



The bridge to possible

“Hello! How can I help you today?”

Conversational Experiences in our Contact Center
with Google DialogFlow and the Power of Code

Alfonso Sandoval Rosas, Network Software Engineer

 @ponchotitlan

Cisco Webex App

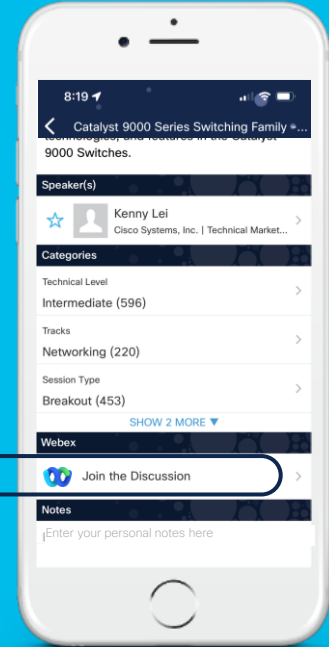
Questions?

Use Cisco Webex App to chat with the speaker after the session

How

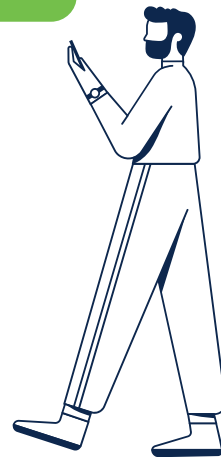
- 1 Find this session in the Cisco Live Mobile App
- 2 Click “Join the Discussion”
- 3 Install the Webex App or go directly to the Webex space
- 4 Enter messages/questions in the Webex space

Webex spaces will be moderated until February 24, 2023.



But first, a horror story

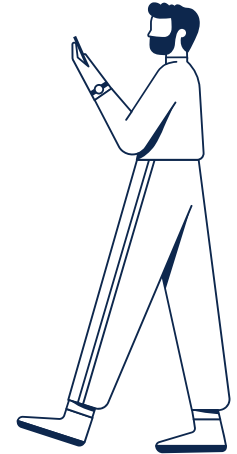
** ALL FLIGHTS CANCELLED **
Due to bad weather



But first, a horror story

- “Welcome to ACME airlines customer support.
For information regarding your flight, press 1 ... Or
wait in the line for an agent to take your call”

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(Goes through all the IVR menu)
(Gets kicked out from the waiting
queue in intervals of 20 mins)



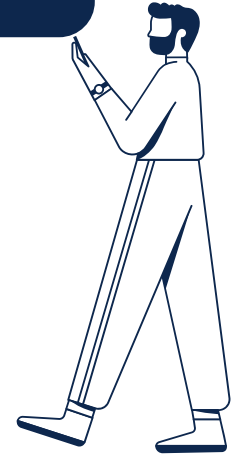
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- “Oh, I’m sorry. You are in the [*lost baggage, booking, support*] queue. Let me transfer your call to the appropriate queue ...”



But first, a horror story

- "Welcome to ACME airlines customer support. For information regarding your flight, press 1 ... Or wait in the line for an agent to take your call"

**** ALL FLIGHTS CANCELLED ****
Due to bad weather

- "Oh, I'm sorry. You are in the [*lost baggage, booking, support*] queue. Let me transfer your call to the appropriate queue ..."

(Goes through all the IVR menu)
(Gets kicked out from the waiting queue in intervals of 20 mins)

(5 hrs non-stop trying to reschedule the flight)



But first, a horror story

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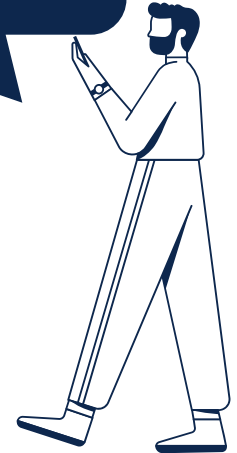
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(Goes through all the IVR menu)
(Gets kicked out from the waiting queue in intervals of 20 mins)

(5 hrs non-stop trying to reschedule the flight)

- "All the flights for today have been already taken. The next flight for your destination departs in 3 days ..."

(...)



Agenda

- Today's Conversational Experiences in the Contact Center
- Google DialogFlow ES integration
- Enhancing with NodeJS coding
- Use Case example: Customer ID through a voice questionnaire
- References

This session is about

Quick recap on DialogFlow ES technology and Cisco CVP

Use Case Design walkthrough

DevNet Code and tooling walkthrough

Exciting DevNet project demo

This session is NOT about

Deep-dive into DialogFlow ES Agent design*

Cisco CVP/CVA integration setup with DialogFlow*

*There are references of these topics at the end of the presentation

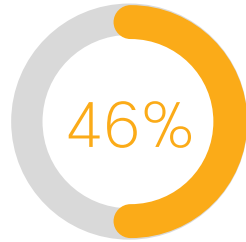
Today's Conversational Experiences in the Contact Center



Customer experience with traditional IVRs



of customers experience frustration when reaching out to an IVR

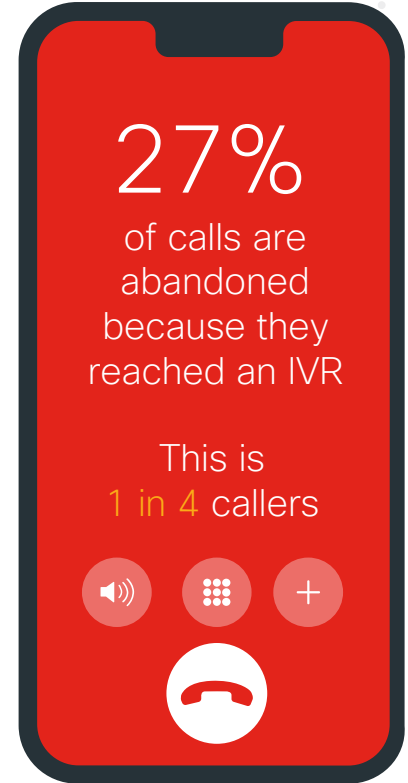


of customers feel that the IVR forces them to listen to irrelevant options

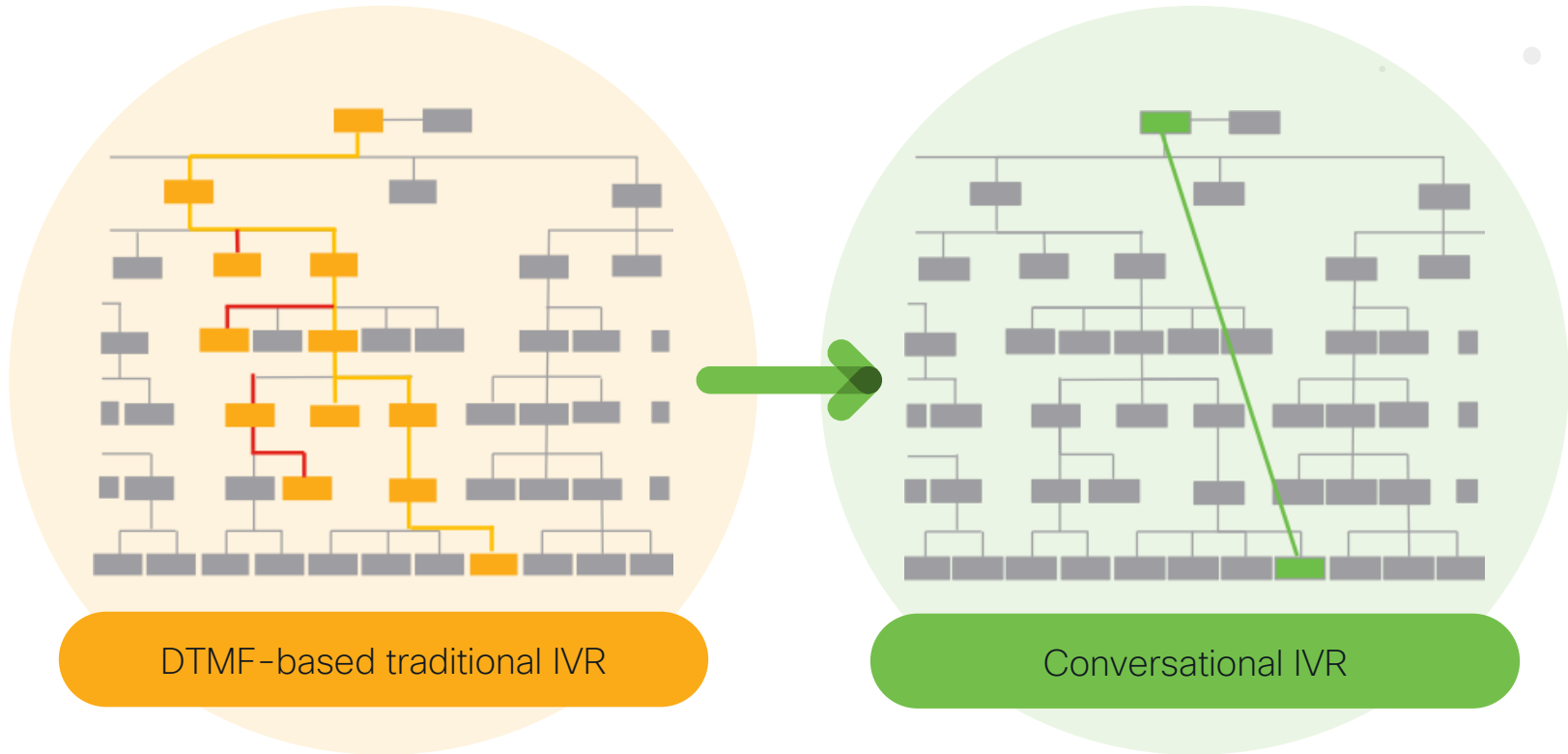


of customers complain about having to repeat themselves very often

Source: Vonage report, 2021



The Conversational Experience approach



Google DialogFlow ES integration



Google DialogFlow



A natural language understanding platform for designing of conversational user interfaces



Integration with different interaction channels

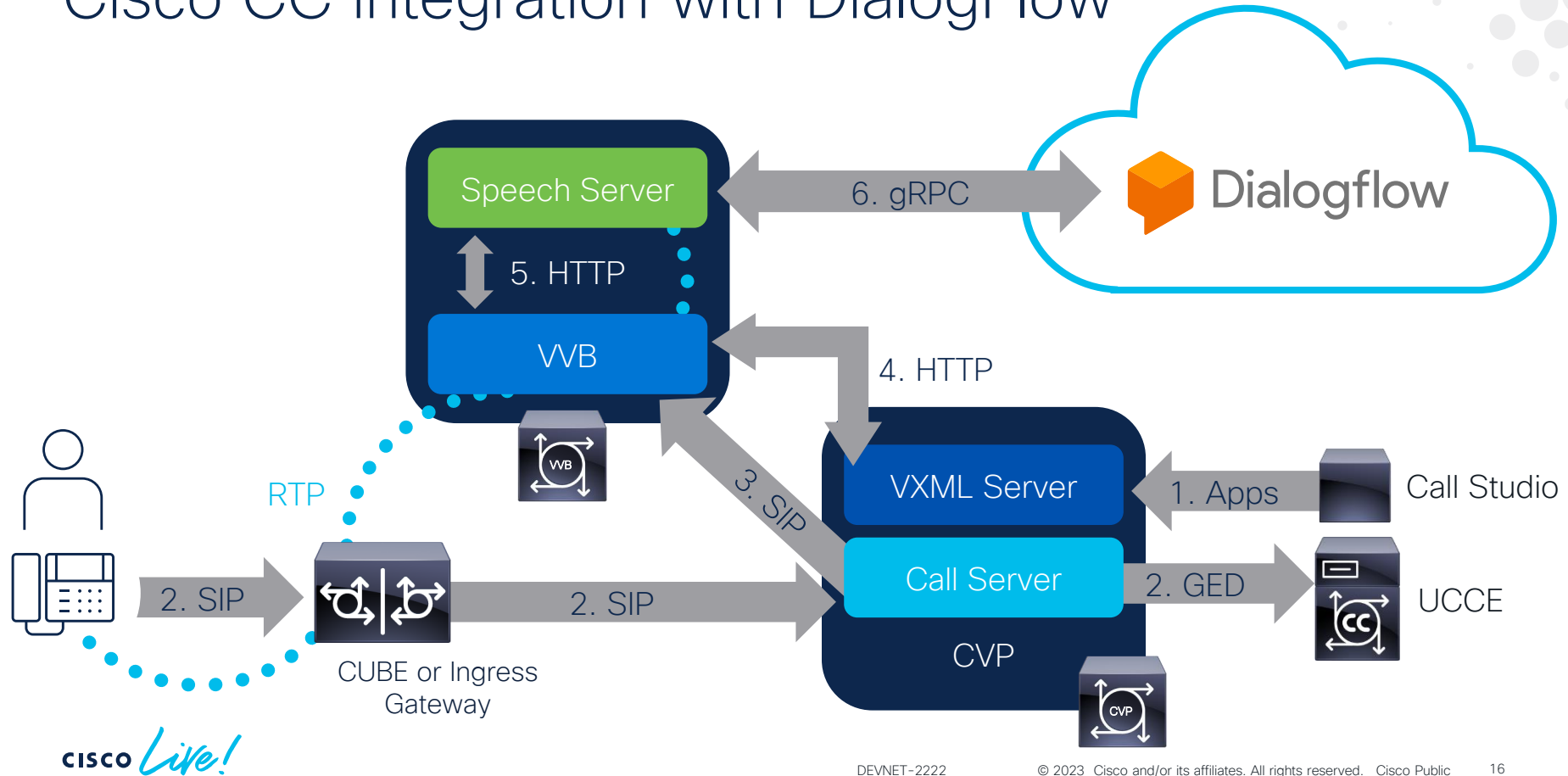
GCP-based platform

NLU
(Natural Language
Understanding)

ASR
(Audio Speech Recognition)

TTS
(Text-to-Speech)

Cisco CC integration with DialogFlow

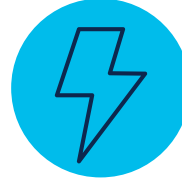


Google DialogFlow ES terminology



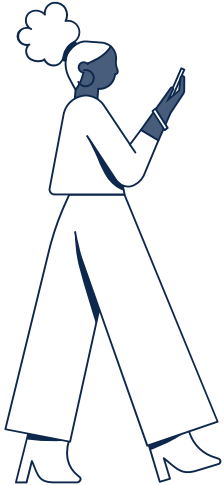
Agent

Virtual agent which handles conversations with users



Intent

Entity matched by user's input for triggering a workflow



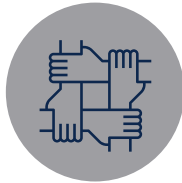
Parameter

Variables within the user input



Entity

A parameter data type (System-defined, Custom)



Context

Rule to match for linking intents together (Input/Output)



Fulfillment

Calling of a 3rd party service via API requests

An interaction lifecycle

I want to report an
internet issue at
742 Evergreen
Terrace



Dialogflow

An interaction lifecycle

I want to report an
internet issue at
742 Evergreen
Terrace



Dialogflow



Match intent



Find
parameters



Map entities

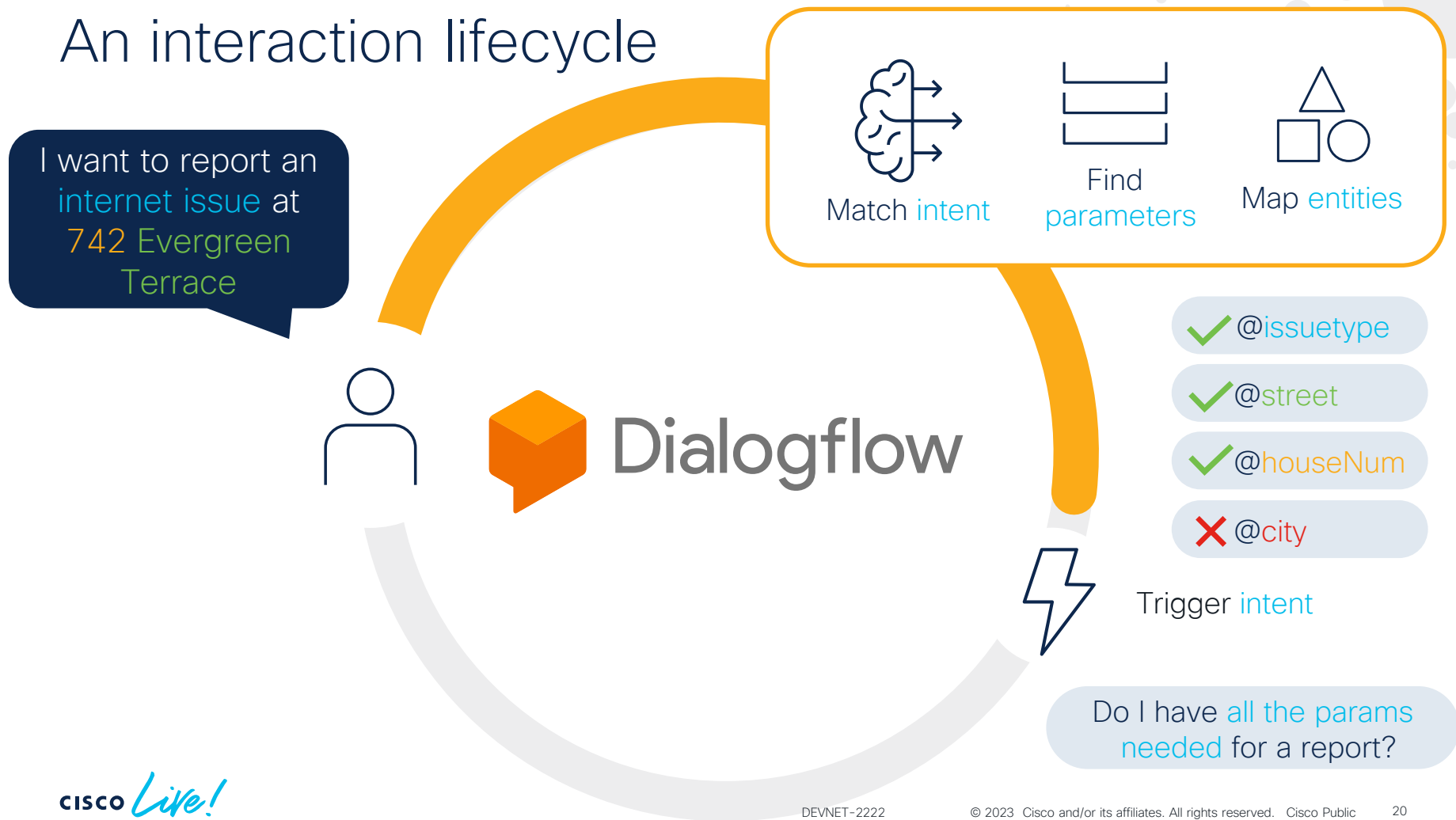
✓ @issuetype

✓ @street

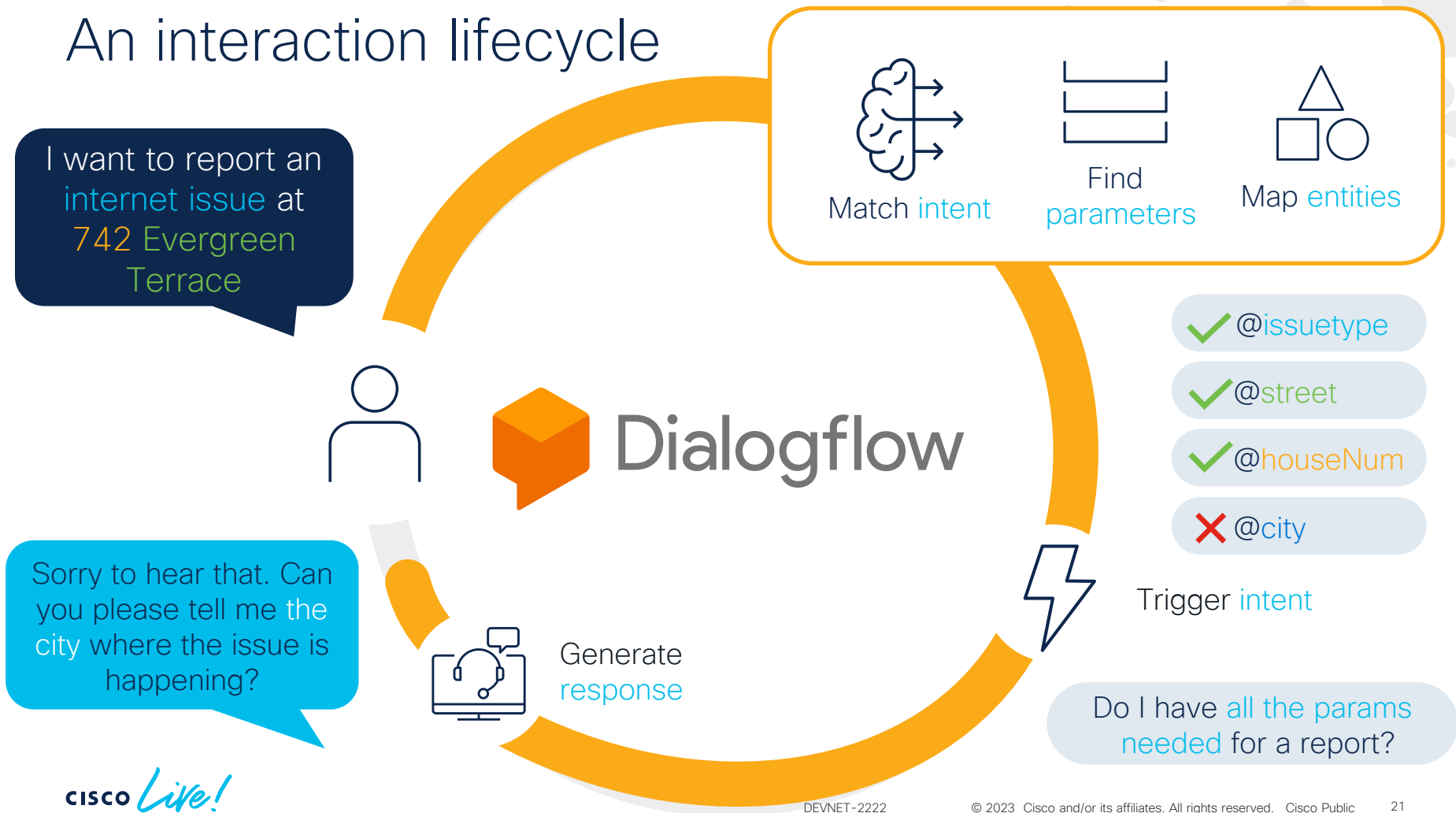
✓ @houseNum

✗ @city

An interaction lifecycle



An interaction lifecycle



Fulfillment

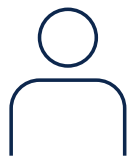
Sure, the city is
Springfield



Dialogflow

Fulfillment

Sure, the city is
Springfield



Dialogflow



Match **intent**



Find
parameters



Map **entities**

✓ @issuetype

✓ @street

✓ @houseNum

✓ @city



Trigger **intent**

How do I invoke our report creation service?



Reports
API

Fulfillment through Cisco CVP

Pros

Custom Call Studio elements for REST API invocations and Java code snippets

Included out-of-the-box in Call Studio

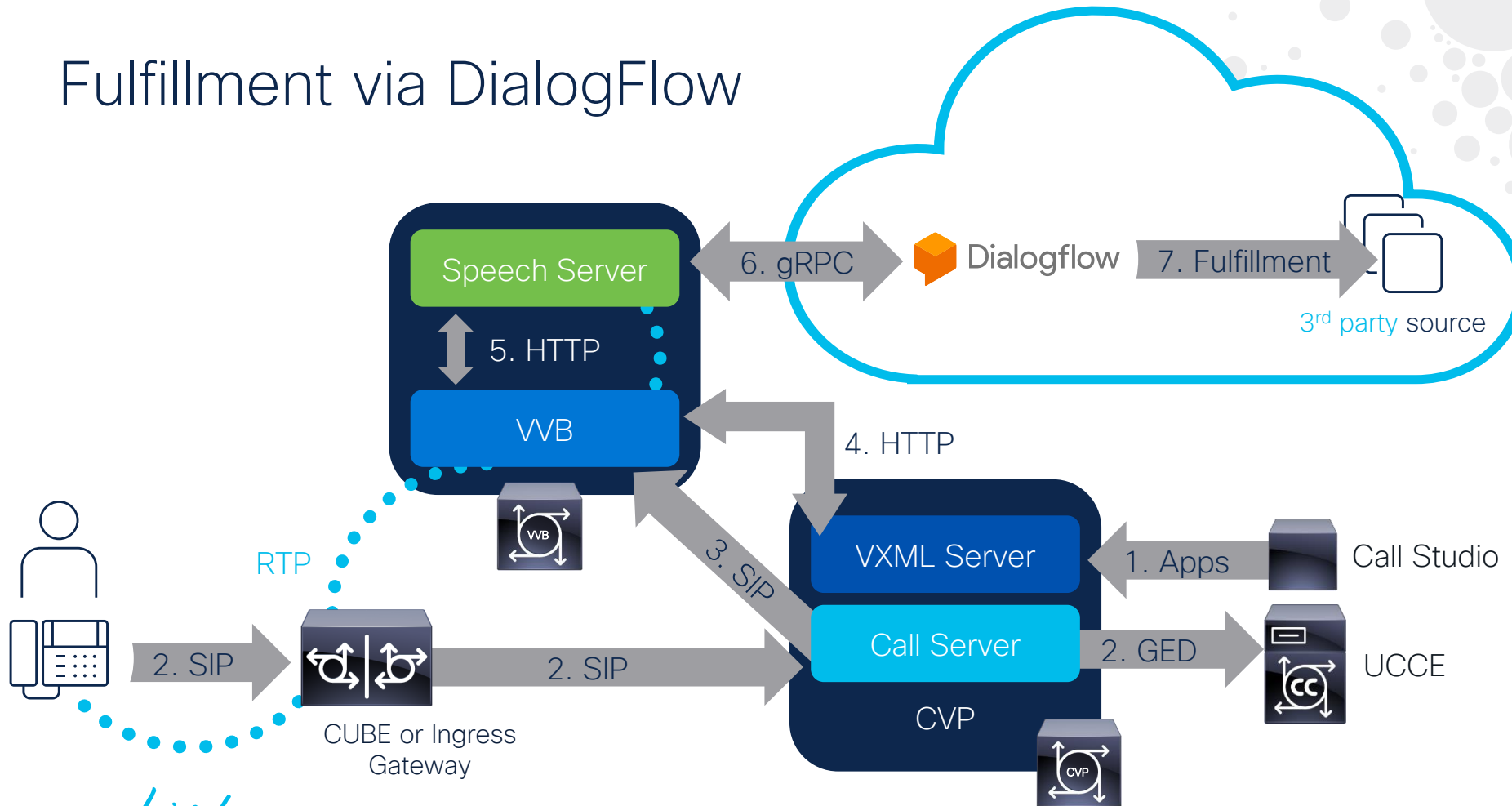
Cons

Very specific usage

Requires the data from DialogFlow

Steep learning curve – only Contact Center engineers can design and deploy new services

Fulfillment via DialogFlow



Webhook

DISABLED ☐

Your web service will receive a POST request from Dialogflow in the form of the response to a user query matched by intents with webhook enabled. Be sure that your web service meets all the [webhook requirements](#) specific to the API version enabled in this agent.

Inline Editor (Powered by Google Cloud Functions)

ENABLED ☒

Build and manage fulfillment directly in Dialogflow via Cloud Functions. [Docs](#)

i Newly created cloud functions now use Node.js 10 as runtime engine. Check [migration guide](#) for more details.

index.js package.json

```
1 'use strict';
2
3 const functions = require('firebase-functions');
4 const { WebhookClient } = require('dialogflow-fulfillment');
5 const axios = require('axios');
6
7
8
9
10
11
12
13
14
15
```

[View execution logs in the Google Cloud Console](#)

Last deployed on 12/01/2021 20:39

DEPLOY

Fulfillment through Cisco CVP

Inline Editor

Pros

Full programmatic approach

Embedded in web platform

Makes use of Google Cloud Functions (serverless)– no need to deploy any infrastructure

Cons

Monolithic structure

Google Cloud charges a fee for every request made outside of the cloud instance

Cannot work with call-specific data (ANI, call status, etc)

Enhancing with NodeJS coding



es

Intents

Entities

Knowledge [beta]

Fulfillment

Integrations

Training

Validation

History

Analytics

Prebuilt Agents

> Docs Trial
Free

Upgrade

⚡ Fulfillment

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Your web service will receive a POST request from Dialogflow in the form of the response to a user query matched by intents with webhook enabled. Be sure that your web service meets all the [webhook requirements](#) specific to the API version enabled in this agent.

URL*

BASIC AUTH

ciscoadmin

HEADERS

Enter key

Enter value

 Add header

SMALL TALK

Disable webhook for Smalltalk

Inline Editor (Powered by Google Cloud Functions)

DISABLED



Build and manage fulfillment directly in Dialogflow via Cloud Functions. [Docs](#)

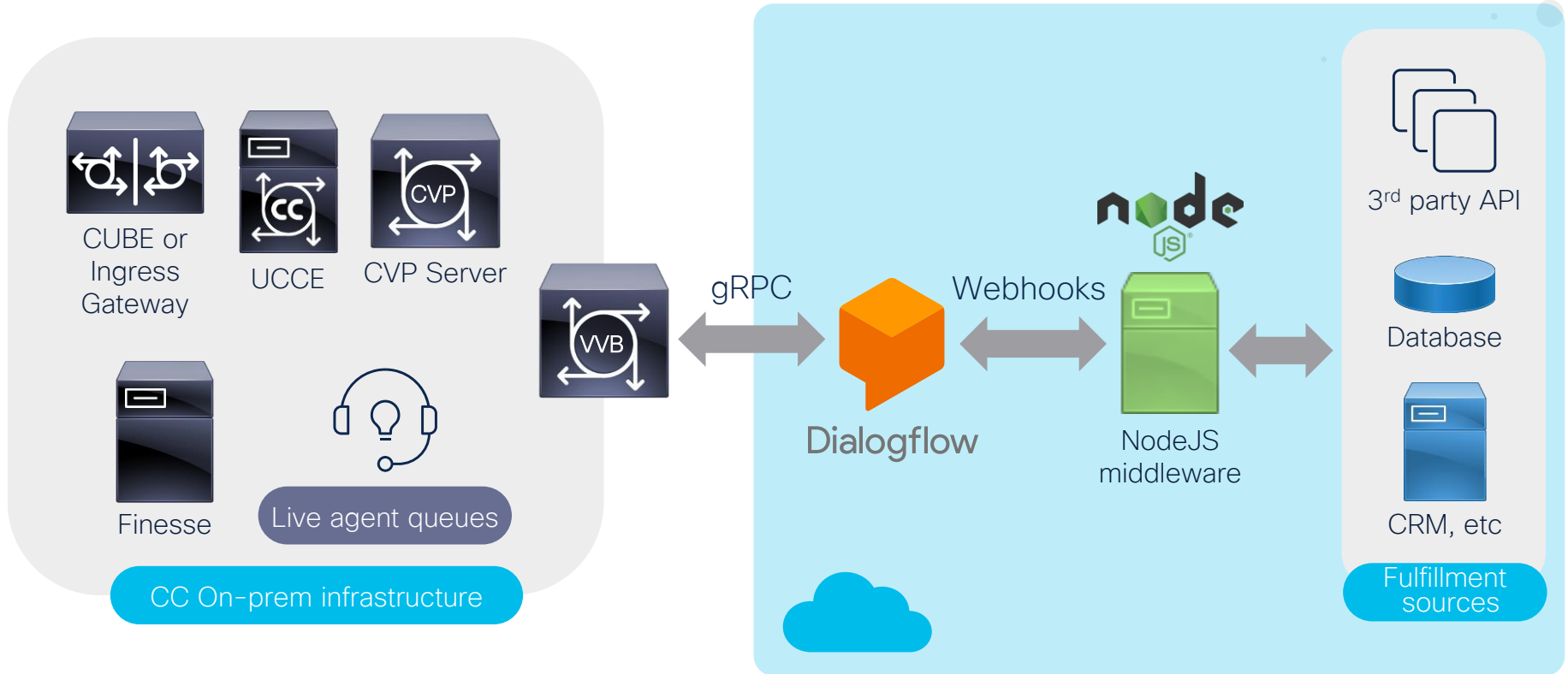


Newly created cloud functions now use Node.js 10 as runtime engine. Check [migration guide](#) for more details.

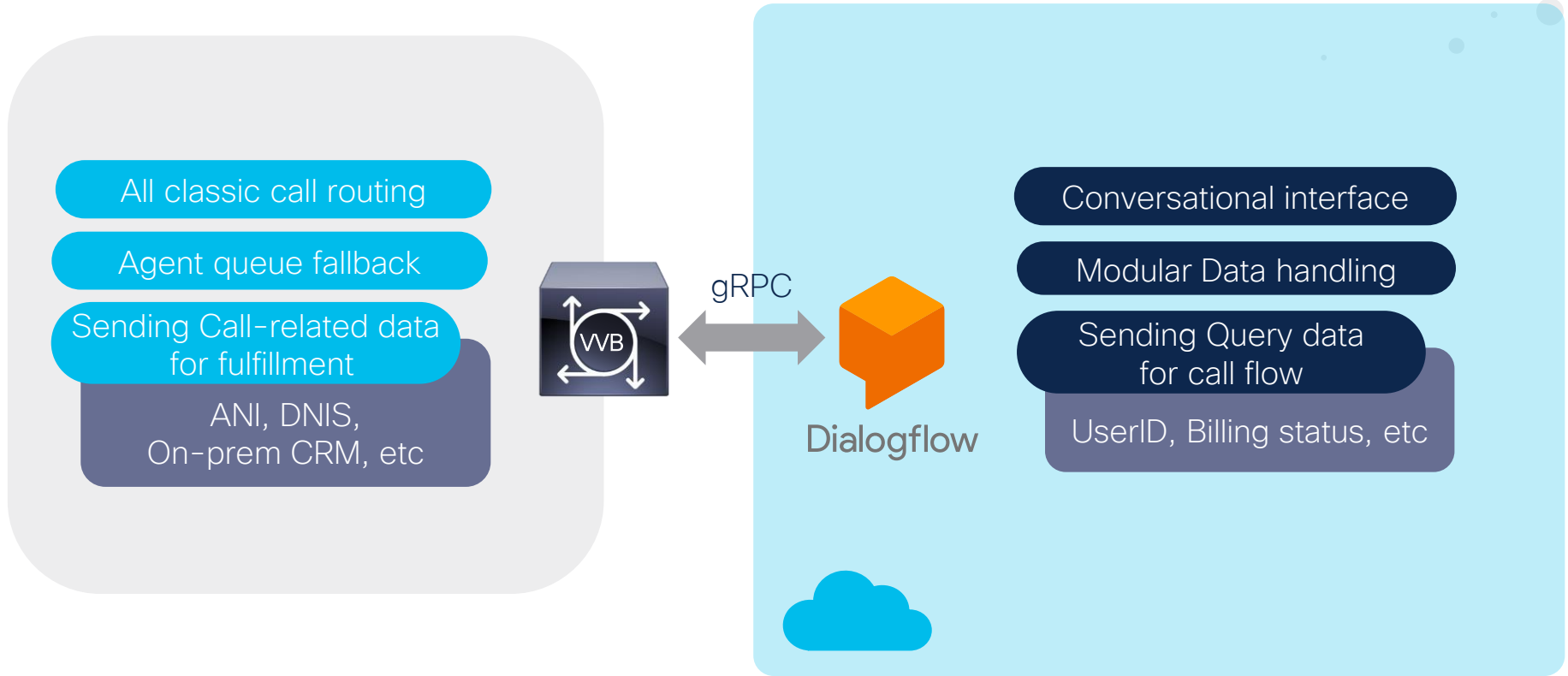
[index.js](#) [package.json](#)

```
1 // See https://github.com/dialogflow/dialogflow-fulfillment-nodejs
2 // for Dialogflow fulfillment library docs, samples, and to report issues
3 'use strict';
```

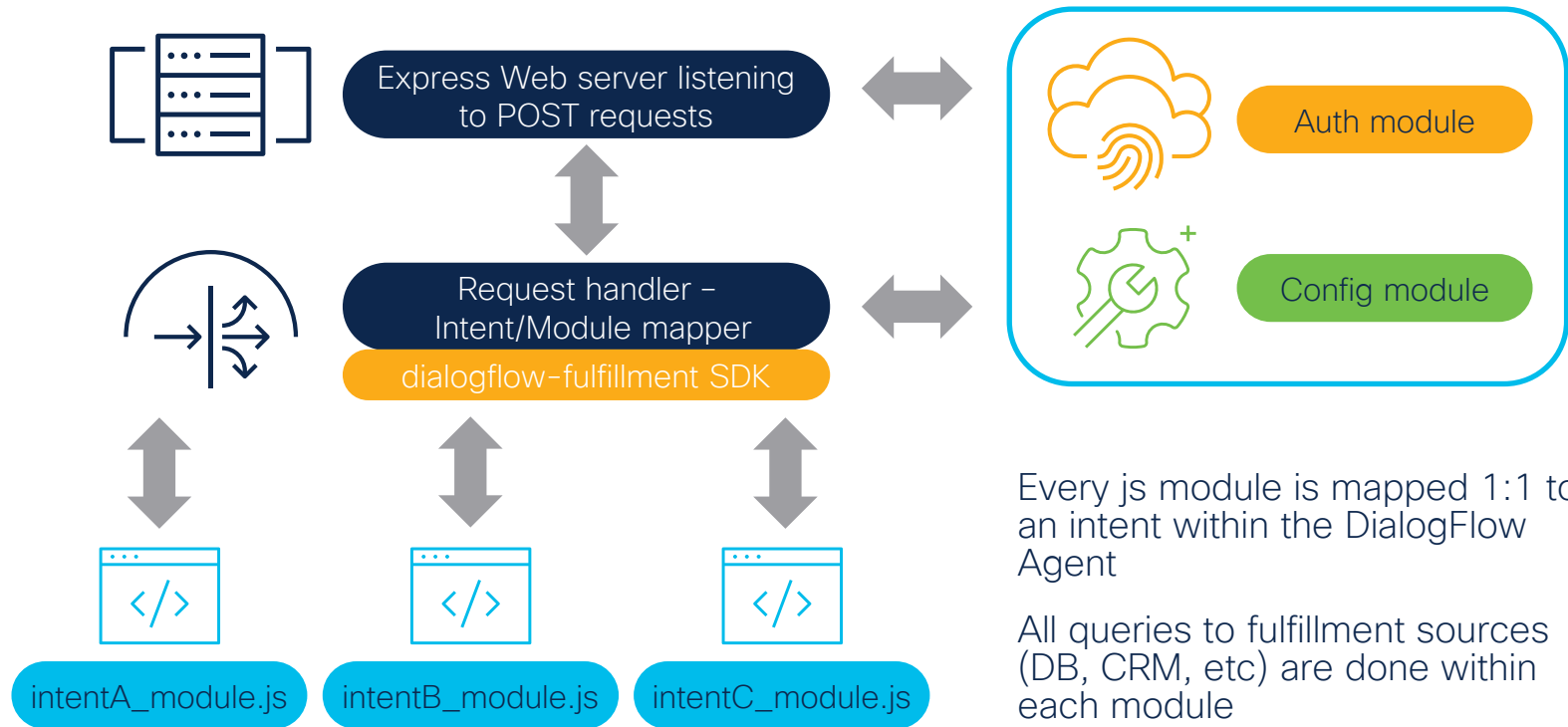
NodeJS middleware via Webhooks



Decoupling Fulfillment from Call Routing



Middleware architecture



Use Case example

Customer ID through a voice questionnaire





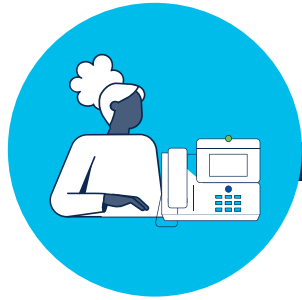
Customer calls to
report an issue with
their SP service



Customer calls to
report an issue with
their SP service



Identity of the user could not
be verified:
The ANI is not associated to
any account

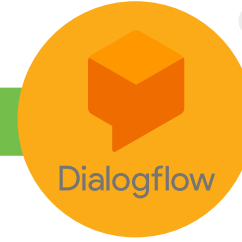


Customer calls to report an issue with their SP service



Identity of the user could not be verified:
The ANI is not associated to any account

Call ANI



Voice questionnaire:
“Please provide your name & city”



Customer calls to report an issue with their SP service



Identity of the user could not be verified:
The ANI is not associated to any account

Call ANI



Dialogflow

Voice questionnaire:
"Please provide your name & city"

Call ANI
Name
City



When the customer confirms, the middleware is called

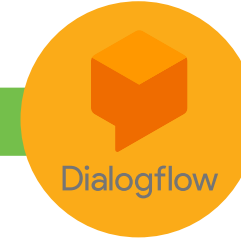


Customer calls to report an issue with their SP service



Identity of the user could not be verified:
The ANI is not associated to any account

Call ANI



Voice questionnaire:
"Please provide your name & city"

Call ANI
Name
City



Customer is identified via API and the new number is associated



When the customer confirms, the middleware is called



Customer calls to report an issue with their SP service



Identity of the user could not be verified:
The ANI is not associated to any account

Call ANI



Voice questionnaire:
"Please provide your name & city"

Call ANI
Name
City



CustomerID is sent to CVP.
Call moves on

Customer ID



Customer is identified via API and the new number is associated



When the customer confirms, the middleware is called

Use Case construction



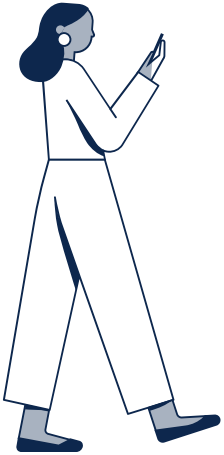
Agent design in DialogFlow



NodeJS Middleware module coding



CallStudio generic app creation



Agent design in DialogFlow



The call control goes
to the agent

Agent design in DialogFlow



The call control goes
to the agent



Customer provides
their name and city

Agent design in DialogFlow



The call control goes
to the agent



Customer provides
their name and city



The agent asks for
confirmation

Agent design in DialogFlow



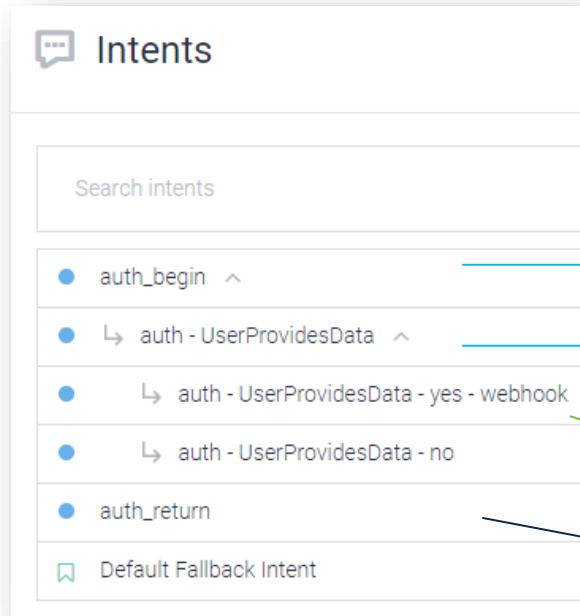
Agent design in DialogFlow



Agent design in DialogFlow



Agent design in DialogFlow



Welcome message. Prompt for user's name and city

Validation of the name and city provided against system entities. If OK, agent asks for confirmation

If the data is correct, fulfillment via Middleware is triggered in this specific intent

Return from middleware. End of questionnaire

Agent design in DialogFlow

• auth_begin

Contexts ?

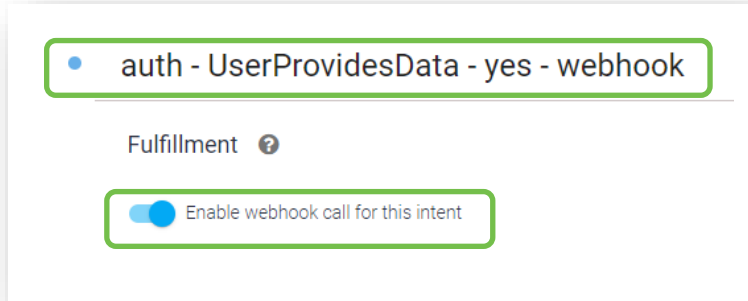
Add input context

10 customer_data ✕ 2 auth_begin-followup ✕ Add output context

Custom context for storing the collected data throughout the conversation

Must have enough lifespan for all the rounds

Webhook activation

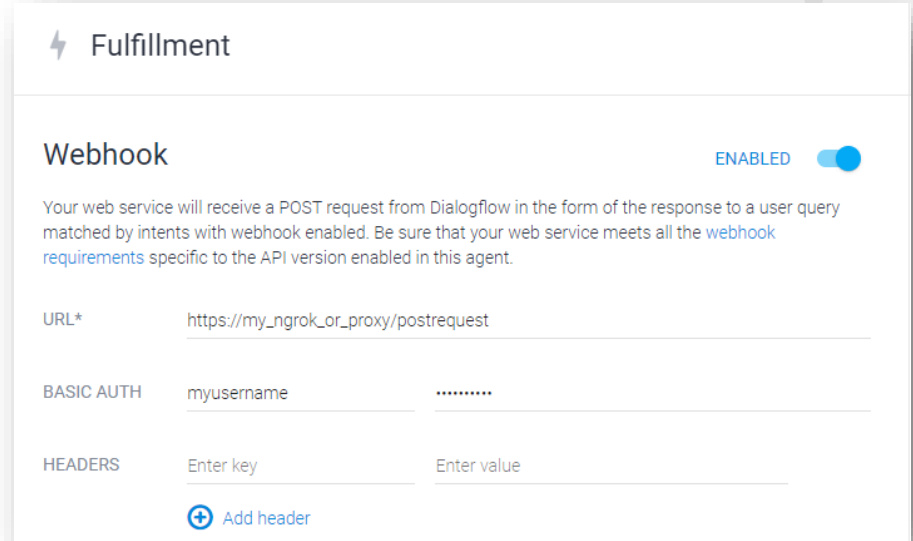


• auth - UserProvidesData - yes - webhook

Fulfillment ?

☒ Enable webhook call for this intent

Enable fulfillment in the intent which will communicate with the NodeJS middleware



⚡ Fulfillment

Webhook ENABLED ☒

Your web service will receive a POST request from Dialogflow in the form of the response to a user query matched by intents with webhook enabled. Be sure that your web service meets all the [webhook requirements](#) specific to the API version enabled in this agent.

URL*

BASIC AUTH

HEADERS

[+ Add header](#)

Provide all the required connection details in the Fulfillment panel

Agent design in DialogFlow

• auth_return

Contexts ?

Events ?

auth_return_event (x) Add event

Trigger the intent for when the Middleware returns data with a custom Event

Responses ?

DEFAULT +

Text or SSML Response

1 \$middlewaremessage

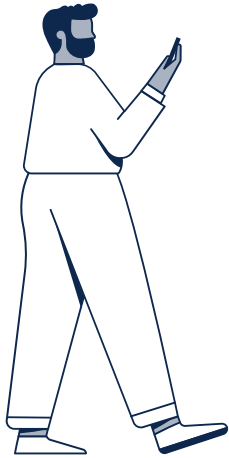
2 Enter a text or SSML response variant

ADD RESPONSES

☒ Set this intent as end of conversation ?

Prompt the Middleware's return to the user, and return the call control to CVP

Middleware module coding



1. Retrieve the collected data from DialogFlow



2. Retrieve the call data sent from CVP

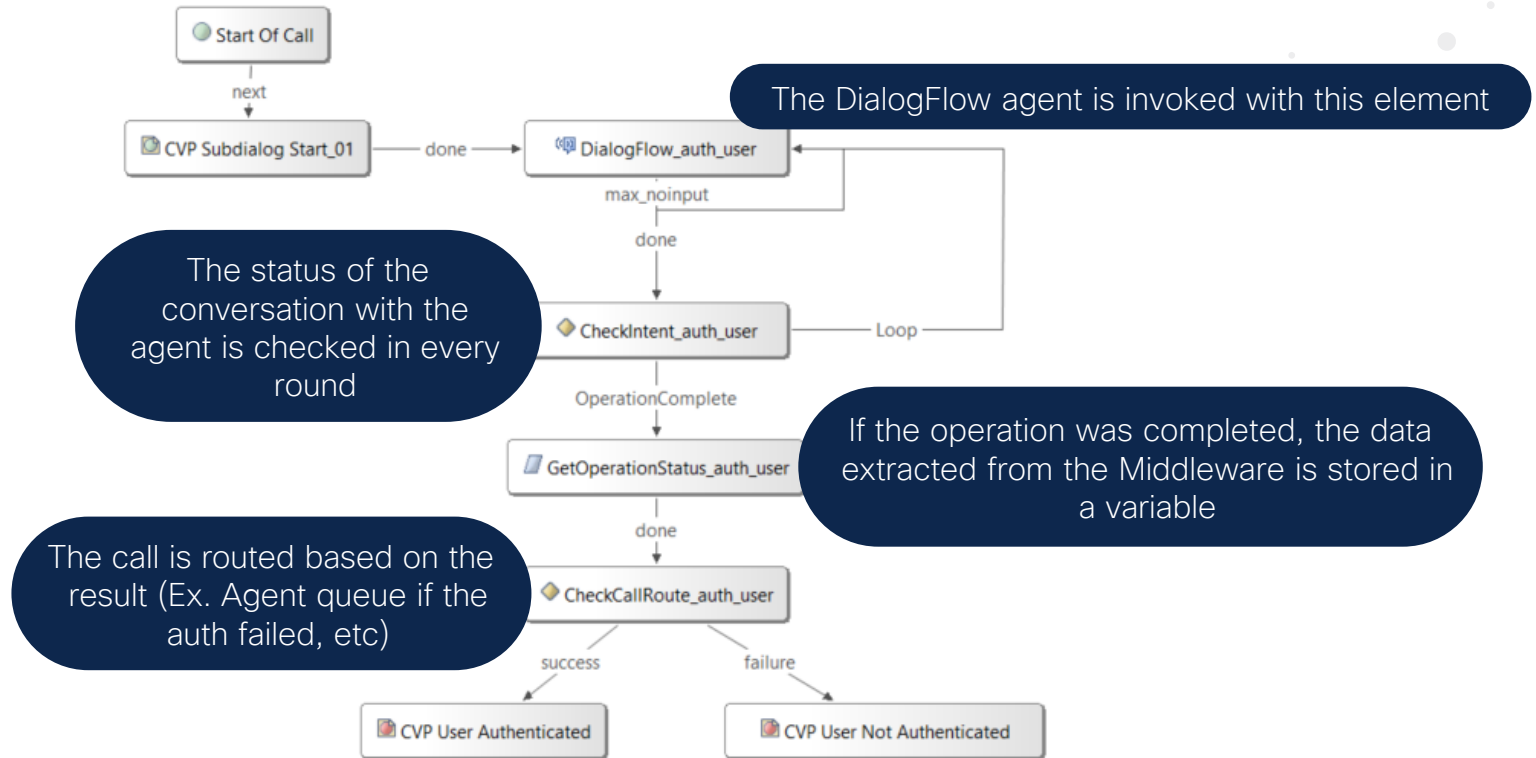


3. Query the API of interest and build a new context for returning results to CVP

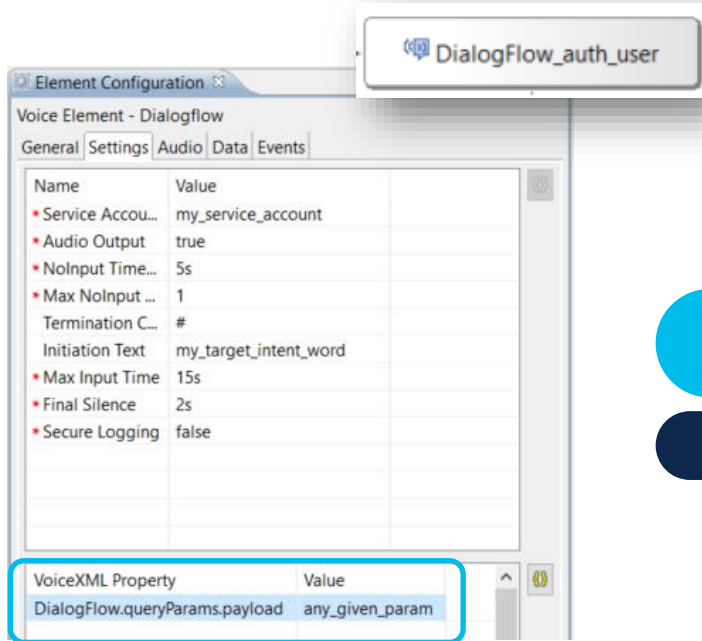


4. Include the new module in the handler

CallStudio generic app creation



CallStudio generic app creation



All call-related parameters are passed to DialogFlow via this VoiceXML Property

`"DialogFlow.queryParams.payload"`

Demo

References



References

Middleware boilerplate on DevNet Code Exchange
[cs.co/dfCVPMiddleware](https://github.com/cisco/dfCVPMiddleware)

DialogFlow ES console overview
<https://cloud.google.com/dialogflow/es/docs/console>

Official Cisco guide for DialogFlow integration with
CVP/CVA
[cs.co/DialogFlowCiscoCVP](https://github.com/cisco/DialogFlowCiscoCVP)



Collaboration

Cisco Contact Center

Learn about Webex Contact Center and transitioning from premise contact center to the cloud. Understand how digital channels and customer interaction automation can optimize the customer engagement experience for both cloud and premise solutions.

START

Feb 6 | 08:45

TECCCT-3001

Webex Contact Center Workshop:
Differentiating your Customer Experience

Feb 7 | 08:30

BRKCCT-2460

Next Gen Contact Center using CCAI

Feb 7 | 14:00

LTRCCT-2011

Webex Contact Center Analyzer
- Data and Analytics Lab

Feb 8 | 08:30

BRKCCT-2724

Exploring Webex Contact Center
functionality and use cases

Feb 8 | 16:45

BRKCCT-3735

Intelligently Handling Call Traffic
Between Premise & Cloud
Contact Centre

Feb 9 | 10:45

BRKCCT-2722

Understanding Webex Connect as
the platform for customer engagement
using digital channels

Feb 9 | 14:00

LTRCCT-3001

Webex Contact Centre New Digital
Channels Bot Capabilities

Feb 9 | 14:15

BRKCCT-2027

Contact Center Enterprise (CCE)
digital channels integration powered
by Webex Connect

Feb 10 | 11:00

FINISH

BRKCCT-2723

Demystifying voice connectivity and
real-time media handling in Webex
Contact Center

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The bridge to possible

Thank you

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ALL IN