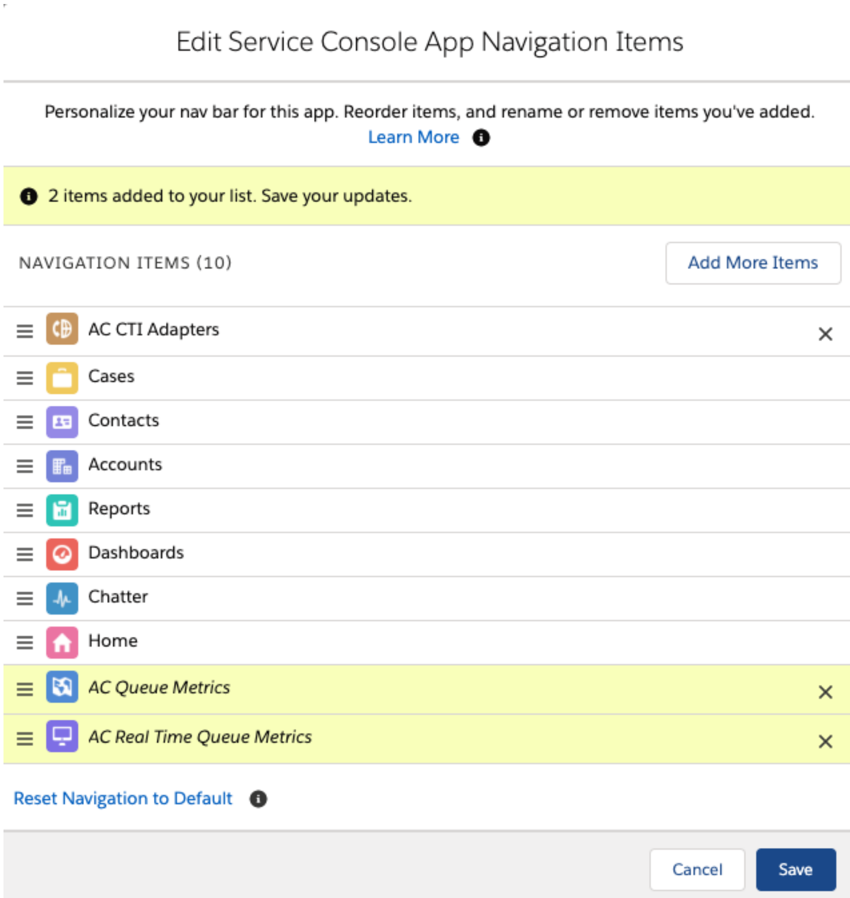
3. On the Edit Service Console App Navigation Items page, select **Add More Items**



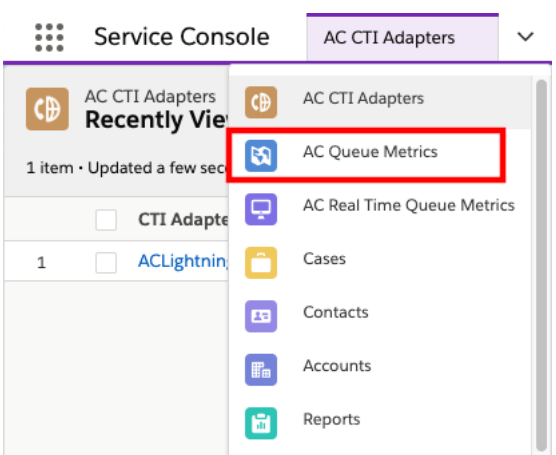
4. Select the **+** next to **AC Queue Metrics** and **AC Real Time Queue Metrics**

5. Select **Add 2 Nav Items**

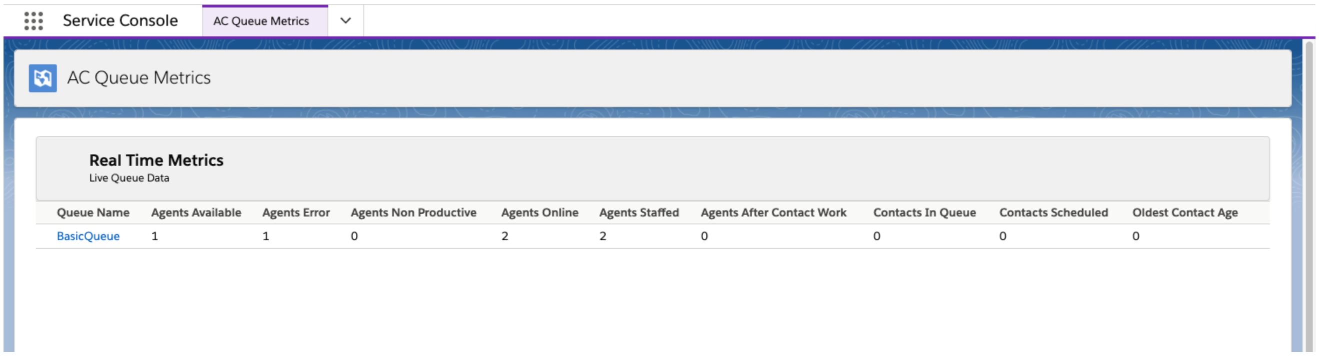
6. Change the order of your Navigation Items if desired, then choose **Save**



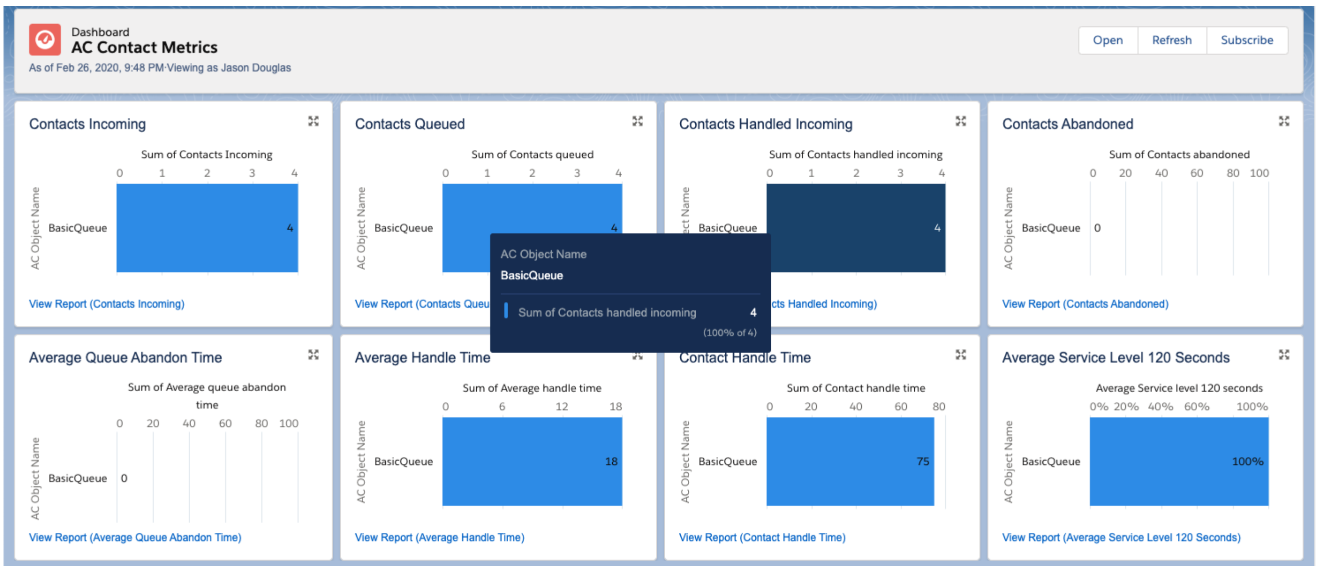
7. Once the save completes, expand the **navigation menu** by selecting the down arrow and choose **AC Queue Metrics**



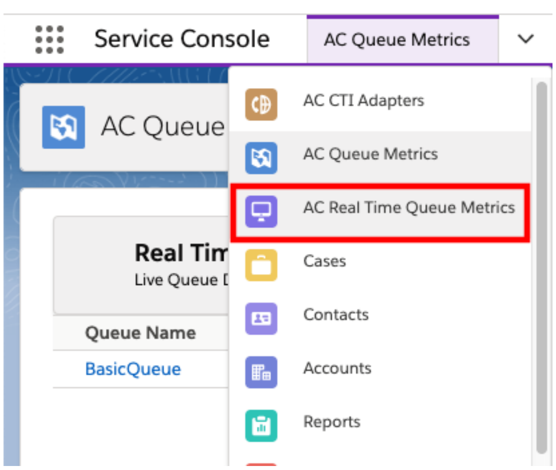
8. The AC Queue Metrics view will display and any relevant data will update every 15 seconds.



9. Scroll down to view the **AC Contact Metrics Dashboard

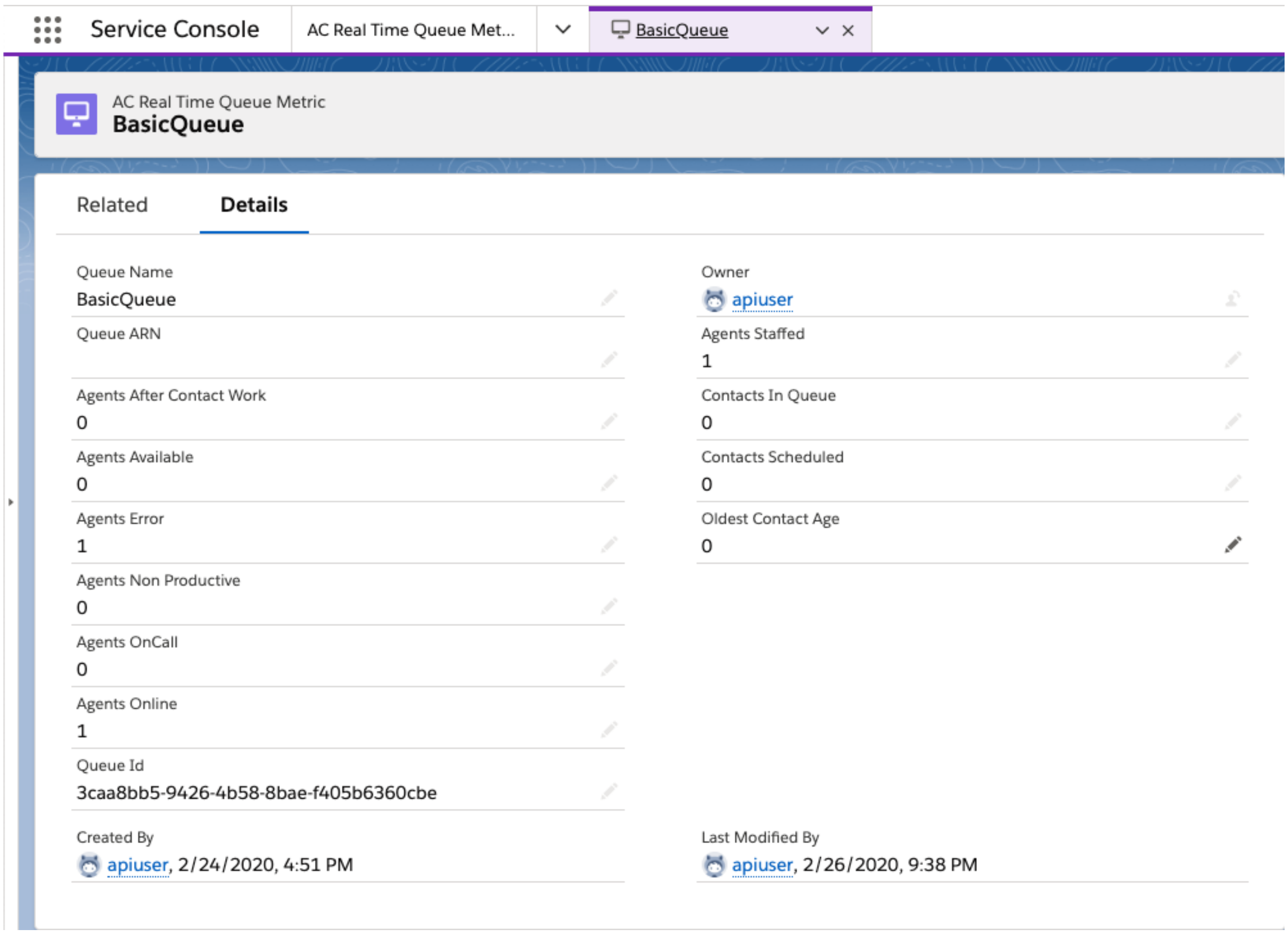


10. Expand the **navigation menu** by selecting the down arrow and choose **AC Real Time Queue Metrics



11. Change the List View to **ALL**

12. Select a queue to view the detailed real-time statistics for that specific queue



Contact Channel Analytics

In addition to the CTI adapter's native ability to provide direct playback links to call recordings in Amazon Connect, the AWS Serverless Application Repository for Salesforce includes several functions that allow you to process recordings, perform quality analytics functions, and bring data into Salesforce.

This processing is done post-call, using the Contact Trace Record (CTR) as the initiation path. The following quality analytics options are available:

- **Call Recording Import:** imports the actual audio file into Salesforce. This option is not mandatory for the others to function.

- **Recording Transcript:** you can choose to have your call recordings transcribed to text and presented in a visual format that resembles a chat conversation. This allows for quick scanning of a call to identify key segments of conversation. This option is required if you wish to include the next level of analysis

- **AI-Driven Contact Analysis:** once the recordings have been transcribed to text, you can also indicate that you wish to do further analysis of the conversation using Amazon Comprehend. Available options are:

  - **Sentiment Analysis:** returns the overall sentiment of the conversation (Positive, Negative, Neutral, or Mixed).

  - **Keyphrase Extraction:** returns the key phrases or talking points and a confidence score to support that this is a key phrase.

  - **Language Detection:** returns the dominant language with a confidence score to support that a language is dominant

  - **Custom Entities:** allows you to customize the AI to identify terms that are specific to your domain

  - **Syntax Analysis:** analyze the transcript using tokenization and Parts of Speech (PoS), and identify word boundaries and labels like nouns and adjectives within the text.

Call Recording Import

You can import Call Recording (wav) files into your Salesforce Org. This allows for easy access to the recordings from within Salesforce and can be used in conjunction with the other contact channel analytics features to provide a complete view of the customer interaction.

The import of call recordings is not required to activate the other contact channel analytics features. Additionally, the import will consume storage in your Salesforce Org, approximately 2MB per minute.

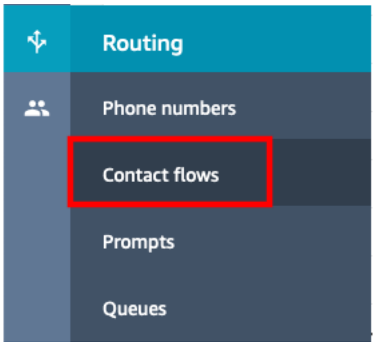
Once enabled during the AWS Serverless Application Repository for Salesforce, recording import is activated on a call by call basis by adding a specific contact attribute. This attribute is used during Contact Trace Record processing to trigger the call import.

NOTE: After Call Work time is a part of the Contact Trace Record. As such, CTRs are not generated until the agent leaves the after call work state. If you are not seeing a recording import, please make sure the agent has completed the call and left the after call work state.

Enabling call recording import

1. Login to your Amazon Connect instance as an Administrator

2. From the left navigation, choose **Routing** then select **Contact flows**



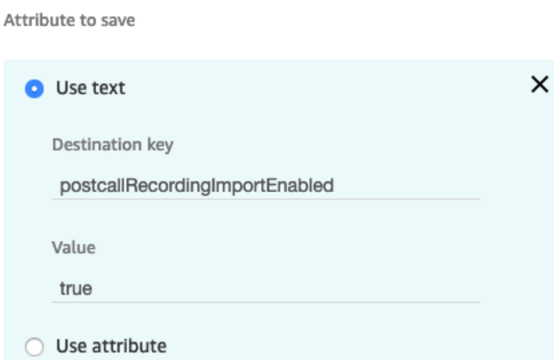
3. Open the contact flow that you want to use to enable call recording import. This contact flow must have Amazon Connect's native recording turned on.

4. In you contact flow, before you transfer to queue, add a new **Set contact attributes** block

5. Configure the block to set a contact attribute as follows:

   a. **Destination key:** postcallRecordingImportEnabled

   b. **Value:** true



6. **Save** the Set contact attributes block. Make sure it is appropriately connected to your contact flow, and **Publish** the flow.

7. Wait approximately 2 minutes to give the contact flow time to publish.

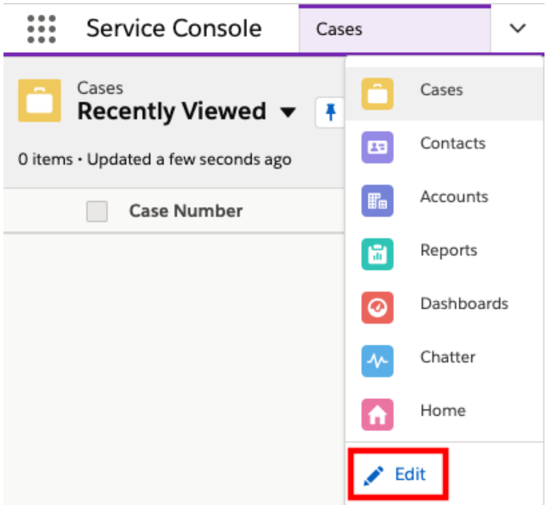
8. Place a call, connect to your agent, speak for a few moments to test the audio, then end the call. Make sure the agent exits after call work

9. After a minute or so, the recording should import.

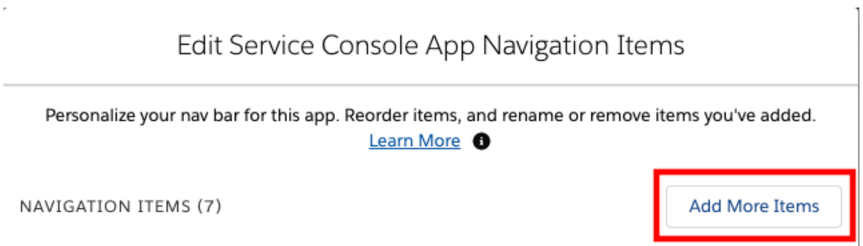
Adding Contact Channel Analytics to the Service Console

1. Log in into your Salesforce org and go to the **Service Console**

2. Expand the **navigation menu** by selecting the down arrow and choose **Edit**.



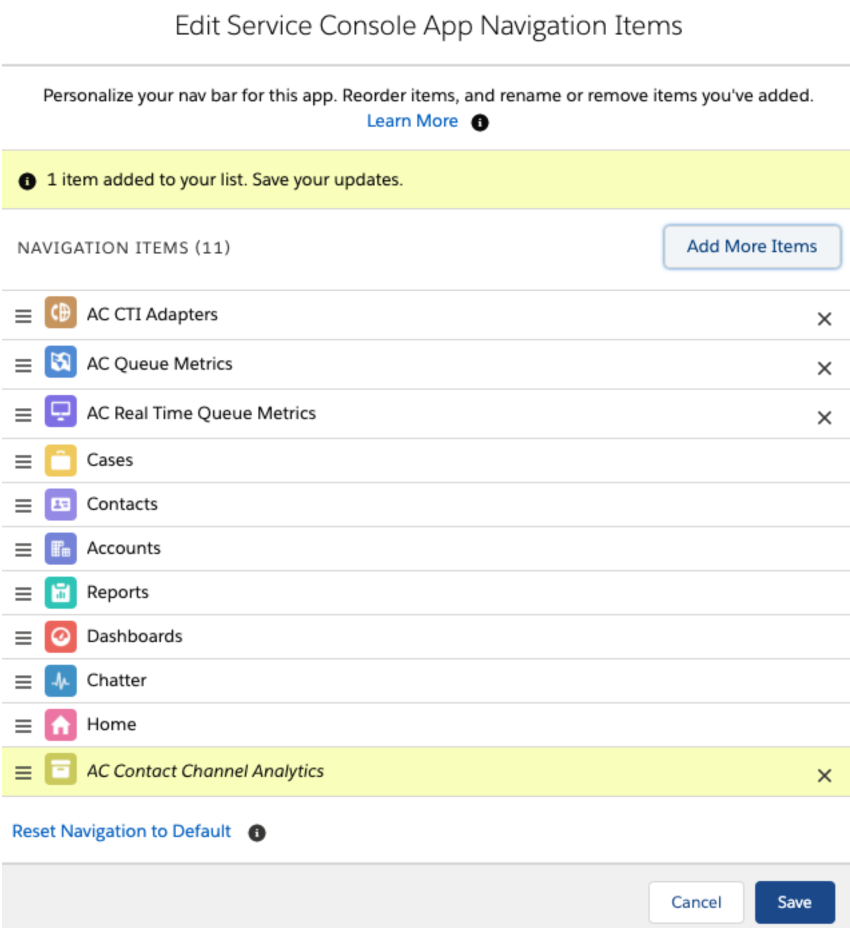
3. On the Edit Service Console App Navigation Items page, select **Add More Items**



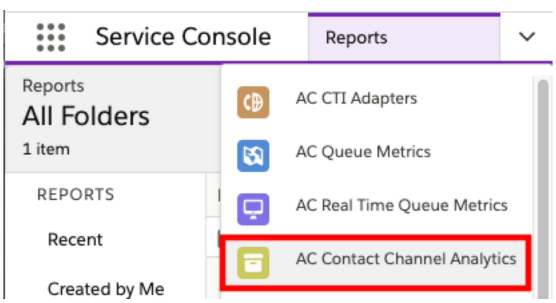
4. Select the **+** next to **AC Contact Channel Analytics**

5. Select **Add 1 Nav Item**

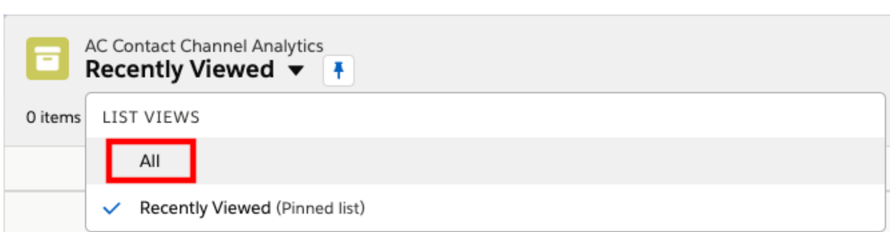
6. Change the order of your Navigation Items if desired, then choose **Save**



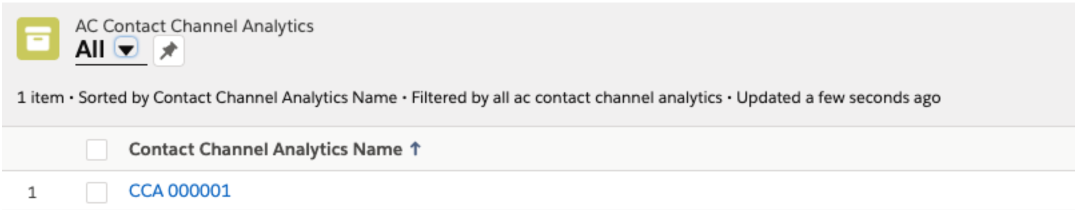
7. Once the save completes, expand the **navigation menu** by selecting the down arrow and choose **AC Contact Channel Analytics**



8. Change the list view from Recently Viewed to **All**

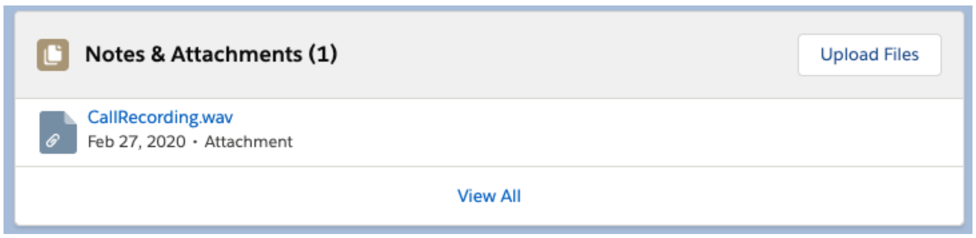


9. Once the view refreshes, you should see your record(s)



10. Select the recording to open it

11. In the Notes & Attachments section, you will see the recording file attached.



12. NOTE: The recording playback, waveform, and transcript views are only active when you also choose to activate recording transcripts.

Recording Transcripts

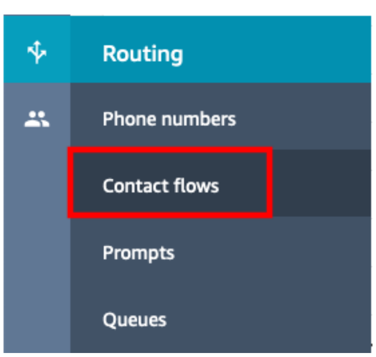
Enabling the Recording Transcripts activates a process to run your contact recordings through Amazon Transcribe which uses a deep learning process to convert text to speech accurately and quickly. In addition, this process also creates a visual waveform of the recording, enables the in-app recording playback, and provides a visual representation of the conversation.

Once enabled during the AWS Serverless Application Repository for Salesforce, recording transcription is activated on a call by call basis by adding a specific contact attribute. This attribute is used during Contact Trace Record processing to trigger the transcription.

Enabling recording transcription

1. Login to your Amazon Connect instance as an Administrator

2. From the left navigation, choose **Routing** then select **Contact flows**



3. Open the contact flow that you want to use to enable call transcription. This contact flow must have Amazon Connect's native recording turned on, since the transcription is dependent on it.

4. In you contact flow, before you transfer to queue, add a new **Set contact attributes** block

5. Configure the block to set two contact attributes as follows:

    1. Attribute 1: enables the transcription process

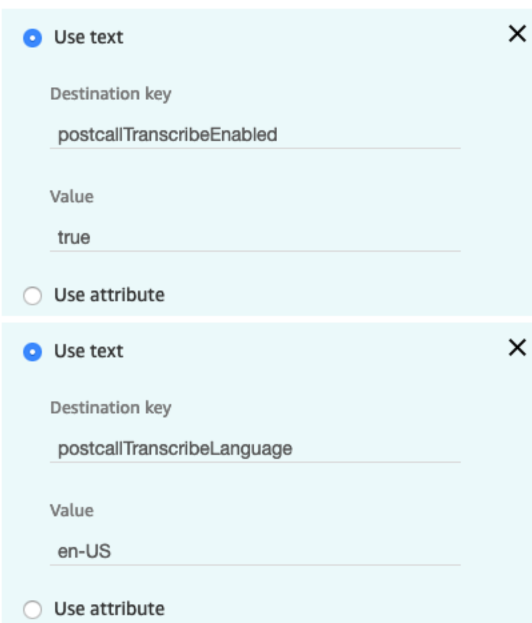
        a. **Destination key**: postcallTranscribeEnabled

        b. **Value**: true

    2. Attribute 2: specifies the transcription language

        -a. **Destination key**: postcallTranscribeLanguage

        b. **Value**: en-US (See [Amazon Transcribe API Reference] for valid language codes)



6. **Save** the Set contact attributes block. Make sure it is appropriately connected to your contact flow, and **Publish** the flow.

7. Wait approximately 2 minutes to give the contact flow time to publish.

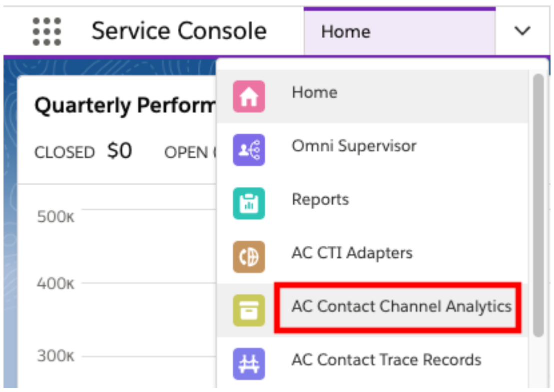
8. Place a call, connect to your agent, speak for a few moments from both the agent and the customer side to generate a good transcript, then end the call. Make sure the agent exits after call work

9. The transcription will take at least as long as the call did. Wait an appropriate amount of time for the transcription to be available.

Accessing transcriptions

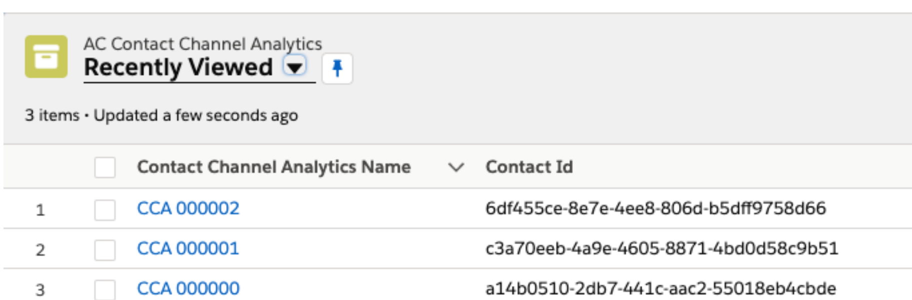
1. Log in into your Salesforce org and go to the **Service Console**

2. Expand the **navigation menu** by selecting the down arrow and choose AC Contact Channel Analytics. If you have not previously added AC Contact Channel Analytics to the navigation menu, complete the steps found in [Adding Contact Channel Analytics to the Service Console](#) .



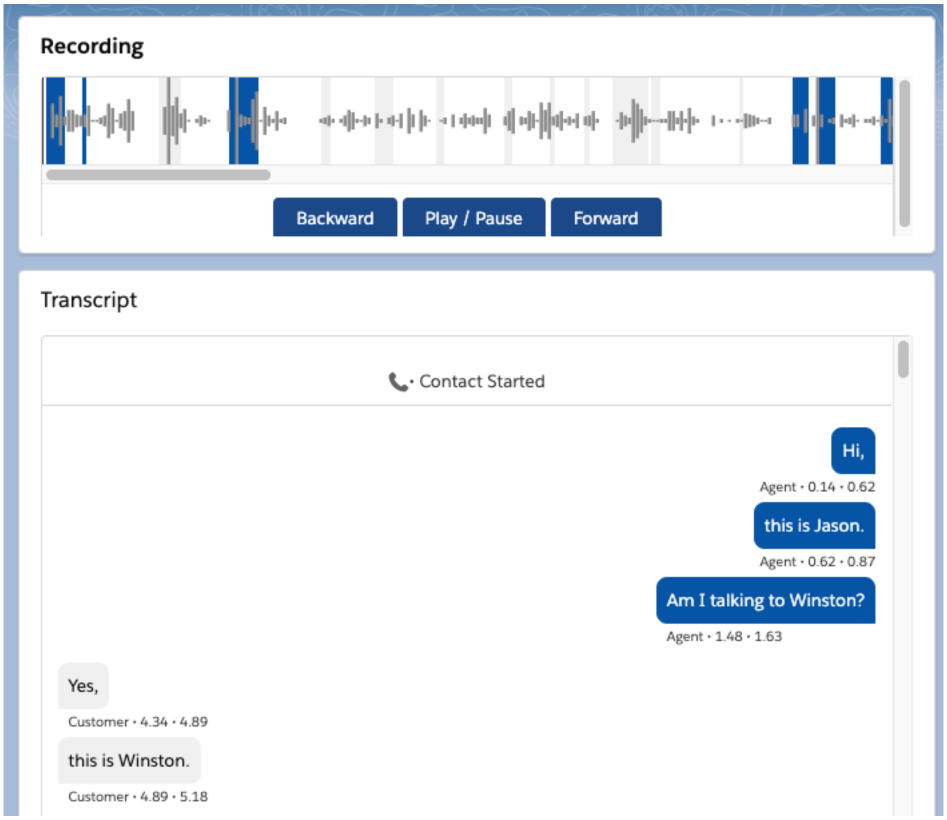
3. Change the list view from Recently Viewed to **All**

4. Once the view refreshes, you should see your record(s)



5. Select a record to view the details.

6. Once the record opens, note the recording waveform, playback controls, and the visual version of the transcription



7. Also note that the transcriptions for each side of the conversation are also included as attachments.

AI Driven Contact Analysis

Enabling the AI Driven Contact Analysis function allows you to process the transcribed text using [Amazon Comprehend](). Amazon Comprehend is a natural language processing service that uses machine learning to find insights and relationships in text.

Once enabled during the AWS Serverless Application Repository for Salesforce, contact analysis is activated on a call by call basis by adding a specific contact attribute. This attribute is used during Contact Trace Record processing to trigger the Amazon Comprehend task.

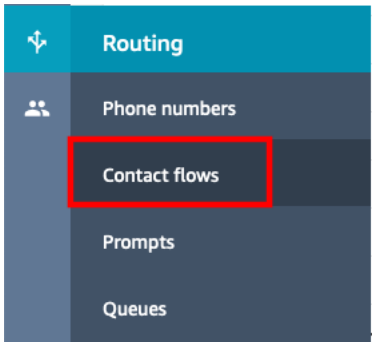
There are five functions available with the integration. Each function is triggered by a code. You can use one code in your contact attribute, or string multiple together as a comma separated list. The available codes and their functions are:

- **snt = Sentiment Analysis**
- **kw = Keyphrase Extraction**
- **dl = Language Detection**
- **ne = Custom Entities**

- **syn = Syntax Analysis**

Enabling AI Driven Contact Analysis

1. Login to your Amazon Connect instance as an Administrator
2. From the left navigation, choose **Routing** then select **Contact flows**

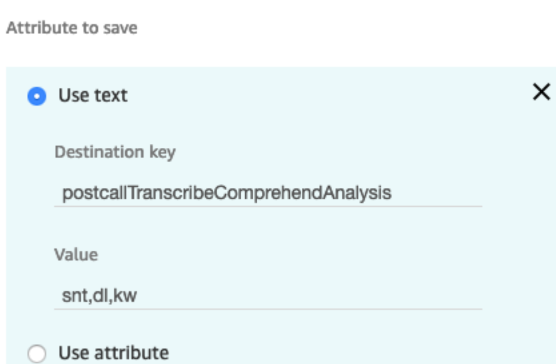


3. Open the contact flow that you want to use to enable AI Driven Contact Analytics. This contact flow must have Amazon Connect's native recording turned on, and transcription enabled as these are both prerequisites for the analytics function.
4. In you contact flow, before you transfer to queue, add a new **Set contact attributes** block
5. Configure the block to set a contact attribute as follows:

   a. **Destination key:** postcallTranscribeComprehendAnalysis

   b. **Value:** snt,dl,kw,syn

```
- In this example, we are performing sentiment analysis,
language detection, and keyphrase
extraction
```



6. **Save** the Set contact attributes block. Make sure it is appropriately connected to your contact flow, and **Publish** the flow.

7. Wait approximately 2 minutes to give the contact flow time to publish.

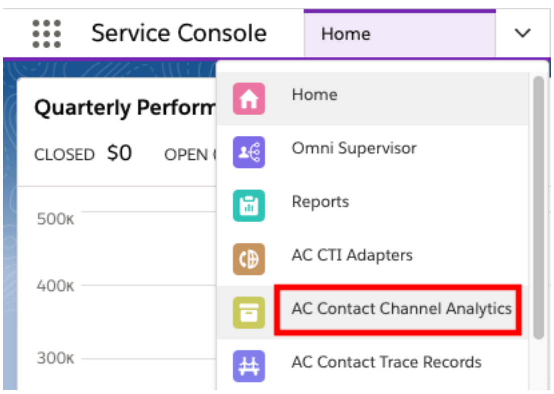
8. Place a call, connect to your agent, speak for a few moments from both the agent and the customer side to generate a good transcript, then end the call. Make sure the agent exits after call work

9. The contact analysis runs after the transcription, which will take at least as long as the call did. Wait an appropriate amount of time for the analysis to be available.

Accessing the AI Driven Contact Analysis

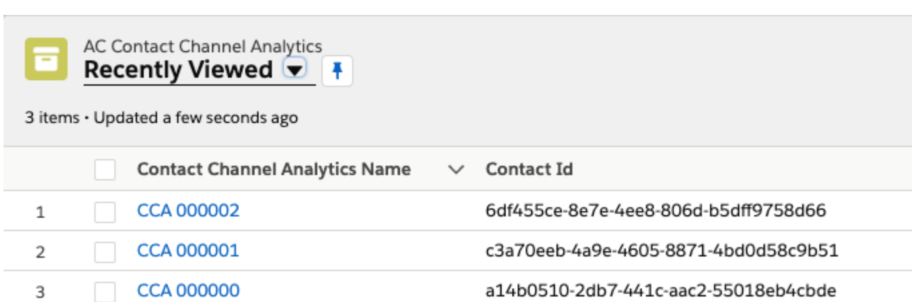
1. Log in into your Salesforce org and go to the **Service Console**

2. Expand the **navigation menu** by selecting the down arrow and choose AC Contact Channel Analytics. If you have not previously added AC Contact Channel Analytics to the navigation menu, complete the steps found in [Adding Contact Channel Analytics to the Service Console](#) .



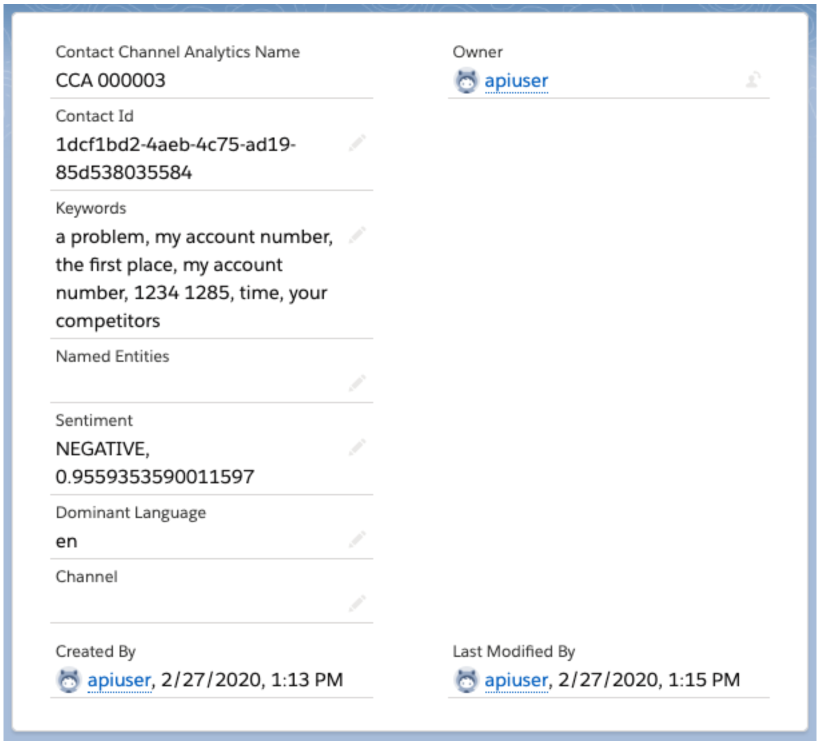
3. Change the list view from Recently Viewed to **All**

4. Once the view refreshes, you should see your record(s)



5. Select a record to view the details.

6. Once the record opens, note the Keywords, Sentiment, and Dominant Language



Contact Trace Record Import

In Amazon Connect, data about contacts is captured in contact trace records (CTR). This data can include the amount of time a contact spends in each state: customer on hold, customer in queue, agent interaction time. The basis for most historical and real-time metrics in Amazon Connect is the data in the CTR. When you create metrics reports, the values displayed for **most** (not all) metrics in the report are calculated using the data in the CTRs.

CTRs are available within your Amazon Connect instance for 24 months from the time when the associated contact was initiated. You can also stream CTRs to Amazon Kinesis to retain the data longer, and perform advanced analysis on it. Additionally, with the AWS Serverless Application Repository for Salesforce, you can import Contact Trace Records into your Salesforce org.

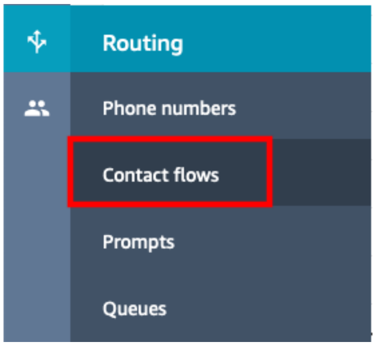
Contact Trace Record Import

Once enabled during the AWS Serverless Application Repository for Salesforce, CTR import is activated on a call by call basis by adding a specific contact attribute. This attribute is used during Contact Trace Record processing to trigger the import task.

Enabling Contact Trace Record Import

1. Login to your Amazon Connect instance as an Administrator

2. From the left navigation, choose **Routing** then select **Contact flows**



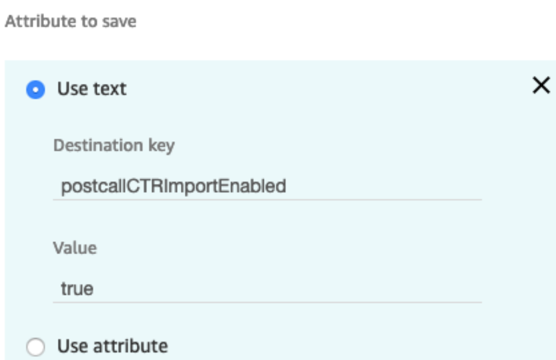
3. Open the contact flow that you want to use to enable call recording import.

4. In you contact flow, before you transfer to queue, add a new **Set contact attributes** block

5. Configure the block to set a contact attribute as follows:

   a. **Destination key:** postcallCTRImportEnabled

   b. **Value:** true



6. **Save** the Set contact attributes block. Make sure it is appropriately connected to your contact flow, and **Publish** the flow.

7. Wait approximately 2 minutes to give the contact flow time to publish.

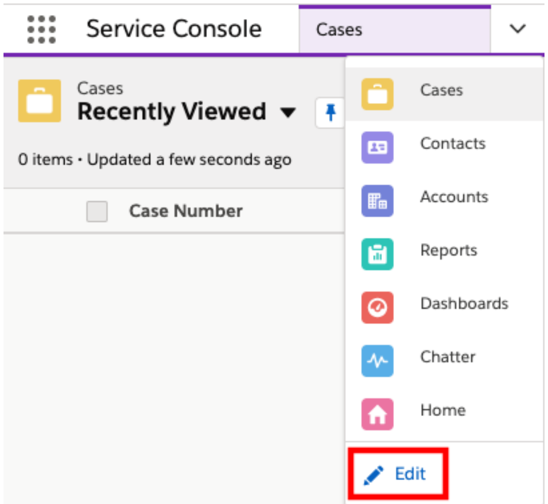
8. Place a call, connect to your agent, speak for a few moments, then end the call. Make sure the agent exits after call work

9. The Contact Trace Record is emitted shortly after call completion and the import happens almost immediately.

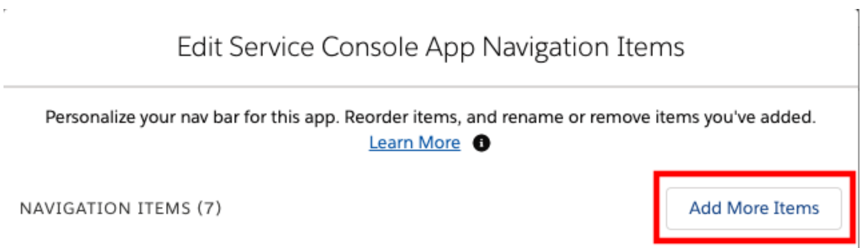
Adding Contact Trace Records to the Service Console

1. Log in into your Salesforce org and go to the **Service Console**

2. Expand the **navigation menu** by selecting the down arrow and choose **Edit**.



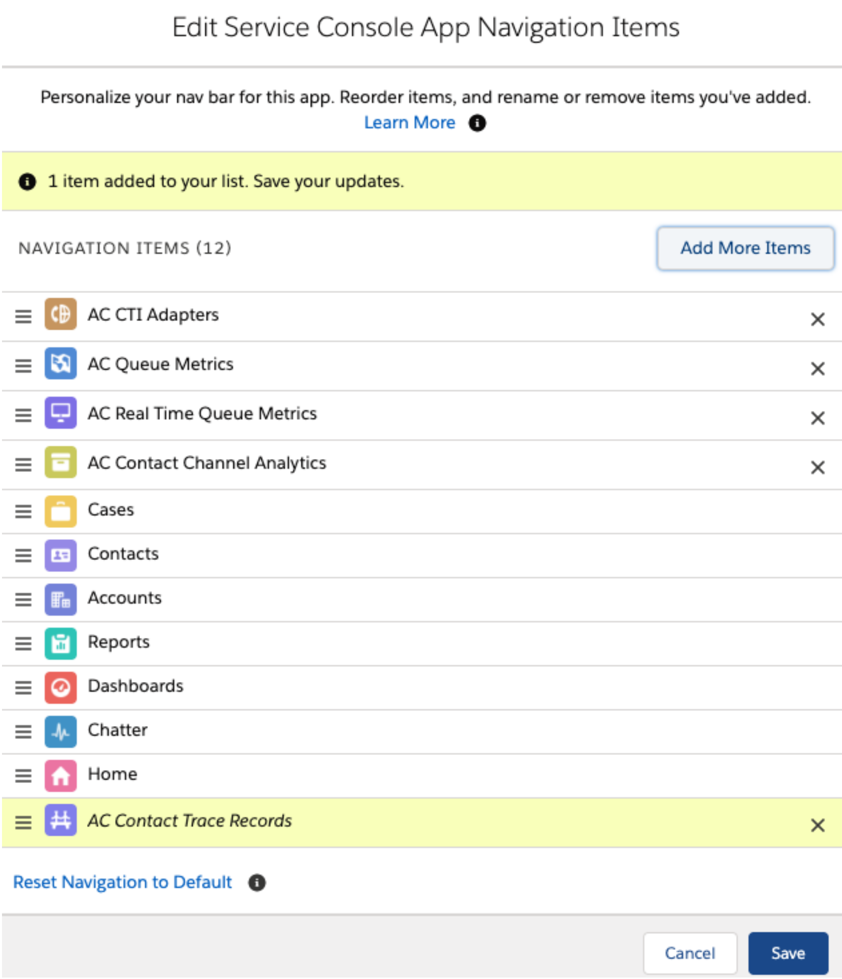
3. On the Edit Service Console App Navigation Items page, select **Add More Items**



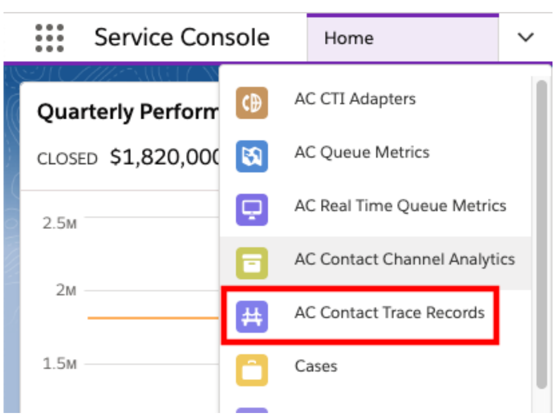
4. Select the **+** next to **AC Contact Trace Records**

5. Select **Add 1 Nav Item**

6. Change the order of your Navigation Items if desired, then choose **Save**

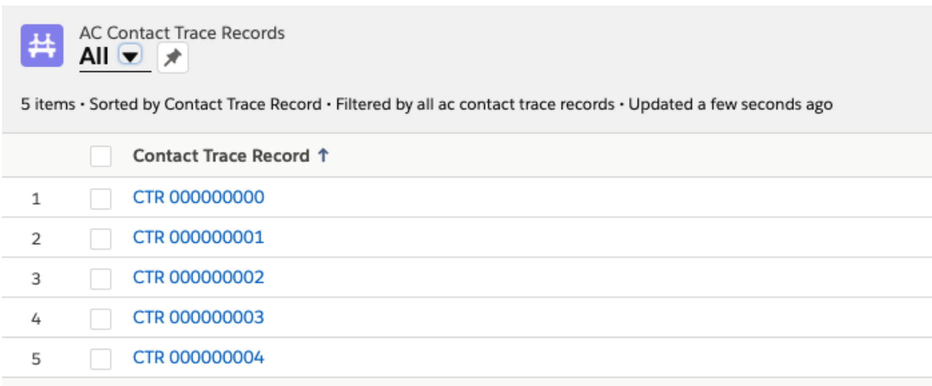


7. Once the save completes, expand the **navigation menu** by selecting the down arrow and choose **AC Contact Trace Records**



8. Change the list view from Recently Viewed to **All**

9. Once the view refreshes, you should see your record(s)



10. Select a record to view it

11. Note the ContactId value from Amazon Connect

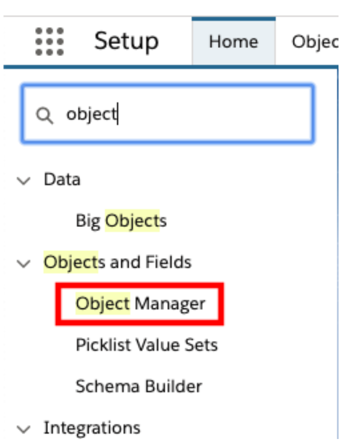
Display Additional Contact Trace Record Data

By default, the AC Contact Trace Record layout only contains the ContactId. However, all of the CTR data has been imported. It is likely that you will want to customize this view to show more data.

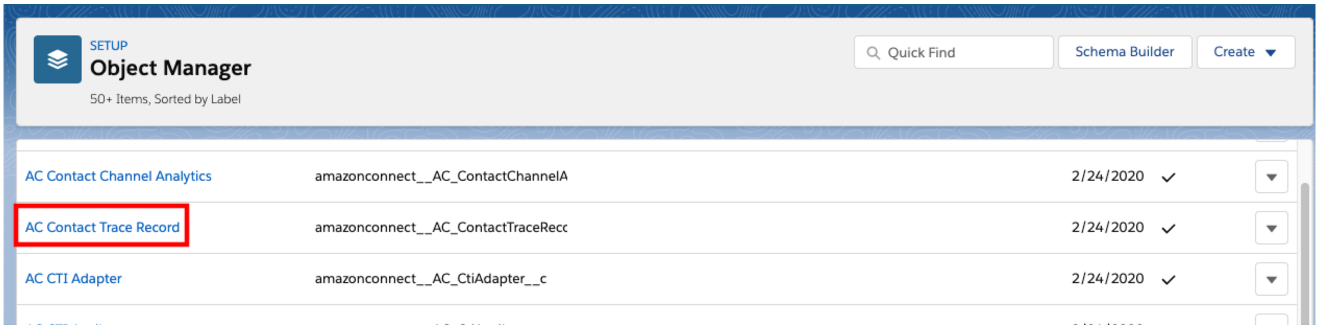
Customizing the AC Contact Trace Record Layout

1. Log in into your Salesforce org and go to **Setup**

2. In the **Quick Find** field, enter object and choose **Object Manager** from the results

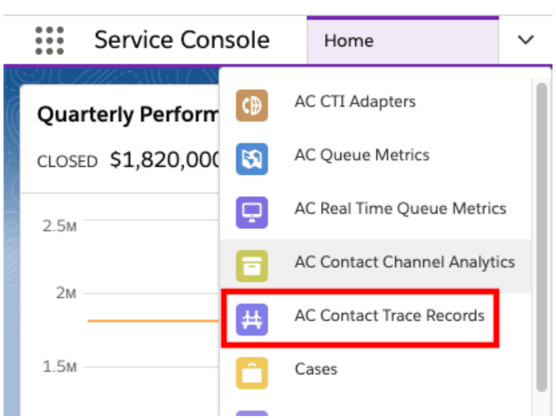


3. In the Object Manager, find the **AC Contact Trace Record** object and select it



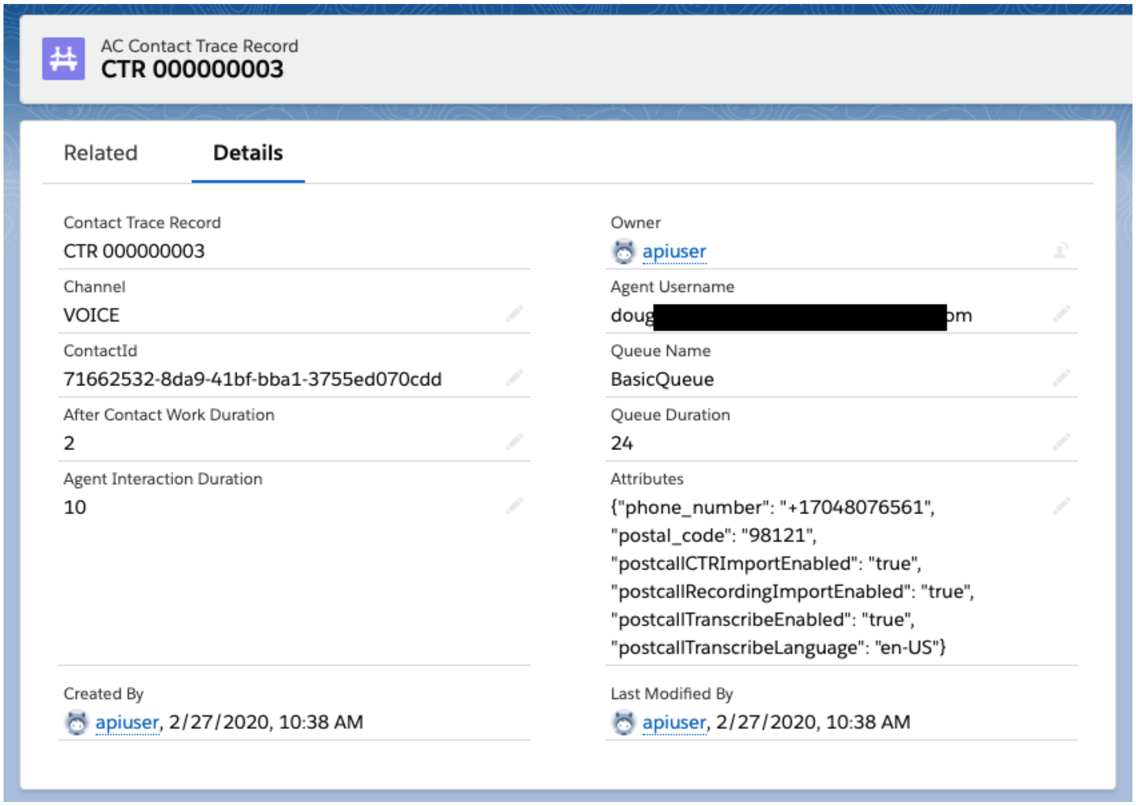
4. In the left navigation, choose **Page Layouts**
5. Select **AC Contract Trace Record Layout**
6. Select items from the Fields section and add them to the layout as you wish. In the example below, I have selected Agent Username, Queue Name, Queue Duration, After Contact Work Duration, Agent Interaction Duration, and Attributes

7. **Save** the layout
8. Return to the **Service Console**
9. **Refresh** the browser
10. Expand the **navigation menu** by selecting the down arrow and choose **AC Contact Trace Records**



11. Select a contact trace record

12. You should now see your modified layout



Appendix A - Required Salesforce Configurations

In this appendix, we will walk through he configuration of some Salesforce entities required to fully integrate Amazon Connect with Salesforce Lightning Experience. The steps here are intended for development and test orgs, not for productions. For production use, please consult Salesforce resources to ensure appropriate configuration at production scale.

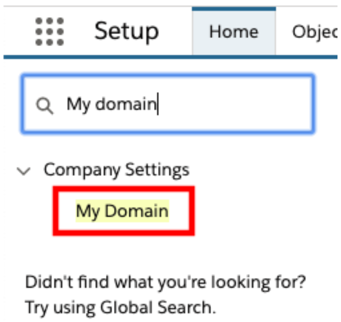
Configuring My Domain in Salesforce

The latest CTI adapter includes several lighting components that provide a better administrative user experience. Salesforce requires that My Domain be enabled to make use of lightning components. Setting up My Domain is a fairly simple setup, but it does require some time for the changes to propagate, so it will be helpful to complete this configuration in advance of your CTI adapter deployment.

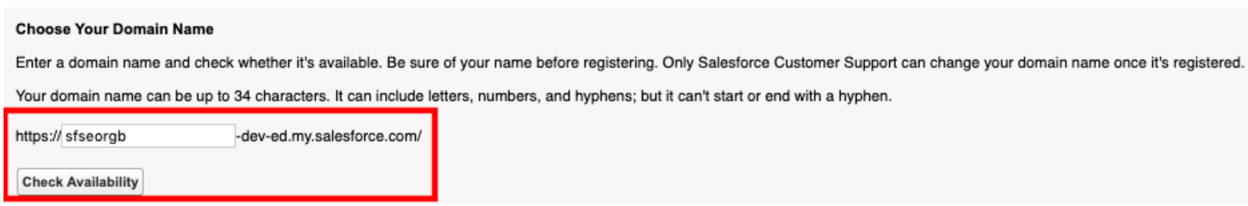
Register Your Domain

Step 1 in the process is registering your domain in Salesforce. This allows you to check availability of the domain and complete the registration process. It will take some amount of time for the registration to complete.

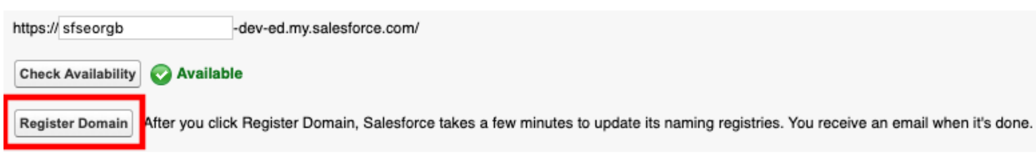
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** field, enter **My Domain**, then select **My Domain** from the result list



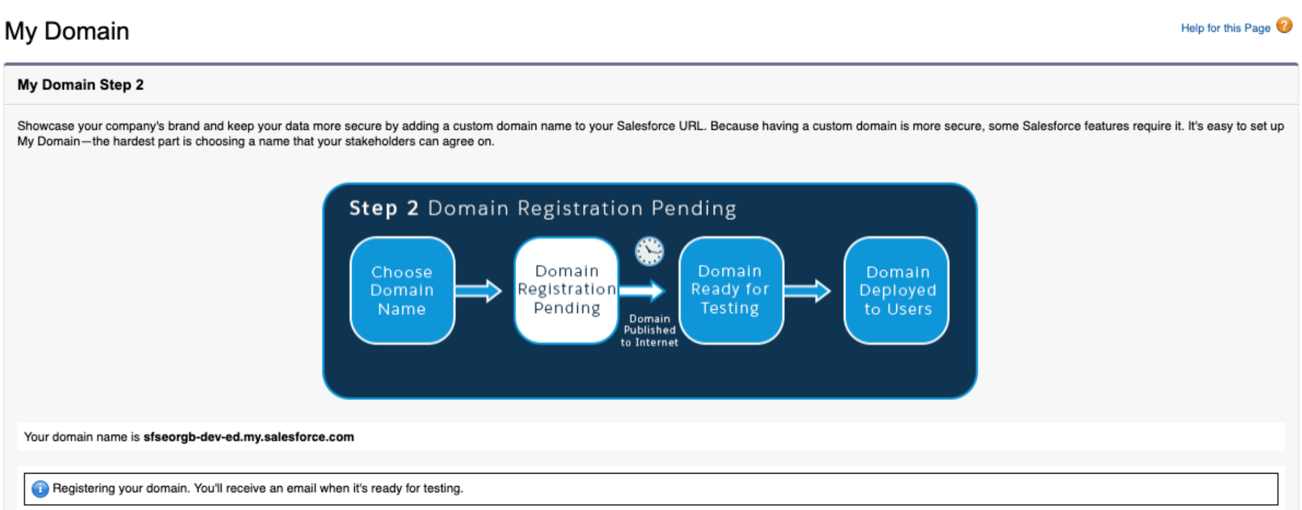
3. In the **My Domain Step 1** section, enter your desired domain name and select **Check Availability** to determine if the domain is available.



4. If the domain is not available, you will need to try a different name.
5. If the domain is available, select **Register Domain



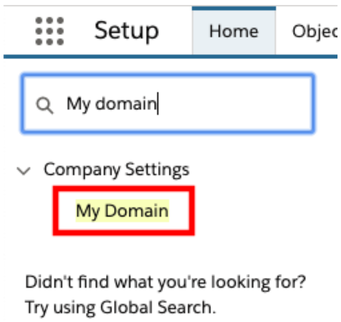
6. The domain registration process will begin. You will receive an email once it is complete. Once you receive the confirmation, you may continue with the next section.



Deploy the Domain to Your Users

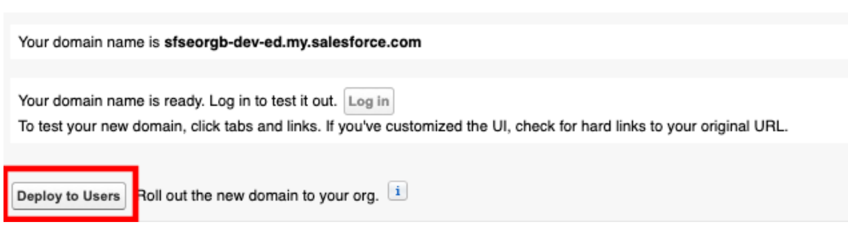
Once the domain registration process completes, you then need to deploy the domain to your users.

1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** field, enter **My Domain**, then select **My Domain** from the result list

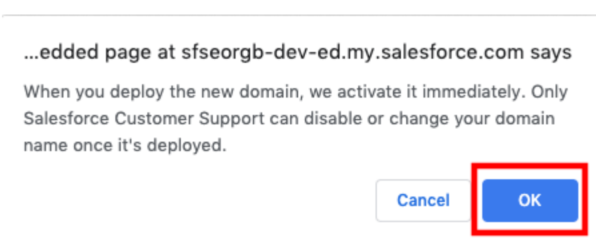


3. In the **My Domain Step 2** section, note the domain name, then select the **Log in** button to login using the new domain.

4. Once the login completes, you should see your new domain in the address bar of your browser. You should also be returned to the My Domain configuration.
5. Select the Deploy to Users button to deploy your domain



6. You should get a popup message that warns you about the domain deployment. Select OK.



7. Deployment should now be complete

Configure Salesforce Omnichannel for Testing

In order to sync your Connect User status with your Omni-Channel agent status, you must configure Omni-Channel Presence Syncing. This will make your Omni-Channel presence status match your Amazon Connect Agent Status and vice versa.

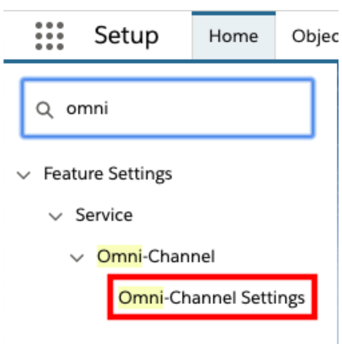
Enable Omnichannel

First, we must enable omni-channel. Once you enable Omni-Channel, you will have access to the other components in Salesforce that will be required for Omni-Channel setup.

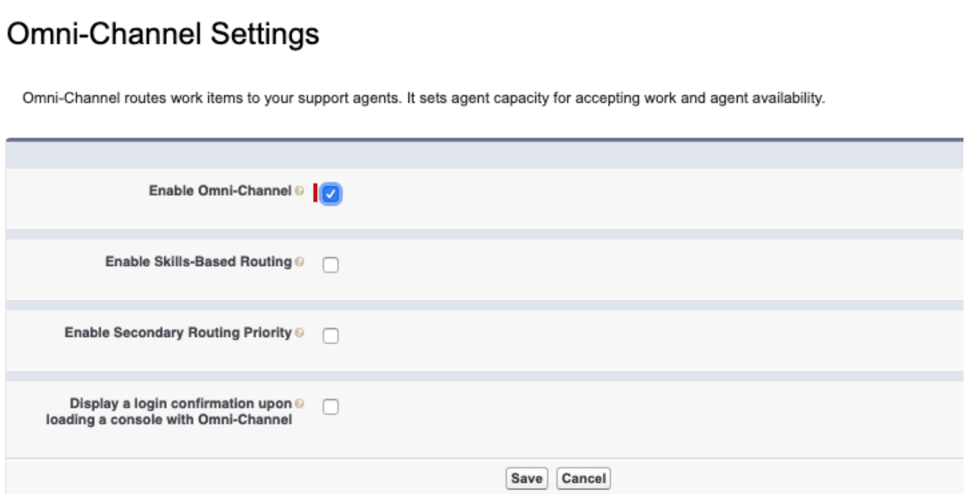
Enable Omnichannel in Your Salesforce Org

1. Log in into your Salesforce org and go to **Setup**

2. In the **Quick Find** field, enter omni and choose **Omni-Channel Settings** from the results



3. Select the checkbox for Enable Omni-Channel and choose Save



4. Omni-Channel is now enabled.

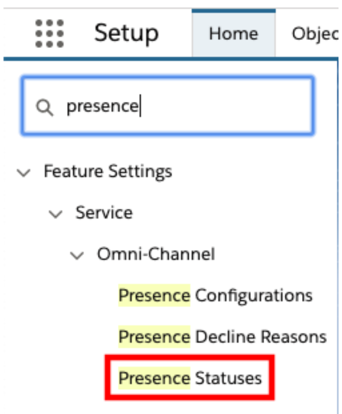
Configure Presence Statuses

Once you have enabled Omni-Channel, you will need to configure presence statuses to reflect the different presence states that you wish your Omni-Channel agents to enter. These do not need to match agent statuses in Amazon Connect exactly, but it does make it easier to track what you are doing.

Add a Presence Status

1. Log in into your Salesforce org and go to **Setup**

2. In the **Quick Find** field, enter presence and choose **Presence Statuses** from the results



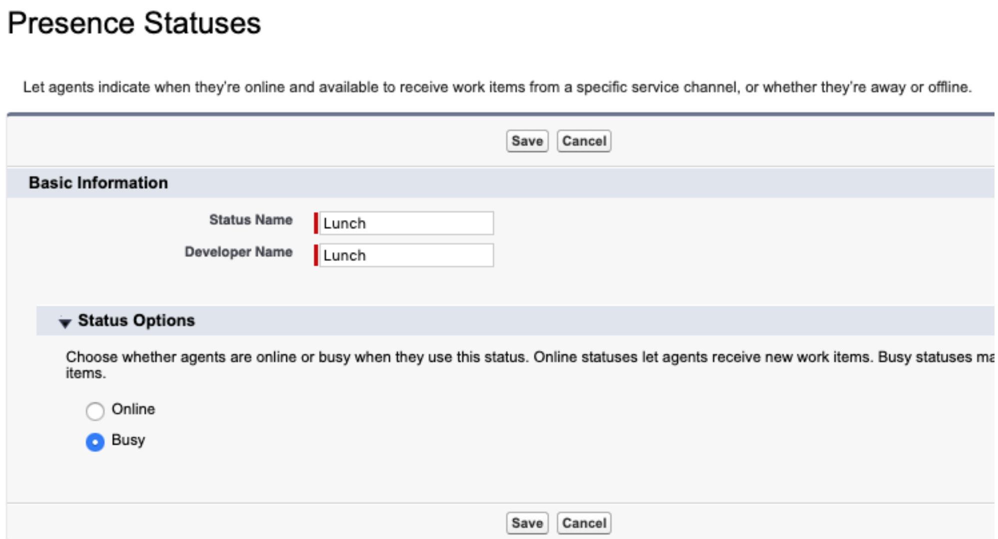
3. In the Presence Statuses page, choose New

4. Provide a status name, for example Lunch

5. Set the Status options appropriately, for example, Busy

6. For Online statuses, you will need to provide a channel. Please reference the [Omni-Channel documentation]() for details

7. Choose Save



8. Repeat as necessary for all desired statuses

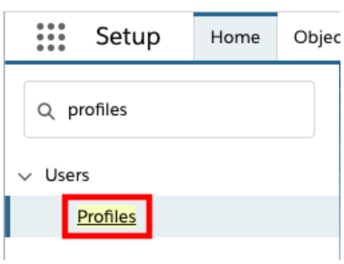
Configure Profiles to Use the New Statuses

Before agents can use the statuses that have been configured, you will need to make sure that they have been provided rights to them. This is done by modifying the profiles assigned to your agents.

Modify Profiles to Use New Statuses

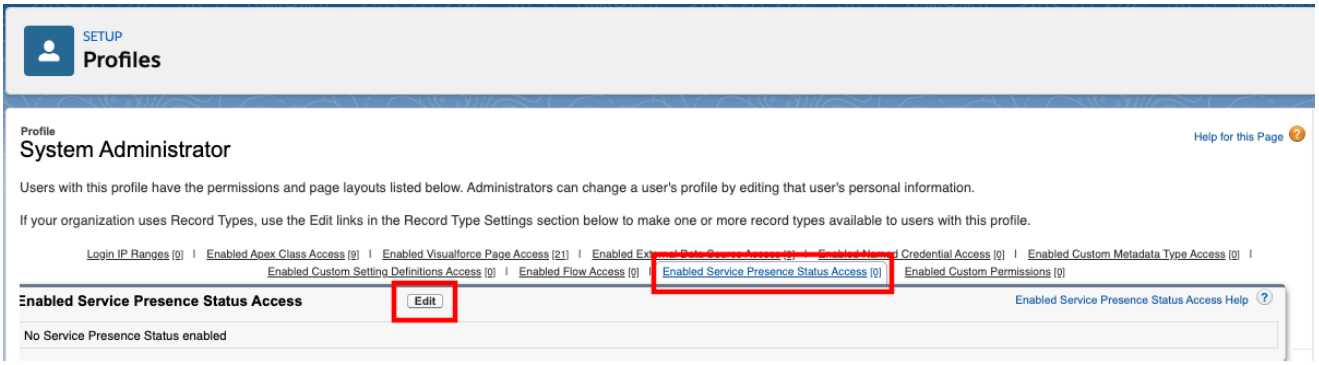
1. Log in into your Salesforce org and go to **Setup**

2. In the **Quick Find** field, enter profiles and choose **Profiles** from the results

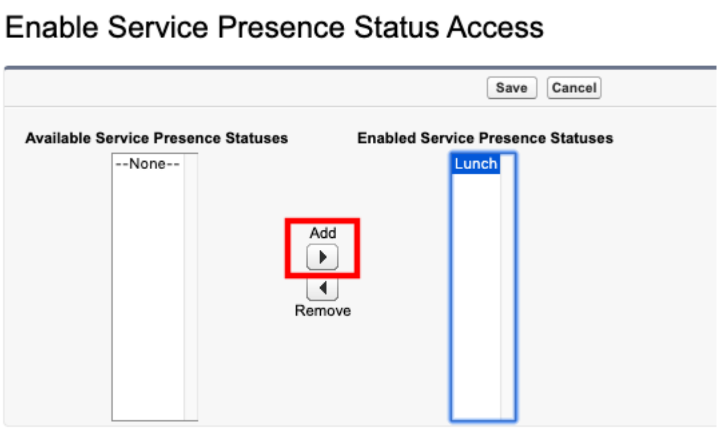


3. Select the profile assigned to your users

4. Hover over the Enabled Service Presence Status link and choose Edit



5. Select the available status from the left, then choose the Add button to add it the Enabled Service Presence Statuses field



6. Select Save

7. Repeat as necessary for other statuses or profiles.

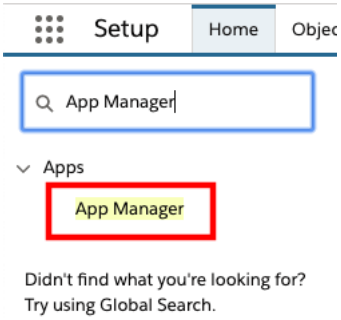
Add Omni-Channel to the Utility Bar

To provide agents access to the Omni-Channel tool, you will need to add it to the Service Console.

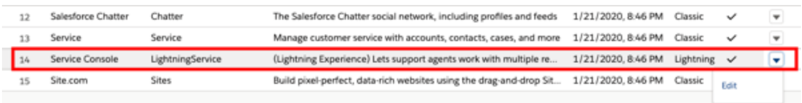
Add the Omni-Channel Utility Item

1. Log in into your Salesforce org and go to **Setup**

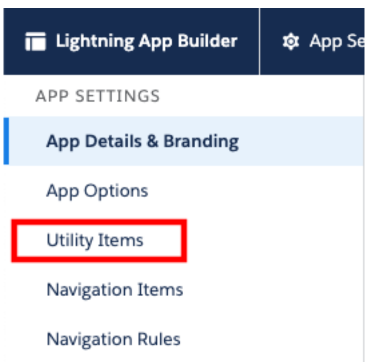
2. In the **Quick Find** box, type **App Manager**, then choose **App Manager** from the result list.



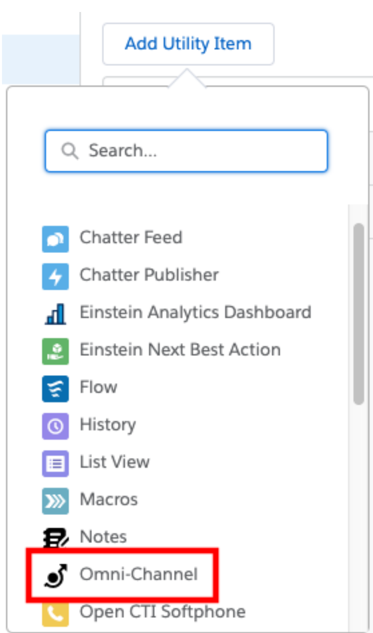
3. Expand the drop-down menu associated to Service Console and select **Edit**.



4. Once the **Lightning App Builder** opens, select **Utility Items** from the left Navigation



5. Choose Add Utility Item, then select Omni-Channel



6. Adjust the order of the utility items as desired and select Save.

7. Return to the Service Console and refresh your browser.

8. You should now see the Omni-Channel utility item.

Appendix B - Configuring Salesforce as Your Identity Provider

Amazon Connect supports Security Assertion Markup Language (SAML 2.0) to enable single sign on(SSO). Salesforce can act as a single sign on identity provider to service providers, allowing end users to easily and securely access many web and mobile applications with one login. By establishing the SSO integration between Amazon Connect and Salesforce, you will be able to seamlessly login to Salesforce and the same credentials will be used to auto-login to Amazon Connect.

Configuration

Prerequisites

To complete the SSO integration between Salesforce and Amazon Connect, you need:

1. An Amazon Connect Instance configured for SAML authentication

2. Appropriate AWS permissions to create Identity and Access Management (IAM) roles and policies

3. Administrator permissions for your Salesforce Org

4. Amazon Connect CTI Adapter AppExchange package installed and configured

Configuring Salesforce as an Identity Provider

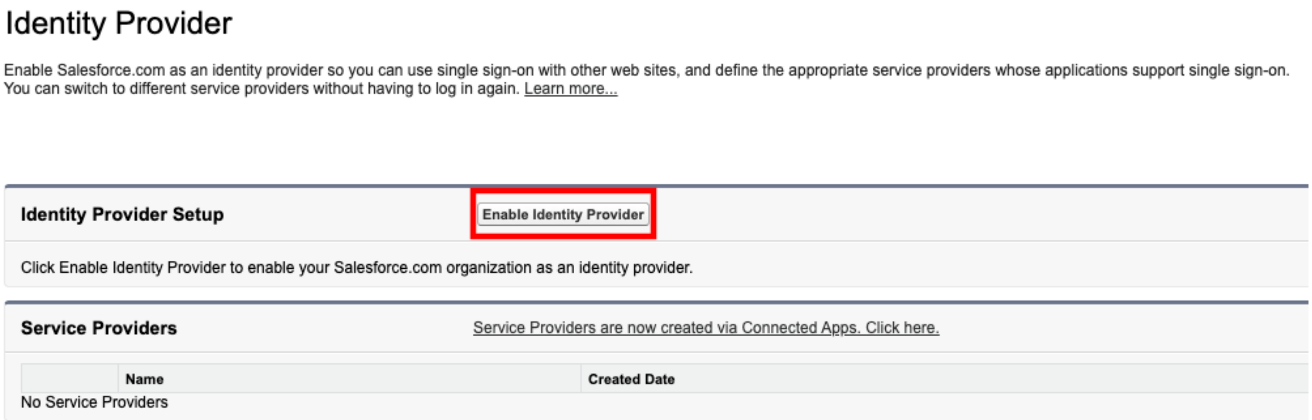
First, we need to enable Salesforce to act as an identity provider (IdP). An IdP performs end user authentication and provides the credentials to the requesting service provider. In this case, Salesforce server as the IdP and Amazon Connect the service provider, while being embedded in Salesforce.

Setup Identity Provider & Download Metadata

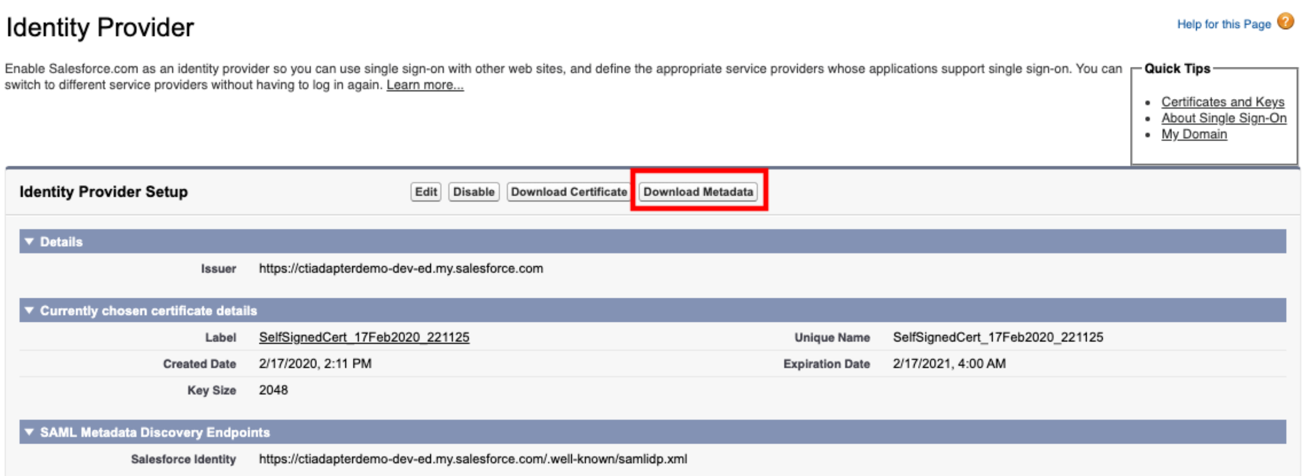
1. Log in into your Salesforce org and go to **Setup**.

2. In the **Quick Find** field, type **Identity Provider,** then select **Identity Provider** from the result list

3. Identity Provider may be enabled by default. If not, choose **Enable Identity Provider**, then select the appropriate certificate and select Save.



4. Choose **Download Metadata** and save the file to your computer.



Configure the Identity Provider, Policy, and Role in the AWS Console

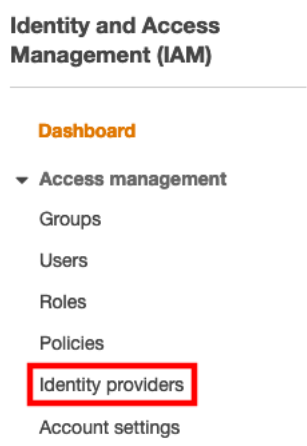
Next, you need to configure the identity provider (Salesforce) in the AWS console and provide access to Amazon Connect via IAM policies and roles. This allows AWS to acknowledge Salesforce as the identity provider and to provide users authenticated through Salesforce with the access required to login to Amazon Connect.

Configure the Identity Provider

1. Login to the **[AWS console]**

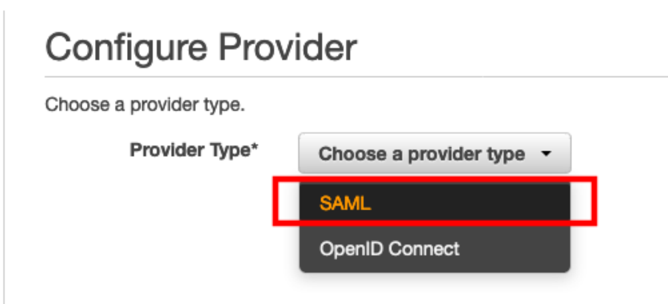
2. Open the [AWS identity and Access Management (IAM) Console]

3. Select **Identity providers



4. Choose **Create Provider**

5. On the Configure Provider screen, select **SAML** as the Provider Type



6. Set the Provider Name to **SalesforceConnect**

7. Import the metadata file you downloaded previously by selecting Choose File and navigating to the downloaded metadata file.

8. Select Next Step

9. Choose Create

10. The Identity provider has been created

Create the IAM Role and Policy

1. Login to the **AWS console**

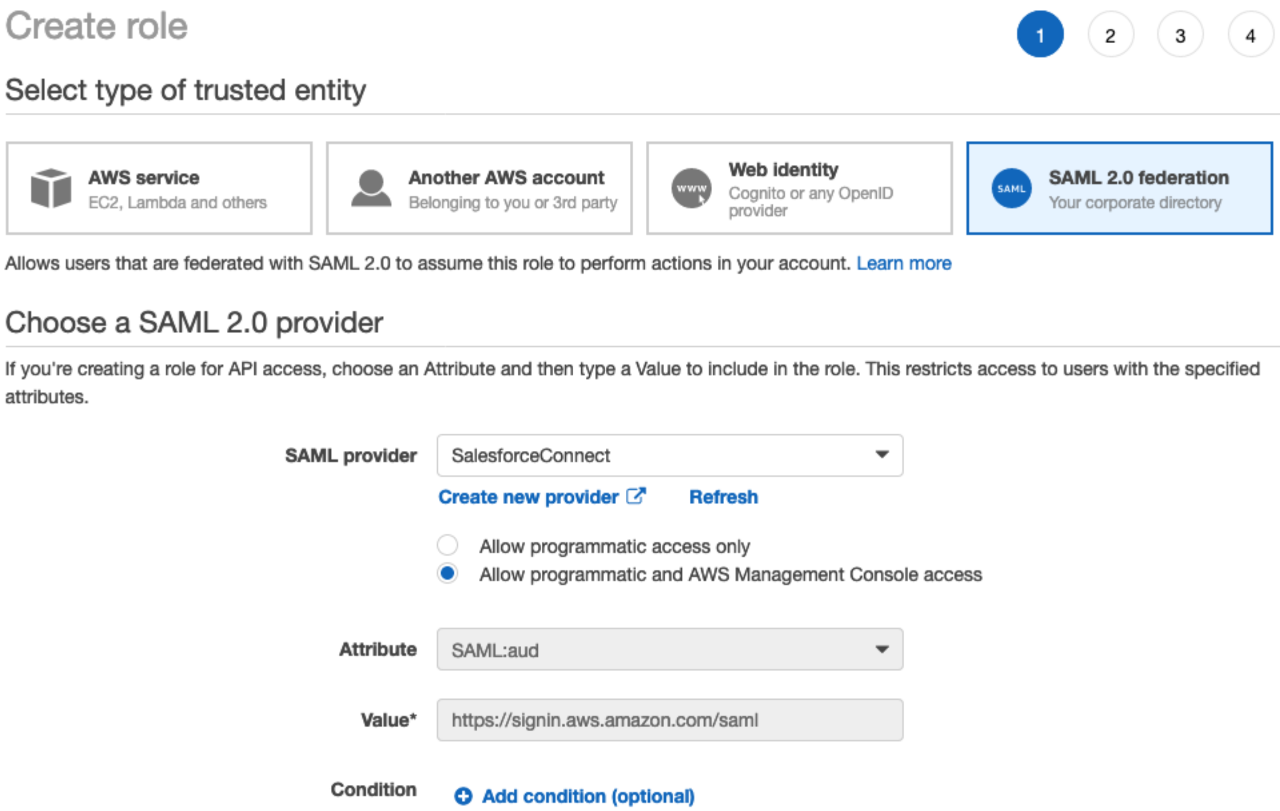
2. Open the AWS identity and Access Management (IAM) Console

3. Select **Roles,** then choose **Create role**

4. Choose **SAML 2.0 federation**

5. In the SAML provider dropdown, select the provider you just created, which should be named **SalesforceConnect**

6. Select the radio button for **Allow programmatic and AWS Management Console access**. The Attribute and Value fields should auto-populate



7. Select **Next: Permissions**

8. On the Attach permissions policies page, select **Create policy.** This will open a new browser tab.

9. Choose the **JSON** tab to switch to the JSON editor

10. Replace the existing JSON with the following:

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "Statement1",
            "Effect": "Allow",
            "Action": "connect:GetFederationToken",
            "Resource": [
                "**YOUR ARN**/user/${aws:userid}"
            ]
        }
```

```
    ]
}
```

11. Replace **YOUR ARN** with the ARN of your Amazon Connect instance. To find your Amazon Connect instance ARN:

12. Open a new tab in your browser and navigate to [Amazon Connect Console]()

13. Click on the name (alias) of your Amazon Connect instance

14. Copy the Instance ARN and paste it to your computer's notepad (you will use it in a few places)

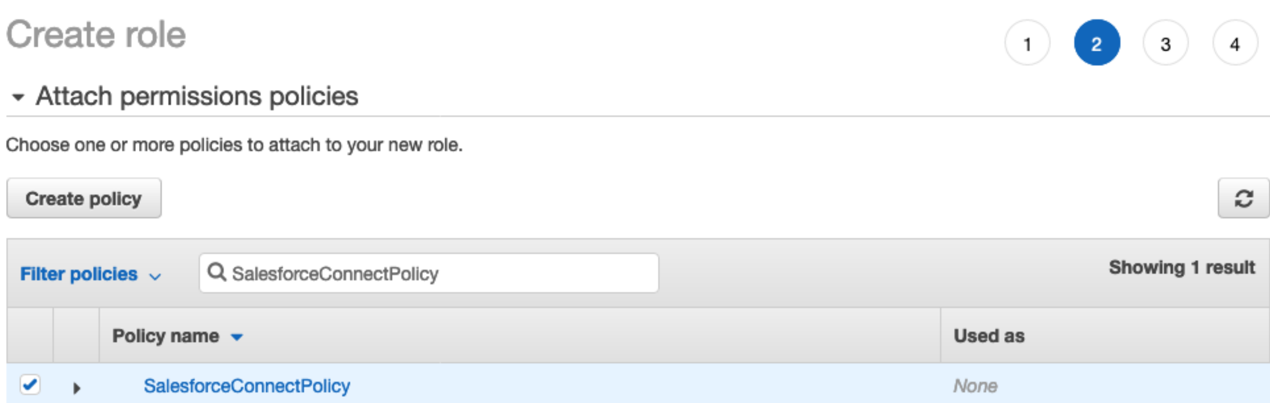
15. Choose **Review policy**

16. Set the Name to **SalesforceConnectPolicy**

17. Select **Create Policy**

18. Once the Policy has been created, close the tab, go back to the original (Role) tab in your browser and select the **Refresh** button (do not refresh the browser)

19. In the search field, enter **SalesforceConnectPolicy** and select the box to attach the policy.



20. Choose **Next: Tags** and set tags if desired, then choose **Next: Review**

21. Name the Role **SalesforceConnectRole** and provide a description if you like

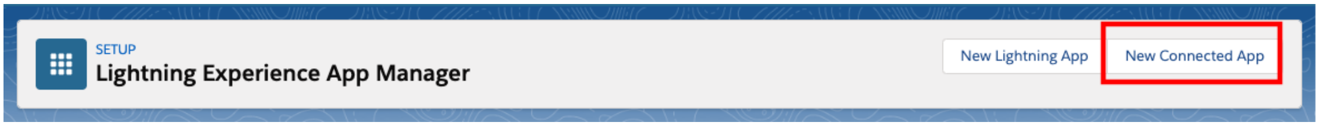
22. Select Create role

Complete the Base Salesforce Configuration

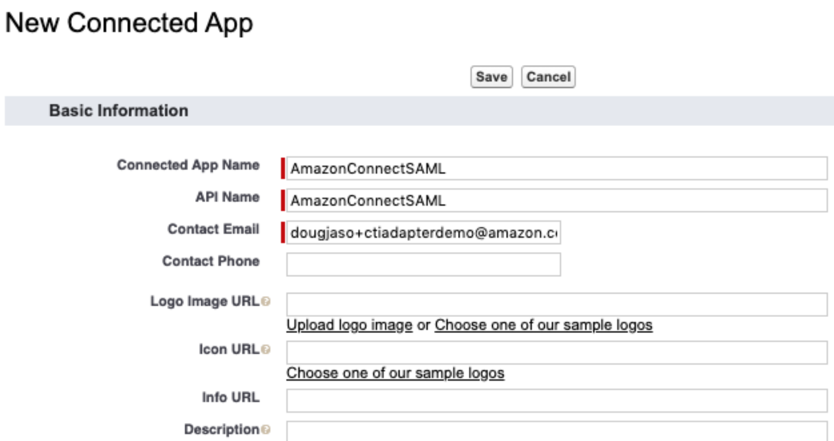
Next, you need to configure a Connect App in Salesforce and provide further configuration to complete the SAML integration.

Create the Connected App in Salesforce

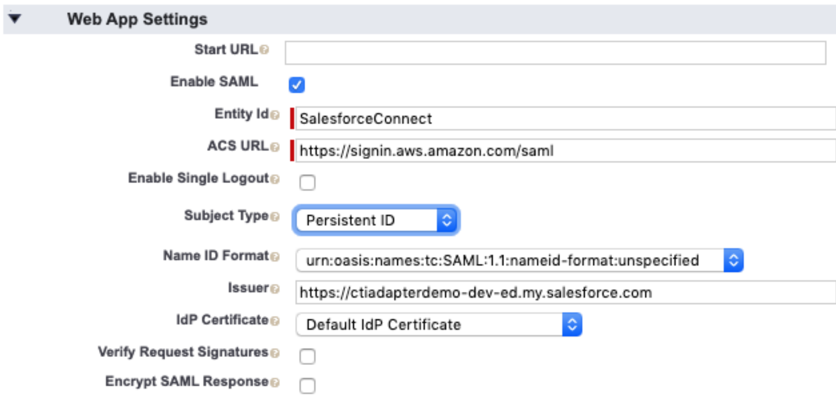
1. Log in into your Salesforce org and go to **Setup**
2. In the **Quick Find** field, type **App Manager,** then select **App Manager** from the result list
3. Select New Connected App



4. Provide a name for the Connected App, such as **AmazonConnectSAML,** then press tab and the API Name should auto-populate
5. Provide an email contact address



6. In the Web App Settings section, choose **Enable SAML**
7. Leave Start URL empty
8. Set Entity Id to the same name that you gave the Identity Provider in the IAM console, which should be **SalesforceConnect**
9. Set ACS URL as **https://signin.aws.amazon.com/saml**
10. Set Subject Type as **Persistent ID**



11. Choose **Save**. The screen should refresh and the new Connected App should be displayed

12. Scroll down to the **Custom Attributes** section and select **New**

13. Set Key as **https://aws.amazon.com/SAML/Attributes/RoleSessionName**

14. Set Value as **$User.Email**

15. Select **Save**

Create Custom Attribute

16. Select New again to configure another custom attribute

17. Set Key as **https://aws.amazon.com/SAML/Attributes/Role**

18. The Value is going to be a combination of the Indentity Provider and IAM Role ARNs.

    a. In a new tab, open the [AWS identity and Access Management (IAM) Console]()

    b. On the left navigation, select **Identity providers**

    c. Select the Identity provider you created earlier, which should be named **SalesforceConnect**

    d. Copy the **Provider ARN** to your computer's notepad

e. Return to the IAM console and select **Roles**

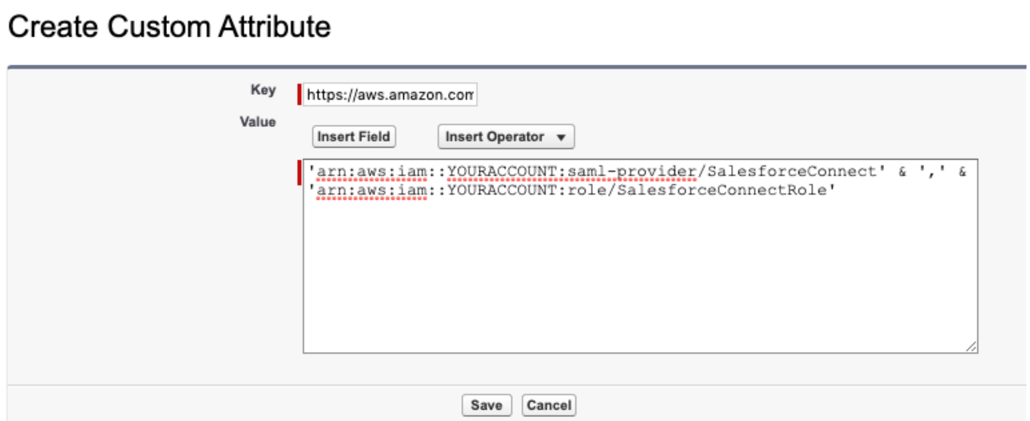
f. Select the Role you created earlier, which should be **SalesforceConnectRole**

g. Copy the **Role ARN** to your computer's notepad

h. Format the combined value as follows: 'Identity Provider ARN' & ',' & 'Role ARN'

i. Paste the formatted value into the Custom Attribute Value

19. Select **Save**



20. At the top of the Connected App description, select **Manage**

21. Scroll down to the **SAML login Information** section

22. Copy the **IdP-Initiated Login URL** to your computer's notepad

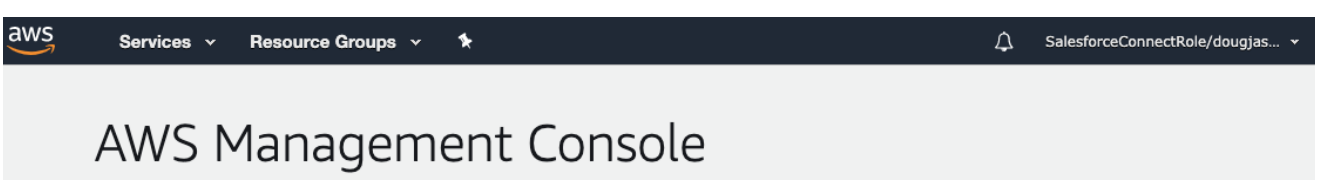
23. Scroll down to find the Profiles section, then select **Manage Profiles**

24. Select a profile from the list, for example System Administrator for testing purposes

25. Choose **Save**

26. Open a new tab in your browser and navigate to IdP-Initiated Login URL that you copied in an earlier step

27. The browser will redirect to AWS Console and log you in automatically as a federated user **Note:** you may be able to see AWS services, but you should have no configuration rights.



28. The Federated Login consists of the Role name and your Salesforce email address.

29. Initial validation is complete

Complete the Amazon Connect Configuration

The last step in the SAML setup is to add users to Amazon Connect that exist in your Salesforce org, then validate login. It is critical that the usernames for both platforms match exactly.

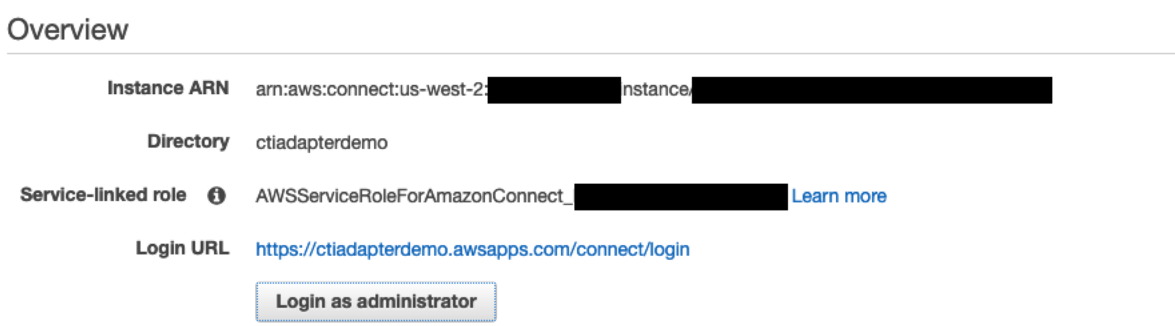
Add Users to Amazon Connect

1. In a new browser tab, login to the [AWS console]()

2. Open the [Amazon Connect Console]()

3. Select the name (alias) of your Amazon Connect instance

4. Choose **Login as administrator**



5. Within the Amazon Connect administration portal, select **Users** then choose **User Management**

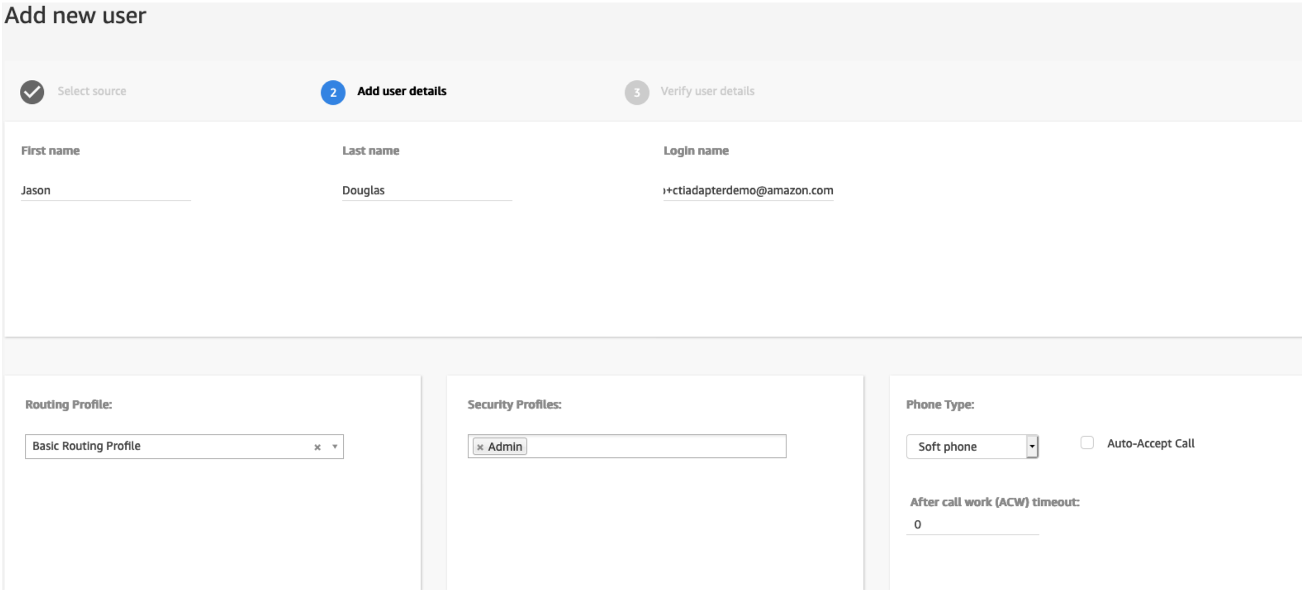
6. Leave **Create and setup a new user** selected and choose **Next**

7. Complete the First and Last name fields as appropriate

8. Set the login name to match the **Email Address** of your Salesforce user

9. Set the **Routing Profile**. In this example, the default Basic Routing Profile is shown

10. Set the **Security Profile**. In this example, *Admin* is shown



11. Select **Save**

12. Select **Create Users**

13. Repeat this process as required for your staff

Final Configuration for the Lightning Experience

Now that all of the underlying pieces are in place, the last steps are to create the Amazon Connect Single Sign On URL and validate that it works correctly, then configure the Lightning CTI adapter and login the agent.

Create the Amazon Connect SSO URL

You create the Amazon Connect SSO URL by combining the IdP-Initiated Login URL that you copied earlier, and a relay state URL that will redirect the authenticated user to your Amazon Connect instance.

The 'RelayState' will be in the following format:

```
https://console.aws.amazon.com/connect/federate/{InstanceId}?destinat
```

Please note that "console.aws.amazon.com" refers to US-East-1 region (N. Virginia). If your Amazon Connect instance is in a different region, please use the region Console URL. For example:

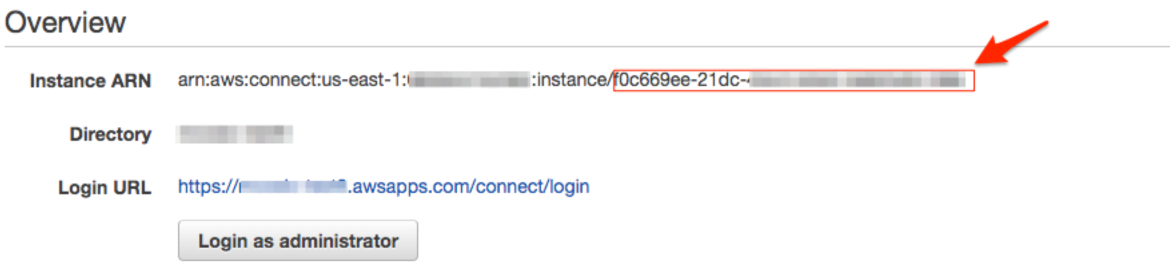
```
https://us-west-2.console.aws.amazon.com/connect/federate/{InstanceId
```

1. To begin, format the relay state URL by replacing **InstanceId** with your Instance Id. To find your Amazon Connect Instance Id:

   a. Open a new tab in your browser and navigate to the [Amazon Connect Console]()

b. Click on the name (alias) of your Amazon Connect

c. From the Instance ARN, copy the portion after the '/'. This is the Instance Id



2. Concatenate the 'IdP-Initiated Login URL' and the 'RelayState', by combining the two with "&RelayState=" in between, for example:

```
https://mXXXXXXrun-dev-ed.my.salesforce.com/idp/login?app=0sp0N000000
```

3. This is the Final SSO URL, needed for the Amazon Connect Lightning CTI Adapter Configuration.

4. To validate this URL:

   a. Open a new tab in the same browser that you are logged into Salesforce

   b. Paste the fully concatenated URL into the new browser and press enter

   c. You should automatically login and be redirected to the Amazon Connect Contact Control Panel.

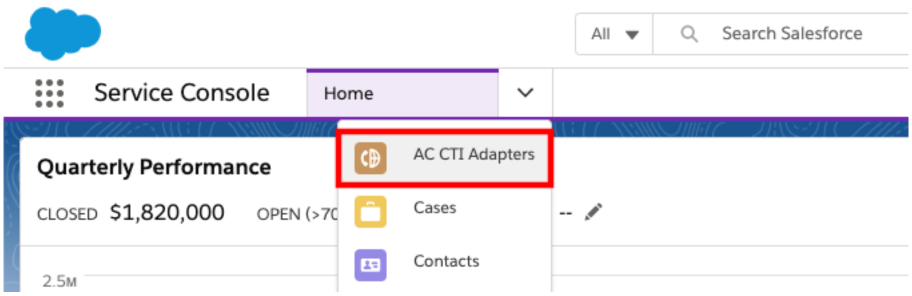
5. Once you validate the full URL, you are ready to add it to the Lightning Adapter

Configure the CTI Lightning Adapter in Salesforce For SSO

Now we are ready to complete the last step in the configuration process: Adding the SSO settings for Salesforce to the Lightning Adapter. This will configure the adapter to authenticate via SSO and redirect to the Amazon Connect Contact Control Panel once authentication completes.

1. Log in into your Salesforce org and go to the **Service Console**

2. Expand the **navigation menu** by selecting the down arrow and choose **AC CTI Adapters**.



3. Select **ACLightningAdapter**

4. Scroll down to the Single SignOn (SSO) section and choose the pencil icon of either field to edit

5. For the SSO Url, copy the first part of the SSO URL that you created previously, up to the first question mark (do not copy the question mark), for example:

   `https://mXXXXXrun-dev-ed.my.salesforce.com/idp/login?app=0sp0N0000`

6. Paste this portion of the URL into the **SSO Url** field

7. For the SSO Relay State, copy everything AFTER the question mark (do not copy the question mark), for example:

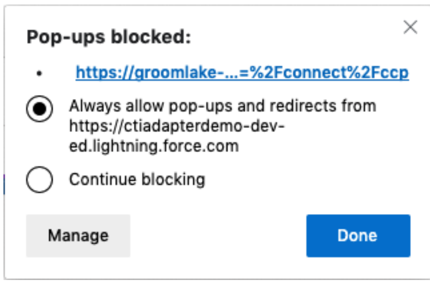
   `https://mXXXXXXrun-dev-ed.my.salesforce.com/idp/login?app=0sp0N000`

8. Paste this portion of the URL into the **SSO Relay State** field

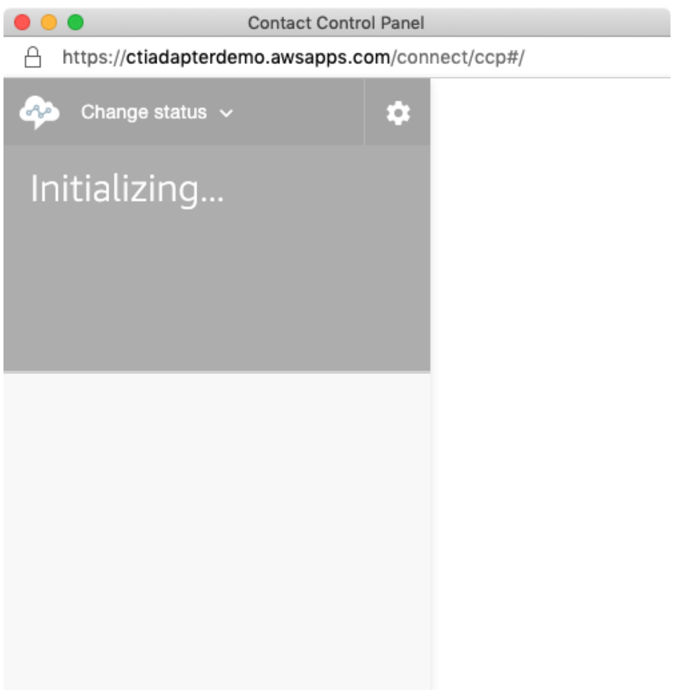
9. Choose **Save**

10. **Refresh** your browser to make the changes take effect

    a. **NOTE:** If you receive a blocked popup warning, select the warning and change the setting to always allow popups from your Salesforce org, then refresh the browser again

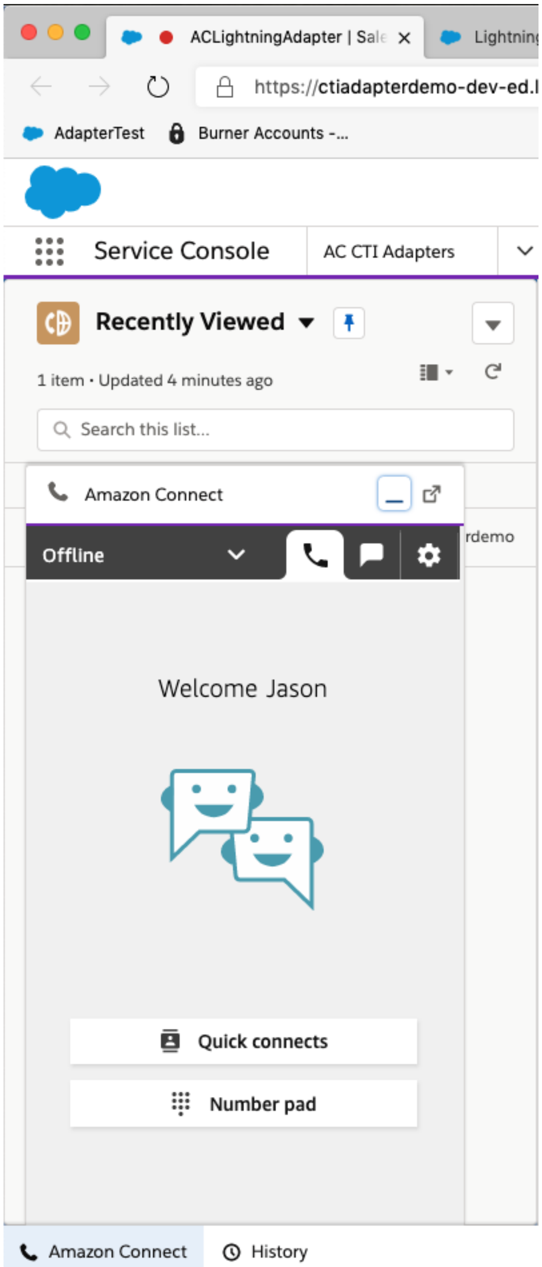


11. After a few seconds, a new window should pop up for a moment. This window is performing the authentication and setting your session cookie. Once it does this, it will close automatically.



12. Once the authentication window closes, select the **phone icon** in the console toolbar to open the CCP Note: You may also receive popups to allow notifications and microphone access. Please accept both.

13. You should now see the authenticated and logged in CCP



14. Configuration is complete

Appendix C - CTI Flow Sources and Events

The following sources are defined in the adapter for use with CTI Flows:

- Initialization
    - onInit: The CTI adapter has initialized.
- Amazon Connect Agent

  - onRefresh: The Connect agent's data was updated.
  - onStateChange: The Connect agent's state changed.
  - onRoutable: The Connect agent became available for contacts.
  - onNotRoutable: The Connect agent became unavailable for contacts.
  - onOffline: The Connect agent's state was set to "Offline".
  - onError: The Connect agent encountered a system error.
  - onAfterCallWork: The Connect agent entered "After Call Work".
  - onInit: The Connect agent has logged in.
- Amazon Connect Voice Contact
  - onIncoming -- The voice contact is incoming. Note: This event fires for queued callback contact only.
  - onConnecting -- The voice contact is connecting. Note. This event fires for inbound and outbound contacts except queued callback contacts.
  - onConnected -- The voice contact is connected.
  - onEnded -- The voice contact is ended or destroyed.
  - onRefresh -- The voice contact is updated.
  - onAccepted -- A voice contact is accepted.
  - onInit -- The voice contact is initialized.
  - onMissed -- The voice contact is / was missed.
- Amazon Connect Chat Contact
  - onConnecting -- The chat contact is connecting.
  - onConnected -- The chat contact is connected.
  - onEnded. The chat contact ended.
  - onRefresh -- The chat contact is updated.
  - onAccepted -- The chat contact is accepted.
  - onInit: The chat contact was initialized.
  - onMessageReceived: A message was received from the customer

    - onMessageSent: A message was sent to the customer
    - onMissed: The chat contact was missed.
- Salesforce Agent
    - onStateChange -- The Salesforce agent's state changed.
    - onWorkAccepted -- The Salesforce agent accepted work.
    - onWorkloadChanged -- The Salesforce agent's workload changed.
- Salesforce UI
    - onClickToDial: A phone number, within the Salesforce UI, was clicked.
    - onNavigationChange
    - onHvsWorkStart

Appendix D - CTI Flow Examples

This appendix includes samples scripts that provide different functionality depending on the event source.

CTI Flow Examples

Voice Contact Screenpop (Legacy Adapter Support)

Source: Amazon Connect Voice Contact

Event: onConnecting

Download

Chat Contact Screenpop

Source: Amazon Connect Chat Contact

Event: onConnecting

Download

Click-to-Dial

Source: Amazon Connect Chat Contact

Event: onClickToDial

Download

Screen Pop on Customer Phone Number

Source: Amazon Connect Voice Contact

Event: onConnecting

Download

Screen Pop a Case on Contact Attribute Data (if it exists) or Pop a New Case (if it does not)

Source: Amazon Connect Voice Contact

Event: onConnecting

Download

Create a Task (Call Activity) and Pop That Task

Source: Amazon Connect Voice Contact

Event: onConnecting

Download

Screenpop on Customer Email Address (in contact attribute data)

Source: Amazon Connect Chat Contact

Event: onConnecting

Download

Create a Task (Call Activity) and Pop That Task

Source: Amazon Connect Chat Contact

Event: onConnecting

Download

Default CTI Flows

The following zip file includes default flows, which are automatically added and activated on new installations of the package. However, if you are upgrading from an earlier version you may need to replace your legacy script with the new flow.

Download

Appendix E - Integration with Salesforce High Velocity Sales

The Amazon Connect CTI adapter supports communication with Salesforce High Velocity Sales (HVS) workloads and provides click to dial functionality to HVS work queue items. The CTI Adapter syncs the call outcomes to the sales cadence to move it to the next best step.

High Velocity Sales

What is High Velocity Sales?

Salesforce HVS (HVS) is a process for your inside sales team to follow a repeatable pre-defined sales cadence for your business. It enables sales managers and representatives to work on a prioritized list of prospects and follow best sequence of sales outreach activities as defined by your sales process.

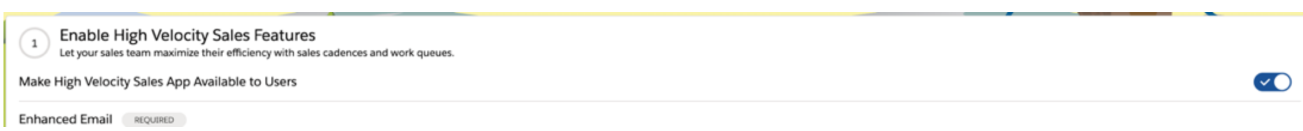
Enabling the Integration with High Velocity Sales

In order to make HVS works for your connect users, you must enable High Velocity Sales in your Salesforce Org.

Enable High Velocity Sales

1. From Setup, enter High Velocity Sales in the Quick Find box, then select High Velocity Sales.

2. Toggle "Enable High Velocity Sales Features" from disable to enable state



Call Outcomes for Branching

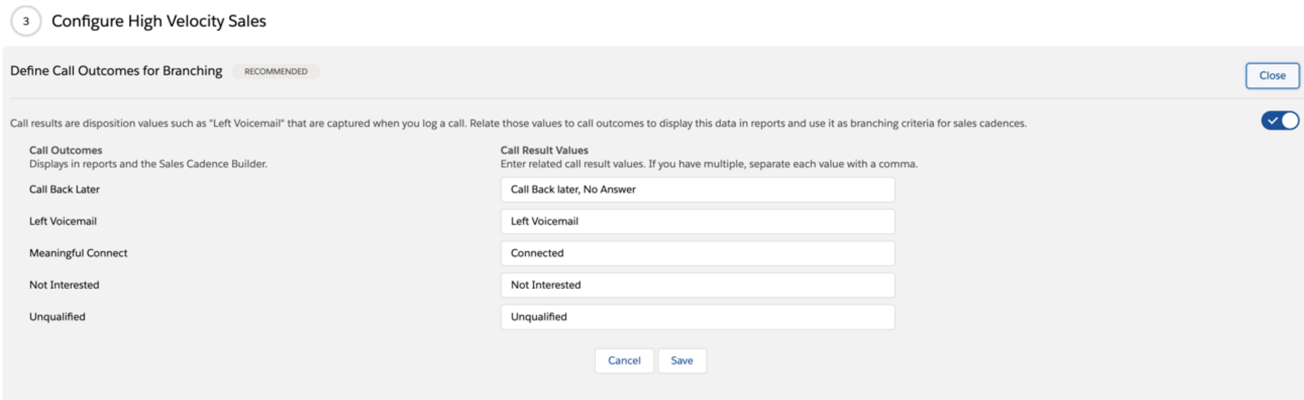
In this step, you can define call disposition values which can be used to branch sales cadence to define next best action for your sales process.

Define Call Outcomes for Branching

1. From Setup, enter High Velocity Sales in the Quick Find box, then select High Velocity Sales.

2. Edit the Define Call Outcomes for Branching.

3. Enter the call result values used by your org next to related call outcomes.



Assign HVS permission sets to Connect Users

For creating Sales Cadence, you need to have **High Velocity Sales Cadence Creator** permission set otherwise assign the **High Velocity Sales User** permission set to sales users.

Assign the permission set

1. From Setup, enter permission Sets in Quick Find box, and then select Permission Sets.

2. Select permission set, then click Manage Assignments to assign the permission set to users.

Create Sales Cadence

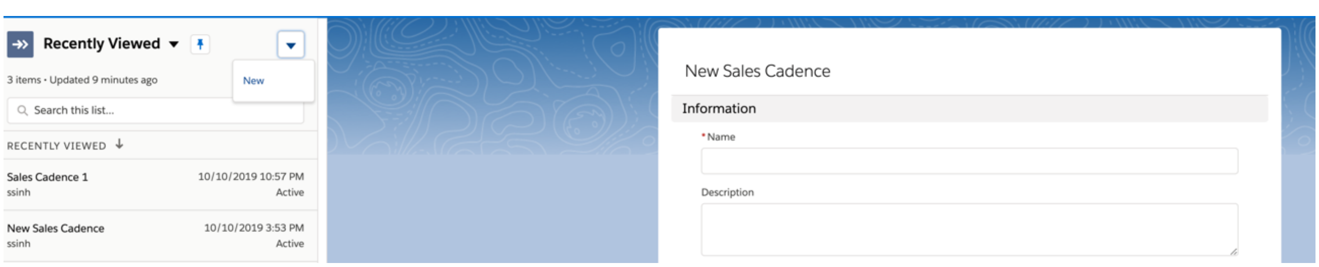
In HVS application, you will need to create a Sales Cadence based on Sales process

Create a Sales Cadence

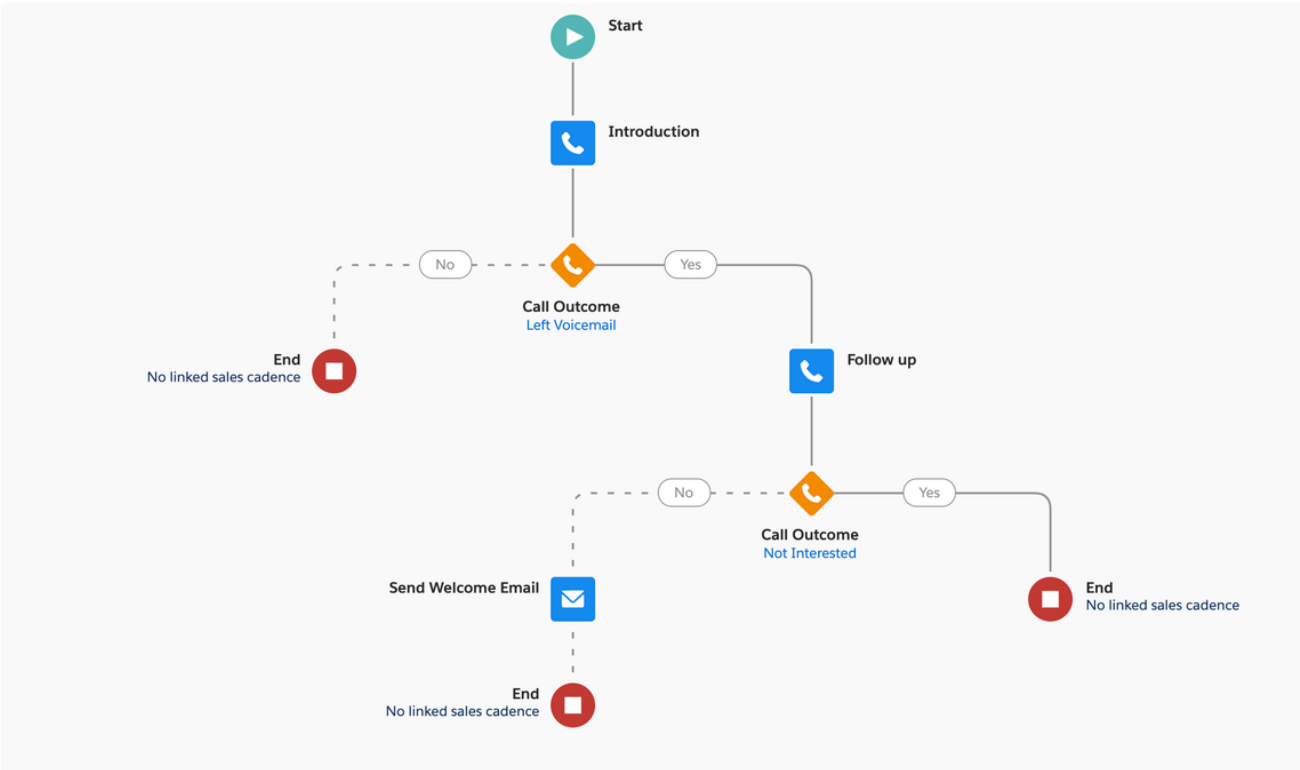
1. Choose **Sales Cadence** from navigation menu.

2. Click the down arrow button then click **New**

3. Enter name and description. Click **Save** button which opens **Sales Cadence** builder screen.

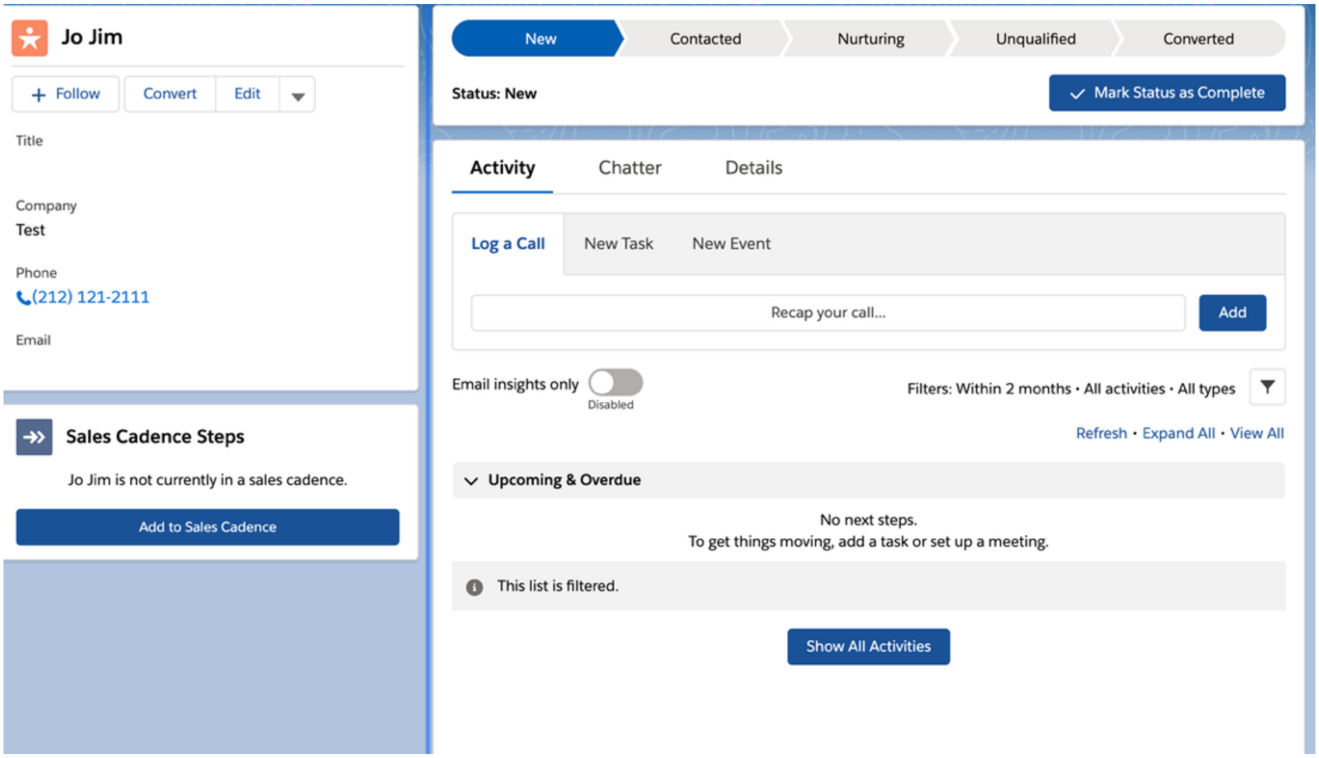


4. Click + sign in the builder to add a step. Choose a type of step you want to add for your sales cadence. Once you finish adding steps, click the **Activate** button. Once a sales cadence is active, you can add leads, contact, and personal accounts to Sales Cadence.



Assigning Prospects

You can assign a prospect to a Sales Cadence either on a prospect detail page or through an automated flow. In this example, using prospect detail page to assign a sales cadence.



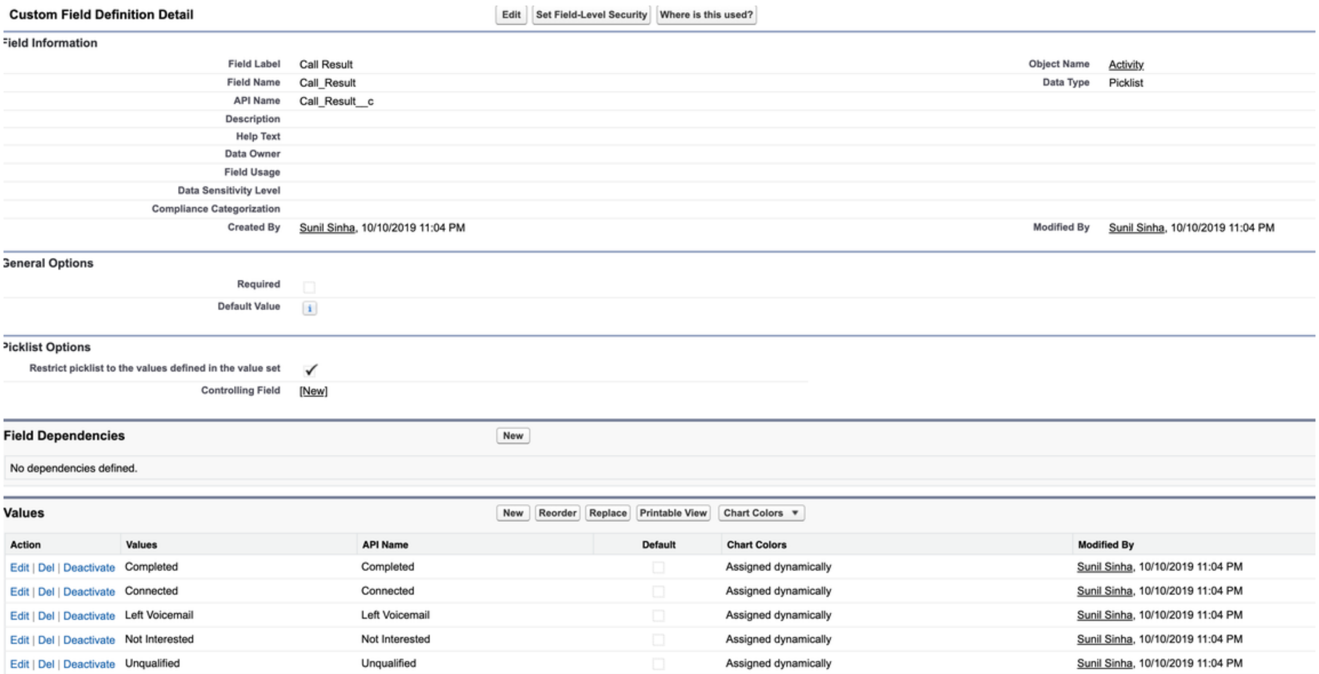
Click **Add to Sales Cadence** button to add this prospect to a Sales Cadence.

Create and Map Dispositions

In this step you need to add a disposition field on Activity object and map disposition options to what is defined in HVS call outcomes. In this example, I am going to create a picklist field and add it to default task page layout to track disposition value for each call.

Create and map disposition fields

1. Go to the Setup screen then click **Object Manager**
2. Click **Activity Object**
3. In Fields and Relationships section select **New**
4. Select a picklist field and choose **Next**
5. Enter require information and add HVS call outcomes as picklist options.
6. Select all default options and add this filed on Task page layout. (If there is already a field called **Call Result** on Task Page layout then remove it from the page layout.)
7. Choose **Save**

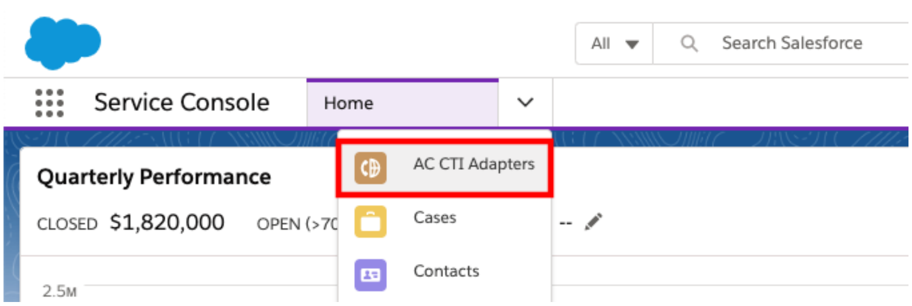


Setup CTI Flows for High Volume Sales

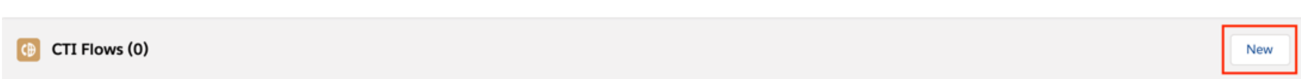
Next you will need to create a new set of CTI Flows for High Volume Sales.

Configuring the CTI Flow

1. Log in into your Salesforce org and go to the **Service Console**
2. Expand the **navigation menu** by selecting the down arrow and choose **AC CTI Adapters**.



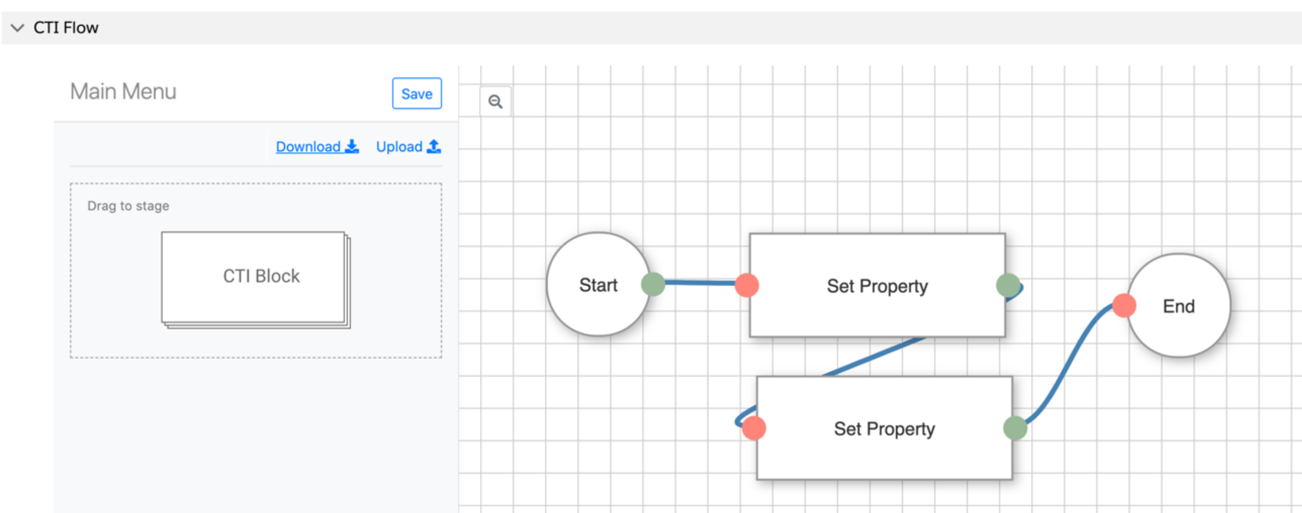
3. Select **ACLightningAdapter**
4. Scroll down to the **Scripts** section
5. Select New to create a new CTI Flow



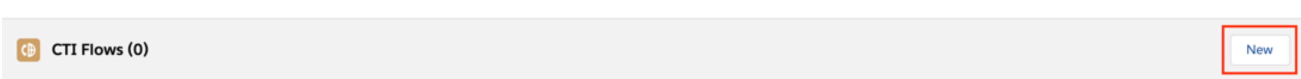
6. In the **CTI Flow Name** field, enter **Voice onHvsWorkStart**
7. Make sure the checkbox for **Active** is selected
8. For the **Source**, select **Salesforce UI**
9. For the **Event**, select **onHvsWorkStart**
10. Provide a **Description**
11. Click **Save**.
12. Scroll down and click on the link **Voice onHvsWorkStart.**
13. On your desktop, create a file called flow.json, and, paste the following code:

{"actions":[{"id":"uid-0","type":"SE_Start","meta":{},"controls":{},"ports":{"done":"uid-1"},"position":[-351.5,-206]},{"id":"uid-1","type":"SE_SetProperty","meta":{},"controls":{"key":"hvsWorkId","value":"$.payload.workId"},"ports":{"done":"uid-3"},"position":[-151,-205]},{"id":"uid-3","type":"SE_SetProperty","meta":{},"controls":{"key":"hvsCompleteWorkWhen","value":"$.payload.completeWorkWhen"},"ports":{"done":"uid-4"},"position":[-144,-64]},{"id":"uid-4","type":"SE_End","meta":{},"controls":{},"ports":{},"position":[221.5,-185]}]}

14. Click **Upload** and find the file you just created. You should now see this:**



15. Click **Save**
16. Go back to the CTI Adapter page and select **New** in CTI Flows section to create another CTI Flow.



17. In the **CTI Flow Name** field, enter **HVS Voice onConnecting**

18. Make sure the checkbox for **Active** is selected

19. For the **Source**, select **Amazon Connect Voice Contact**

20. For the **Event**, select **onConnecting**

21. Provide a **Description**

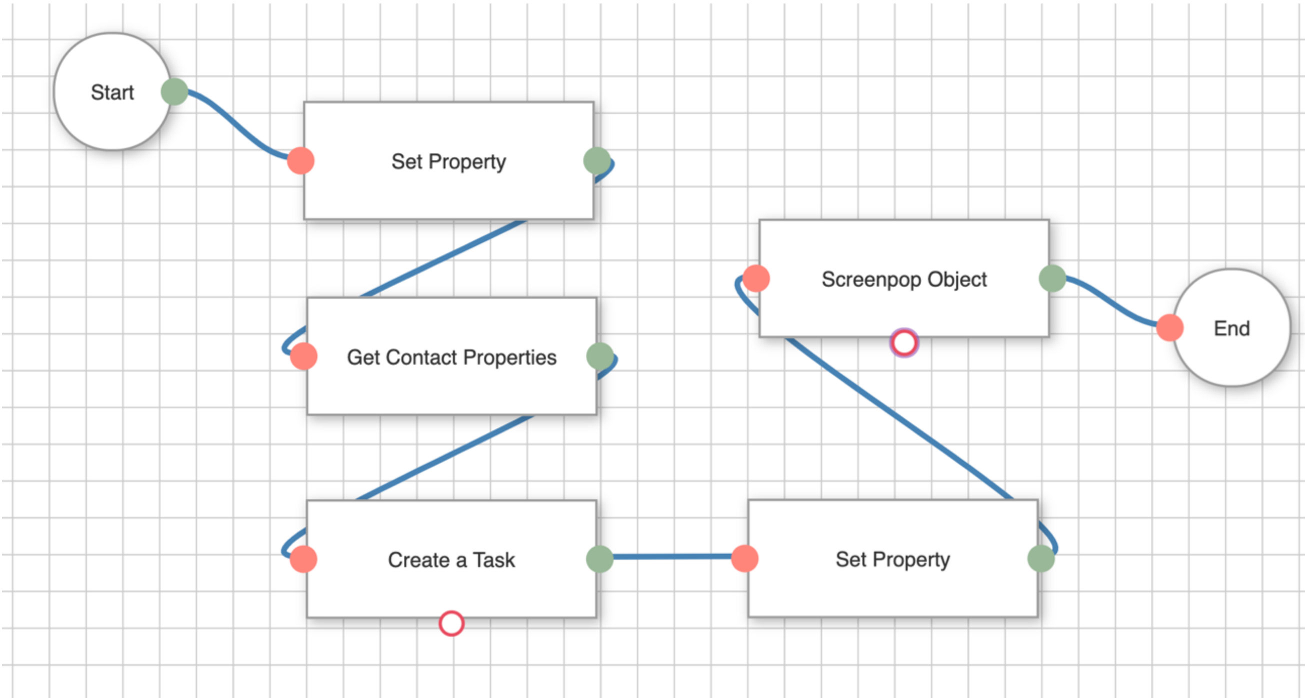
22. Scroll down and click on the link **HVS Voice onConnecting.**

23. On your desktop, create a file called flow.json, and, paste the following code:

{"actions":[{"id":"uid-0","type":"SE_Start","meta":{},"controls":{},"ports":{"done":"uid-10"},"position":[-380.5,-262]},{"id":"uid-10","type":"SE_SetProperty","meta":{},"controls":{"key":"hvsWasConnected","value":"true"},"ports":{"done":"uid-12"},"position":[-162.60096153846155,-201.99198717948715]},{"id":"uid-12","type":"SE_ContactProperties","meta":{},"controls":{},"ports":{"done":"uid-14"},"position":[-160,-32]},{"id":"uid-14","type":"SE_SFCreateTask","meta":{},"controls":{"CallObject":"$.actions.uid-12.results.contactId","Type":"Call","Status":"In Progress","Priority":"High","IsClosed":false,"TaskSubType":"Call","WhoId":"","WhatId":"","C
12.results.type","subject2":"$.actions.uid-12.results.queueName","subject3":""},"ports":{"success":"uid-16"},"position":[-160.21955128205127,144.5032051282052]},{"id":"uid-16","type":"SE_SetProperty","meta":{},"controls":{"key":"taskId","value":"$.actions.uid-14.results.id"},"ports":{"done":"uid-17"},"position":[224,144]},{"id":"uid-17","type":"SE_SFScreenpopObject","meta":{},"controls":{"recordId":""},"ports":{"success":"uid-19"},"position":[233.90384615384613,-99.59134615384613]},{"id":"uid-19","type":"SE_End","meta":{},"controls":{},"ports":{},"position":[594.0921474358975,-56.72596153846149]}]}

(Please note: Make sure that the code you copied is valid JSON before uploading. You can use an online JSON formatter to be certain.)

24. Click **Upload** and find the file you just created. You should now see this:



25. Click **Save**

26. Once you've created the flows refresh your browser and the new scripts will take effect.

Per the recipe you created above, a Task (Call Activity) object will be created and screen popped as each call is ringing to the agent. After each call, Amazon Connect puts the agents into the *After Call Work State*. As part of the CTI adapter, it pops up a task record where you can capture standard task related information. The task screen also requires an agent to enter the call outcomes.

Upon selecting the call outcome on task page, click save to persist data in Salesforce. After completing this action, when user change his state from *After Call Work State* to *Available state*, the CTI Adapter raises an event to sync the task's call result value with HVS Sales Cadence and generate the next outreach activities for associated prospect.

Appendix F - CTI Flow Blocks

If-else

Change the flow of your script depending on value of fields you fetch or store. This is a simple "if-else" utility for your flow.

HTTP Request

Make an HTTP request.

Get Property

Fetches a property from the local data store. You can access a property you have retrieved from the local store by referring to the return value of this block.

Get All Properties

Returns all stored properties.

Format Phone Number

Formats a phone number for a country code.

Format Phone Number (E164)

Formats a phone number for a country code in E164 format.

Format a Date object

Returns a formatted date.

Is Truthy?

This is a utility to branch your flow depending on the truthiness of a value.

Set Property

Assigns a value to a property in the local data store.

Log to Console

Sends a static or dynamic value from an action to a logger.

Show Modal

The command to open modal.

Enable Click To Dial?

The query to determine whether Click to Dial should be enabled.

Enable Click To Dial

The command to enable Click to Dial.

Disable Click To Dial

The command to disable Click to Dial.

Get App View Info

The command to get App View information.

Get Softphone Layout

The query to get softphone layout.

Get Agent Workload on Salesforce

Returns the agent's current workload.

Complete High Velocity Sales Work With Task Saved

This methods allow your CTI implementation to communicate with High Velocity Sales (HVS) to handle HVS work.

Refresh View

The command to refresh the view.

Show Softphone Panel

The command to show softphone panel.

Hide Softphone Panel

The command to hide softphone panel.

Set Softphone Panel Height

The command to set the height of softphone panel.

Set Softphone Panel Width

The command to set the width of softphone panel.

Screenpop Object

The command to open a screenpop with information from object.

Screenpop Url

The command to screenpop a url in a new browser tab or browser window.

Screenpop Object Home

The command to screenpop to an object's home page.

Screenpop List

The command to screenpop a list view.

Screenpop Search

The command to screenpop search results based upon the search input. Not to be consued with "Search And Screenpop."

Screenpop New Record

The command to screenpop to a new record of the specified type with specified default field values.

Search And Screenpop

This command searches objects specified in the softphone layout for a given string. Returns search results and screen pops any matching records. Not to be consued with "Screenpop Search."

Run Apex

The command to run an apex function.

Get Agent State from Salesforce

The command to get an agent's state.

Set Agent State on Salesforce

The command to set an agent's presence state on Salesforce.

Login Agent on Salesforce

The command to login an agent on Salesforce.

Logout Agent on Salesforce

The command to logout an agent on Salesforce.

Save (or Create) a Record

The command to save or create a Salesforce object.

Create a Task

The command to create a Task. (The Subject of the task will be a string made up of upto 3 field values.)

Is Contact "Do Not Call"?

The query to check if the Contact requested not to be called.

Dial Number

The command to dial a phone number or to conference to an endpoint.

Mute Agent

The command to mute the agent.

Unmute Agent

The command to unmute the agent.

Get Agent Status from Connect

The command to get the current presence status of the agent from Connect.

Set Agent Status on Connect

The command to set the current presence status of the agent on Connect.

Set Agent Status By Name on Connect

The command to set the current presence status of the agent on Connect by name of the state.

Set Agent as Available on Connect

The command to set the current state of the agent to "Available."

Get Quick Connection List

Gets the list of quick connects available to the current agent

Get Transfer Connection List

Gets the list of quick connects available to the current agent.

Get Endpoint by Phone Number

Generates and returns an endpoint for a provided phone number.

Get Available Agent States

Gets all of the available agent states including custom states.

Get Agent Name

Returns the agent's user friendly display name for the agent.

Get Agent Extension

Returns the phone number that is dialed by Amazon Connect to connect calls to the agent for incoming and outgoing calls, if softphone is not enabled.

Get Agent Deskphone Number

Returns the phone number that is dialed by Amazon Connect to connect calls to the agent for incoming and outgoing calls, if softphone is not enabled.

Is Agent Softphone Enabled?

Checks if agent softphone is enabled. Branches in different directions if it is or not.

Change Agent to Softphone

Changes the current agent to softphone mode.

Change Agent to Deskphone

Changes the current agent to desktop phone mode with the specified phone number.

Get Agent Configuration

Returns the phone number that is dialed by Amazon Connect to connect calls to the agent for incoming and outgoing calls, if softphone is not enabled.

Get Agent Dialable Countries

Returns the list of dialable countries for the current agent.

Get Contact Attribute

The command to get value of an attribute from the contact in the current session.

Is Voice Contact?

The command to determine if the contact is a voice contact.

Is Chat Contact?

The command to determine if the contact is a chat contact.

Is Contact Inbound?

The command to determine if the contact is inbound.

Is Contact Transfer?

The command to determine if the contact is transferred.

Is Callback?

The command to determine if the contact is a queue callback.

Get Contact Properties

The command to get properties of a contact.

Get Customer Phone Number

The command to get customer phone number of a contact.

Get Contact Interaction Metadata

The command to get metadata about a contact interaction.

Query value

The query to execute an arbitrary SOQL statement and returns the results.

Open Salesforce Primary Tab

Opens a new primary tab to display the content of the specified URL.

Open Salesforce Sub Tab

Opens a new subtab (within a primary tab) that displays the content of a specified URL.

Get Focused Primary Tab Object Id

Returns the object ID of the primary tab on which the browser is focused.

Get Focused Subtab Object Id

Returns the object ID of the subtab on which the browser is focused.

Call jQuery Method

Perform a method call on a jQuery selection with your arguments.

Replace String

Perform a .replace() method on an input string.

Text Starts With Value

Checks whether a text input starts with one of the values.

Text Ends With Value

Checks whether a text input ends with one of the values.

Join Strings

Concatenates 2 values into a string.

SOQL Query

The query to execute an arbitrary SOQL statement and returns the results.