

# Pega Call

## **OPERATIONS AND CONFIGURATION GUIDE**

CTI Link with Avaya Aura Contact Center (AACC)

7.4



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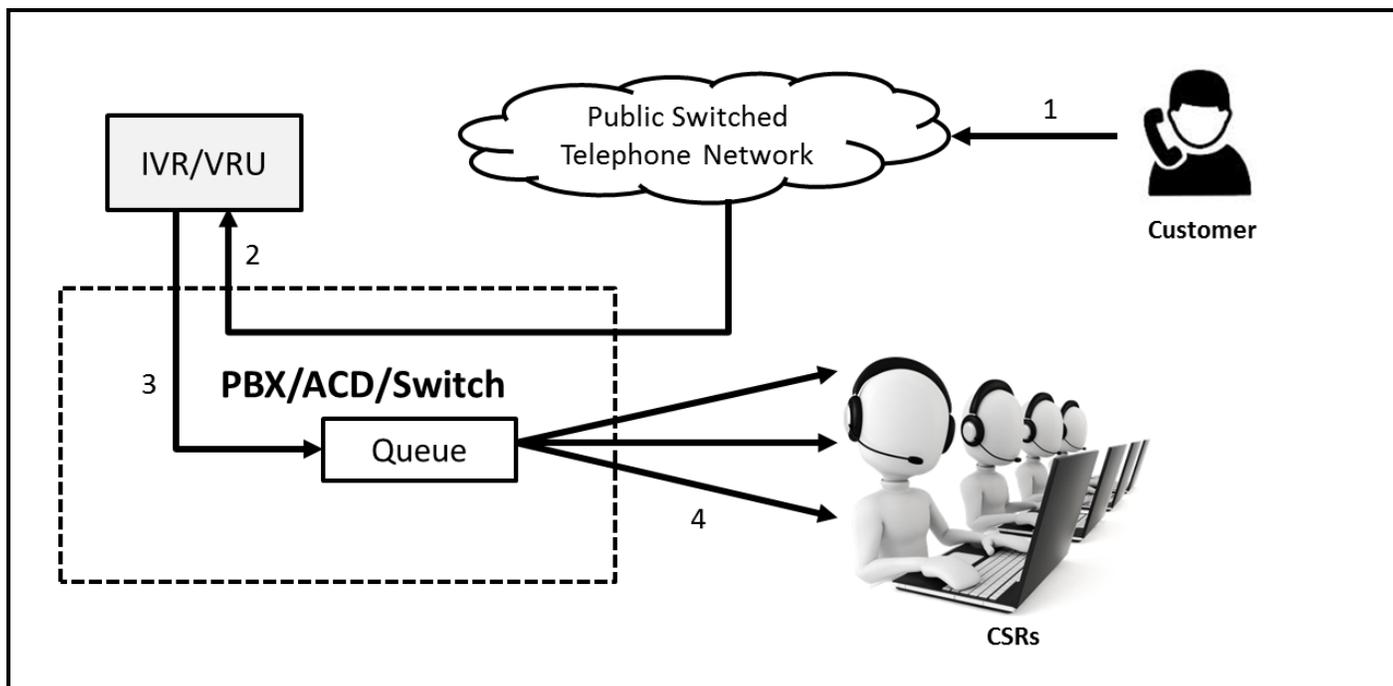
# Pega Call Introduction

Pega Call™ for Pega Platform provides Computer Telephony Integration (CTI) to improve contact center operations. Pega Call enhances telephone-based customer interactions such as service inquiries, telemarketing, sales, and collection efforts by integrating Process Commander-based business process management capabilities with telephony infrastructures, increasing agent productivity and enhancing customer satisfaction.

This chapter describes the capabilities and high-level architecture of Pega Call.

## Traditional Contact Center Environment

In a traditional contact center environment, calls come into the contact center and are connected to an Interactive Voice Response (IVR) system (sometimes also called VRU). The IVR plays voice menus that allow customers to choose from several selections and obtain information related to their account. Callers can subsequently speak to a Customer Service Representative (CSR) for further service, as in the diagram below



The numbers on the diagram correspond to the steps outlined below. These steps give a high-level overview of a call as it moves through a traditional contact center environment:

1. A customer calls a contact center. Mr. Brown is a high-balance account holder at the Company. He calls the company's customer service center because he wants to make an adjustment to his account.
2. When the call arrives in the IVR, Mr. Brown is prompted to enter his account number. He enters his account number, account verification information, and proceeds to move through the IVR voice menus. He then selects the option to make an adjustment to his account. Mr. Brown is unsure about updating his account from the IVR and wants to speak with someone to help him make the adjustment.
3. Mr. Brown opts to speak with a Customer Service Representative. The call is transferred from the IVR to the contact center telephone switch (often referred to as a PBX or ACD) where it is routed to queue for an available representative.
4. A CSR becomes available and answers the call. The CSR asks Mr. Brown for his account number again before servicing can begin. Mr. Brown must repeat the account information he has already entered into the IVR, including his account number and personal identification code (PIN number) because the information is not available to the CSR.

From this overview, it is apparent that the traditional contact center is not servicing the customer as effectively and efficiently as possible. When a customer has to repeat information to a CSR that he already entered into a system, it wastes both the customer and the CSR's time. The result is an unsatisfactory service experience for the customer and increased costs to the company.

Inefficiencies of traditional contact centers can cost a company valuable time, money, and opportunities for building customer relationships.

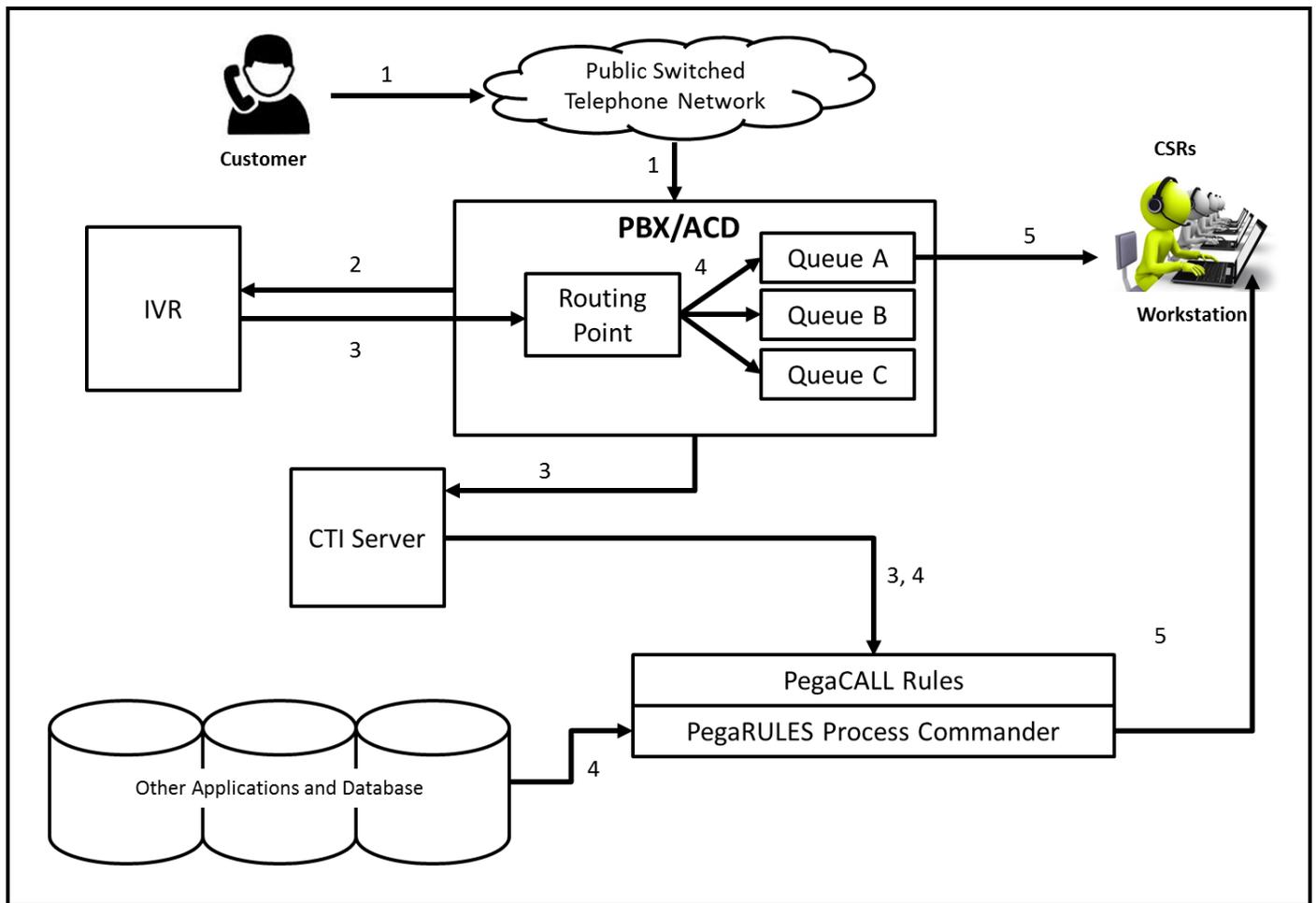
# Contact center environment with Pega Call

Pega Call uses computer telephony integration (CTI) to improve the efficiency of a contact center and helps improve the customer's experience. CTI typically involves connecting a computer system to the contact center's IVR and a telephone switch.

The CTI system passes information about calls it is servicing to the Pega Platform application so this information is available when the caller decides to speak to a Customer Service Representative. This information typically includes the caller's account number as entered into the touch-tone phone and other information about the IVR interaction. The call is queued at the telephone switch (PBX or ACD) and is connected to the next available representative. Pega Call uses CTI to receive information about the call. When the call reaches a CSR, the CSR's Pega Platform desktop application can use the information provided at the IVR to look up and display the caller's information, enabling the CSR to serve the customer quicker and better.

While serving the customer, the CSR can use Pega Call to control the telephone from the Pega Platform application without the need to switch focus to the phone. For instance, a CSR can place a call on hold or transfer a call from the desktop application without having to switch focus to the telephone.

The following diagram shows an overview of the Pega Call contact center environment.



The numbers on the diagram correspond to the steps outlined below. These steps give a high-level overview of a call as it moves through the Pega Call contact center environment:

1. A customer, Mr. Brown, calls a Pega Call enabled contact center. Mr. Brown is a high-balance account holder at The Company. He calls The Company’s customer service center because he wants to make an adjustment on his account.
2. When the call arrives in the IVR, Mr. Brown is prompted to enter his account number. He enters his account number, account verification information, and proceeds through the IVR voice menus. He then selects the option to make an adjustment on his account. Mr. Brown is not sure how to update his account from the IVR and wants to speak with someone to help him make the adjustment.
3. Mr. Brown opts to speak with a CSR. The information gathered in the IVR, including Mr. Brown’s account number, is now passed to Pega Call, through the CTI Server.

4. As soon as a CSR is available, the call is connected to the CSR and key information pertaining to the customer is displayed on the CSR's workstation. This is known as a screen pop. The CSR immediately knows that Mr. Brown is on the line. There is no need to ask Mr. Brown to repeat any account information because it is displayed on the CSR's screen. In addition, the CSR is able to see other information, such as what Mr. Brown was attempting to do within the IVR, and can proceed to assist him.

The screen-pop information appears in a concise window or popup area that highlights the key information required to begin servicing the call.

As the CSR proceeds with the call by clicking on a button from the screen-pop window, additional account information is available at the CSR's workstation.

**Note:** The screen-pop window does not replace the contents of the application window and does not delete work in progress. The context of the business process that the CSR is executing is preserved until the CSR takes an action from the screen-pop window and calls an activity.

With a Pega Call contact center that includes the customer service application provided by Pegasystems, or a custom-developed customer service application built on Pega 7, CSRs are armed with the functions they need to service a call more efficiently and effectively than they could in a traditional contact center.

All data is presented to the CSR in an easy-to-view format, making data immediately available to answer customer questions and complete service interactions. Business rules guide CSRs throughout the interaction to ensure a consistently high level of service.

# Pega Call Features

The sections below describe the main features of Pega Call at a high level. These are described in detailed in subsequent chapters.

## *Adaptive Screen Pop*

The Pega Call screen pop functions coordinate the arrival of an incoming call with the display of caller information at the CSR workstation. This capability eliminates the need to have the CSR collect the caller number or other identification information to retrieve customer information manually.

The type of screen-pop window and the information it displays is determined by evaluating the information gathered about the caller. Examples of this include what the person requested at the IVR, language preference (so that bilingual operators can greet the caller in their native language), and qualification for promotion and/or cross-selling opportunities.

The screen-pop window displays key information about the caller and includes buttons and messages that can lead the CSR into specific contact center business processes. All information about the call is then passed to the business processes so servicing can begin.

## Examples

- A caller provides an account number to the IVR to check an account balance, but fails to provide the PIN number. After that person opts out to speak to a CSR, a customized screen pop can be presented that prompts the CSR to verify the caller by requesting security information.
- A caller enters information in the IVR and attempts to transfer money between two accounts. The caller has difficulty with the IVR and opts out to speak with a CSR. A customized screen-pop window can display the account information collected in the IVR as well as buttons that lead the CSR to the Balance Transfer window.

## *Data Prefetch*

Data prefetch allows the system to gather customer information before the call reaches a CSR. The Pega Platform application includes interfacing capabilities that can gather data from external systems based on information collected in the IVR.

As a caller moves through the IVR menus, information such as the account number is collected. This information can be used to look up or pre-fetch additional information about the caller before the

call reaches a CSR. Information collected in this manner may be used to make call routing decisions, or may be provided to the Pega Platform application as the call reaches a CSR.

## ***Desktop Telephony***

Pega Call enables CSRs to control their phones from their desktops, so they don't need to switch focus to the phone. For example, a CSR may transfer a call to another queue or place a call on hold while he consults another CSR, using buttons in the desktop application. Telephony functions include hold, retrieve, consult, conference, transfer and hang-up. These functions can be invoked using desktop buttons or as part of application business processes.

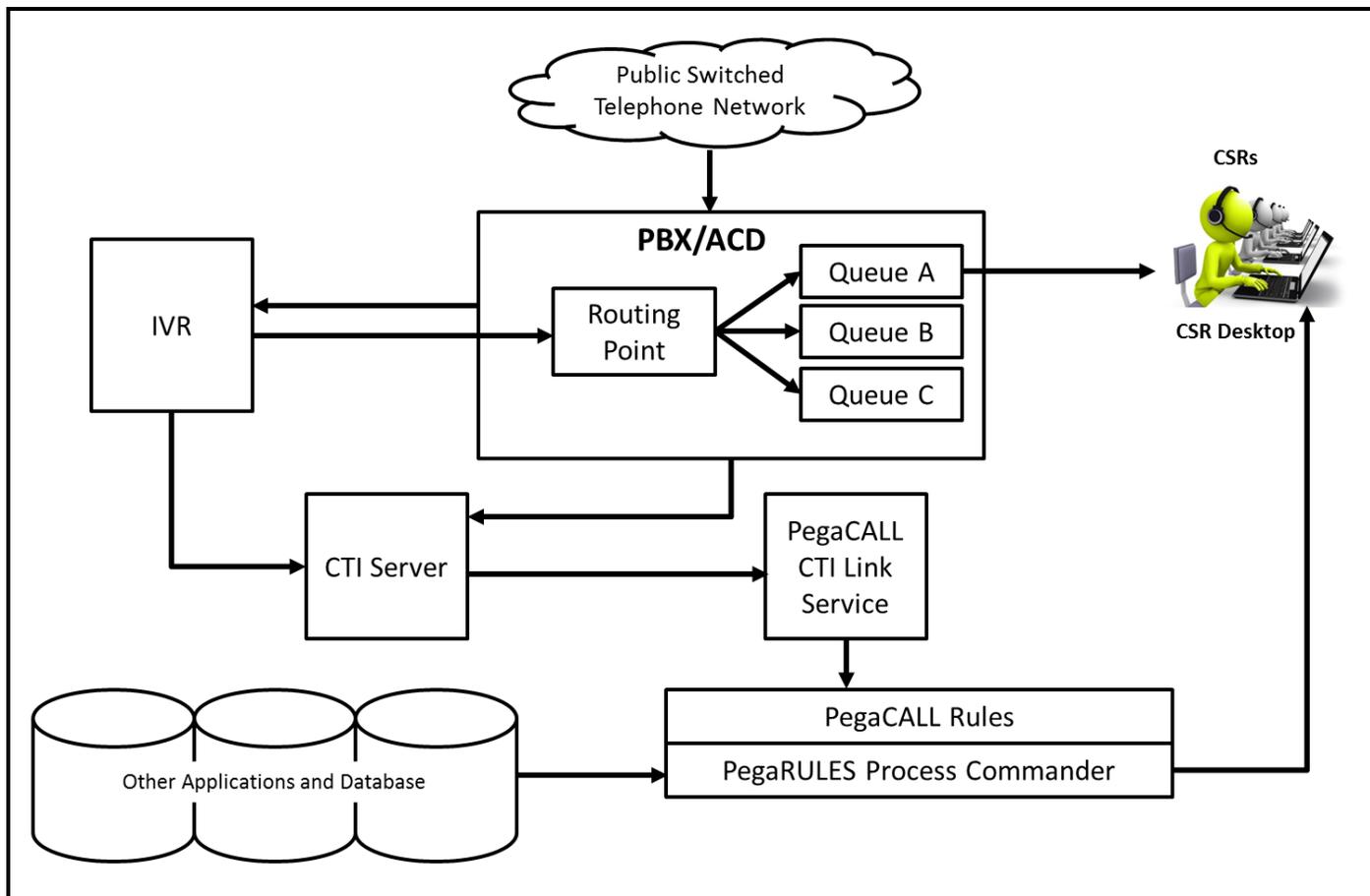
## ***Agent State Management***

CSRs log into ACDs as agents. While logged in, they need to indicate to the ACD if they are available to answer calls from customers.

For example, a CSR may need to change state to Not-Ready when they are taking a break for lunch. Pega Call enables CSRs to do this from their Pega Platform desktop, rather than having to switch focus to their phone.

# High-level Architecture

To support a broad range of functions, Pega Call has an open architectural design that brings together the business process management capabilities of Pega Platform and the call treatment and routing capabilities of call center equipment. The diagram below illustrates the Pega Call architectural design used to integrate with a contact center’s telephony infrastructure.



# Supported CTI Platforms

Pega Call integrates with a variety of telephony equipment (including IVRs, ACDs and PBXs) through one or more CTI servers. The following CTI platforms are supported:

- Avaya Aura Contact Center (AACC) for use with Avaya Aura

For more information on the supported version, see *Pega Call Release Notes* available on PDN.

# Pega Call Components

The following section provides an overview of the primary components of the Pega Call solution. Additional details and information on each of these components can be found in subsequent chapters of this document.

Pega Call consists of two main components – Pega Call CTI Link and a set of Pega Call rules for Pega Platform. Depending on the specific CTI platform and configuration used, these components may interconnect using web services or Java.

## *Pega Call CTI Link*

The Pega Call CTI Link interfaces between Pega Platform and the CTI platform. The CTI Link translates telephony events from the CTI platform into messages that are sent to Pega Call rules for processing. In addition, the CTI Link receives telephony requests from Pega Call rules and translates the requests into specific telephony requests for processing by the CTI platform.

For some CTI platforms, the CTI Link also monitors the routing point within the PBX/ACD and provides for enhanced call routing decisions.

The CTI Link for AACC uses Simple Object Access Protocol (SOAP) to integrate with the Communications Control Toolkit (CCT) server.

Pega Call also provides a remote deployment option for the CTI Link Engine, allowing for CTI Link capabilities from one Pega Platform server to be used from another Pega 7 Platform server. For example, a Pega Platform server executing CTI capability may be located in geographic proximity to the CTI platform, while Pega Platform servers which CSRs log into may be located centrally in a data center.

## *Pega Call rules*

Pega Call includes several rulesets that are loaded onto your Pega Platform server. These rules process events from Pega Call CTI Link (example, provide a screen pop when notified of an incoming call to an agent) and pass CTI requests to CTI Link (for example, answer a call).

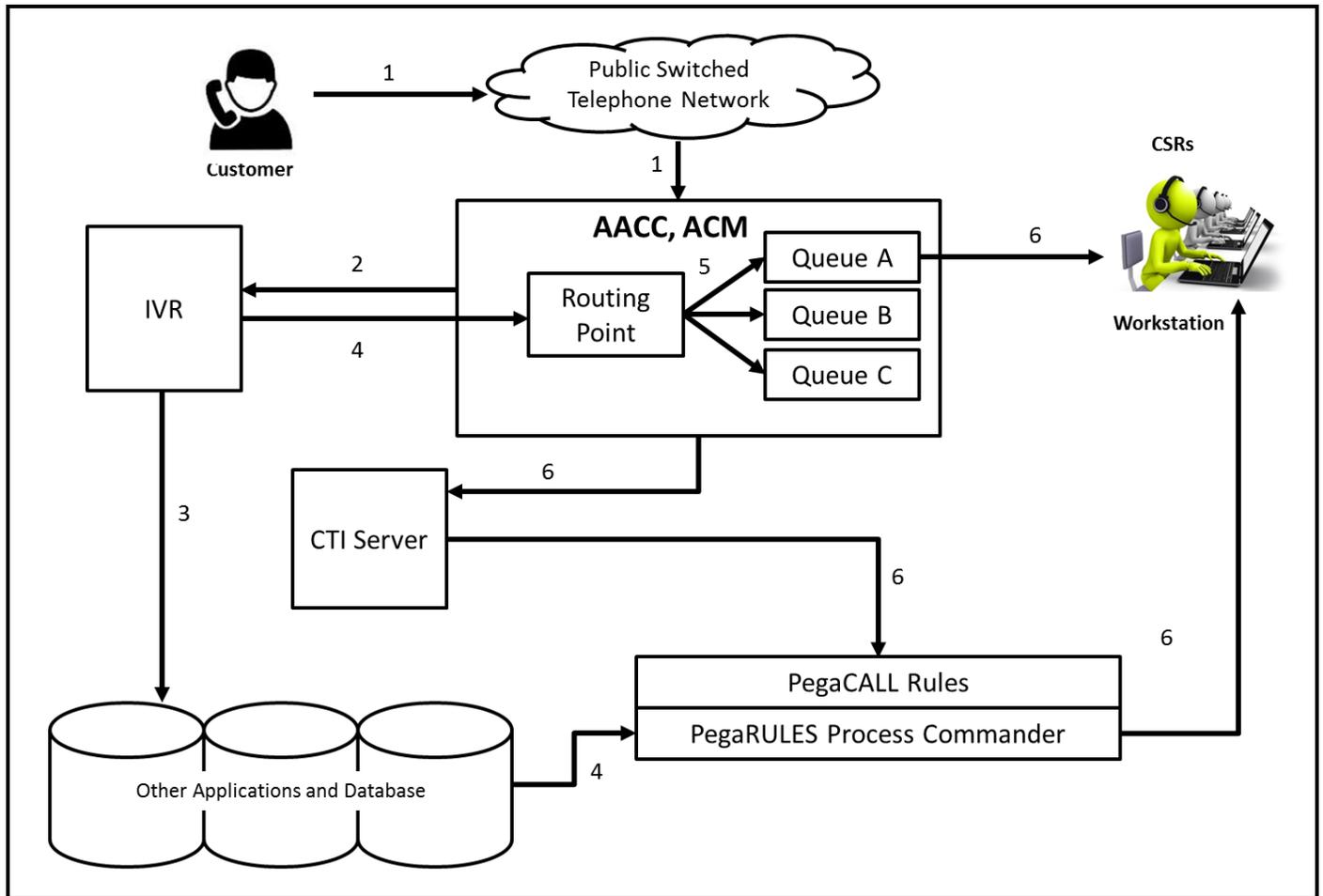
These ruleset also provide user interfaces for screen pop, telephony control and agent state management on the customer service desktop. Details on Pega Call rules are provided in subsequent chapters.

## *The Pega Call Desktop*

Pega Call provides various UI elements that may be used as part of a Pega application. These include UI elements to manage agent state and to provide for call control (hold, retrieve call, make call and transfer ). When the telephony state changes, the Pega Call desktop receives events from the server. The events can then trigger changes on the desktop, including UI changes.

# Call Flow for AACC Integration

The figure below presents a graphical overview of a call flow in a typical AACC environment:



## Call flow overview

For this scenario, a call moves through the system as shown in the diagram above. The relevant steps in the call flow are numbered and correspond to the steps described below. Some steps include events that occur simultaneously in different parts of the system. In the diagram, the steps for these events have the same number. For example, step 6 appears several times in the diagram. The call flow consists of the following steps:

1. The call comes into the Avaya Communications Manager (ACM) PBX from the PSTN.
2. As soon as the call arrives at the PBX, it is routed to the IVR (also called a VRU).

3. Caller identification, such as account number, is gathered in the IVR. The caller proceeds with automated IVR inquiries, such as account balance. This information is typically obtained from various back-end systems or databases.
4. When the caller chooses to speak with a CSR, the IVR passes information about the call in progress to the Avaya ACM PBX and/or AACC. This is commonly known as attaching data to the call. Typically, the information sent by the IVR includes:
  - Caller identification such as Account Number.
  - Indication of what the caller was doing when he “opted out” (for example, a Balance Inquiry). This is commonly referred to as “last action.”
  - Verify flag indicating that the caller successfully provided security information, such as a PIN number, to the IVR
  - Any other information that the IVR has to use in a call routing decision. For example, if the IVR menu includes an alternate language selection, it would include the customer’s choice of language.
5. The call is routed to a queue, where it waits for an available Customer Service Representative (CSR).
6. When a CSR becomes available, the PBX/ACD connects the call to the CSR. At the same time, the CCT server sends a message to the Pega Call CTI Link indicating that the call was connected. This message is forwarded for processing to Pega Call rules within Pega Platform. The message includes information identifying the call and the CSR who received the call.

Pega Call maps the CSR’s identity to the workstation where the CSR is logged in and sends a message to that workstation.

7. At the desktop, the CSR is logged into the Pega Call. When the appropriate message is received, the desktop works with Pega Platform to generate and display a screenpop with information about the call. The screen pop is displayed at the workstation as a separate window alerting the CSR to the new call.

Clicking appropriate buttons in the screen-pop window allows the CSR to begin servicing the call.

# Implementing Pega Call

This topic describes the architecture and configuration for a Pega Call implementation with Avaya Aura Contact Center (AACC). The topic includes descriptions of the components used in the implementation and their connectivity.

This implementation of Pega Call leverages AACC's Communications Control Toolkit (CCT) to provide synchronized telephony control. It is hosted within a Pega 7 Platform node and communicates with the CCT server using the Simple Object Access Protocol (SOAP). It provides screen pop, agent state management and call control capabilities to Pega 7 Platform applications.

# System requirements

This section describes the components required for a Pega Call installation.

## *Requirements for Pega Call CTI Link*

For integration with AACC, the CTI Link uses Simple Object Access Protocol (SOAP) to communicate with the CCT server. HTTP connections will be made in both directions, as needed, between the CCT server and the Pega Platform node.

For information on general hardware and software requirements for the Pega Platform application, see the Installation guide for the specific platform that you are using at your site.

For more information about installing the Pega Call components, see Pega Call Installation and Upgrade Guide.

## *Other required components*

In addition to the standard component requirements for the Pega Platform application, a Pega Call implementation with AACC requires Avaya Aura Contact Center (AACC) version 6.3, with a CCT server that supports integration over SOAP. Pega Call supports Avaya Aura Contact Center (AACC) in configurations where it is used with Avaya Aura. Configurations using AACC with Communication Server 1000 (CS1000) are not supported.

## *Web Browser Support*

Pega Call supports Internet Explorer, Firefox and Chrome web browsers. Refer to the Pega Platform guide for details on versions supported.

# Initial configuration

Pega Call initial configuration process is summarized in the following steps:

- [Importing the java libraries required to connect to your CTI platform](#)
- [Enable logging for CTI engine](#)
- [Purge stale call objects](#)

## ***Enable logging for CTI engine***

Before you proceed with configuring Pega Call, enable logging for the CTI Link Engine to help troubleshoot problems. For more information, refer to the appendix topics of the *Pega Call Configuration and Operations Guide for your CTI platform* available on PDN.

## ***Purge stale call objects***

In most environments, call objects should be purged from the database periodically. Pega Call provides an Agents rule to complete this task. Configure call object purging on your system.

For more information, see the appendix topics of the *Pega Call Configuration and Operations Guide for your CTI platform* available on PDN.

# Pega Call Configuration Wizard

The Pega Call Configuration Wizard enables you to create the basic configuration for Pega Call. After you configure the basic settings, you can make more advanced configuration changes manually.

## Prerequisite steps

Complete these steps before running the Pega Call Configuration Wizard:

1. Contact the person who manages your CTI environment and ensure that it is configured to be able to provide CTI services to Pega Call. Obtain information required for Pega Call to connect. For more information, see the *Defining Pega Call configuration* section under *Define behaviour for additional components* topic in the latest *Pega Customer Service implementation guide* available on PDN. Use the Implementation Planning workbook available on [PDN](#) to record your requirements.
2. Create your application (For example, using the Application Wizard or Application express). The application must include Pega Call rulesets (Pega-CTI and Pega-ChannelServices) and an open application ruleset in which the Pega Call wizard creates additional rules.
3. Work with your telephony and CTI team to configure and identify an extension and agent login credentials to use as part of this step. Pega Call monitors a call coming to a CSR's phone extension, retrieves associated data, and allows the user to map call-associated data to Pega properties for use with your application.

## Using the wizard

You can use the Pega Call Configuration Wizard to create a new configuration or to modify an existing configuration. When you are updating an existing configuration, the wizard detects and updates existing settings in the specified ruleset.

With the Pega Call configuration wizard, you can:

1. Configure and test connectivity to your CTI server.
2. Configure the Pega Call application ruleset.
3. Configure the telephone UI that the CSRs will use.

4. Detect and map the call data to the properties on the Pega clipboard.
5. Configure the desktop behaviour when a customer call arrives for the CSR.
6. Review and and save the complete configuration.

To use the wizard:

1. Log in to the Designer Studio as a user with access to your application to process CTI.
2. In Designer Studio, click **Channel Services > Pega Call > Administration and Configuration**.
3. Click the **Telephony Experience** tab.
4. In the **Configuration Wizard** section, review the instructions and click **Start Configuration Wizard** to launch the wizard.

Navigate through the wizard screens by using the **Back** and **Next** buttons at the bottom of the screen. You can close the tab any time during the session to exit the wizard.

## *Connect CTI*

This step helps you to configure and test the connectivity to your CTI server. Pega Call uses a **CTI Link** to configure connectivity and other parameters related to your CTI Server.

If you already have a CTI Link configured, select **I have already configured a CTI Link to use**. If you do not have a CTI Link configured, the wizard will guide you through this process. Choose option **Configure a new CTI link now**. For more information on how to connect from your telephony, see the Defining Pega Call configuration section under Define behaviour for additional components topic in the latest *Pega Customer Service implementation guide* available on PDN.

If you want to configure a new CTI link from the configuration wizard, perform the following steps:

1. Select the **Configure a new CTI link now** option, and then click **Next**.
2. Enter the following details
  - a. **Choose your CTI Server:** Select AACC .
  - b. **CTI Link Name:** The name you want to give to the CTI link that is configured.
  - c. **Short Description:** Short description of the configured CTI link.
3. Click **Next**.

4. Complete the following details:

- **CCT Server Host Name:** The host name or ip address of the AACC Communications Control Toolkit (CCT) Server.
- **Port:** The TCP port used to connect to the CTI server.
- **Domain Name:** The Windows domain for the AACC system. This domain will be used to authenticate CSRs when they log in.

5. Click **Next**.

6. In the **Configure Failover** step:

If you have a secondary CCT Server, you can configure a connection to it as part of CTI Link configuration. Pega Call attempts to connect to the secondary CCT Server server if it is unable to connect to the primary server.

- a. If you have a secondary CTI server configured to failover, select **Yes** under **Is your CTI Server Configured to fail over?**, and, enter the required details to connect to the secondary CTI server in the next step.
- b. If your CTI server is not configured to failover, select **No** under **Is your CTI Server Configured to fail over?**, and then click **Next**.

7. Based on your telephony type, select telephony switch that is listed.

8. Click **Next**. A confirmation message appears. If an error occurs, check your CTI link configuration from the CTI link configuration page.

9. Click **Next**.

If you have an existing CTI link to use, perform the following steps:

1. Select the **I have already configured a CTI Link to use** option, and then click **Next**.
2. Specify a CTI link to be used during the wizard process by selecting an existing link from the list.
3. Click **Next** to continue.

The specified CTI Link will be used for call testing in later wizard steps.

## *Application and ruleset*

You can configure your Pega Call application and ruleset from this step.

1. Select the application context that is used for processing CTI events.
2. Select the ruleset and version in which CTI configuration rules will be saved. The selected version must be unlocked and it must be made available in the user's access group. The Pega Call configuration wizard confirms the access group settings.
3. Click **Next** to continue.

## *Telephony controls*

You can configure how you want the CSR to control the calls and the agent state.

From the **Pega Call Configuration Wizard**, choose one of the following options to control the calls and agent state:

- Use Pega Desktop as a primary means to control calls
- Use another tool as the primary means to control telephony

### **Using Pega desktop as a primary means to control calls**

Select this option if the Pega desktop is the primary means by which CSRs control calls (for example hold and transfer). With this option, call and agent state management options are enabled, and the CSRs can manage calls and handle agent state (Available or Unavailable) from the Pega desktop.

### **Using another tool as a primary means to control telephony**

Select this option if you have another tool (hardware or software) to manage the calls. With this option selected, you can receive call notifications (for example screen pops) on Pega desktop. Optionally, the CSR can handle the agent state from Pega desktop.

Click **Next** and continue with the wizard steps on call and agent state management options.

## *Call data and screenpops*

The system attempts to connect to the telephony environment using the agent and extension information provided. Using a different phone, place a test call to the extension. The call should match the incoming customer calls in your production environment as closely as possible in order to make sure the same types of call data is attached as it will be attached on a real call.

Once the test call connection is successful, additional CTI data detected on the test call is displayed. The properties listed depend on the data attached to the test call by your telephony and CTI environment.

Select additional properties to appear on the call page, and map them to call page properties. If you specify new properties, the wizard adds them to the ruleset version you specified. If there are any properties that do not exist in the Call class, they are automatically created from the configuration wizard.

## Configure desktop behaviour when a call arrives

In this section you can configure the desktop behaviors when a call arrives by choosing from the following options:

### Display Screen Pop

If you want the CSR to be notified with a screen pop as part of the Pega desktop, select **Display Screen Pop** option and then click Next. A list of properties is displayed. For each property on the list displayed, select the checkbox if you want Pega Call to map the call data value to the screen pop when a call is received. Properties that are not selected are available on the clipboard, but they do not appear on the screen pop.

### Start Interaction processing

If this option is selected, there will be no screen pop that notifies the CSR of the call. Interaction processing starts immediately, based on information received through CTI. If you want to directly start the interaction processing, select this option and click **Next**.

## *Review and save*

Review the configuration settings the wizard has recorded. Return to any step in the wizard to modify your choices.

When the configuration is as you want it, click **FINISH** to generate the rules. The process may take several minutes; the wizard then displays a list of what was generated.

You can further customize the settings:

- Modify newly created properties
- Modify Pega Call data transforms
- Modify the custom screen pop section

Click **Pick Value**  icon to access the rule.

# Using telephony in your application

The Pega Customer Service interaction portal includes a telephony toolbar that provides synchronized telephony control. This topic discusses how to use and customize the toolbar.

## Using the telephony toolbar

The telephony toolbar is included at the top of the Pega Customer Service interaction portal, if the CSR has the role PegaCTI:CSR or the privilege HasTelephony. Depending on the configuration performed using the Pega Call configuration wizard, the modes are be used based on the CTI link that is used.

### *Using simple telephony*

Simple telephony mode is intended for users who use a different tool for call control operations (for example, placing calls on hold, transferring calls) and agent-state management (making themselves Available or Unavailable for customer calls). The user receives new call notifications (screen pop or automatic interactionstart) when calls arrive at their phone. CTI data associated with the call will be available for use within the Pega application for screen pops and related processing. Agent state management and call control features are not available on the Pega desktop.

Click the phone button to log in. Once logged in, the incoming calls trigger the call notification and related processing.

### *Using simple telephony with agent-state management*

Simple telephony mode with Agent State Management is intended for users who use a separate phone (hardware or software) for call control operations, but need to perform agent-state management from their Pega desktop. When this mode is selected, the user can manage their agent state (Available or Unavailable) from the Pega desktop. In addition, call notifications with CTI data are available in the Pega application. Call control features are not available from the Pega desktop.

Click the phone button to log in. Once logged in, you see the agent state button to use if you want to change the agent state. For more information on the ACD Agent button, Work Modes, and Reason codes, see the [Telephony toolbar controls](#) section.

## Using full telephony

Full telephony mode is intended for users who perform all telephony functions from the Pega desktop. When this mode is selected, the user can control calls (for example, Hold, Retrieve, Transfer, Hangup) on their phone and manage agent state from their Pega desktop. In addition, they receive call notifications the same way as simple telephony mode.

The Telephony Toolbar includes these controls:

<b>ACD Agent State Menu</b>	<p>This panel changes the agent's state on the ACD. To change state, select the desired state. For Unavailable, the reason for the state change may be included. If you specified more than one queue when you logged in, changing the selection on this button changes the state for all queues.</p> <p>The current ACD agent state is reflected in the menu panel.</p>
<b>Reason Codes</b>	<p>Under <b>Unavailable</b>, a sub-menu of reasons is provided. These are mapped to reason codes on your ACD. If you wish to modify the reasons or codes, refer to the section on using telephony rules.</p>
<b>Line State Buttons</b>	<p>This set of buttons displays the state of the agent's phone lines.</p> <ul style="list-style-type: none"> <li>•  — A line with no call (IDLE state).</li> <li>•  — A ringing call (Incoming state) is indicated by a ringing icon. Click the icon to answer the call.</li> <li>•  — A connected call (CONNECTED or TALKING state) is indicated by a In Progress icon. Click the icon to place the call on hold.</li> <li>•  — A call that is on hold (HELD state) is indicated by a On Hold icon. Click the icon to retrieve the call from hold.</li> <li>•  — A call that is being placed (INITIATING state) is indicated by a New Call icon.</li> </ul>
<b>Phone Number Text area</b>	<p>This tool provides a text-entry area for entering text or digits to dial. While you enter the first three digits of the phone number or the first three characters of the phone book, you will be prompted with the available numbers or values which match. You can either choose from the list displayed or complete your entry.</p> <p>To configure this feature, refer to <a href="#">Configuring and using phone books on page 36</a> section.</p>
<b>Call Controls</b>	<p>This tool provides call control capabilities (for example, Consult, Transfer, Conference). It is context-sensitive, enabling call control functions relevant to the state of the phone lines.</p> <p>If you use the toolbar within Pega Customer Service, the call control menu includes options to transfer the interaction (and associated service processes) along with the call.</p>

To launch the toolbar in Designer Studio, select the **DesignerStudio > Channel Services > Pega Call > Tools & Settings**

# Agent and Device State

Pega Call provides for agent state management and call control with Avaya AACC. A toolbar user interface is provided that may be embedded into your Pega 7 Platform application or Pega Customer Service.

## *Device and agent state monitoring*

When an agent logs into AACC through Pega Call, Pega Call monitors the user's device through the CCT interface. When the state of a call on the device changes, Pega Call updates the state of the call on the toolbar. For example, if the agent places a call on hold (either using the Pega Call UI or using the phone), the call state displayed in the Pega Call toolbar is updated.

Similarly, Pega Call reflects agent state in the toolbar. If an agent changes state to Unavailable using the Pega Call toolbar, the resulting state change is reflected in the toolbar.

# Configuring call treatment and screen pops

## Call Treatment rules

Ensure that the basic configurations are completed as part of the Pega Call configuration wizard steps. The options are configured in **Call Treatment** rules as described in the following section. Circumstance these rules to process different call types (for example, consultation and transferred calls with respect to incoming customer calls) that are triggered when a phone call arrives at the CSR's phone.

Call Treatment rules let you configure actions triggered on a CSR's desktop when a phone call arrives.

## Configuring screen pops

To configure Pega Call to trigger a screen pop on the CSR's desktop, select **Display pop up**. Configure parameters for the pop up window, including size and position, in the **Pop Up Details** section.

**Note:** Some of these parameters will depend on your browser and security settings.

### Inline pop-ups

You may configure the screen pop to use an inline pop-up rather than a separate browser window. To configure this behavior, check the **Use inline pop up, if possible** check box.

This functionality is not supported when using the Pega Customer Service CSR portal or when using the Pega Call without Pega Customer Service. It is only supported when Pega Call is used with the Pega Customer Service interaction portal.

### Timeout Disposition

You may configure a timeout interval and behavior in the call treatment rule. If the CSR does not respond to the screen pop (does not click the **Accept** or **Decline** buttons in the popup window) within the timeout interval, the timeout behavior launches. The options for timeout behavior are:

**Take no action** – No action triggered by the timeout. Popup window remains open.

**Close the window** – Closes the popup window. No further processing is triggered for the call. This option does not apply to inline pop-ups.

**Set focus to the popup window** – Depending on your browser and operating system, this may bring the popup window to the foreground. This option does not apply to inline pop-ups.

**Start the interaction** – Starts Pega Customer Service interaction processing for the call.

### Screen Pop User Interface

The popup window displays the section **OFFERING** (applies to your call class – For example, *ChannelServices-Interaction-Call* or *PegaCA-CTI-Call*). To configure the user interface elements and information displayed in the pop up window, modify the section or its component rules in your application ruleset. You may circumstance the section based on call type, or include elements conditionally if you need different information displayed for different types of call; the sample sections in *ChannelServices-Interaction-Call* use circumstancing and the sample section included in Pega Customer Service (*PegaCA-CTI-Call*) uses conditional includes. If you use the Pega Customer Service interaction portal, you should customize the included section *IncomingCallPop*.

## Starting interaction processing automatically (auto-accept)

If you use Pega Call with Pega Customer Service, you can configure the call treatment rule to initiate Pega Customer Service interaction processing for the call automatically. No screen pop window displays in this case.

Select the radio button **Automatically start an interaction** to configure this behavior. Refer to the Pega Customer Service implementation guide for additional details, including information about setting timeout options and behavior.

## No call processing

For calls, such as, internal calls, you need not trigger any desktop processing (pop up window or interaction start). To configure this behavior, circumstance a call treatment rule and select the radio button **Take No Action**.

# Answering calls

You can configure the call treatment rule to answer some or all calls on the CSR's behalf. To answer all calls that a call treatment rule applies to, select **Always** when condition in the **Auto Answer** section of the call treatment rule. To answer no calls, select the **Never** when condition.

To answer a subset of calls, define or use another When rule.

To configure Pega Call to wait until interaction processing starts before answering the call, check the check box **but wait until the interaction is started**. You can use this option with screen pops (i.e. answer the call when the CSR clicks the **Accept** button) and with auto-accept.

## Notes:

If your telephone equipment is configured to automatically answer calls, do not configure Pega Call to answer call consultation and transferred calls automatically. This may cause problems in blind-transferred calls.

# Modifying Call treatment rules

Review and modify Call Treatment rules from the Pega Call administration landing page.

1. Log in to your application using your administrator credentials.
2. From the Designer Studio menu, select **Channel Services > Pega Call > Administration & Configuration**.
3. Select the **Call Treatment** tab to display a list of call treatment rules, along with the specific circumstance, class and ruleset version they apply to. The landing page displays only call treatment rules applicable to **offering** events. Pega Call includes several call treatment rules you can use as starting points. The rules are named for the CTI events that trigger processing. Modify the offering call treatment rules.
4. To review or modify configuration details associated with a particular call treatment, click the **Details** button for the rule.
5. To modify the rule, copy it to your application ruleset and then modify it to suit your needs. Make sure that the service packages that processes CTI events (CTIACCLINKEVENT1 thru CTIACCLINKEVENT10) have access to your ruleset.

You may circumstance the offering rule to vary call treatment based on a property (for example, *pyCallType*). A circumstanced rule is included for consultation and transferred calls (*pyCallType=CONSULT*).

## Call types

Pega Call provides a call type that may be used to circumstance call treatment rules. The *pyCallType* property on the call page specifies call types, which includes:

- INBOUND – Inbound calls including customer calls that are routed through an ACD queue.
- CONSULT – Consultation and transferred calls.
- OUTBOUND – Calls placed from the contact center or the CSR's phone to an external phone number.
- INTERNAL – Calls that are internal to the call center, such as calls from one CSR to another.

The call type values depend on the CTI platform and link type – your platform may not detect all of the above call types. Modify Pega Call's call type detection or add additional call types by modifying the decision tree *ChannelServices-Event-CTILink • SelectCallType* in your application ruleset. Ensure that the service package used to process CTI events has access to your application ruleset.

## Retrieving additional data

When a call arrives, Pega Call receives CTI data gathered in the telephony system. To retrieve data from additional sources before a screen pop displays or call processing starts, override the activity *pyPrefetch* in your call class (for example, *ChannelServices-Interaction-Call* or *PegaCA-CTI-Call*). Pega Call executes *pyPrefetch* when a call arrives.

Add properties to the call class or create a separate object to hold the additional data. Since the activity is executed from a service package (not the operator), ensure that your application ruleset is accessible to the service package that processes CTI events.

# Configuring the telephony experience

Ensure that the basic configurations are completed as part of the Pega Call configuration wizard steps. The User Telephony Capabilities section allows you to configure which telephony capabilities are available to each operator.

## Understanding telephony modes

The telephony modes refer to the set of telephony capabilities presented to a user. Pega Call supports various telephony modes. For more information, see [Using the telephony toolbar](#) section.

**Note:** Ensure that the user has the HasTelephony privilege that is required to view the telephony tools in the portal. Without this privilege, telephony tools will not be displayed in the Pega Customer Service interaction portal. To provide appropriate privileges, add the PegaCTI:CSR role to the user's access group. For more information, see [Telephony privileges and roles](#) section.

## Configuring telephony capabilities

You can configure telephony capabilities from the User Telephony Capabilities section of the **Telephony Experience** tab in the **Pega Call Administration & Configuration** landing page.

A Default Device configuration (telephony capabilities record) is provided. Edit this record to configure the capabilities that you want to present to the users.

To edit the Default Device capabilities record, follow the given steps:

1. Click **Edit** for the Default Device record.
2. If you choose Full Telephony mode, configure the following in addition to other configuration settings:
  - a. To allow the user to transfer the Pega Customer Service interaction and cases associated with a call along with the call, select the **Allow user to transfer interaction with call** check box.

- b. To change the number of phone lines that you want to show on the CSR's desktop, select the **Number of Phone Lines** list. The minimum number of phones that may be configured is 2 and the maximum is 4. This configuration must match the capabilities of the user's phone.

To create additional telephony capabilities configuration, complete the following:

If there are different groups of users using different telephony modes or configurations, you must create one Telephony Capabilities record for each set of capabilities you need.

1. Click **Edit** for the Default Device record.
2. Click **Save As** from the **Save** menu to create a new telephony capability record.
3. Enter the **Short Description** and **Name** of the new record.
4. Click **Create and Open** to create the new record.
5. Edit the record to enable the desired capabilities.
6. Associate the telephony capabilities with the set of users.

To configure additional telephony capabilities for the users, complete the following:

1. Click **Configure** in the User Telephony Capabilities section. The Select Telephony Capabilities decision-tree rule is displayed.
2. Click **Check out** to edit the decision tree or click **Save As** to create a copy of the record in the appropriate ruleset.
3. Write your own logic to select the specific telephony capability rule.

## Configuring and using phone books

You can configure phone books from which telephone numbers are looked up. Phone numbers are configured in Pega rules or retrieved by integrating with an external system. To configure a phone book that can be used as a look up, you must first create a phone book and fill in the details.

To create a phone book complete the following steps:

1. In the Explorer panel, click **App Explorer**, go to ChannelServices-Admin-PhoneBook. The **Instances of Phone Directory** page appears.
2. To create a new phone book, click **Create**.

3. Complete the form by entering the description and name of the phone book.
4. Click **Create and open**.
5. Edit the phone book created. Add the names and phone numbers.

To modify an existing phone book complete the following steps:

1. In the **App Explorer**, go to ChannelServices-Admin-PhoneBook. The **Instances of Phone Directory** page appears.
2. Click on the phone book instance you want to modify.
3. Modify the details and click **Save**.

To configure the phone book for lookup complete the following steps:

1. In the Designer Studio menu, click **ChannelService > Pega Call > Administration & Configuration**.
2. Click on **CTI link** tab.
3. Open the CTI link that you want to edit, and click **Edit**.
4. Click the **Phone Book** tab.
5. Select the phone book for which you want to search the phone numbers.
  - a. **Personal phone book** - Searches the phone book that matches the Operator ID.
  - b. **Team phone book** - Searches the phone book that matches the default Workgroup ID.
  - c. **CTI Link-specific** - Searches the CTI link specific phone book that is configured. You can select the phone book from the drop-down list.

## The Phone login screen

CSRs must log in to Pega Call to receive ScreenPops and control their telephones through their desktops. Pega Call provides a login screen that is included in the section PegaCallLoginScreen. The fields shown on the screen depend on the telephony mode, the CTI link type, and the telephony switch capabilities. For example, if the telephony switch is Avaya, work modes are displayed.

In simple telephony mode, because agent state is managed through another device or application, the agent ID and related fields are not displayed. Instead, Pega Call requires only the extension as

input. In this case, the phone login does not log an agent into the ACD. The phone login process monitors the phone extension and associates it with the Pega user (operator), and the user receives notifications for subsequent calls to that extension.

## Retrieving login information and automating the CTI login (single signon)

To retrieve the phone login information from another source (such as LDAP or Active Directory), use the data page `D_MyCTICredentials`. Override the data page (or the associated `pyFetch` activity) in your application ruleset and then configure it to retrieve login information from the external source.

At run time, the properties from the data page are loaded to the login screen and used as part of the Pega Call phone login process.

**Note:** If you are using Pega Customer Service, save your login credentials to the Pega Customer Service preferences.

To automate the phone login (for example, to provide single signon to CTI), you can set the following properties on the datapage:

- **Auto Login:** If you want users to log into Pega Call when they log in to the Pega 7 Platform (for example, when they log in to the Pega Customer Service interaction portal), set the `pyAuto-Login` option property to `TRUE`.
- **Quick Login:** If you want users to login to Pega Call when they click the phone button (without having to enter the values on the login screen), set the `pyQuick-Login` property to `TRUE`.

For either of the above options, you must ensure that adequate login information is provided in the other properties (such as `pyExtension`, `pyAgentID`, and `pyAgentPwd`) on the data page.

If the Auto Login and Quick Login parameters are false, the phone login screen displays when you click the phone  button. Values of any other parameters populated on the data page will be displayed on the phone login screen. To be true, the values of the other parameters will still be populated on the Login screen. The user can change the displayed values, if required, and then click on the **Login** button to be connected to the phone system.

# Saving login credentials to Pega Customer Service preferences

While using the Pega Customer Service application, save the login credentials to the Pega Customer Service preferences following the steps:

1. Launch the Pega Customer Service Interaction Portal.
2. Go to the Operators menu and click Preferences.
3. In the Desktop Preferences menu, under Channels, click Phone.
4. In the Phone Preferences, click Configure Phone Login.
5. Enter the phone login information.
6. Click Save to save the changes.
7. Click Save Preferences to save the preferences.

## Telephony privileges and roles

Pega Call provides various privileges that you can configure to suit your needs. The privileges are provided in the role PegaCTI:CSR. Typically, users who use telephony should have this role added to their access group(s).

The following privileges are set to allow or restrict the users to change the parameters on the phone login screen. The privileges are:

- **ChangeCTILink:** To change the CTI Link used to connect to the CTI server.
- **ChangeExtension:** To change the user's phone extension.
- **ChangeAgentID:** To change the Agent ID used to login to the ACD.
- **ChangePassword:** To change the password used to login to the ACD.
- **ChangeQueue:** To change the ACD queue that the user logs in to.
- **ChangeWorkMode:** To change the work mode when the user logs in.

- **HasTelephony:** Whether the user has access to the telephony tools in the portal. This is used by the Pega Customer Service interaction portal to determine whether to show the telephony toolbar in the portal header.
- **ChangeCTUserName:** To change the user name used to connect to CCT. This is used only for AACC CTI links.
- **ChangeCTPassword:** To change the password used to connect to CCT. This is used only for AACC CTI links

**Note:** To restrict any of the above privileges for users using Pega Call, ensure that the data page is configured to load the appropriate login information from another source as explained in the above sections.

# CTI Link configuration on Pega Platform

You can perform the basic configuration for the CTI Link with Avaya Aura Contact Center (AACC) CTI Link from the Pega Call Configuration wizard. You can modify the CTI link configuration or add CTI links by following the procedures described in the following sections.

## Adding and configuring CTI Link(s)

When a CTI Link is created, it is used on any Pega 7 Platform node within the cluster.

### *Configuring CTI Link*

Log in to the Pega 7 Platform Designer Studio as a user with access to the Pega-CTI ruleset (a user with the role *CASysAdmin* on Pega Customer Service systems, *CTIDeveloper* in other systems). Click the Designer Studio menu and select **Channel Services > Pega Call > Administration & Configuration**:

In the Pega Call **Administration & Configuration** landing page, select the **CTI Links** gadget. A list of existing CTI links appears, with information about their status.

To edit an existing CTI link, click **Actions > Edit**.

To create a new link:

1. Choose **Add CTI Link** and select AACC.
2. In the new form, provide a short description and name for the new CTI link, then click **Create and open**.
3. In the rule form that appears on the **Link Configuration** tab, enter the information for your CTI Link.

In the **Link Configuration** tab, fill in the following:

Field	Description
-------	-------------

<b>Enabled</b>	Select if this CTI Link is enabled. Pega Call will only attempt to connect to the CTI server if the corresponding CTI Link is enabled.
<b>Port</b>	Required. The port used for SOAP connections to the server.
<b>CCT Server Host Name</b>	Required. The host name or ip address of the AACC Communications Control Toolkit (CCT) Server.
<b>CCT Server Port</b>	The port used for SOAP connections to the CCT Server.
<b>Domain Name</b>	The Windows domain for the AACC system. This domain will be used to authenticate CSRs when they log in.
<b>Dial Plan</b>	Select a dial plan rule that will be used to place calls with this CTI Link. If no dial plan is selected, dial strings will be sent to the PBX/ACD without modification.
<b>Site ID</b>	Provide a unique identifier that this CTI link will connect to. If more than one link connects to the same ACD, they should all have the same Site ID.

4. Save the CTI Link configuration.

## Testing Connectivity

**Note:** Save your CTI Link configuration before testing connectivity.

Use the **Test Connectivity** button to ensure that the Pega 7 Platform node is able to connect to the CTI Server (or CTI Link Server, for Classic links) using the configured link parameters. A results screen appears and provides:

- The **name** of the CTI Link tested.
- Connectivity **status** to the ACD.
- The PRPC **application** that will process requests on the local CTI node.
- The **results** of the connectivity test.
- Any **error messages** that were generated.

# Additional CTI Link configuration and High Availability

## *Creating a dial plan*

The Pega Call dial plan is used to modify a telephone number to ensure that it can be dialed by the ACD/PBX. For example, if your PBX requires that the number 9 be dialed to reach an external line before external calls may be placed, the dial plan may be used to prefix the digit 9 before external telephone numbers. The dial plan is applied to all numbers called through Pega Call, including extensions and external telephone numbers, whether dialed as direct calls or as consult calls (as part of transfer and conference scenarios).

To create a dial plan, write a decision-tree rule that applies to the *ChannelServices-Admin-DialPlan* class in your own ruleset. The decision-tree modifies the property *.pyDialString*. A sample rule called **Sample** is provided in the class.

## *CTI Link Reconnect and Failover*

If a Pega Call CTI link loses its connection to the CCT Server, it will attempt to reconnect. If you have a secondary CCT Server, configure a connection to it as part of CTI Link configuration. Pega Call will attempt to connect to the secondary CCT server if it is unable to connect to the primary CCT server.

On successful connection to the primary or secondary CCT server, Pega Call will attempt to retrieve the state of the devices/telephones for agents who were logged into Pega Call. This includes retrieving the state of calls on the device. Call-attached data is not retrieved as part of this process.

To configure failover perform the following steps:

1. Log in to your application.
2. Click **Designer Studio > Channel Services > Pega Call > Administration & Configuration**.
3. Select and click **Actions > Edit** to open the CTI Link. The rule form for that CTI Link appears.
4. Click the **Failover** tab.
5. Check the **Enable Failover?** checkbox.

6. Provide the **Host name** or ip address of the secondary CCT server that Pega Call should connect to.
7. Provide the **port** that Pega Call should connect to on the secondary server.

## *Pega Platform High Availability feature support*

**Application maintenance and crash recovery** – A user's Pega Call state and login are not maintained if the Pega Platform server crashes or is taken offline for maintenance ("quiesced"). Each CSR who was on the Pega 7 server will need to log in to CTI when they are connected to another Pega Platform server.

## Multitenancy

You can install and use Pega Call in Pega Platform environments that support multitenancy. CTI links for each tenant must be created by a tenant administrator in the tenant-specific layer.

## *Configuring Switch Capabilities*

Pega Call allows you to configure the behavior of the telephony toolbar (stateful telephony) and the login screen to match that of your telephony switch (PBX).

To view and configure the switch capabilities follow the given steps:

1. Log in to your application.
2. Click **Designer Studio > Channel Services > Pega Call > Administration & Configuration**.
3. Select and click **Actions > Edit** to open the CTI Link. The rule form for that CTI Link appears.
4. To view and configure, click the **Switch Capabilities** tab.
5. To save any changes, click **Save**.

## *Agent State and Login Options*

You can configure various options related to the login screen and the agent-state menu on the telephony toolbar, as described below:

**Select Work Mode on Login:** If selected, the login screen allows selection of a work mode (Auto In or Manual In) to be enabled upon login to CTI. This option is only used with Avaya CM switches.

**Specify Queues on Login:** If selected, the login screen allows the user to specify the queue(s) to log into. Select this option if you need agents to login to specific queues.

**Specify Work mode on Available:** If selected, the agent-state menu in the telephony toolbar allows selection of a work mode (Auto In or Manual In) when the agent switches to an **Available** agent state. This option is used with Avaya CM switches.

**Specify Reason on Unavailable:** If selected, the agent-state menu in the telephony toolbar allows the user to specify a reason (or reason code, depending on the switch) when going into an **Unavailable** state. The **Reason** is presented as a sub-menu of the **Unavailable** menu.

**Specify Reason on Logout:** If selected, the agent-state menu in the telephony toolbar allows the user to specify a reason while logging out of CTI. The **Reason** is presented as a sub-menu of the **Logout** option as shown below.

**Allow Logout while Available:** Selecting this option, allows the agent to select logout from an available or ready state.

## *Call Options*

These options allow you to specify which call-control options are available in the telephony toolbar.

**Consult:** Select this option to allow users to be able to place consultation calls to other users. Consultation calls may be ended by hanging up, transferring (complete a warm transfer) or conferencing.

**Warm Transfer:** Select this option to allow users to be able to initiate warm transfers.

**Conference:** Select this option to allow users to be able to initiate conferences.

**Place Calls while Available:** If enabled, this allows agents to place outbound calls while they are available to take customer calls (i.e. while their agent state is Available). Some ACDs require agents to be in an Unavailable state before they may place outbound calls; on these ACDs, this option should be unchecked.

# Administering Pega Call

Pega Call provides several utilities to help you administer CTI Links and, that are useful in development and troubleshooting. The utilities include a soft phone that are used to test Pega Call and utilities to administer and edit the CTI Links and log out users.

## Accessing the Pega Call landing page

The utilities are part of a landing page that provides quick access to the CTI Link tools. To use the landing page, you must have the *Pega-CTI* ruleset in your access group.

To open the landing page, click the **Designer Studio** menu, and then select **Channel Services > Pega Call>Administration & Configuration**.

### *Administration & Configuration pages*

When you select **Administration & Configuration**, you have access to the following:

- CTI Links
- Telephony Experience
- Call Treatment
- Application Gateways
- Version Information

### CTI Links

The CTI Links tab lists all available CTI Links configured to your application with the description and the status.

Click **Refresh** to refresh the display. Click **Add CTI Link** to add a CTI link.

1. Enter the **Failover Server Host** details. It is the failover host of the CTI server.

In the Administration and Configuration page, the CTI Links tab displays the details of each CTI link configured. The following are the properties displayed:

- **Name:** The name of the CTI link.
- **Description:** A short description of the link.
- **Link Type:** The the link types are **Local, Remote, Classic, OpenCTIDesktop** or **OpenCTIServer**.
- **Status:** The current status of the CTI link. The following icons can appear here:
  -  **Connected:** The CTI link is connected to the CTI environment and is able to provide CTI services.
  -  **Stopped** or **Disconnected:** The CTI link has been stopped or is unable to connect to the CTI environment. CTI services are not available through this link.
  -  **Connecting** or **Reconnecting:** The CTI link is attempting to connect or reconnect to the CTI server. If the CTI link was configured to failover, it may be attempting to reconnect to the secondary CTI server if it is unable to connect to the primary CTI server.
  -  **Unreachable:** The CTI link is unable to connect to the Pega Platform node(s), or to the CTI link server that provides CTI services. For local CTI links with failover configured, one of the configured CTI end points is not connected (even if it is reachable) and will show this status.
  -  **Partial:** This status can appear for remote CTI links with failover configured. One of the links that provides CTI services to the remote CTI link is connected and is providing CTI services. The other peer link is unreachable or disconnected, and is thus not providing CTI services.
  -  **Disabled:** The CTI link is not enabled and is not providing CTI services on this server. The CTI link may not be enabled, or it may be configured to run on specific nodes not including this node.
- **AutoStart:** This column is applicable to local CTI link engines only. A checkmark in this column indicates that the CTI Link is set to auto-start on system startup. The CTI agent will periodically attempt to start any link that has this setting enabled and is currently stopped.

Click the icon in the first column to see additional details about the endpoints providing service to the CTI link.

- For **local CTI links** you can see the endpoints (CTI servers) configured in Primary and Failover roles, and see the status of the connection. Only one endpoint can be connected at a time (the

other is marked as unreachable even if there is a network connection to it). Current role is not applicable to local CTI links.

- For **remote CTI links**, Endpoint refers to the local CTI link and the Pega Platform node providing CTI service. If the link has failover enabled, the endpoints configured in Primary and Failover roles are displayed. The Status column shows the status of each endpoint. The Current Role lists the role (Active, Warm-Standby, or Hot-Standby) of the endpoint, if it is connected. If the endpoint is not connected, no current role appears.

**Note:** For OpenCTI links, the status information is not displayed.

The **Actions** menu provides actions for each CTI link. The available actions depend on the type of the link:

- **Edit** - Displays the configuration page for the CTI link so you can edit its configuration.

You can drill down into an endpoint listing to see the CTI sessions currently in progress. As a rule, each CTI link endpoint has one CTI session. For each CTI session, you can see a number of devices that Pega Call is monitoring.

You can drill down further to see information about the devices being monitored. For each device, an array of information appears if it is available:

## Telephony Experience

This tab allows you to configure which telephony capabilities are available to each operator and provides a link to the configuration wizard. For more information, see [Pega Call Configuration wizard](#).

## Call Treatment

This tab displays a list of call treatment rules configured on your system. For each rule, the tab displays the rule's description, circumstance, configured behavior, class, and ruleset version. Click the **Details** button to review details or edit the rule.

## Application Gateways

This tab provides administration of Cisco application gateways.

## Version Information

The Version Information gadget provides detailed information on the Pega Call CTI Link engine and third-party CTI Java archives that are loaded into the system. This information may be useful if you experience problems while installing and configuring the system to connect to your CTI environment.

The Pega Call engine must be accessible and the channel services codeset must be set appropriately for CTI engines to function normally.

If third-party jar files for Avaya JTAPI or the Genesys voice platform SDK have been imported, they should be listed as accessible.

The gadget lists version information if it is available.

**Note:** It is normal for the Genesys version to be listed as "N/A".

## *Phone icon*

Pega Call provides a telephony icon you can use for call control and agent state management.

You may use the panel to log in to an extension or monitor a device using the synchronized telephony control. Once logged in, you may perform call control and agent state management from the panel.

# Using telephony rules

This section provides an overview of the rules provided by Pega Call and how to use them in your application. This includes information you need while customizing or troubleshooting Pega Call.

**Note:** Avoid overriding Pega Call activities and JavaScript. Overriding activities and JavaScript makes it harder to upgrade Pega Call and benefit from fixes and enhancements in future versions of the product. Where possible, use a data transform or extension point provided instead.

## Rulesets and class hierarchy

Many Pega Call rules are included in the ruleset **PegaFW-CTI**. Rules common to various channel services, such as CTI and chat, are in the ruleset **PegaFW-ChannelServices** and **Pega-CTI**.

Pega Call and other channel services use the class **ChannelServices-** as a base class for their class hierarchy.

**Note:** The **CTI-** class hierarchy is deprecated and should not be used.

### *CTI requests*

Pega Call provides an API of activities in the class **ChannelServices-Device-Phone** which you may invoke from other Pega 7 rules. Additional detail is included later in this chapter. Lower level request processing occurs in **ChannelServices-Request-CTILink**.

### *CTI events*

Pega Call rules receive and process various CTI events from the CTI Link. Event processing is handled in **ChannelServices-Event-CTILink** and its subclasses. These rules are invoked from Java services (for local CTI links) or SOAP services (for remote and classic CTI links). Additional detail is included later in this chapter.

### *Administration*

Landing pages to administer Pega Call are in **ChannelServices-Landing-PegaCTI**. Rules for administering CTI Links are in **ChannelServices-Admin-CTILink** and in subclasses specific to each link type. The Pega Call configuration wizard is in **ChannelServices-Wizard-CTI-**.

## Call class

Calls are represented by the class **ChannelServices-Interaction-Call**. Pega Customer Service uses the call class **PegaCA-CTI-Call** which inherits from **ChannelServices-Interaction-Call**. Additional details are included later in this chapter.

# Setting access to Pega Call rules and custom rulesets

For users who use the CTI capabilities, Pega Call provides an Application rule called *PegaCALL* and an access group *CTIDeveloper*. You may customize these access groups or create similar ones for your users. You must ensure that your access group provides access to custom rulesets required for your screenpops and any other rules you customize.

If you use Pega Call with Pega Customer Service, note that the default application and access groups provided with Pega Customer Service include Pega Call capabilities.

CTI events received from AACC are processed using ten service packages *CTIAACCLinkEvent1* through *CTIAACXCLinkEvent10*. Make sure that the service packages have access to your application rulesets, including any rules used to customize call processing (for example, Call Treatment, Screen pop and related UI elements).

# Customizing the call class and associated call data

Pega Call provides a call class `ChannelServices-Interaction-Call` in the Pega-CTI ruleset. Call objects are typically created when a call arrives at a CSR desktop. CTI call data, for example data entered by the caller in the IVR, is stored in properties in the call class. You may extend the call class or add properties to it to suit your needs.

The data transform *pyOffering* maps CTI data that Pega Call receives with the Offering event (when a call is ringing at the CSR's phone) to properties in the Call class. You should customize the data transform and the properties in the call class to suit your needs.

By default, the User-To-User Information (UUI) data provided by Avaya is stored in the `pyApplicationData` property in class `ChannelServices-Interaction-Call`. You may pass data in UUI as a set of values delimited by the pipe (|) character. Pega Call parses pipe-delimited data into the value

list `.pyCallVariables`. You may also pass XML data in UUI. XML strings are parsed into the value group `.pyUserData`. Parsing is performed by the Activity `ChannelServices-Event-CTILink` • `ParseApplicationData`. You may customize the parser to suit your needs. In addition, AACC string data is provided in the `pyAttachedDataString` property and AACC key-value pair data is provided in the `pyUserData` value group.

Pega Call provides When records that determine when call objects are saved or updated in the database. These are defined on the call class `ChannelServices-Interaction-Call`:

- `pyOverwriteExisting` - If set to true, Pega Call will overwrite a pre-existing call object if one is found. Any data in the older call object will be lost. If set to false, Pega Call will update the call page with the data received from the CTI platform based on the data transform `pyOffering`. Properties that are not updated will be retained from the older call object; this can be useful if another system or process (for example, pre-fetch) creates call objects before Pega Call receives an incoming call (OFFERING event).
- `pyCheckExisting` - If set to true, Pega Call will check for a pre-existing call object with the same ID. If you are certain that a prior call object would not exist (i.e. call IDs will not repeat before call objects are purged), you may set this to false. This can optimize database access as part of screen pop handling. However, note that screen pops and related processing may fail if this is set to false and a prior call object exists.
- `pySaveInteraction` - This rule determines if a call object is saved as part of Pega Call event processing. You should set this to true for OFFERING to ensure that call pages on the user's clipboard have CTI data when a call arrives at a CSR's phone. This also ensures that any data gathered using the `pyPrefetch` activity is available to the user.

## Pega Call pages on the clipboard

Pega Call uses various pages on the CSR's Pega Platform clipboard. The following pages include information on the current state of the CSR's phone.

### *CTI Phone*

This CTIPhone page shows the current state of the CSR's phone.

The page includes a reference to the CTI Session (`.pyCTILinkSession`) and a list of lines (`.pyLines` value list). Each line lists the identifier (call ID) of the call and its state, if the line has a call. Note that line and call ID and states are only populated if you use stateful telephony.

## *CallInteraction*

This page shows details of the incoming call on the CSR's phone. Call data received from the CTI platform is available in `D_pyChannelServices`. Note that this is a CTI call page (for example, `ChannelServices-Interaction-Call` or `PegaCA-CTI-Call`), not a Pega Customer Service interaction (`PegaCA-Interaction-Call`).

# Customizing the login screen

CSRs must log in to Pega Call to be able to receive ScreenPops and control their telephones through their desktops.

Pega Call provides a login screen in the section *ChannelServices-Device-Phone-UI.PegaCallLoginScreen*. You can customize the login screen and the login process by modifying this section.

# Telephony functions: invoking CTI capabilities from your application

Pega Call provides JavaScript functions that you can use to invoke telephony capabilities such as answer call and hold call.

These functions are used by the telephony toolbars. You may also invoke the functions from your application and business processes.

## *Attaching call data on telephony functions*

You may associate data with a call when invoking call control requests that place, transfer, or conference calls. Pega Call provides data transform rule(s) in class *ChannelServices-Request-CallOptions-AACC* for use with AACC CTI links. Copy the relevant data transform to your application ruleset and modify it to set the data you need to associate with the call. To set UUI data on Avaya Aura Communication Manager (ACM), set *pyApplicationData*. To set AACC's string data element, set *pyAttachedDataString*. To set AACC key-value pairs, update the *pyNamedVariables* value group.

You may review the sample data transform *ChannelServices-Request-CallOptions-AACC.MakeCall*. Source data may include references to pages on the user's clipboard.

**Notes:**

If you need to transfer the Pega Customer Service interaction context with a call (i.e. if you use the voice-data transfer feature), you must ensure that the data transforms *PegaCallData* and *PegaAppData* are invoked from the data transforms *BlindTransfer*, *TransferInitiate* and *ConsultationCall* in class *ChannelServices-Request-CallOptions*.

Do not modify rules in the *ChannelServices-Request-CallOptions-Remote* class. These are for internal use only.

## Extension point for the OFFERING activity

As a rule, you should not override any of the activities used to process Pega Call events. If you need to perform any additional processing when a call arrives at a CSR's phone (i.e. as part of the event handling for OFFERING), you may override the activity *pyPrefetch* in your call class (for example, *ChannelServices-Interaction-Call* or *PegaCA-CTI-Call*).

# Enabling Desktop Event Delivery

## No-Plugin mode

No-Plugin mode is the default and the only supported mode in Pega Call. This works using WebSockets capabilities of Pega Platform. For more information, see Pega Platform guides on PDN.