

Zendesk CTI Development Guide

May 2015

Version 2.3

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Version History

Version #	Date	Changes Made
1.0	Aug 22, 2013	Baseline released
1.1	Sept 20, 2013	Minor formatting and content updates
1.2	Oct 14, 2013	New feature interface added
2.0	Nov 7, 2013	New app (top bar) location / softphone details added
2.1	Jan 15, 2014	<ul style="list-style-type: none">● Best practices for developing a top bar app● How to populate ticket fields with call data
2.2	Sept 10, 2014	Added CTI feature #9 to support reporting use cases
2.3	May 28, 2015	Added ability to search for multiple phone #'s with one API search

OBJECTIVE

Welcome to the Zendesk CTI Development Guide! This guide provides an overview of the Zendesk CTI Toolkit -- an API and application framework to enable CTI interfaces with Zendesk.

The CTI Toolkit provides Zendesk technology partners with the ability to integrate their telephony hardware and software with Zendesk. In other words, the CTI toolkit enables a business to integrate its underlying IVR/ACD/PBX systems, contact center software, and Zendesk instance in order to provide superb customer service. No CTI adapter is required to be installed on an agent's desktop machine.

This guide will walk you through everything you need to know about the Zendesk CTI Toolkit. Things like...

WHAT are the core integration features we suggest building and releasing as a joint solution to customers

HOW to use Zendesk APIs to build the features highlighted in this guide

WHERE to access API documentation to support your development

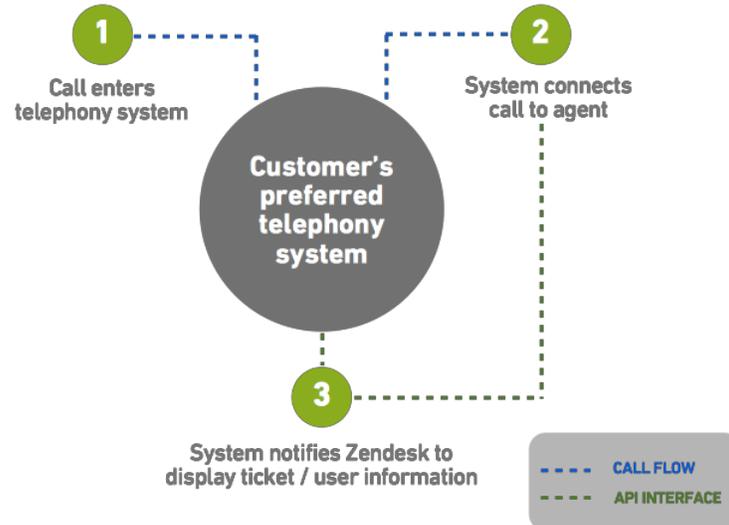


ZENDESK CTI OVERVIEW

ASSUMPTIONS

1. The telephony partner will be responsible for, but not limited to:
 - Development, application, and deployment of telecommunication services for the purpose of electronic transmission of voice between a business and a customer
 - Inbound/outbound call blending, call routing, agent presence management, IVR, storage of call recordings, and providing voicemail capabilities
 - Providing call controls via a Zendesk app or desk phone
 - A cloud or premise platform to support CTI connectors / components that are required to support the integration
2. Our CTI toolkit (and **Zendesk for that matter**) is browser and platform agnostic
3. A developer will need to set up a Zendesk instance via Zendesk.com or have access to an existing Zendesk instance
4. The integration should work with SSL and non-SSL-enabled Zendesk accounts
5. The CTI Toolkit will only work with the new Zendesk (not Classic)
6. Zendesk CTI API calls are recommended to be done server-side by the telephony platform, or client side within a Zendesk app built on the Zendesk app framework
7. **Read backwards and forwards the Zendesk APIs and Apps Framework documentation**
 - **THIS IS VERY IMPORTANT: Zendesk REST API**
 - **THIS IS VERY IMPORTANT: Zendesk Apps Framework**
 - **Open source apps developed and supported by Zendesk**
 - **Zendesk API community**
 - **Zendesk Apps Community**

CTI INTERFACES / FEATURES



Our CTI Toolkit supports the following CTI interfaces in Zendesk. A customer support agent will be able to perform their critical tasks in Zendesk -- with additional desktop or web-based applications opened alongside Zendesk if needed.

1. **Embed a web-based softphone directly in Zendesk**
 - As an app built on Zendesk's app framework, or as an iframe
2. **Link caller to a Zendesk end-user profile based on the caller's phone number**
3. **Create a new user profile in Zendesk with just the phone number of the caller**
4. **Link call center agent to a Zendesk agent**
5. Screen pop events (new Zendesk tabs) for inbound calls:
 - **Create a new ticket and display it to an agent**
 - **Display a user's profile to an agent**
 - **Open an existing ticket for an agent, if caller enters ticket number**
6. **Add a recording or text transcript (speech-to-text) to a Zendesk ticket with the ability to play/stop recording in Zendesk**
7. **Create a Zendesk ticket based on a voicemail left by a caller**
8. **IVR integration / data dips**
 - Route calls by user profile data (e.g. custom fields, tags, organization data)
 - Automatically assign a ticket to a specific team based on the inbound number
9. **REPORTING: Populate ticket fields with call data (e.g. call metrics, wrap-up code)**

FEATURES WITH CODE SAMPLES

Zendesk has an extensive API for developing applications and integrations. This section covers the features outlined above with sample code and/or links to supporting resources. These uses cases are not exhaustive. *The use of the API is limited only by your creativity.*

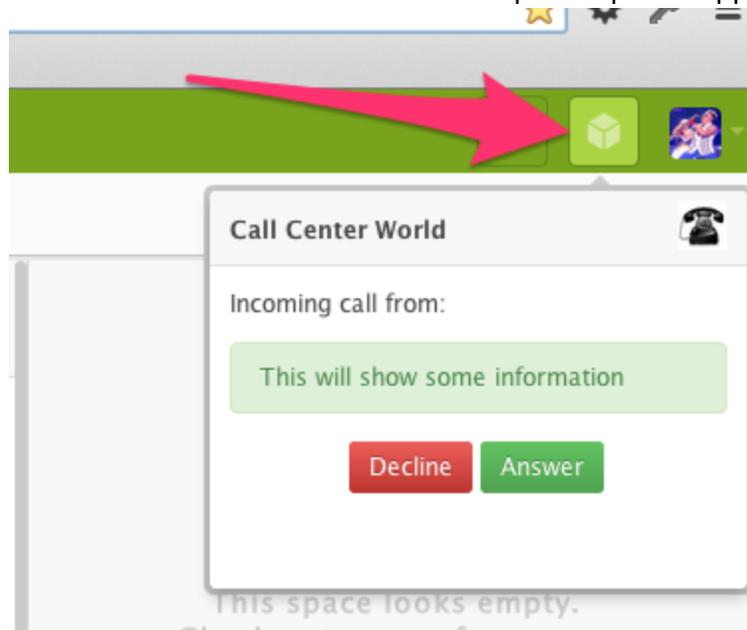
For additional support see also the [voice integration API documentation](#) on our Developer portal.

1. Embed a web-based softphone directly in Zendesk

Remove the nuisance of toggling between screens. Telephony providers can provide a web-based softphone to an agent in the Zendesk interface. Enabling capabilities such as:

- Call controls (e.g. Answer/end/transfer/conference/hold/mute)
- View current call details (e.g. caller's name, phone number, call duration)
- Place outbound call via softphone dialpad
- Set agent availability presence
- View call queue and recent call history
- Save call logs

The web-based softphone can be implemented via [a Zendesk app](#) or an iframe in the top-bar, right-hand side of Zendesk. Here is a screenshot of a sample softphone app:



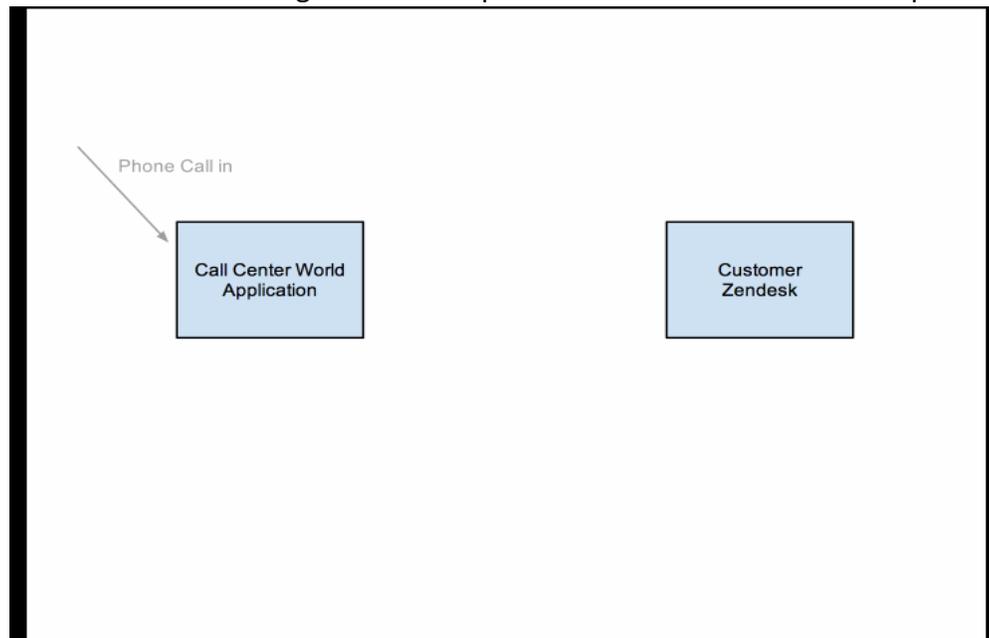
The softphone app should be in the “Top_bar” application. Features of this location:

- **Build and control the app UI** on our App Framework, or **as an iframe** (however, for security reasons we do not allow HTML5 post messages to an iframe, instead we have published the [Zendesk App Framework SDK](#) for cross-frame communication)
- **Send notifications to the top bar app** from the telephony system / platform
- **Programmatically open the app via the notify API**. Here is a [sample app](#) showing how the notification causes the top bar pane to pop open.
 - Note: You need to use notify in conjunction with this.popover()

- Manually toggled on/off by an agent
- **Re-size the height and width** through our API
- This top_bar location is a persistent session that is loaded when Zendesk loads
- The top_bar location has access to **user level context** but not ticket level context
- **Here's how to change the top-bar icon.** We recommend using a white icon.
- Outbound calling can be supported as part of your app by pulling the phone number from a user's profile and sending to the telephony system to make the call. You can retrieve the phone number from the user profile through the **user data API**. You will have to specify the user ID of the user you want to call, as the top_bar app location does not have ticket context data. Note: Enabling an agent to click on the phone number in the user profile to make a call is not yet available through our APIs.

TIPS for building a softphone app on the Zendesk App Framework:

1. **To help you get started download this sample Zendesk softphone app**
2. The Apps Framework supports a number of external libraries you can use. **See here more details on each available library and best practices here.**
3. You must provide a login mechanism to your call controls. It is suggested to use Oauth if you support this. Basic auth will work as well.
4. If you need to reference the Zendesk API from within the application framework, API calls from within the framework are already authenticated, since your agents are logged in the system. For instance, your App can make a REST API call to a user field and you do not need to worry about passing authentication information in this AJAX request because you're making it on behalf of whoever is viewing the App. Good examples can be found on [Github.com/zendesk](https://github.com/zendesk) (more specifically /user_data_app)
5. Ensure that the Zendesk App is localised **following these recommendations**
6. Here's the associated logical flow of a phone call into Zendesk via a softphone app.



In addition to a web-based softphone, the Zendesk CTI toolkit can be integrated via the following methods assuming a telephony provider has the supporting integration layer:

1. A desktop phone
2. A softphone that sits alongside Zendesk via a web-based or desktop application

2. Link caller to a Zendesk end-user based on the caller's phone number

When an agent receives a call, the telephony system can check to see if there's a Zendesk user associated with the caller's phone number / ANI. This is done by using the users search API to look for a user with the same phone number.

When searching for existing users, simply add a leading * followed by numerics. This will enable the searching for phone numbers in different formats in a single API call. Formats like:

```
+1 513.555.7611
(513) 555-7611
513 555 7611
513-555-7611
513.555.7611
```

The query, single API call we suggest to use is:

```
api/v2/search.json?query=role%3Aend-user%20phone%3A*5135557611
```

Note:

- Other fields ([set up as user custom fields](#)) may need to be searched as well
- [Additional details / sample code can be found here](#)

3. Create a new user profile in Zendesk with just the phone number of the caller

If the caller's phone number is not found in Zendesk, the telephony system can use the users API to create a user. The new user's profile can be created with just the telephone number of the user. The agent can then get more information from the user when on the call, such as their name and email address.

Using curl

```
curl -v -u {email_address}:{password} \
https://{subdomain}.zendesk.com/api/v2/users.json \
-H "Content-Type: application/json" -X POST \
-d '{"user": {"name": "Caller: 12345678", "phone": "12345678"}}'
```

[Full details / sample code can be found here](#)

4. Link a call center agent to a Zendesk agent

In order to make use of the screen pop APIs and designate a proper Zendesk ticketing workflow, you will need to map a call center agent to a Zendesk agent. This is necessary for specifying an agent in API calls and linking agents to the ticket they open or updated in Zendesk. There are two options to do this:

- A. Telephony provider as the system of record.** The telephony provider / system stores the mapping, so when requests are made, the telephony system knows the Zendesk

“agent ID” to perform an action for. The “agent ID” must be a unique identifier that can be used to match to a corresponding Zendesk user. The “agent ID” can be any type of data stored in the telephony system, as long as it is unique per user. For example, the identifier could be the agent's phone extension or call center software login ID.

B. Zendesk as the system of record. Leverage a **Zendesk custom user field** to store the “agent ID” in a Zendesk agent user profile. Therefore the mapping is stored in Zendesk and can be updated through the Zendesk UI. Steps to complete this setup:

- a. Navigate to the "Admin" cog in the lower left corner of Zendesk
- b. Under Manage, click on "User Fields"
- c. Select "Text" type field
- d. Enter "CallCenterAgentID" (or something similar) for field title and field key
- e. Click on the "Create field" button

Note: Alternatively, you can use **the user fields API** to do this.

Custom user fields can be **searched via the users API**. See also our **search reference guide for user fields**. You would pass the query of `type:user+agentID:XXXX`. The agentID, would be the value from step D above.

Using curl

```
curl https://subdomain.zendesk.com/api/v2/search.json?query=type:user+agentID:1234 -v
-u {email_address}:{password}
```

5. Screen pop events (new Zendesk tabs) for inbound calls:

5.1 - Create a new ticket and display it to an agent

Once an agent answers a call, you can programmatically create a new ticket and display it to the agent. Information about the call can be added to the ticket and the ticket is displayed to the agent in a new tab in their open Zendesk instance -- ready for the agent to add comments and enter associated information about the customer interaction.

- To associate the new ticket to the agent that is talking to the customer **refer here**
- A ticket has to be associated to a user profile so before creating a new ticket, an **existing profile has to be found** or a **new profile has to be created**
- **VERY IMPORTANT:** To ensure tickets are reported on correctly and follow the right business rules that customers set up, new tickets that are created need to use the `/channels/voice/tickets` API endpoint and use the appropriate `via_id` parameter depending on the type of phone call: 45 (inbound call), 46 (outbound call)
- You can **add a voice comment** to the ticket upon creation



Eric Shen Jan 22 10:42 am

Call from: +1 (831) 247-4604
Time of call: January 22, 2014 10:42:08 AM
Answered by: Eric Shen

- We recommend **adding a tag or populate call information into custom ticket fields**
- **In the app setting**, you can provide the option to not automatically screen pop a new ticket and instead **just the user profile of the caller**

[Full details / sample code can be found here](#)

5.2 - Display a user's profile to an agent

The telephony system can search for a user profile in Zendesk via the caller's phone number. If the caller is a known user in Zendesk, the user's Zendesk profile can be displayed in a new tab in the agent's Zendesk instance once the call is answered. The agent can then decide to look up existing tickets related to the user or create a new ticket via the Zendesk interface. [Full details / sample code can be found here.](#)

Note: A customer may have more than one phone number. If there are additional phone numbers they're probably on the end-user profile as custom user field(s). We require separate searches for each field as you cannot search across all the different fields in one API call. You'll need to search the custom user fields using the associated "field_key". [More info here.](#)

5.3 - Open an existing ticket for an agent, if caller enters ticket number

The telephony system can request and display a specific ticket in the Zendesk agent interface after the agent answers a call. For example, if a ticket was created for a customer and the customer calls a second time, the [most recent ticket associated to the customer](#) can be displayed to the agent. Or if the customer enters ticket #1234 in the IVR the telephony system can screen pop ticket #1234 in the agent's Zendesk instance.

[Full details / sample code can be found here --- and here!](#)

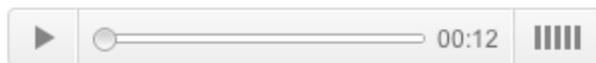
6. Adding a recording or text transcript (speech-to-text) to a Zendesk ticket with the ability to play/stop recording in Zendesk

The telephony system can add a recording or transcription to a ticket after a call is concluded. The ticket would be updated with a new comment that includes an in-product ability to



Eric Shen Feb 12 03:50 pm (assign)

Phone Call from: Eric Shen



Call Details

Call from: +1 (831) 247-4604

Call to: +1 (312) 300-6974

Time of call: February 12, 2014 03:49:20 pm

Location: Santa cruz, California, United States

Answered by: Eric Shen

Length of phone call: 39 seconds

play/stop the voice recording. Or, the transcription can be added as a comment.

Note:

- The link to the recording source file gets passed in the API when adding the voice recording to the ticket. Zendesk does not store the actual recording file.

- To successfully play the audio file it will have to be in a MP3 or WAV format

JSON format

data.json

```
{ "ticket": {  
  "voice_comment": {  
    "from": "+16617480240",  
    "to": "+16617480123",  
    "recording_url": "http://www.yourdomain.com/recordings.mp3",  
    "started_at": "2013-06-24 15:31:44 +0000",  
    "call_duration": 414,  
    "answered_by_id": 6,  
    "transcription_text": "The transcription of the call",  
    "location": "Dublin, Ireland"  
  } }  
}
```

Using curl with data.json

```
curl https://{subdomain}.zendesk.com/api/v2/tickets/123.json \  
-H "Content-Type: application/json" \  
-d @data.json \  
-u {email_address}:{password} -v -X PUT
```

[Full details / sample code can be found here](#)

7. Create a Zendesk ticket based on a voicemail left by a caller

If a voicemail is received, the telephony system programmatically creates a Zendesk ticket with a link to the voicemail's recording or transcription (or both). **REMINDER:** To ensure tickets are reported on correctly and follow the right business rules that customers set up, these tickets need use `via_id` parameter "44".

[Full details / sample code can be found here](#)

8. IVR integration / data dips

When a caller calls into the IVR, you can search Zendesk for existing [user information](#) or [ticket](#)

information related to the caller. **More on search here.** This information can be used for call routing or other functions within the IVR based on business rules. For an example, if a customer from organization Widgets is calling the mobile app technical support number, route the call to agent Jane Smith, **add “mobile app” as a tag**, and **assign to the “Tech Account Mgmt”**.

Tags

mobileapp x
vip x

Assignee*

👤
Technical Account Management
▼

9. To support reporting and business flow rules, you can populate ticket fields with call data

The telephony system can add data collected in the IVR, during the call, and after the call ends to the ticket. Data such as:

- Call metrics such as call time, hold time, queue time, etc
- Wrap-up code after the call ends
- Data that is collected in the IVR (e.g. customer hit #2 for technical support)

This data would need to be saved **via a tag** or **custom field** to the Zendesk ticket. **Custom ticket fields** need to be configured in a customer’s Zendesk instance. We suggest **setting up custom ticket fields programmatically when an app is installed**.

Data can then at any point be saved to custom ticket fields **through an UPDATE call via the Zendesk tickets API**. This data will then be available in Zendesk Insights (our embedded reporting/analytics product).

POINTS OF CONTACT

Name	Role	How can I help?	Email
Steven Larsen	Technology Partnerships, Business Development	<input type="radio"/> Primary contact <input type="radio"/> GTM & sales support	slarsen@zendesk.com
Eric Shen	App & Integrations Manager, Platform	Technical integration questions / testing	eshen@zendesk.com
Neil Weldon	Product Mgr, Voice	CTI roadmap	nweldon@zendesk.com