Installing and Configuring AES Open CTI Adapter

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Chapter 1: Introduction

Purpose

This document describes how to install and configure Avaya Aura® Application Enablement Services (AES) Open Computer Telephony Integration (CTI) Adapter. This document is intended for users who want to install and configure AES Open CTI Adapter.

Change History

Document version	Date	Author	Summary of changes	Reviewer
1.0	23-March-2016	Y. Abbas	Initial version	D. Castañares, I. Bedascarrasbure
2.0	1-April-2016	I. Bedascarrasbure	Reviewed version	D. Castañares, D. Iguchi
3.0	15-June-2016	Y. Abbas	Reviewed version	D. Castañares, I. Bedascarrasbure R. Mateescu
4.0	28-June-2016	I. Bedascarrasbure	Updating APEX package for version 1.7.3	
5.0	14-Sept-2016	M. West	Reviewed full document	S. Fernandez

Chapter 2: AES Open CTI Adapter Overview

Overview

AES Web Softphone is a Telephony Server Application Programming Interface (TSAPI) based solution.

The solution provides a thin-client HTTP Web softphone that you can use to make a call, transfer a call, and conference a call.

The Web softphone can be hosted on multiple browsers. The Web Softphone also provides URL based screen pops.

The primary purpose of the AES SFDC Adapter is to provide customers who have Salesforce as CRM solution, to get a full integration with Computer telephony integration (CTI) through the AES and Avaya Aura® Communication Manager.

Prerequisites

- Configure the Avaya Application Enablement Server (AES)
- Install Red Hat Enterprise Linux on the server.
- Install additional Linux packages.
- Install the CTI Engine and the server certificate.

The installation document for the CTI Engine is *Installing and Configuring AES CTI Engine*.

Environment Configuration

Server Requirements

- Multi-core processor
- 4GB of RAM
- 10 GB of free hard disk space
- Red Hat Enterprise Linux (RHEL) 6 (Update 5 and later)

  Note

  The newer versions of RHEL 6 are supported, but ensure that libraries required to support the solution are also installed. AES Open CTI Adapter works on both 64-bit and

32-bit versions of RHEL, but the appropriate OpenJDK and Tomcat package must be installed.

The OpenJDK and Tomcat package also requires the following libraries to be installed:

- **`glib2-2.28.8-4.el6`**
- **`GConf2-2.28.0-6.el6`**

The AES Open CTI Adapter uses web socket technology between the user's browser and the host server. The communication path between those two entities must permit the use of web sockets.

Browser Requirements

- Internet Explorer 11 or later
- Firefox 27 or later
- Chrome 30 or later
- Safari 7 or later

Port Requirements

The application uses the following ports:

Port number	Description
450	AES TSAPI Port
1066 to1081	TSAPI encrypted links
8090	CTI Engine
9090	Client Logger
8443	Tomcat
8092	Presence Server

It is important to make sure that these ports are opened on the Linux server in the appropriate direction. Assuming a default RHEL 6.5 installation, the outbound ports will be automatically enabled, but the inbound ports will be blocked. These ports must be opened for the CTI Engine to function correctly.

Preparing the Local Firewall

The firewall program on Linux is **`iptables`**. By default, all ports are open for output, but the input list is very restricted. Use the **`iptables`** command to open access to the ports that are needed. Run the following commands as a `root` user.

```
sudo iptables -I INPUT 2 -p tcp -m tcp --dport 8443 -j ACCEPT
```

Save the changes in the **/etc/sysconfig/iptables** folder using the following command as a `root` user:

```
sudo service iptables save
```

To clear the local firewall settings for initial testing, use the following command as a `root` user:

```
sudo iptables --flush
```

Note that some corporate security policies do not allow for iptables to be stopped or empty. Be sure they validate that this is an acceptable option before trying to flush the iptables configuration. Regardless, this is an unacceptable solution for a production system.

Chapter 3: Open CTI Adapter Installation and Configuration

Installing the AES Open CTI Adapter

About this task

Use this procedure to install AES Open CTI Adapter on the RHEL server.

Before you begin

- Ensure that you have administrative privileges for installing the rpm files.
- Ensure that you have downloaded the SFDC Softphone installers.

Procedure

1. Run the following command with admin privileges from the location where you placed the installation file:

   sudo rpm –ivh OpenJDK-Tomcat-8.0.36.<arch>.rpm
   Where `<arch>` is `x86_64` for a 64-bit system, or `i686` for a 32-bit system.

   sudo rpm –ivh AES-SFDC-SoftPhone-1.7.4-<rev>.noarch.rpm

2. To allow access to both the Open CTI Adapter and Tomcat applications have been installed, make sure that the `avaya` user can make changes to the root directory of these applications. To perform this action, run the following command:

   sudo chown –R avaya:susers /opt/avaya

Licensing

All of the licensing for the AES Open CTI Adapter is handled in the CTI Engine. As such, those instructions are provided in the *Installing and Configuring the AES CTI Engine* document.

Certificate Configuration

The AES Open CTI Adapter uses the HTTPS service to use the softphone inside Salesforce. To support the use of HTTPS, you must install a server certificate. You can install any of the following types of certificates in the server:

- Self-signed certificate
- Third-party or signed certificate from a request file
- Signed certificate with a private key

The mentioned certificate applies to all of the applications that are part of the AES Open CTI Adapter. Since the base certificate and private key are required by the AES CTI Engine, the instructions for creating and installing the base private key and certificate are given in the *Installing and Configuration the AES CTI Engine* document. The following instructions assume that the files have already been created, or obtained, and have been placed in the correct locations.

Regardless of the type of certificate used, the below instructions assume that the certificate is named `certificate.crt`, the private key is named `private_key.pem`, and that both are located in the `/opt/avaya/certs` directory.

If you are using a self-signed certificate, you must copy the self-signed certificate into each user's workstation. The self-signed certificate should be imported into the Windows Certificate Store for Internet Explorer and Google Chrome or imported as an exception directly into Firefox. This allows the browser to treat the self-signed certificate as a genuine certificate from a trusted entity.

For the self-signed certificate to be properly recognized when imported into the Windows Certificate Store, the certificate must be installed in the Trusted Root Certification Authorities folder. Placing the self-signed certificate in any other store will not allow it to be recognized.

These actions are not required for a signed certificate. They are only necessary when using a self-signed certificate. It is recommended that self-signed certificates only be used temporarily in a lab or test environment. Any production environment should use a signed certificate.

Creating a Keystore

The certificate and the private key created during the CTI Engine installation allow it to work with wss, but for tomcat to work with https, a keystore file must also be created.

Procedure

1. Run the following command to navigate to the directory where certificate and private key are located:

   `cd /opt/avaya/certs`

2. Run the following command to generate the `tomcat.p12` file :

   `openssl pkcs12 -export -in certificate.crt -inkey private_key.pem -out tomcat.p12 -name tomcat`

3. Type a password and type the same password as a confirmation password to create the file.

4. Run the following command to create the keystore file:

   `keytool -importkeystore -srckeystore tomcat.p12 -srcstoretype PKCS12 -destkeystore tomcat.jks -deststoretype JKS`

- **This will ask for a new password (with confirmation), then ask for the password created in the previous step. Using the same password both times is acceptable and recommended. This creates the key store file we need for tomcat.**
  Note

  When creating the password for the tomcat keystore, make sure the password does not include the ampersand (&) character. This character will cause tomcat to crash on startup.

5. Run the following command to copy the keystore file into the tomcat configuration directory:

   `cp tomcat.jks /opt/avaya/tomcat8/conf`

6. Run the following command to change the directory to the tomcat configuration directory:

   `cd /opt/avaya/tomcat8/conf`

7. Edit the `server.xml` file and look for section in the file that defines port 8443. Once found, insert the following text immediately before it so that it looks like this:

```
    <Connector SSLEnabled="true"
               clientAuth="false"
               keystoreFile="/opt/avaya/tomcat8/conf/tomcat.jks"
               keystorePass="avaya123"
               keyAlias="1"
               maxThreads="800"
               acceptorThreadCount="4"
               port="8443"
               protocol="org.apache.coyote.http11.Http11Nio2Proto
col"
               scheme="https"
               secure="true"
               sslProtocol="TLS"
               sslEnabledProtocols="TLSv1.1,TLSv1.2"
    />
```

   The password referred to above is the one created in step 4. Change it from “avaya123” to the password that was actually used.

At this point Tomcat is configured to use the HTTPS protocol with the same certificate used by the CTI Engine.

Chapter 4: Salesforce Configuration

Upgrading the Salesforce components

Procedure

1. Upgrade the latest version of the APEX Package as shown in the next section. Ensure that you are using the latest version of APEX Package; otherwise the Open CTI Adapter will not work.
2. Import the latest version of the call center definition file and copy the configuration from the old call center definition file.
3. Move the users from the old call center definition to the new call center definition.

Prerequisites

To start using Open CTI Adapter in Salesforce, you must first perform the following tasks:

No.	Task	Notes	✔
1	Install the APEX package		
2	Disable the Interaction Logs settings (if necessary)		
3	Configure the Call Center Definition		
4	Configure the Softphone Layout		
5	Configure the Directory Numbers		

All of the actions below require Salesforce administrator privileges. To perform any of these actions, it is necessary to be logged in as a Salesforce administrator.

Installing the APEX package

Before you begin

Log in as a Salesforce administrator.

Procedure

Install the package for a production organization by using the following URL:

https://login.salesforce.com/packaging/installPackage.apexp?p0=04t360000019m4c

Install the package into a sandbox by using the following URL:

https://test.salesforce.com/packaging/installPackage.apexp?p0=04t360000019m4c

If you are not logged in as a Salesforce administrator, the system displays the Salesforce login page.

Provide the Salesforce administrator login credentials when prompted.
The system displays the package page.

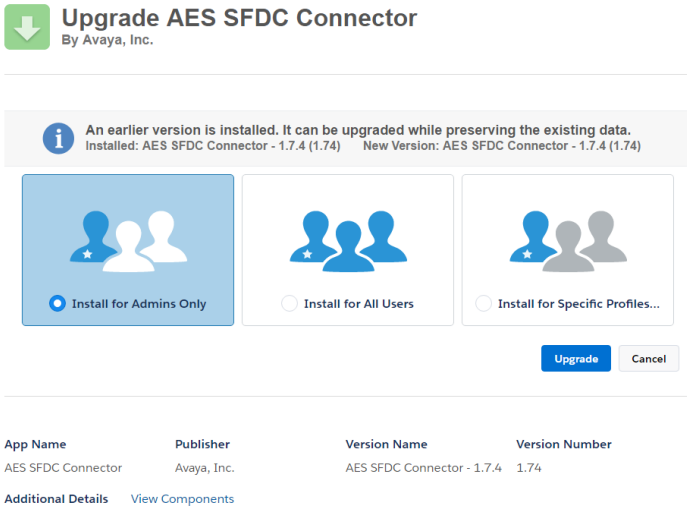


Figure 1: Package Page

Ensure that the **Install for All Users** option is selected and click **Install**. After the installation is completed, click **Done**.

The system installs the APEX package which contains the following components:

- Activity Custom Fields: Called, Caller, UCID, UUI, and CallReference
- Apex Class: DataRetrieval and ObjectDetailsRetrieval
- Visualforce Page: StoragePage

Logging Calls

There are multiple ways to log calls in Salesforce. The traditional way is Call Logs. In the Console view, the default option is Interaction Logs, however Call Logs can still be used if desired. In addition, the option to pop to a VisualForce page is available as a replacement for both. It is important to understand the capabilities and limitations of each option, as all three options will have different behaviors. The desired behavior will guide the choice of which method to use.

Call Logs

When using Call Logs, the Call Center definition must have the Interaction Log option set to “N”. It is also important to make sure Interaction Logs are disabled. Interaction Logs are incompatible with Call Logs, and so only one Logging type can be used. When Call Logs are used, Interaction Logs must be disabled.

You can turn off Interaction Logs on page layouts assigned to different user profiles.

Procedure

1. Navigate to one of the following options:
    a. For standard objects, click **Your Name>Setup > Customize>Object>Page Layouts**.
    b. For custom objects, click **Your Name> Setup>Create> Objects**, and then choose the object.
2. Click **Edit** next to a page layout.
3. Click **Layout Properties**.
4. Clear the **Interaction Log** option.
5. Click **OK**.
6. Click **Save**.

Perform these actions for each object that is displayed in the users’ normal operation.

Interaction Logs

When using Interaction Logs, Call Logs and all of their other options are not present or enabled. That means there are no options to save on incomplete calls, no ability to modify how objects are associated with the logs, no ability to save the custom Avaya fields to the logs, and no Call Log information shown in the softphone. Instead, the standard items are simply updated into the existing Interaction Log.

To use Interaction Logs, the Call Center definition must be configured to have the Interaction Log option set to “Y” and the Enable Call Log and Show Call Log options set to “N”.

Visualforce Page

The use of Call Logs or Interaction Logs is limited, with little customization available. If the use of those features are too limiting, it is possible to instead invoke a Visualforce page. This page

will be passed all of the information that would have been provided to the Call Log or Interaction Log, but at that point the Visualforce page can completely control what else is presented to the users, what other data is collected, and how the resulting logs will be saved.

To use a Visualforce page, the Call Center definition must be configured to have the Interaction Log option, the Enable Call Log option, and the Show Call Log options all set to “N”. In addition, the Pop on Call End option must not be set to “N”, and the End Popup Visualforce Page Name option must be set to the name of a Visualforce page.

Configuring the Console

When using the Salesforce Console, it is critically important to configure the “Whitelist Domains” setting in the Salesforce administration. If this is not done, then none of the interactions with the Console will work.

Procedure

1. Navigate and click the **Setup** option.
   The system displays the setup page.
2. On the left menu, navigate to **App Setup > Create > Apps**.
   The system displays the list of applications.

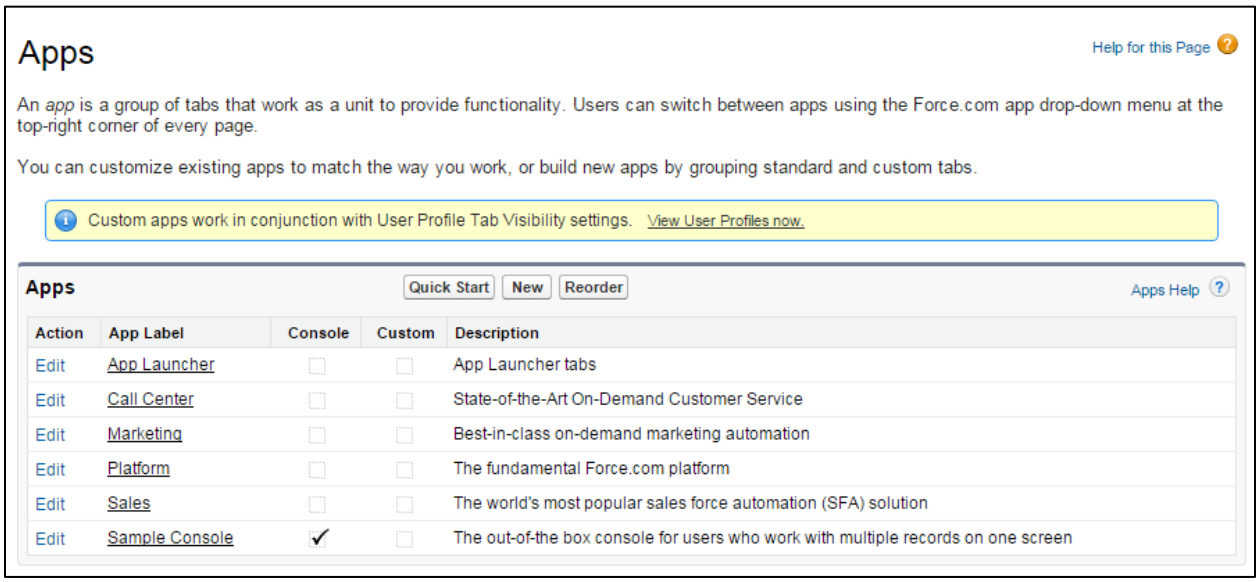


Figure 2: The application list page

3. Click the **Edit** link next the application you are using.
4. When editing the Console application, go to the **Whitelist Domains** section as shown below:

Figure 3: The Whitelist Domains option

5. Type the name and port of the Open CTI Server in the following format: **<server>:8443**
6. You can type multiple entries separated by commas.

Note

It is important that the same FQDN used in the other configuration entries is used. It is critical that the port be included. If the port is not included, then the entry will have no effect.

Call Center Definition

Along with the Avaya CTI Adapter setup file, an XML file is also provided. This XML file is used by the Salesforce application to configure site information for use with the Open CTI Adapter. A copy of this XML file is included in Appendix A, called **AvayaCTIAdapter.xml**. Salesforce calls this site information "Call Center Configuration".

This is just the name used by Salesforce. This is not meant to imply that the Avaya Open CTI Adapter may only be used in a call center environment. In fact, it can be used whether a call center is configured in the Communication Manager or not.

Procedure

1. Navigate and click the **Setup** option.
   The system displays the setup page.
2. On the left menu, navigate to **App Setup > Call Center > Call Centers**.
   The system displays the list of call center definitions.

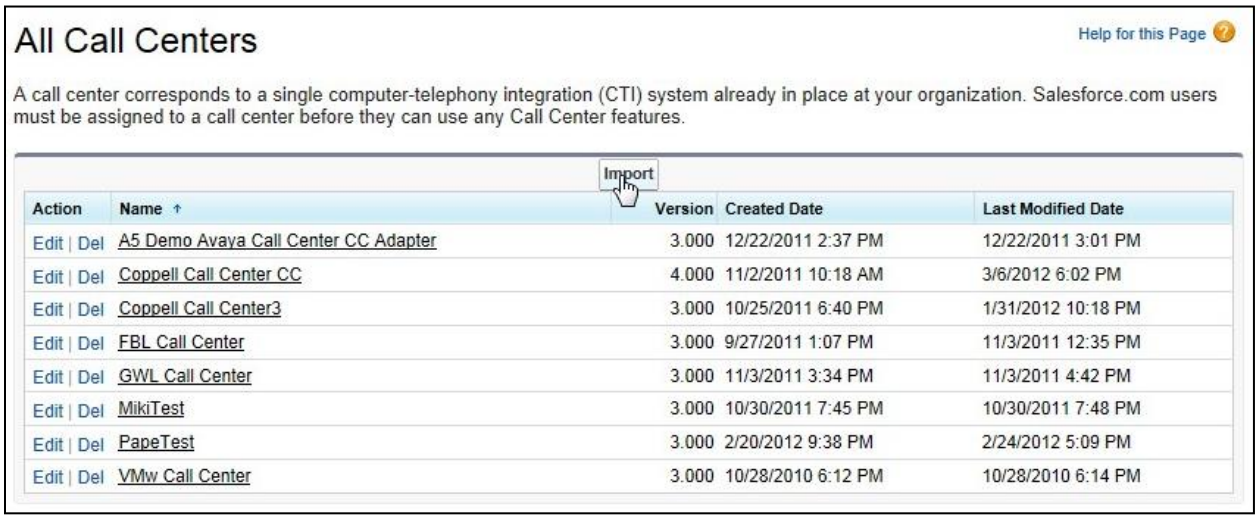


Figure 4: The list of call centers

3. Click **Import** to create a new call center entry.

   The system displays the Call Center Import page.

4. Click **Browse** to search for the XML file provided to feed the call center information.
5. Once the XML file is selected, click **Import**.
6. The **Call Center** component has the following configuration settings:

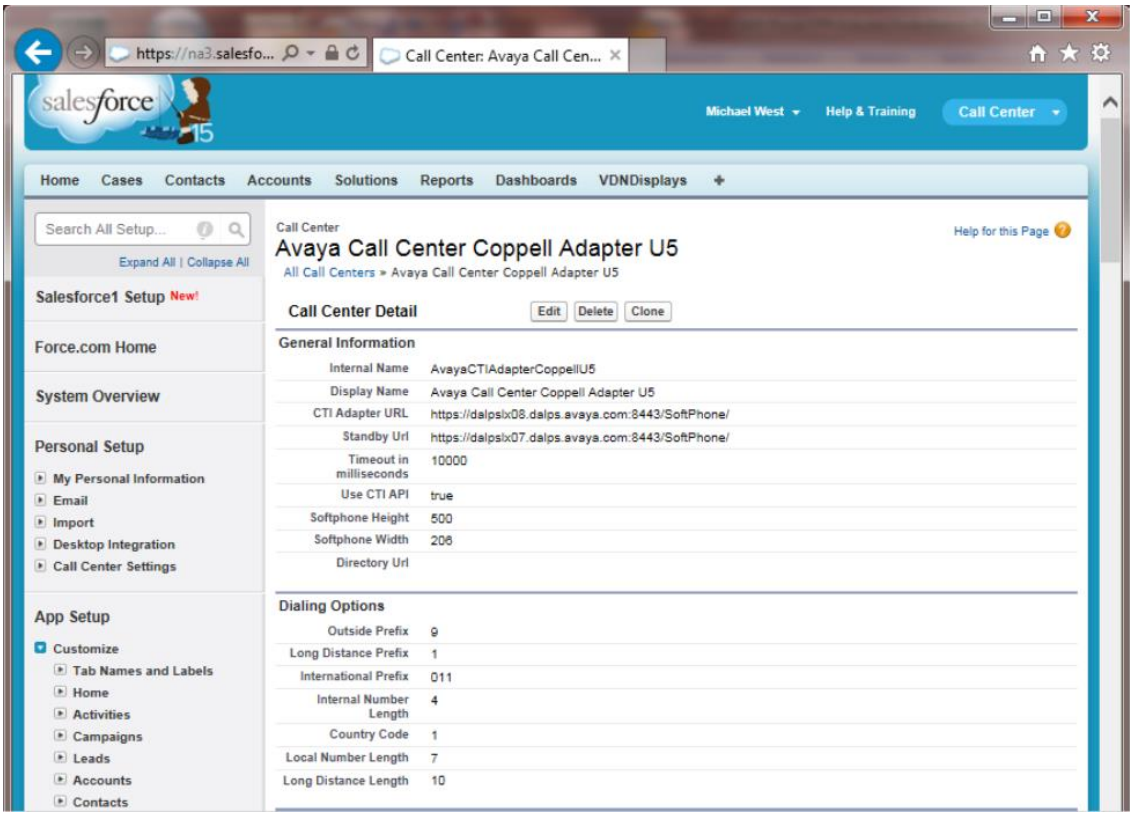


Figure 5: The Call Center configuration settings

Call Center Components

You must configure the following settings of the Call Center Definition:

- General Information
- Dialing Options
- Softphone Options
- Label Options
- Screen Pop Options
- Reason Codes
- CTI Engine Configuration
- Avaya Remote Agent Configuration

You must also perform the following task:

- Add a user to the list of call center users

You must add information in the required fields as explained in the field descriptions sections of this guide.

General Information

All fields in the General Information section are mandatory for Open CTI Adapter for Salesforce.

Name	Description
Internal Name and **Display Name**	The fields to uniquely identify the Call Center definition in Salesforce. If multiple Call Center definitions are present in a Salesforce instance, each name must have a unique Internal Name and Display Name.
CTI Adapter URL	A URL to access the Open CTI Adapter. This URL is used to open the Open CTI Adapter's softphone. The format of the URL is: `http://<server>:8443/SoftPhone` It is very important that the "<server>" value be replace with the server's fully qualified domain name (FQDN). Do not use the IP address in this field.
Standby Adapter URL	A URL to provide redundancy on OpenCTI. The following link shows the format of **StanderBy Adapter URL**: `http://<server2>:8443/SoftPhone` If there is no second server to use for standby, leave this field empty.
Timeout in milliseconds	The **Timeout in milliseconds** field determines the time period to wait for CTI Adapter URL before switching to the Standby URL. If no Standby URL is provided, the Timeout in milliseconds value must also be left empty.
Use CTI API	An option to use CTI API in Call Center Definition. You must always keep this value as `True`.
Softphone Height and **Softphone Width**	The fields to specify the dimension of the Open CTI Adapter's softphone. The default value of the **Width** should remain unchanged. But if you cannot see the information in the configured size, the **Height** value must be increased.

Name	Description
Directory URL	This field is reserved. Leave the field blank.

Dialing Options

Name	Description
Outside Prefix, **Long Distance Prefix**, and **International Prefix**	The parameters required for all Open CTI Adapters.
Internal Number Length	**Internal Number Length** is a value used to determine whether a number is an internal number or an outbound/inbound external number. If the number of digits in a phone number is this value or fewer, then the number is treated as an internal number. If the number is greater than this value, the number is an inbound or outbound external number. If this value is “0”, then all numbers are treated as inbound or outbound external numbers. Note that this number **must** be smaller than Local Number Length and Long Distance Length. If it isn’t (e.g. ten or eleven digit extensions), then the value should be set to “0” as there is no way to differentiate between internal extensions and external numbers.
Country Code	The dialing country code of the current location. This value is used for the enhanced outbound number processing as the default number processing follows US country code standard. This value must be set.
Local Number Length	The length of an external local phone number.
Long Distance Length	The length of a long distance phone number. This and the preceding values are used to help examine an outbound number to determine exactly which prefixes to use. It is very important that these values are different. If the numbers are technically the same (e.g. ten-digit dialing in the US) then the Local Number Length should be set lower. In this case the routing tables in the Communication Manager will be used to handle the local number special cases.

Name	Description
Do Not Call Prefix	A prefix that, if matched with the beginning of the called number, will prevent the call from being initiated.

Softphone Options

Name	Description
Is Call Center	Determines whether the ACD is used. The options are: • `Y`: ACD is used. The ACD agent ID and password fields are included in the login form. The default value is `Y`. • `N`: ACD is not used. The ACD agent ID and password fields are not included in the login form and only the extension information is requested.
Transfer Button Enabled	Sets whether the option to transfer a call is available. The options are: • `Y`: The Transfer call capability is enabled. The default value is `Y`. • `N`: The Transfer call capability is disabled.
Conference Button Enabled	Sets whether the option to conference a call is available. The options are: • `Y`: The Conference call capability is enabled. The default value is `Y`. • `N`: The Conference call capability is disabled.
Click to Consult	Extends the basic click-to-dial functionality to allow for click-to-consult. Ordinarily, click-to-dial only works if the phone is currently idle, or if all calls present are held. If, however, there is a single active line, and click-to-dial is invoked, click-to-consult will automatically initiate a consultative call. Once initiated, the consultation can be completed as either a conference or a transfer, or it can be backed out to the original call. The options are: • `Y`: The click-to-consult call capability is enabled. If there is a single active line, and click-to-dial is used, then click-to-consult is automatically started.

Name	Description
	• N: The click-to-consult call capability is disabled. The default value is N.
Ready Type	Specifies the ready state type. The options are • Auto-In (A): Will automatically move the user to Ready after an ACD call. The default value is A. • Manual-In (M): Will place the user in Wrapup after an ACD call. The user must then manually set themselves to Ready to receive another call.
Not Ready Enabled	Allows a user to manually set the Not Ready state. The options are: • Y: The option to set the Not Ready state is enabled. The default value is Y. • N: The option to set the Not Ready state is disabled.
Wrapup Enabled	Allows a user to manually setup the Wrapup state. The options are: • Y: Allows user to set the ACD state to Wrapup manually. The default value is Y. • N: Does not allow user to manually set the ACD state to Wrapup. It is possible for the user to end up in the Wrapup state. For example, if the Ready type used is Manual-In, or if Timed ACW is used with Auto-In, but the user cannot change the state manually. • E: Allows user to set the Extended Wrapup state manually. Extended Wrapup is only needed in cases where Timed Wrapup is used, as it allows the agent to disable the timer for this Wrapup.
Auto-answer Incoming Calls	Determines if the softphone will automatically answer incoming calls. Typically this is set in the ACD or switch, but occasionally, the customer might want to set this in Salesforce. The options are: • Y: All incoming calls are automatically answered.. • N: No incoming calls are automatically answered. The default value is N. • A: All incoming ACD calls are automatically answered. This setting must be set to A or Y only if Open CTI Adapter is

Name	Description
	configured to answers the calls. If Communication Manager is configured to automatically answer the calls, this value must be set to N.
Use Extension from User Object	Locks the users' extensions to the defined value in Salesforce. The options are: • Y: The Extension defined in the User object is the only allowed extension that the user can log in with. If the Extension field is wrong or empty, then the user cannot log in. The Extension field on the login dialog is present, but cannot be edited. N: The Extension field on the login dialog can be edited and the value present in the User object is ignored. The default value is N.
My Report Label	Provides the label to use to allow agents to display the page with their daily reports. If no value is present, then the option will not be shown.
URL Report	The URL to use when someone selects My Report Label. If no value is present, then the option is not shown. By default, the value is empty. (See below the table for a good option.)
Password Enabled	Enables the password field on the login dialog box. The options are: • Y: The password field is displayed on the Login dialog box. The default value is Y. • N: The password field is not shown on the Login dialog box.
Auto Login Enabled	Determines whether to automatically log the user into the softphone. The options are: • Y: Automatic login is enabled. This option works only when the login credentials are already stored. If the credentials are not stored, the user is not logged in automatically even when this setting is Y. • N: Automatic login is disabled. The default value is N.
Logo Configuration	A field to specify the path for the logo displayed at the bottom of the softphone. The location of the file is specified as a relative directory path, with the root being

Name	Description
	`/opt/avaya/tomcat8/webapps/SoftPhone`. The default value is `Images/AvayaLogo.gif`, which is the file that comes in the distribution. The image used here must always be in the .gif, .png, or .jpg format.
ANI Masking Value	Provides an alternate value for ANI Masking. When a call is placed outside the Communication Manager, this value is used as the originating phone number and shown to the recipient as the ANI for the current call. Internal calls are unaffected by this setting. If the value is left empty, this feature is not used. The default value is empty.
ANI Masking on Consult?	A field to specify whether to use ANI mask number for consultative calls. The options are: • `Y`: When a consult call is a transfer or a conference initiation, the ANI Mask number is used as an origination number. • `N`: The real origination number is used. The default value is `N`.
Enable Console Logout?	A field to allow a user to log out from the ACD as soon as the user logs out from the Salesforce Console. The options are: • `Y`: The automatic ACD log out option is enabled. The default value is `Y`. • `N`: The automatic ACD log out option is disabled.
ANI Replacement WS URL	URL of the REST web service that provides possible values to replace ANI number for outbound calls. The default value is empty.

For the URL Report entry above, a good generic entry for this is:
00O?pc0=CALLTYPE&pv0=&type=te&sort=CD&pc1=DUE_DATE&pv1=today&pn1=eq&c=CS&c=OP&c=CO&c=LD&c=AT&c=CD_FMT&c=CL_DISP&c=CALLTYPE&c=SU&c=AS&c=P1&details=yes&retURL=%2F00O%2Fo&pn0=ne&rt=24&scope=user&t=title_MyCallsToday&closed=closed&duel0=AS,SU,CALLTYPE,CL_DISP

Note that the above is a single line with no space breaks or line breaks.

Call Log Options

Name	Description
Call Log Enabled	Enable call logging. The options are: • `Y`: Call logs are saved for all calls. The default value is `Y`. • `A`: Call logs are saved for only ACD calls. • `E`: Call logs are saved for only external calls, both inbound and outbound. • `N`: Call logs are not saved.
Show Call Log	Determines whether to show the call log in the softphone display or not. Regardless of whether the call log is shown, it is still saved automatically. The options are: • `Y`: Allows users to view the call logs. • `N`: Disallows users to view the call logs. The default value is `N`.
Call Log on Incomplete Calls	Enable call logging for unanswered and abandoned calls. The options are: • `Y`: Call logs are saved for unanswered calls. • `N`: Call logs are not saved for unanswered calls. The default value is `N`.
Make Call Log Related Data Sticky	Determines how the call log references are saved.. The options are: • `Y`: The application sets the reference to be saved to the first resource browsed. The user can always override the selection manually, but continued browsing doesn't update the selection. Only user intervention can change the selection. The last selection is saved. • `N`: The application sets the reference to be saved to the latest resource browsed. Every time the user browses to a new resource, the reference selection is updated. The user can override the selection, but any further browser will again update the reference. The default value is `N`.
Use Custom Call Log Fields	Saves values to the Avaya custom call log fields. The Avaya

Name	Description
	custom call log fields are: **ANI**, **DNIS**, **UCID**, **UUI**, and **CallReference**. The options are: • `Y`: The custom values are saved as call log. The default value is `Y`. • `N`: The custom settings are ignored. This option only applies if **Call Log Enabled** is set to `Y`. If **Enable Interaction Log** is set to `Y`, then this option is ignored and disabled automatically.
Enable Last Three Calls	Determines whether a link to the last three calls is shown. The options are: • `Y`: A link to display the Last 3 Calls is shown in the softphone. When clicked, a small dialog with the links to the last three call logs is shown. • `N`: The link is not shown.
Enable Interaction Log	Allows Open CTI Adapter to integrate with the Salesforce Console interaction log and not the call log. The options are: • `Y`: Enables integration with the Salesforce Console interaction log. This setting is applied only when both **Call Log Enabled** and **Show Call Log** are set to `N`. • `N`: Disables integration with the Salesforce Console interaction log. The default value is `N`.
UCID URL	Defines the URL to use for the custom URL value in the call log. The URL provided in this setting is appended with "`?UCID=`" and the value of the UCID. If this field is not set, then the value is not saved. The purpose of the URL is to allow an easy entry path into a call recording system that can take the UCID as a key value.
Call Log Completed Status	Defines the value to be saved in the call log Status field when the call log is saved. Default value is "Completed".

Label Options

Name	Description

Name	Description
Login Labels	All of the various login labels can be changed to match what the customer needs for their environment.
Agent State Labels	All of the various agent state labels can be changed to match what the customer needs for their environment.

Screen Pop Options

Name	Description
Pop on Transfer and Conference	Enables screen pops on a transfer or a conference call. The options are: • `Y`: The screen pop is enabled. The transfer or the conference call recipient gets the same screen pop that the original users have received. The default value is `Y`. • `N`: The screen pop is disabled.
Pop on ANI	Enables screen pops for ANI. The options are: • `Y`: The screen pop for ANI is enabled. Also, in case of a UUI pop display failure, an ANI pop is displayed as a backup for the UUI pop for a given call. The default value is `Y`. • `N`: The screen pop for ANI is disabled. Note that even if **Pop on ANI** is set to `N`, all other screen pop capabilities are still enabled.
Pop on Call End	Enables pop to a Visualforce page at the end of a call. The options are: • `Y`: To enable the option for all calls. • `I`: To enable the option for inbound calls only. • `O`: To enable the option for outbound calls only. • `N`: To disable the option for all calls. If either **Call Log Enabled** or **Enable Interaction Log** are set to `Y`, then this option is disabled.
End Popup Visualforce Page	The Visualforce page name to pop up at the end of a call. This value is not used if **Pop On Call End** is set to `N`. Only

Name	Description
Name	the name of the Visualforce page must be specified.
DNIS	A field to enable screen pops for DNIS. The value format must be `object.column`, so that the value can be compared to the correct column of the correct object in the Salesforce database. Only one option for all DNIS values is given.
UUI1 through **UUI5**	Each of these components can be handled differently. In general, a given UUI element can be mapped to a given object and column in the Salesforce database (using the `object.column` form), it can be used to replace the ANI value (by specifying `ani`), or it can be simply used for display (designated by a value starting with a `.`). More detail below this table.
UUI Start	A special character that denotes the start of the UUI as the Open CTI Adapter cares about it. The purpose of this character is to allow an arbitrary number of characters at the beginning of the UUI to be ignored for whatever reason. If the character is not present, then the entire UUI will be placed into the UUI1 value.
UUI Stop	A special character that denotes the end of the UUI as the Open CTI Adapter cares about it. The purpose of this character is to allow an arbitrary number of characters at the end of the UUI to be ignored for whatever reason. If both the **UUIStart** and **UUIStop** characters are not present, then the entire UUI will be placed into the UUI1 value. If only the **UUIStop** character is not present, the UUI will not be parsed correctly.
UUI Separator	A special character that separates each of the UUI fields. It can occur up to four times in the UUI field, and marks the separation between each field.
Show Full UUI	Determines whether to show a link on the softphone each time a call contains UUI information. The options are: • `Y`: A link is shown on the softphone that will display the unparsed UUI as a full string in a pop-up when clicked. The name of the link is specified by **UUI Label**. • `N`: There is no link to show the UUI.

Name	Description
UUI Label	Defines the label to use for showing the UUI.
Append Agent to UUI	Determines whether to append the agent's ID to the end of UUI on hang up. The options are: • `Y`: Add the Agent ID to the very end of the UUI string on hang up. This only applies on calls to an ACD agent where the agent hangs up the call. The primary use of this is to assist post call surveys to directly identify which agent handled the call. • `N`: The Agent ID is not added to the end of the UUI.
Transfer Current Context Indicator Character	Enables context transfer when a call is transferred or conferenced. If a character is defined, this indicates that context transfers are to be used. In this case, the object id of the object the user is currently displaying is placed in the UUI (overriding the previous value). The receiving agent then automatically pop that object. If the field is left blank, context transfer is not used and the UUI is preserved through a transfer or conference. The default is to have the field blank. Note that only the UUI within the UUI Start and UUI Stop characters will be replaced anything in the UUI outside the Start and Stop characters are left unchanged. Valid character options are one of @#$^*()-_+'"/\ and the character has to be different than those used for the UUI Start, UUI Stop and UUI Separator.

Note

Do not use a character for Start, Stop, Separator, or Context Indicator that occurs in the UUI as value data. The parser cannot differentiate between them.

EXAMPLE:
There are three delimiter characters for the UUI field: Start, Stop, and Separator. Start denotes where the Open CTI Adapter will start reading the UUI values. Anything prior to Start is completely ignored. Likewise, Stop denotes where the Open CTI Adapter will stop reading the UUI values. Anything after Stop is also completely ignored. Separator is used to break the fields. You only need enough Separator delimiters for the values present.

In general the Open CTI Adapter requires the use of Start and Stop. There is only one exception. If there is no Start delimiter present in the UUI, the entire UUI value is used as the first element (UUI1).

All examples below assume that Start is ";", Stop is ":", and Separator is "!"

"00022"
";00022:"
";00022!!!!:"

All of these results in the same action: the value "00022" is placed into UUI1, and the other fields are left empty.

";!00001017:"
";!00001017!!!:"

These result in the value "00001017" placed into UUI2, and the other four fields are left empty.

";!00001017!!CSR:"
";!00001017!!CSR!:"

These result in the value "00001017" placed into UUI2, the value "CSR" placed into UUI4, and the other three fields are left empty.

Note that all three of the mentioned examples show that any Separator delimiters ("!" in our examples) are not needed after the last field with a value, but can exist if so desired.

";A!B!C!D!E:"
In this example, the value "A" is placed into UUI1, the value "B" is placed into UUI2, the value "C" is placed into UUI3, the value "D" is placed into UUI4, and the value "E" is placed into UUI5. While this would rarely ever be used, it shows all of the fields being filled with a simple value.

Reason Codes Enabled and Reason Code Labels

Name	Description
Wrapup Reason Codes	Determines whether to enable wrapup reason codes. There are 20 slots for wrapup reason codes in the XML file, and can be extended to include as many as needed. In case of Wrapup reason codes, the numbers are irrelevant, as the actual text string is saved to the call log. Wrapup Reason codes are a Salesforce construct. They are collected at the end of a call and stored in the call log. They are only triggered when the caller ends the call in the Wrapup state.
Logout Reason Codes	Determines whether to enable logout reason codes. There are 9 slots for logout reason codes in the XML file, and that is the maximum number that can be provided. The text string is for the user's benefit, as only the index number is actually sent to the Communication Manager and saved.

Name	Description
	Logout Reason codes are used by the Avaya Communication Manager. Salesforce application does not use these values.
Not Ready Reason Codes	Determines whether to enable not ready reason codes. The option explicitly lists all the available not ready (AUX) reason codes. There are 20 slots for not ready reason codes in the XML file, and can be extended to include up to 99 slots. The text string is for the user's benefit, as only the index number is actually sent to the Communication Manager and saved. If a given index must be skipped, then place the value of two dash (--) symbols for that reason code. Not Ready Reason codes are used by the Avaya Communication Manager. Salesforce application does not use these values.

CTI Engine Configuration

Name	Description
Primary Server Name	The primary Server name on which the CTI Engine is running. This value must be the fully qualified domain name (FQDN) of the server.
Standby Server Name	The secondary CTI Engine server. This value is the domain name (FQDN) of the server. If there is no secondary CTI Engine, then this field must be left blank.
Server Port	The server port on which CTI Engine is running. If there is a standby server, it is assumed both CTI Engines are using the same port number. This value must match what is set on the Open CTI Server for the CTI Engine port. The default value is 8090.
Logging Port	The port number for the Client Logger. This allows the client-side logs to be logged by the Client Logger. If there is a standby server, it is assumed both Client Loggers are using the same port number. This value must match what is set on the Open CTI Server for the Logging port. The default value is 9090.

Name	Description
Connection Retry Interval in Seconds	The timeout value used to maintain the connection. The default value of 5 should not be changed.
Agent Events	Indicates whether the Open CTI Adapter must use the agent events sent by the Communication Manager. The options are: • `Y`: The agent events are received. The default value is `Y`. • `N`: The agent events are not received. A non-timed polling mechanism must be used to maintain the agent states.
ACD Timeout	A field to set the ACD timeout value. This option only used if Agent Events is set to `N`. If no agent states are being received, then this timing value will be used after a call has ended to make an additional agent state query. The value is in seconds, and should be synchronized with the setting for Timed ACW in Communication Manager.

Avaya Remote Configuration

Name	Description
Server IP Address	The FQDN or IP address of the server hosting Avaya Remote Agent.
Port	The port number for Avaya Remote Agent. The value must match what is set in the Avaya Remote Agent configuration. The default value is 8445.
Login External	The external phone number. This specifies where all of the user's calls will end up as a result of Telecommute.
Heartbeat Interval in seconds	Reconnection interval in seconds. The default is 20.
Configuration Realm	Indicates the configuration realm to be taken from Avaya Remote Agent Server. This value must match with what is configured on Avaya Remote Agent

Softphone Layout

Softphone Layout is used to determine how information is displayed within a softphone.

Procedure

1. Navigate to **App Setup > Call Center > Softphone Layouts**.
   The system displays a list of all Softphone Layouts. Initially there will be only a single one. Use the **New** button to create new softphone layouts. If there are multiple softphone layouts, use the **Softphone Layout Assignment** button to assign which groups of users use which softphone layout.
2. To see the settings for a softphone layout, click the **Edit** link.
   The system displays the settings for the selected softphone layout.

Softphone Layout Edit screen field descriptions

Name	Description
Select Call Type	The **Select Call Type** drop-down list in the black bar determines the type of the call. The settings vary based on call type selected. The options are: • **Inbound**: The options are the most varied and are presented in to main sections. The sections are **Softphone Layout** and **CTI 2.0 or Higher Settings**. • **Outbound** and **Internal** calls: For Outbound and Internal calls, there is no **CTI 2.0 or Higher Settings**.
Softphone Layout	The **Softphone Layout** section determines the options shown automatically in the softphone display. The options are: • **Display these call-related fields**: This option determines the call data elements that are always shown. By default, the system shows **Caller ID** and **Dialed Number**. There are two other options available: **Queue** and **Segment**. The Open CTI Adapter does not make use of **Segment**, but **Queue** can be selected and used if desired. • **Display these Salesforce.com objects**: This option determines which objects are searched to find a match. Only the mentioned collection of objects is searched when searching with ANI. So, for example, if the set of Objects defined are just **Contact** and **Lead**, then **Account** cannot be matched. The objects in the list may be custom objects, too. In the case of UUI,

Name	Description
	any objects can be searched, as the UUI setting will define the object required. • Underneath this is the darker gray box where you can define the elements of a matched object. This list can be expanded as desired, but having too many elements can affect readability in the softphone.
CTI 2.0 or Higher Settings	The CTI 2.0 or Higher Settings determines the search results. The options are: **Screen Pop Settings**: • **Screen pops open with**: This can be set to either **Existing browser window** or **New browser window or tab**. The default option is **Existing browser window**. This setting is ignored when using the Salesforce Console. • **No matching records**: This option determines what happens when a screen pop attempt fails to find any records. The possible values are **Don't pop any screen**, **Pop to new**, and **Pop to Visualforce page**. The default and recommended setting for simple screen pops is **Don't pop any screen**. • **Single-matching record**: This option determines what happens if a unique match is found. The possible values are **Don't pop any screen**, **Pop detail page**, and **Pop to Visualforce page**. The default and recommended setting for simple screen pops is **Pop detail page**. • **Multiple-matching records**: This option determines what happens if multiple records are returned by the search attempt. The possible values are **Don't pop any screen**, **Pop to search page**, and **Pop to Visualforce page**. The default setting is **Don't pop any screen**, but the recommended setting for simple screen pops is **Pop to search page**. • In all three scenarios, for advanced search capabilities, select **Pop to Visualforce page** for all three and have those all pop to the same Visualforce page. This provides the maximum flexibility and ease in providing screen pops when showing a simple detail page. • Also, when using both UUI and Visualforce page screen pops, it is not necessary to use the parsing

Name	Description
	capabilities set up in the call center definition. Instead UUI is passed through the CTI Adapter and provided to the Visualforce page. This allows the Visualforce page to parse the UUI data, providing more flexibility than the standard five elements.

Directory Numbers

This section is used to fill out the directory provided in the CTI Adapter.

Procedure

1. Navigate to **App Settings > Call Center > Directory Numbers**.
   Each entry is simplistic with just a simple name and phone number. The user interface provides only the ability to provide one entry at a time. To perform a bulk addition, other Salesforce tools must be used. When selected, the current list of directory numbers is shown.
2. To add new entries, click **New**.

Directory Numbers

- When adding the directory entries, all that is required is the Name and Phone entry. If the **Call Center** field is left blank, the directory entry will apply to all call center definitions. If you wish to restrict a directory entry to a single call center definition, then it can be selected using the search icon.
- The **Directory Numbers** section will only allow directory entries to be added one at a time. To do a bulk addition, you must use other Salesforce tools.

Add a User to a Call Center Definition

Procedure

1. To add the current user, click **Manage Call Center Users** at the bottom of the call center settings page.
   The system displays the following page.

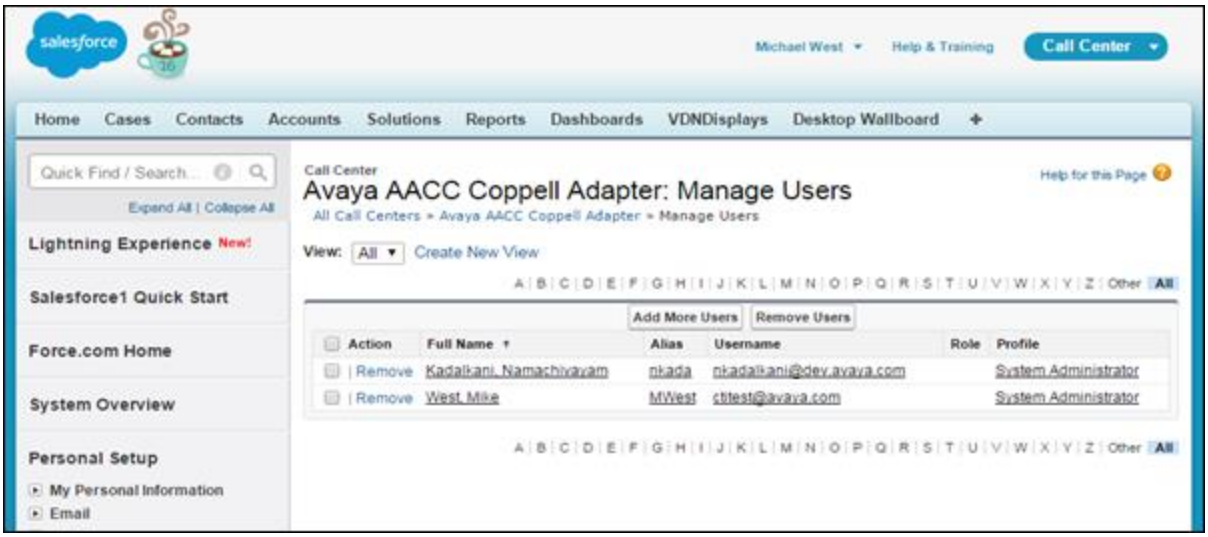


Figure 6: Manage Users page

1. Click **Add More Users**.
   The system displays the search page.

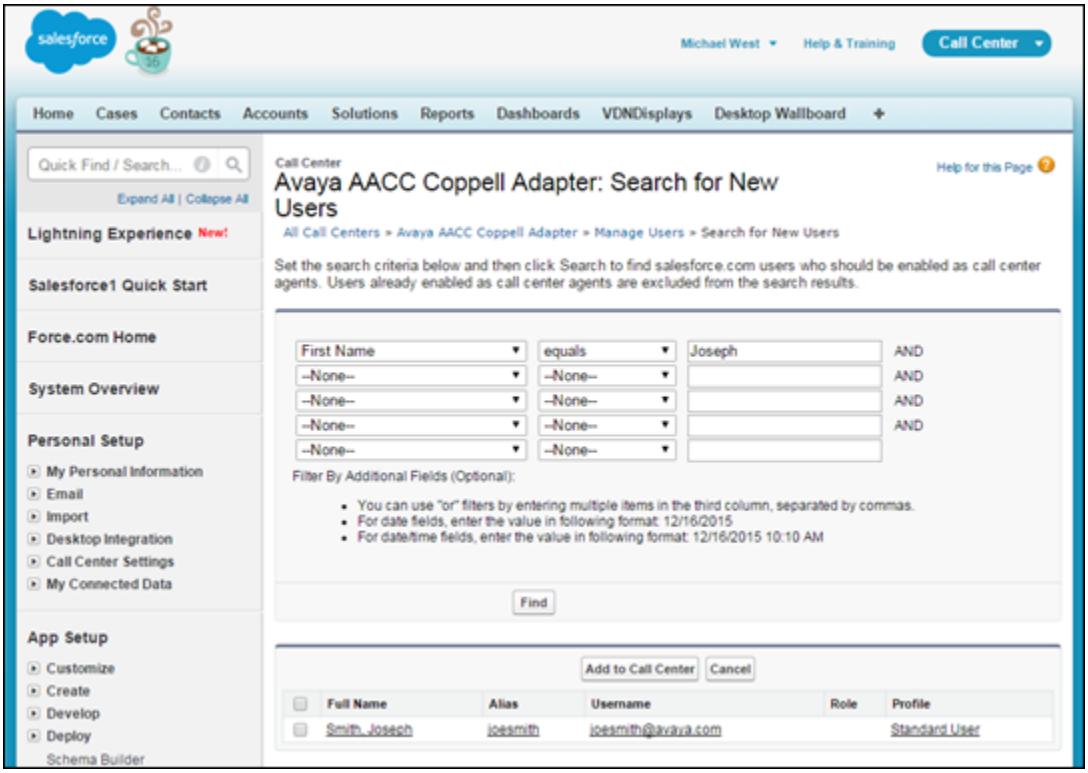


Figure 7: Search page

2. Enter a string in the **Search** field and click **Search**.
   The system displays the salesforce.com users who can be enabled as call center agents. Users already enabled as a call center agents are excluded in this search result.
3. Select the check boxes next to the users you want to enable as salesforce users.

4. Click **Add to Call Center**.
   The system adds the selected user or users to the list of users assigned to the respective call center definition.
5. (Optional) Add a user to a call center directly through the user definition screens.

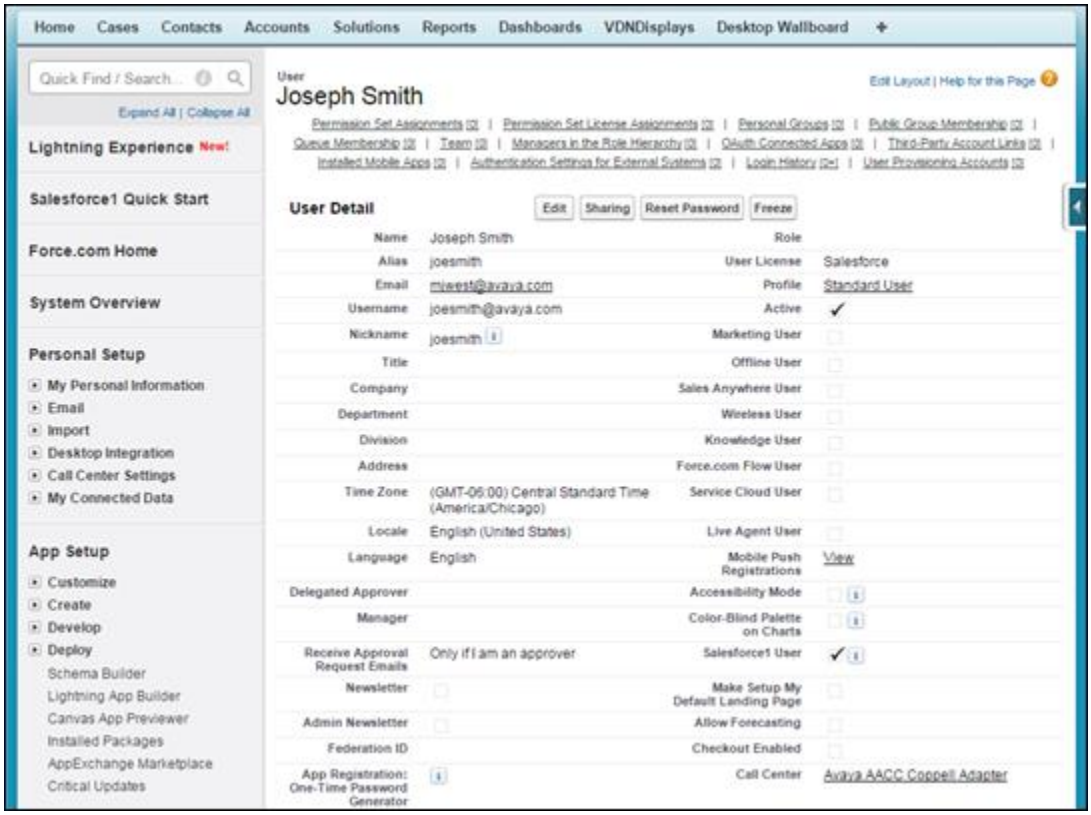


Figure 8: User definition screen

Appendix A: Support Files

If issues with the SFDC Softphone are found, then when reporting these issues to Avaya Application Support, please always provide the log files that cover the time period of the incidence. Log files are stored at the separate locations:

- `/opt/avaya/tomcat8/logs`: This directory contains the log files associated with Tomcat.
- `Browser Console`: This is a debugging display that is part of the user's browser.

The Tomcat logs are used by Tomcat for its own activities and the activities of the Administrative application. The primary log file to check is `catalina.out`.

The browser console allows for real-time observation of the activity of the softphone application in the user's browser. In addition, the same entries are also stored in the user logs managed by the Client Logger. If doing real-time debugging, the contents of the browser console can be captured and sent to Avaya Application Support. If it is past activity that needs to be examined, then the user logs from the Client Logger must be used.

Appendix B: Failover

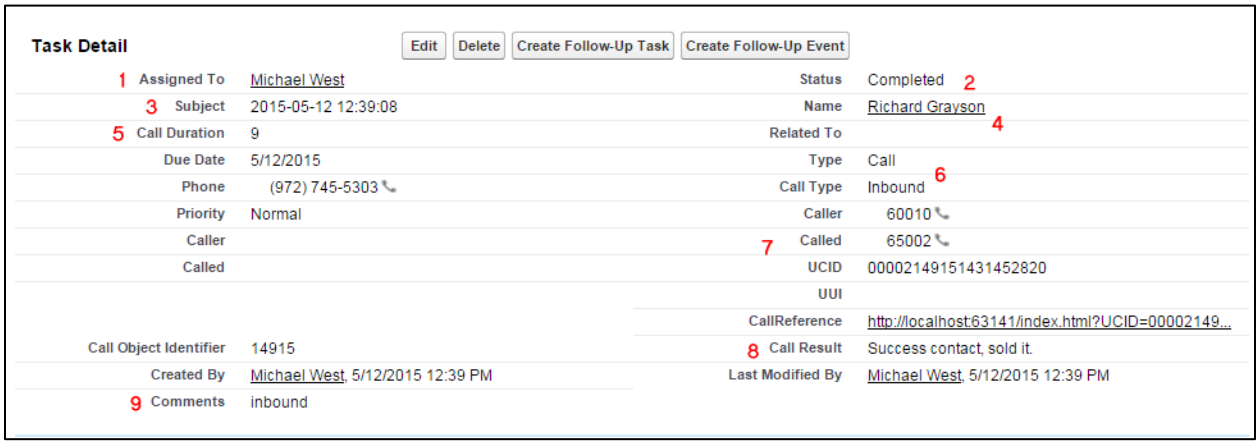
Using an extra Open CTI Server allows for failover for the Open CTI Server. The call center definition in Salesforce allows for the definition of a primary Open CTI Server and a secondary Open CTI Server. The primary server will be used as long as it is available, and the secondary server will only be used when the primary is not available.

If multiple Open CTI Servers are being used, it is possible to use a “plus one” configuration, where each of the Open CTI Servers makes use of the same secondary Open CTI Server. Such a configuration assumes that only one primary Open CTI Server is likely to fail, but it means that each primary Open CTI Server does not require its own dedicated secondary server.

An alternative method of providing redundancy for the Open CTI Server is to make use of an HTTP load balancer. When configuring an HTTP load balancer, there are a couple important considerations. The first is that session affinity must be enabled. Once a user makes a connection, the load balancer must ensure that the user’s session is maintained over a single Open CTI Server. The second is that the HTTP load balancer must also be able to handle web sockets in addition to just HTTPS. The connections from the user’s browser to the CTI Engine and to the Client Logger both use web sockets, and that protocol must be supported.

Appendix C: Call Log Fields

The call log is used to record a specific call into the Salesforce system. It contains several components, as described below:



The above is the detail view of a typical Call Log. The primary elements are:

1. The **Call Log** is always assigned to the agent who took the call.
2. The **Call Log** is always saved with a status as **Completed**.
3. The **Subject** field is the date and time of the call. It is always done in this format.
4. The **Name** and **Related To** fields will relate the call log with the object that was viewed in relation to this call. If the object is a **Contact, Person Accout,** or **Lead**, it is put in **Name**. If it is anything else except a Task, Event, or User, then it is put in **Related To**.
5. The **Call Duration** is saved in seconds in the **Call Log**.
6. The **Type** is always set to **Call**. The **Call Type** is **Inbound**, **Outbound**, or **Internal**.
7. The fields **Caller**, **Called**, **UCID**, **UUI**, and **CallReference** are Activity Custom fields that are unique to the Avaya Open CTI Adapter. The fields contain ANI, DNIS, Universal Call ID, User-to-User Information, and a URL reference respectively by using the UCID as an input parameter. The URL is configured in the call center definition and will generally point to a Visualforce page that will launch into whatever system can use the UCID as a key
8. If wrap-up reason codes are used, the selected code is saved in **Call Result**.
9. The in-softphone comments are saved in the **Comments** field.

Note

All the fields except represented by #7 are standard Task/Activity fields already present in vanilla Salesforce. The custom fields represented by #7 are added by the APEX Package installed with the Open CTI Adapter.

Appendix D: Call Center Definition

The XML file used to create the necessary call center definition in Salesforce.com is provided within the installation zip file and named `AvayaCTIAdapter.xml`.

Resources

The following table lists the documents related to AES Open CTI Adapter. Download the documents from the Avaya Support website at http://support.avaya.com.

Title	Use this resource to:	Audience
Overview		
Avaya Aura® Communication Manager Overview and Specification guide	Understand the key features, the functionalities, and the system requirements of the Avaya Aura® Communication Manager application and the components.	IT Management and support personnel
Avaya Aura® Contact Center Overview and Specification guide	Understand the key features, the functionalities, and the system requirements of the Avaya Aura® Contact Center application and the components.	IT Management and support personnel
Basic Network Feature Fundamentals Avaya Communication Server 1000	Understand the networking features and packages that can be configured to meet your specific requirements.	System administrator and support personnel
Installing and Configuration the AES CTI Engine	Understand how to install and configure the CTI Engine package used by the AES Open CTI Adapter. It is assumed that the CTI Engine package has already been installed prior to using this document.	Anyone installing or configuring AES Open CTI Adapter

Glossary

ACD

Automatic Call Distribution. The cored logic used in a call center. The Avaya ACD used in conjunction with the Open CTI Adapter is CC Elite, which is provided in the Avaya Communication Manager.

AES

Application Enablement Services. The appliance used to provide a CTI gateway into the Avaya Communication Manager.

CM

Communication Manager. The Avaya telephony switch used by the Open CTI Adapter.

CTI

Computer Telephony Integration. A technology that integrates the telephone with the computer for managing telephone calls.

Softphone

Software used to make calls over the Internet by using a computer. A softphone functions like a traditional telephone, but without the dedicated hardware, such as telephone cables and phone sets.

Salesforce

An application that manages customer relationships, integrates with other systems, and allows user to build own applications.

WebDAV

Web Distributed Authoring and Versioning. An extension of the Hypertext Transfer Protocol (HTTP) using which clients can perform remote Web content authoring operations.

CGI

Common Gateway Interface. Using CGIs, web servers can interface with executable programs installed on a server that generates web pages dynamically.

ANI

Automatic Number Identification. A display of the calling number so that agents can access information about the caller.

DNIS

Directory Number Identification Service. For internal numbers, it is the number dialed by the caller to reach the destination. For external numbers, it is usually the number in the Communication Manager that the call entered through.

UCID

Universal Call ID. A unique number that identifies a specific call across all time within a given environment.

UUI

User-to-User Information. A small “hole” in the Avaya call record that CTI applications can write to and read from. When a call is pre-qualified before being sent to an agent, a CTI application can write key information about that call or caller into the UUI so that the Open CTI Adapter can access it when the call reaches the agent. This provides for more advanced kinds of screen pop.