

BUILD YOUR OWN VOICE ASSISTANT

@JARREDOOLSON

ASK QUESTIONS DURING THE SESSIONS!



slack

THERE IS A SEPARATE CHANNEL FOR EACH TRACK!

#2018--RED

#2018--ORANGE

#2018--YELLOW

#2018--GREEN

#2018--BLUE

#2018--PURPLE

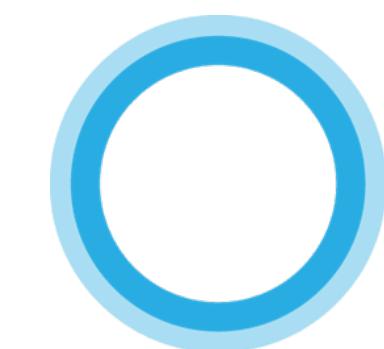
#2018--THANOS

#2018--GAUNTLET

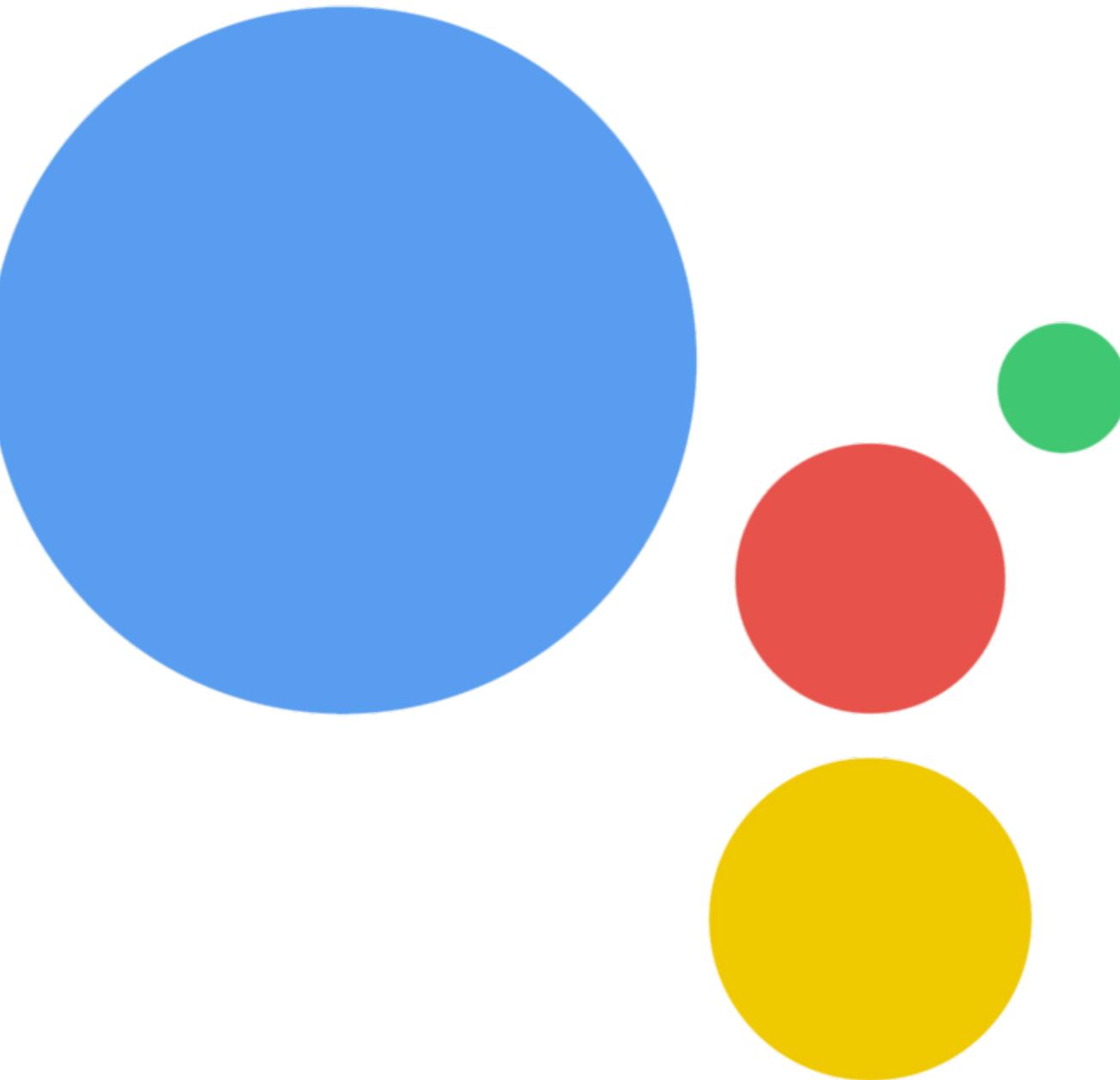
<http://stirtreksslack.herokuapp.com/>

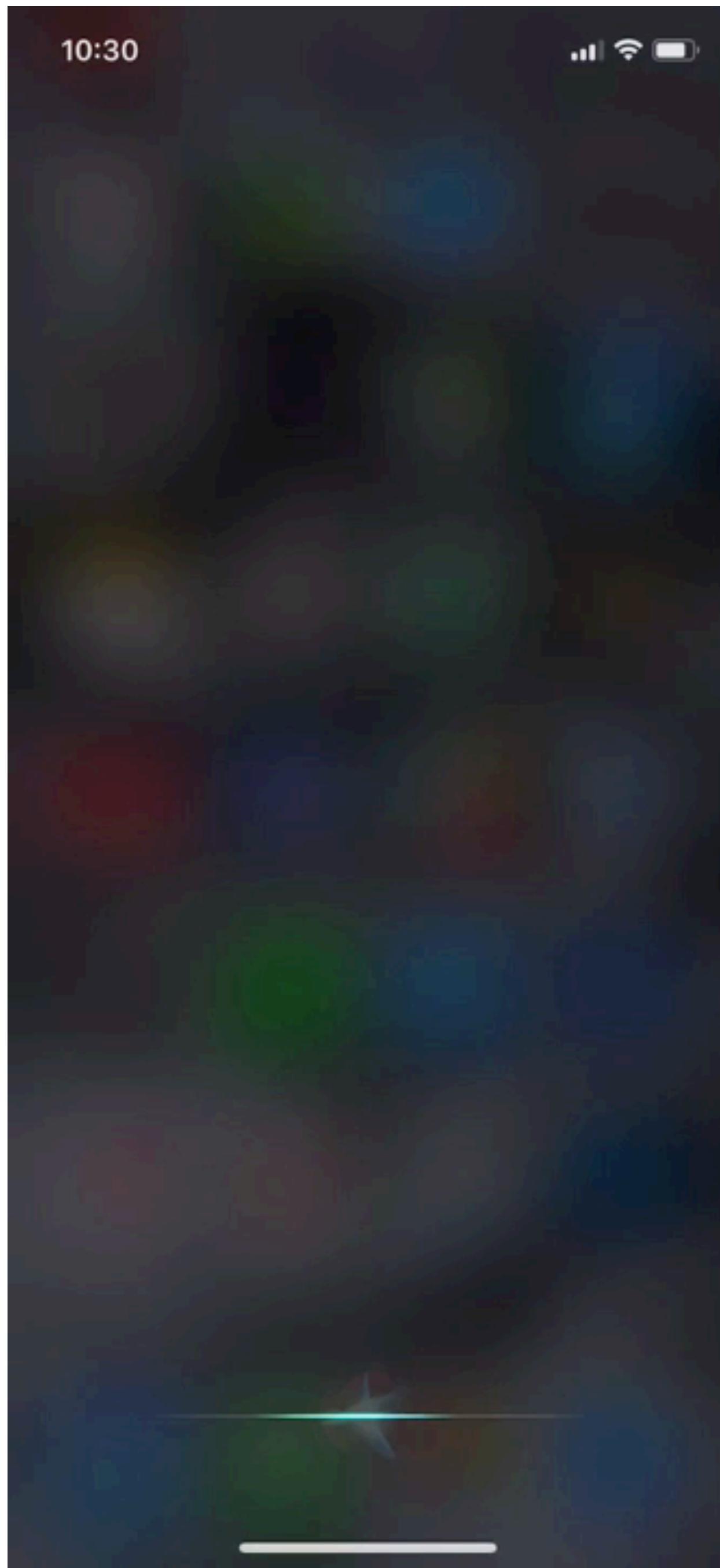


amazon alexa

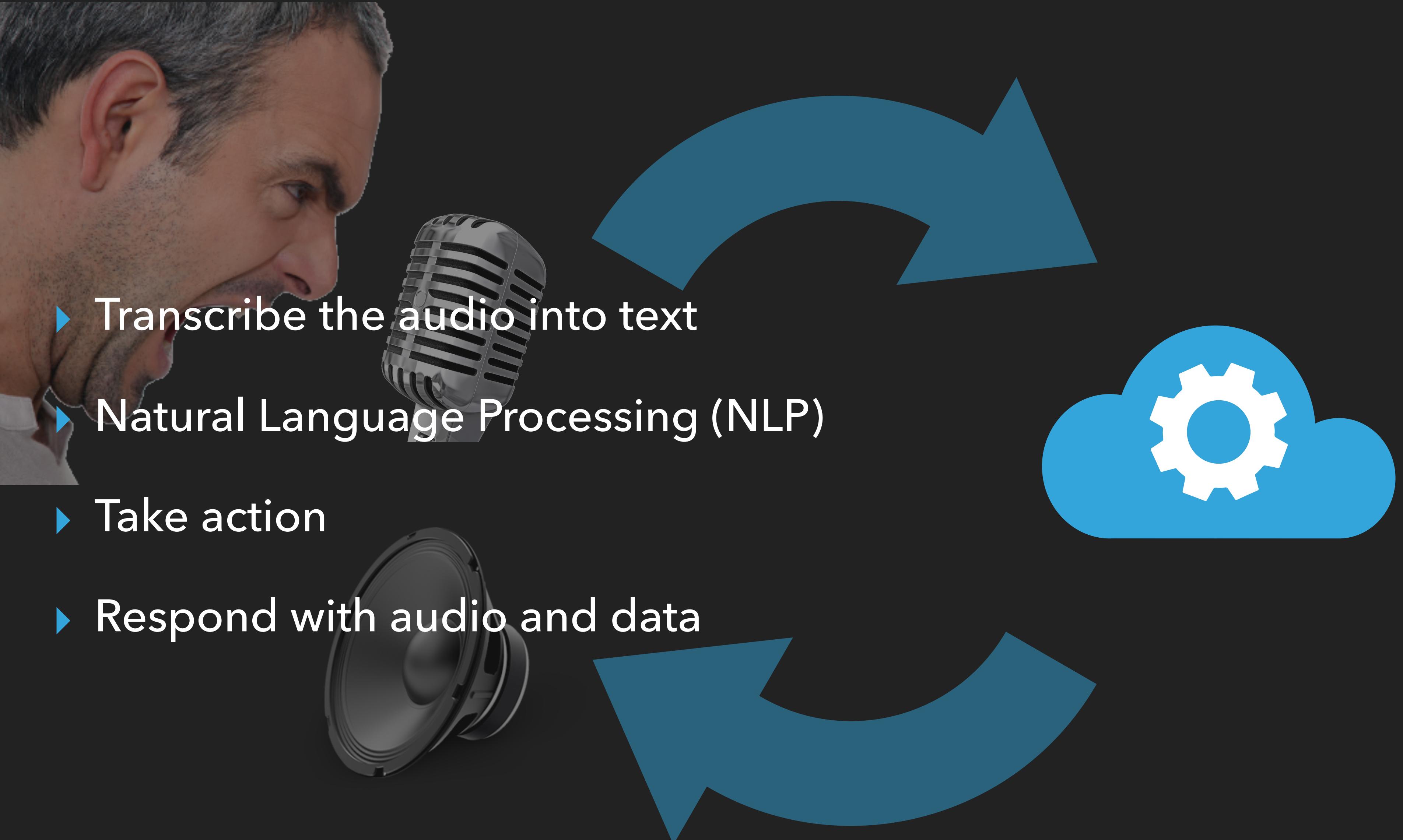


Cortana

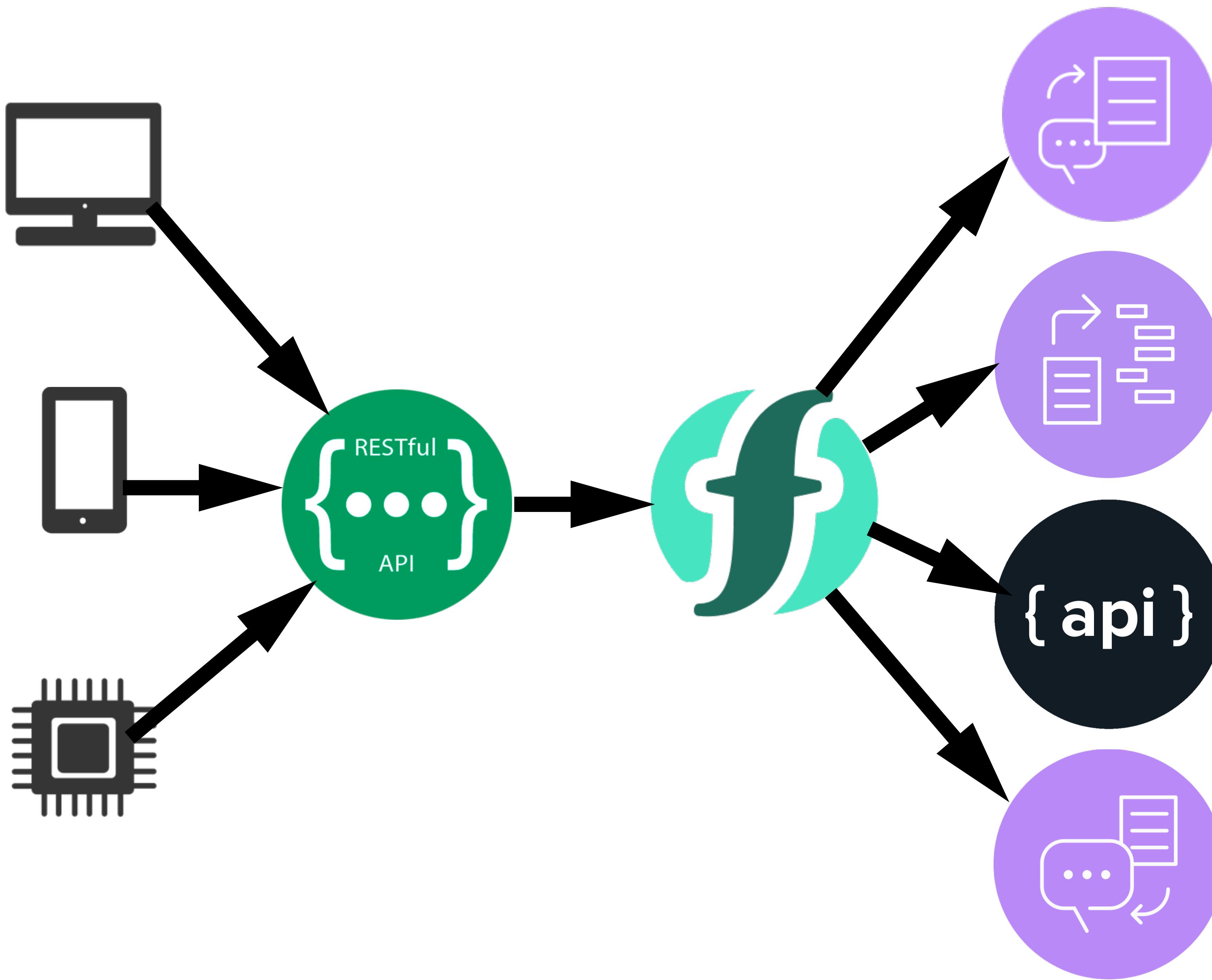
The Cortana logo consists of a light blue circle followed by the word "Cortana" in a blue sans-serif font.



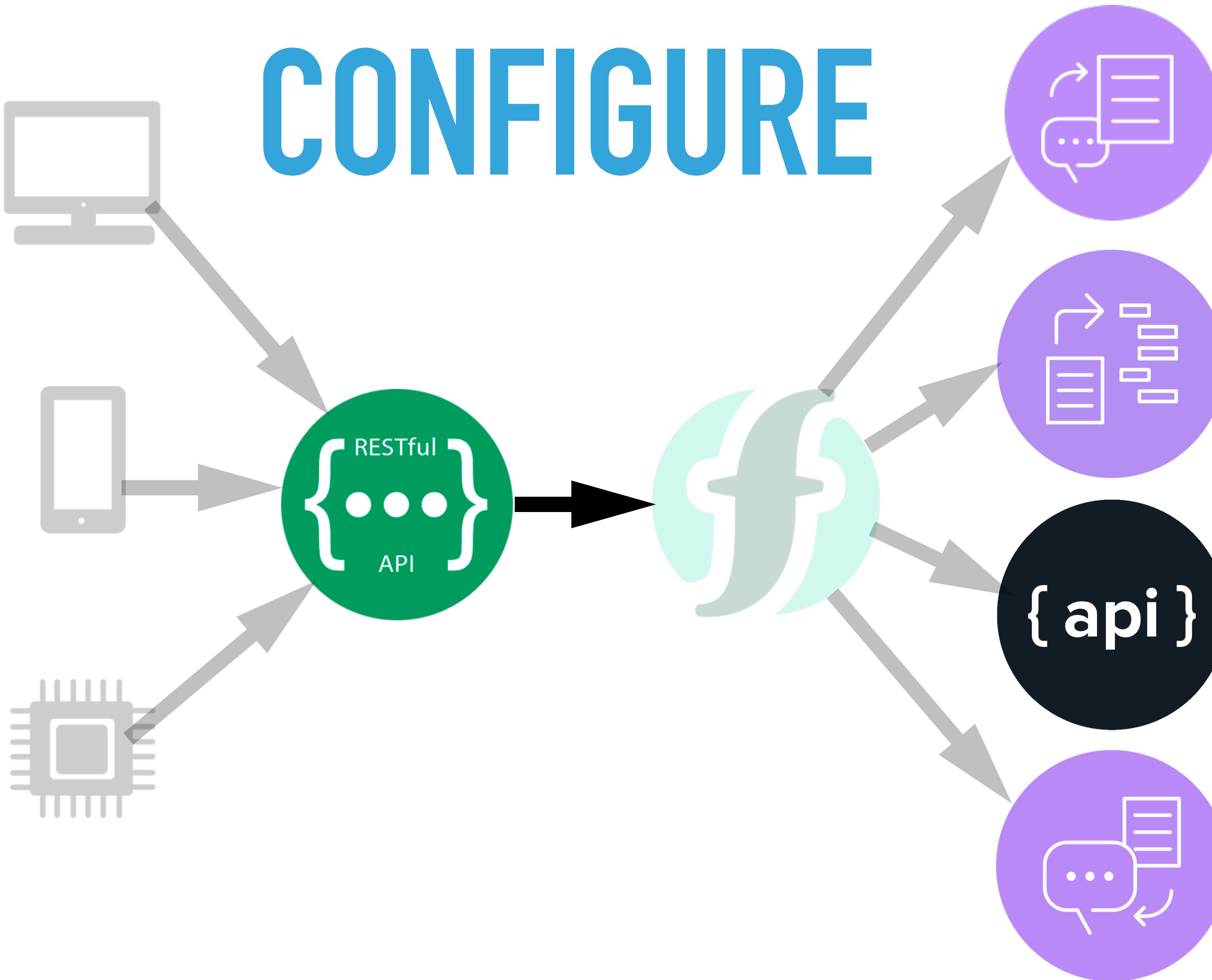




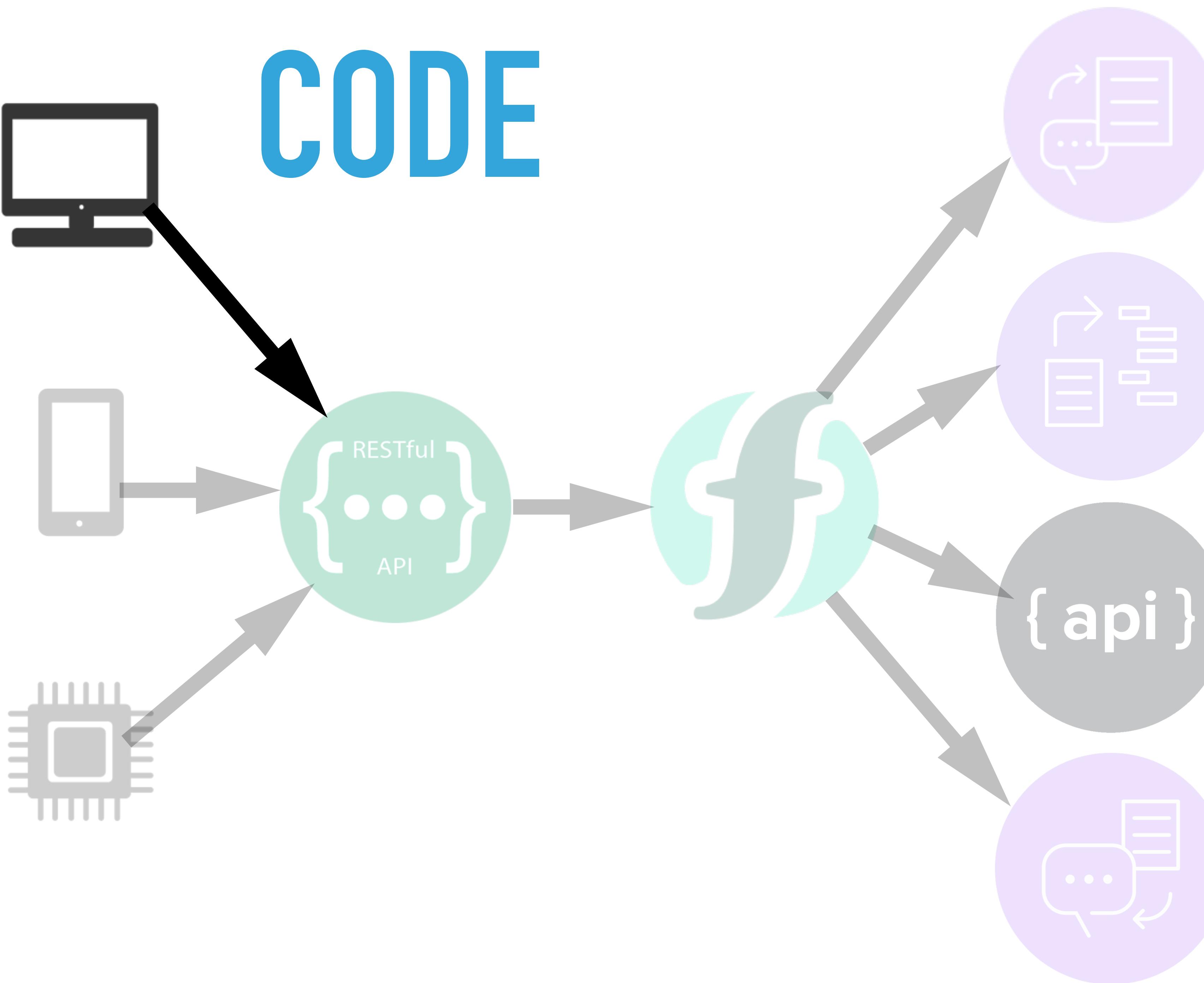
**WHAT EXACTLY ARE
WE GOING TO BUILD?**



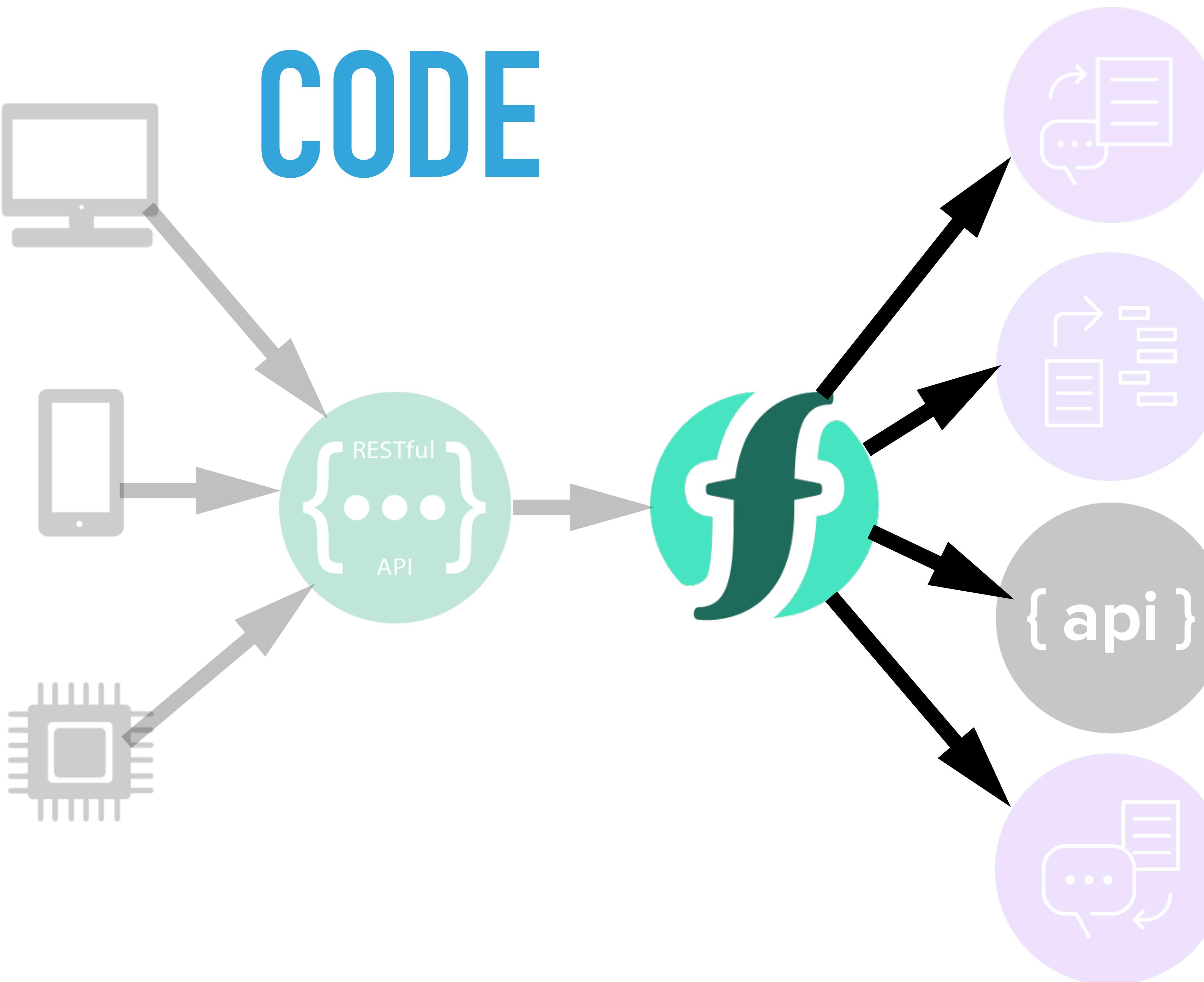
CONFIGURE



CODE



CODE



**WHERE ARE WE GOING
TO BUILD THIS?**

Built for all your applications. AI ready. Secure to the core.

IBM Cloud. The cloud for smarter business.

Innovate, interconnect and secure your business apps and data with ease, wherever they live.

[Why IBM Cloud](#)[Start innovating today](#)[Integrate with ease](#)

↓ Explore your options

↓ See client use cases

↓ Check out promotions

↓ Discover the latest

What makes it better?

Focus on enterprise innovation

Keep your data and applications secure and compliant in over 50 global data centers.

Get more from your data

Connect diverse data from inside and outside your firewall with industry-specific data science models.

Infuse cognitive throughout

Enhance problem solving exponentially with built-in AI and machine learning capabilities.

Give yourself more options

1

Develop cloud-native applications

Rapidly develop and deploy innovative cloud-native applications designed for the cloud economy.

[Start now](#)**2**

Create cognitive solutions

Create new partnerships between people and computers that enhance, scale and accelerate human expertise through IBM Watson®.

3

Fuel innovation with data and analytics

Engage your organization with data to answer the toughest business questions, uncover patterns, and breakthrough ideas.

[Let's talk](#)[Cookie Preferences](#)

WHAT IS A CLOUD FUNCTION?

STATELESS COMPUTE CONTAINERS THAT
ARE EVENT-TRIGGERED, MAY ONLY LAST
FOR ONE INVOCATION, AND FULLY
MANAGED BY A 3RD PARTY

Mike Roberts

All Categories >

Search

Filter

Infrastructure**Infrastructure**

Compute

Compute

Build your virtual environments.

**Bare Metal Server**

Bare metal servers provide the raw horsepower you demand for your processor-intensive and disk I/O-

IBM

**Virtual Server**

Our virtual servers deliver a higher degree of transparency, predictability, and automation for all

IBM

Network

Security

Containers

VMware

Platform

Boilerplates

APIs

Application Services

Blockchain

Cloud Foundry Apps

Data & Analytics

DevOps

Cloud Foundry

Functions

Integrate

Internet of Things

Mobile

Network

Security

Watson

Storage

Order storage.

**Block Storage**

Persistent iSCSI based storage with high-powered performance and capacity up to 12TB.

IBM

**File Storage**

Fast and flexible NFS-based file storage with capacity options from 20GB to 12TB.

IBM

**Object Storage**

Provides flexible, cost-effective, and scalable cloud storage for unstructured data.

Lite

IBM

Network

Order network.

**Content Delivery Network**

The Content Delivery Network service distributes content where it is needed. The first time content is requested

IBM

**Direct Link Dedicated**

Directly connect to IBM Cloud with a single tenant connection via a dedicated circuit or cross-connect

IBM

**Direct Link Dedicated Hosting**

Establish unparalleled network performance to and from your resources to IBM Cloud platform. Support for the

IBM

**Direct Link Exchange**

Aggregate your MPLS, VPLS, or EVPN into the IBM network through VLANs using one of our global netw

IBM

**Domain Name Service**

IBM Cloud offers domain registration services complete with dedicated support staff, knowledgeable custom

IBM

**IPSec VPN**

VPN access is designed to allow users to remotely manage all servers and services associated with the

IBM

**Load Balancers****Subnets/IPs****Virtual Router Appliance**

All Categories

Search

Filter

Infrastructure

Execute code on demand in a highly scalable, serverless environment.



Functions

Execute code on demand in a highly scalable, serverless environment.

IBM

Compute

Storage

Network

Security

Containers

VMware

Platform

Boilerplates

APIs

Application Services

Blockchain

Cloud Foundry Apps

Data & Analytics

DevOps

Finance

Functions >

Integrate

Internet of Things

Mobile

Network

Security

Watson

Getting Started

[Overview](#)[Pricing](#)[Concepts](#)[Integrations](#)[CLI](#)[iOS SDK](#)[API Key](#)[Documentation](#)[Actions](#)[Triggers](#)[Monitor](#)[APIs](#)

Getting Started with IBM Cloud Functions

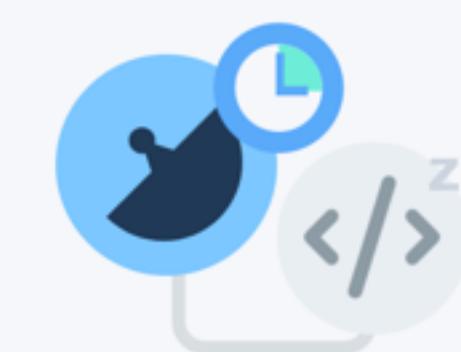
IBM Cloud Functions (based on Apache OpenWhisk) is a Function-as-a-Service (FaaS) platform which executes functions in response to incoming events and [costs nothing](#) when not in use. [Learn more](#)

[Start Creating](#)[Download CLI](#)

New on GitHub:

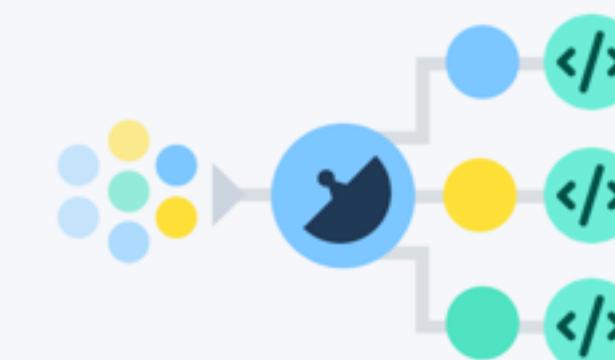
Try [Composer](#) for IBM Cloud Functions: build complex applications and workflows, 100% serverless. Available now as a Tech Preview from IBM Research.

Save costs, scale and integrate.



Cost-Effective Computing

Pay for what time you use down to one-tenth of a second.



Automatically Scale

Run your action thousands of times in a fraction of a second, or once a week. Action instances scale to meet demand exactly, then disappear.



Easy Integration

Trigger your actions from events in your favorite services, or directly via REST API.

Create



Create Action

Actions contain your function code and are invoked by events or REST API calls.



Create Sequence

Sequences invoke Actions in a linear order, passing parameters from one to the next.



Create Trigger

Triggers receive events from outside IBM Cloud Functions and invoke all connected Actions.



Create Action

Actions contain your function code and are invoked by events or REST API calls.

[Learn more about Actions](#)

[Learn more about Packages](#)

Action Name

Enclosing Package i

(Default Package) ▼ Create Package

Runtime i

Node.js 8 ▼

Looking for Java or Docker? [Java](#) and [Docker](#) Actions can be created with the [CLI](#)

[Cancel](#)

[Previous](#)

[Create](#)

Code

Parameters

Runtime

Endpoints

Connected Triggers

Enclosing Sequences

Actions /

speechToText

Code Node.js 8

Change Input

Invoke

```
1+ /**
2  *
3  * main() will be invoked when you Run This Action
4  *
5  * @param Cloud Functions actions accept a single parameter, which must be a JSON object.
6  *
7  * @return The output of this action, which must be a JSON object.
8  *
9  */
10+ function main(params) {
11    return { message: 'Hello World' };
12}
13
```

Code

Parameters

Runtime

Endpoints

Connected Triggers

Enclosing Sequences

Actions

 speechToText

Web Action

Enable as Web Action Allow your Cloud Functions actions to handle HTTP events. Learn more about [Web Actions](#).

Raw HTTP handling When enabled your Action receives requests in plain text instead of a JSON body

REST API

HTTP METHOD	URL
POST	https://openwhisk.ng.bluemix.net/api/v1/namespaces/jarred.128_dev/actions/speechToText

Fully Qualified Name

URL
/jarred.128_dev/speechToText

Save 



Getting Started

REGION
US South ▾
CLOUD FOUNDRY ORG
jarred.128 ▾
CLOUD FOUNDRY SPACE
dev ▾

Actions

Triggers

Monitor

APIs

Actions

Actions contain your function code and are invoked by events or REST API calls.

Search Actions

Create

Default Package

10 ▾ Items per page | 1-1 of 1 items

1 of 1 pages < 1 >

NAME ▾	RUNTIME	WEB ACTION	MEMORY	TIMEOUT
speechToText	Node.js 8	Enabled ✓	256 MB	60 s

Getting Started

Actions

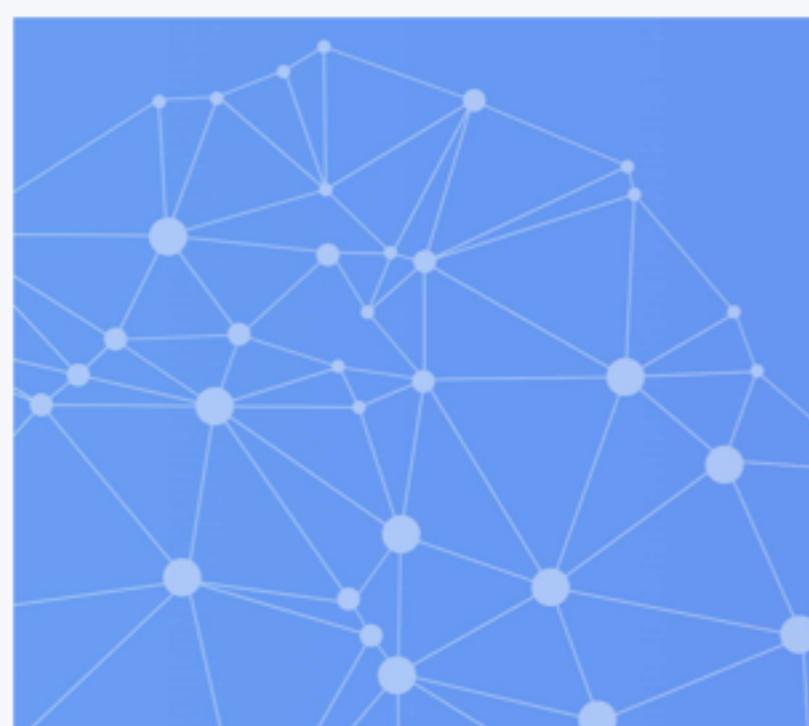
Triggers

Monitor

APIs

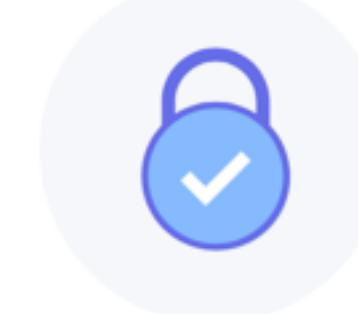
REGION
US SouthCLOUD FOUNDRY ORG
jarred.128CLOUD FOUNDRY SPACE
dev

Create API for Cloud Functions



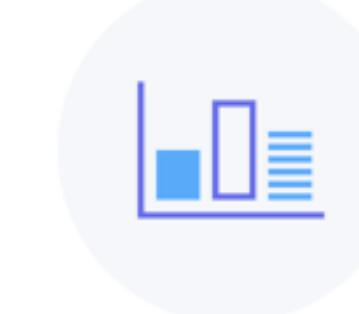
Create a Cloud Functions API

Create an API that wraps a set of OpenWhisk actions. After creating your API, you can easily Secure, Manage, and Socialize it.

[Create a Cloud Functions API](#)

Secure your API

Apply API security and rate limiting policies to protect your API

[Learn more](#)

Manage Traffic

View API usage statistics and check out response logs

[Learn more](#)

Socialize & Share

Share your API with developers both within and outside IBM Cloud

[Learn more](#)

Getting Started

Actions

Triggers

Monitor

APIs

REGION
US SouthCLOUD FOUNDRY ORG
jarred.128CLOUD FOUNDRY SPACE
dev

Create API for Cloud Functions

API Info



API definition file

Optionally import a YAML or JSON format OpenAPI definition file. Imported settings will replace all existing settings.

API definition file ▾

API Basics *

First, specify a descriptive name for this API.

Next, accept the default domain for this API or select a custom domain. As a prerequisite, you will need to register a custom domain with IBM Cloud. This can be done from your organization settings page. For more information, please reference [the documentation](#).

Finally, specify a base path for this API.

API name *

VoiceAssistant

Domain for API

Default domain

Base path for API *

/api

Operations *

Create API operations that invoke OpenWhisk actions.

Create operation +

PATH

VERB

PACKAGE

ACTION

To create an operation that invokes an OpenWhisk action, click Create Operation

Security and Rate Limiting

Application authentication

You can require consuming applications to authenticate using API key and secret or API key alone.



Require applications to authenticate via API key

Method

IBM Cloud

Catalog Docs Support Manage

Getting Started Actions Triggers Monitor APIs

REGION US South CLOUD FOUNDRY ORG jarred.128 CLOUD FOUNDRY SPACE dev

Create API for Cloud Functions

API Info

API definition

Optionaly import Imported settings

API Basics *

First, specify a domain.

Next, accept the terms of service for your domain. As a premium customer, you will receive priority support from IBM Cloud. To learn more, visit our support page. For more information, see the Terms of Service.

Finally, specify a port number for your API.

Operations *

Create API operation

PATH

Create operation

Path *

/speechToText

Verb

POST

Package containing action

Default

Action

speechToText

Response content type

application/json

Cancel Save

Security and Rate Limiting ⓘ

Application authentication

You can require consuming applications to authenticate using API key and secret or API key alone.

Method

Require applications to authenticate via API key

The screenshot shows the 'Create API for Cloud Functions' interface in the IBM Cloud dashboard. A modal window titled 'Create operation' is open, prompting for API details. The 'Path *' field contains '/speechToText', 'Verb' is set to 'POST', 'Package containing action' is 'Default', 'Action' is 'speechToText', and 'Response content type' is 'application/json'. The 'Save' button at the bottom right of the modal is highlighted with a red box. The background shows the main API configuration page with sections for 'Security and Rate Limiting' and 'Application authentication'.



Getting Started

REGION
US SouthCLOUD FOUNDRY ORG
jarred.128CLOUD FOUNDRY SPACE
dev

Actions

Triggers

Monitor

APIs



Create API for Cloud Functions

API Info



API definition file

Optionally import a YAML or JSON format OpenAPI definition file. Imported settings will replace all existing settings.

API definition file ▾

API Basics *

First, specify a descriptive name for this API.

Next, accept the default domain for this API or select a custom domain. As a prerequisite, you will need to register a custom domain with IBM Cloud. This can be done from your organization settings page. For more information, please reference [the documentation](#).

Finally, specify a base path for this API.

API name *

VoiceAssistant

Domain for API

Default domain

Base path for API *

/api

Operations *

Create API operations that invoke OpenWhisk actions.

Create operation +

PATH	VERB	PACKAGE	ACTION	
/speechToText	POST	default	speechToText	⋮

Security and Rate Limiting ⓘ

Application authentication

You can require consuming applications to authenticate using API key and secret or API key alone.



Require applications to authenticate via API key

Method



Getting Started

REGION
US SouthCLOUD FOUNDRY ORG
jarred.128CLOUD FOUNDRY SPACE
dev

Actions

Triggers

Monitor

APIs

Location of API key and secret

Header

Parameter name of API key

X-IBM-Client-ID

Parameter name of API secret

X-IBM-Client-Secret

Rate limiting

When rate limiting is enabled, API calls falling outside of the limit will be rejected and response code 429 will be returned. Given that rate limiting is on a per-key basis, application authentication must be enabled.

The leaky bucket algorithm is used to prevent sudden bursts of invocations of your API. For example, if you set your limit as 10 calls per minute, users will be restricted to 1 call every 6 seconds ($60/10 = 6$).

OAuth user authentication

You can control access to your API through the OAuth 2.0 standard. First require an end user to log in via IBM Cloud App ID, Facebook, GitHub, or Google. Then include the corresponding OAuth token in the Authorization header of each API request. The authenticity of the token will be validated with the specified token provider. If the token is invalid, the request will be rejected and response code 401 will be returned.

CORS

Enabling cross-origin resource sharing (CORS) will allow embedded scripts in a web page to call the API across domain boundaries.

 Limit API call rate on a per-key basis

Maximum calls

1000

Unit of time

Second

 Require users to authenticate via OAuth social login

Provider

IBM Cloud App ID

App ID service

Create an App ID service

[+ Create](#)
[Edit](#) Enable CORS so that browser-based applications can call this API

Cancel

Save

[All Cloud Functions APIs](#)REGION
US SouthCLOUD FOUNDRY ORG
jarred.128CLOUD FOUNDRY SPACE
dev**Summary**

Definition

Sharing

API Explorer



VoiceAssistant

[Expose Managed API](#)

API name	Operations
VoiceAssistant	1

Route<https://service.us.apiconnect.ibmcloud.com/gws/apigateway/api/b9295e6c011185a1acafeb26d61e15ad...> **Rate Limit**

None

**Security**

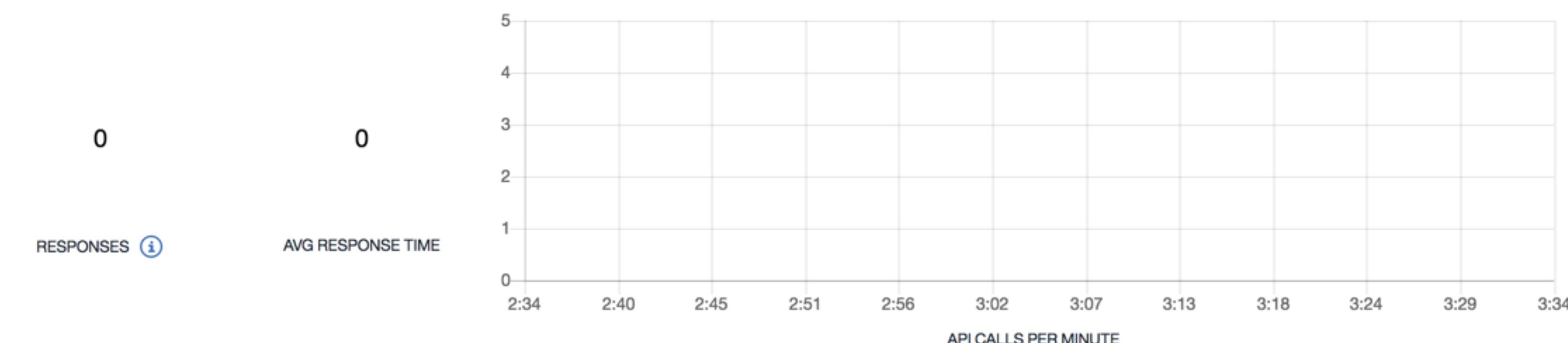
CORS enabled

**Sharing**

Not shared with Cloud Foundry organization

Analytics and Logging

Last updated: 3:34 PM

**Response log**

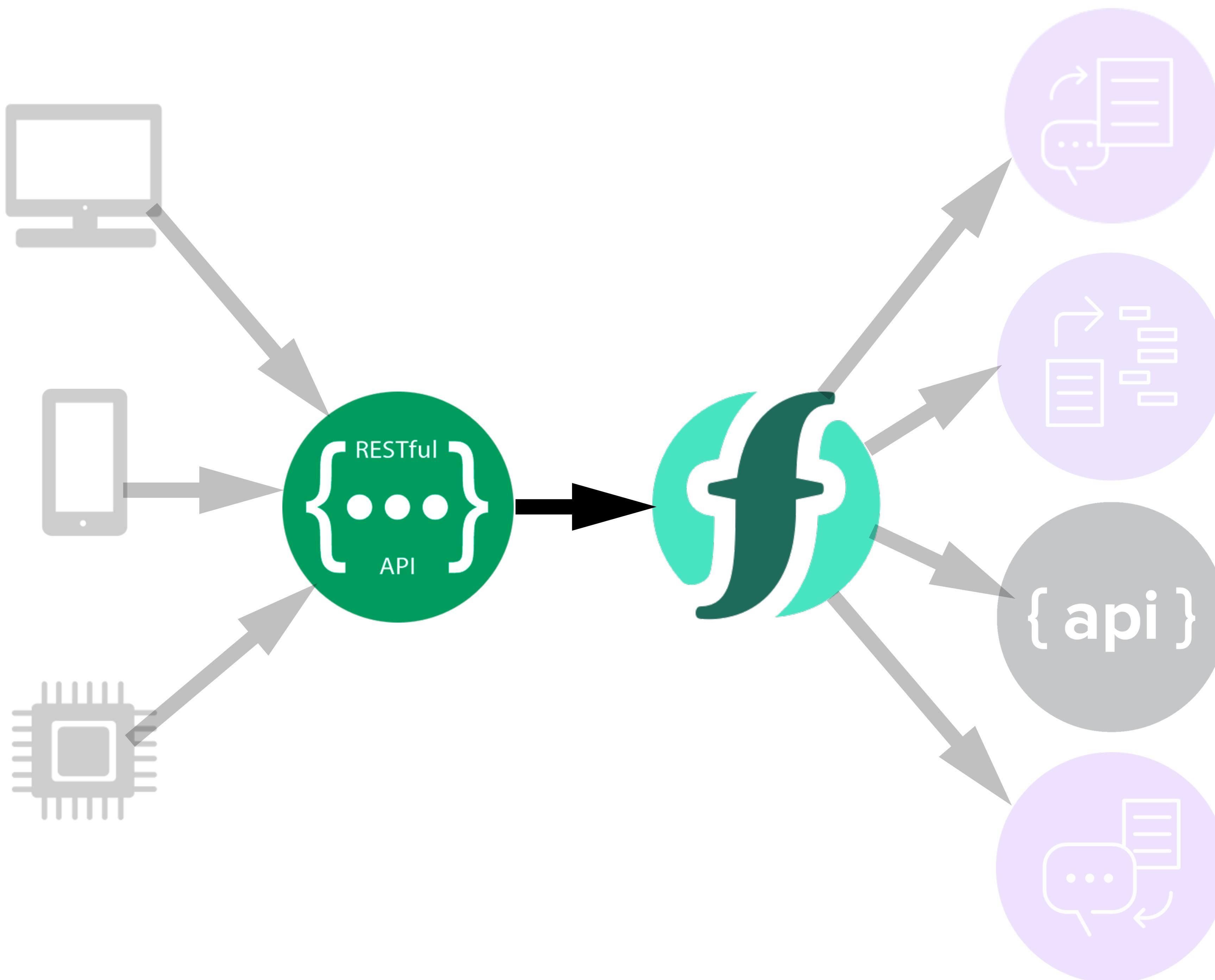
Search responses

PATH	OPERATION	CODE	DATE/TIME	RESPONSE TIME	KEY
No API invocations logged within the past hour					

[https://service.us.apiconnect.ibmcloud.com/gws/
apigateway/api/](https://service.us.apiconnect.ibmcloud.com/gws/apigateway/api/)

b9295e6c011185a1acafeb26d61e15ad49b5d48325f7ce
16ed84996227602ce5/api

```
jarredolson:~$ curl -X POST https://service.us.apiconnect.ibmcloud.com/gws/apigateway/  
api/b9295e6c011185a1acafeb26d61e15ad49b5d48325f7ce16ed84996227602ce5/api/speechToText  
{  
  "message": "Hello World"  
}jarredolson:~$ █
```





FRONT END

Speech to Text Example



Log

01_speechToText.html - voice-assistant-code - [~/Dropbox/Speaking/build-your-own-voice-assistant/voice-assistant-code]

voice-assistant-code > 01_speechToText.html

1: Project 01_speechToText.html

html body script

```
<!DOCTYPE html>
<html>
<head>
<script src="https://code.jquery.com/jquery-3.2.1.min.js"
integrity="sha256-hwg4gsxgFZhOsEEam0YGBf13FyQuiTwLAQgxVSNg4=" crossorigin="anonymous"></script>
<meta http-equiv="Content-Type" content="text/html; charset=utf-8">
<title>Speech to Text Example</title>
<script src="lib/recorder.js"></script>
<style type='text/css'>
audio {
    display: block;
}
</style>
</head>
<body>
<h1>Speech to Text Example</h1>

<audio id="playback"></audio>
<h2>Log</h2>
<pre id="log"></pre>
<script>
var recorder;
$(document).on('click', '#record_button', function () {
    recorder.start();
    setTimeout(function () {
        recorder.stop();
    }, 4000);
});

doInit();
function doInit() {
    if (!Recorder.isRecordingSupported()) {
        return screenLogger("Recording features are not supported in your browser.");
    }
    recorder = new Recorder({
        monitorGain: 0,
        numberofChannels: 2,
        wavBitDepth: 16,
        encoderPath: "lib/waveWorker.min.js"
    });
    recorder.addEventListener("start", function (e) {
        disableRecordButton();
    });
    recorder.addEventListener("stop", function (e) {
        disableRecordButton();
    });
    recorder.addEventListener("streamError", function (e) {
        screenLogger('Error encountered: ' + e.error.name);
    });
    recorder.addEventListener("streamReady", function (e) {
        enableRecordButton();
    });
    recorder.addEventListener("dataAvailable", function (e) {

        var dataBlob = new Blob([e.detail], {type: 'audio/wav'});
        $.ajax({
            url: 'https://service-us.apiconnect.ibmcloud.com/mys/sonicatpu/api/b0205e6c011195d1acafab26d61c15ad40b5d48225f7cc16ed94006227602ee5/api/speechToText'
        })
    });
}
</script>
```

2: Favorites

6: TODO Terminal Event Log

29:18 LF UTF-8

voice-assistant-code > 01_speechToText.html

01_speechToText.html

1: Project

Structure

html body script

```
<!DOCTYPE html>
<html>
  <head>
    <script src="https://code.jquery.com/jquery-3.2.1.min.js"
           integrity="sha256-hwg4gsxgFZQD1/coduLQfwaYF6SK1+I6oE2d2g=" crossorigin="anonymous"></script>
    <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
    <title>Speech to Text Example</title>
    <script src="lib/recorder.js"></script>
    <style type='text/css'>
      audio {
        display: block;
      }
    </style>
  </head>
  <body>
    <h1>Speech to Text Example</h1>
    
    <audio id="playback"></audio>
    <h2>Log</h2>
    <pre id="log"></pre>
    <script>
      var recorder;
      $(document).on('click', '#record_button', function () {
        recorder.start();
        setTimeout(function () {
          recorder.stop();
        }, 5000);
      });
    </script>
  </body>
</html>
```

```
23     <audio id="playback"></audio>
24
25     <h2>Log</h2>
26     <pre id="log"></pre>
27
28     <script>
29         var recorder;
30
31         $(document).on('click', '#record_button', function () {
32             recorder.start();
33             setTimeout(function () {
34                 recorder.stop();
35             }, 4000);
36         });
37
38         doInit();
39         function doInit() {
40             if (!navigator.mediaDevices || !navigator.mediaDevices.getUserMedia) {
41                 return screenLogger("Recording features are not supported in your browser.");
42             }
43             recorder = new Recorder({
44                 monitorGain: 0,
45                 numberOfChannels: 2,
46                 wavBitDepth: 16,
47                 encoderPath: "lib/waveWorker.min.js"
48             });
49             recorder.addEventListener("start", function (e) {
50                 disableRecordButton();
51             });
52             recorder.addEventListener("stop", function (e) {
53                 disableRecordButton();
54             });
55             recorder.addEventListener("streamError", function (e) {
56                 screenLogger('Error encountered: ' + e.error.name);
57             });
58             recorder.addEventListener("streamReady", function (e) {
59                 enableRecordButton();
60             });
61         }
62     </script>
```

<https://github.com/chris-rudmin/opus-recorder>

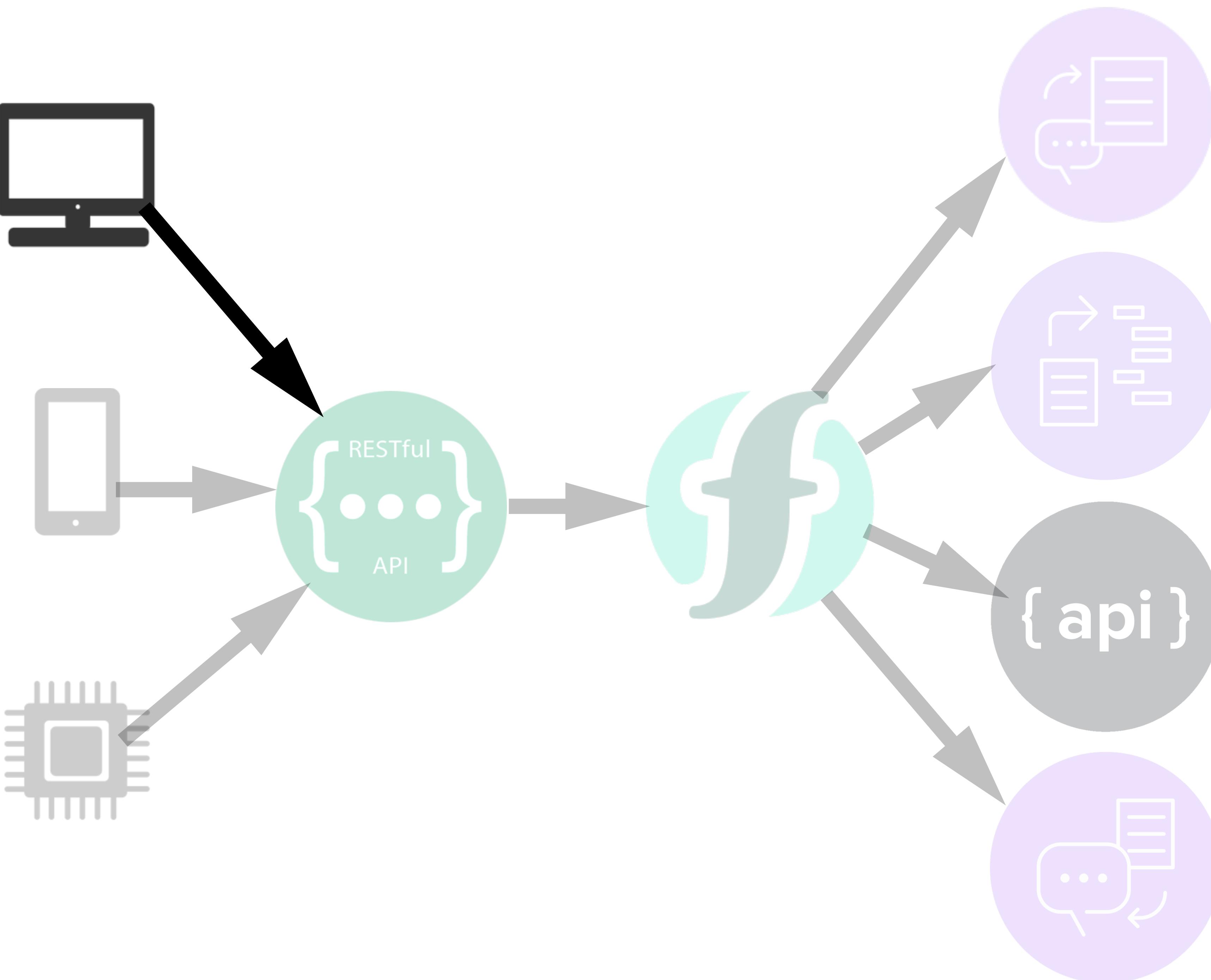


```
51      });
52      recorder.addEventListener("stop", function (e) {
53          disableRecordButton();
54      });
55      recorder.addEventListener("streamError", function (e) {
56          screenLogger('Error encountered: ' + e.error.name);
57      });
58      recorder.addEventListener("streamReady", function (e) {
59          enableRecordButton();
60      });
61      recorder.addEventListener("dataAvailable", function (e) {
62
63          var dataBlob = new Blob([e.detail], {type: 'audio/wav'});
64          $.ajax({
65              url: 'https://service.us.apiconnect.ibmcloud.com/gws/apigateway/api/b9295e',
66              type: 'POST',
67              data: dataBlob,
68              processData: false,
69              headers: {
70                  'Content-Type': 'audio/wav'
71              },
72              success: function (data, textStatus, jqXHR) {
73                  screenLogger(JSON.stringify(data, null, 2));
74                  doInit();
75              },
76              error: function (jqXHR, textStatus, errorThrown) {
77                  screenLogger(jqXHR);
78                  doInit();
79              }
80          });
81      });
82
83      });
84      recorder.initStream();
85  }
86
87
88  function disableRecordButton() {
89      $('#record_button').css('opacity', '0.4');
90  }
```

```
67     type: 'POST',
68     data: dataBlob,
69     processData: false,
70     headers: {
71       'Content-Type': 'audio/wav'
72     },
73     success: function (data, textStatus, jqXHR) {
74       screenLogger(JSON.stringify(data, null, 2));
75       doInit();
76     },
77     error: function (jqXHR, textStatus, errorThrown) {
78       screenLogger(jqXHR);
79       doInit();
80     }
81   });
82
83   recorder.start();
84 });
85 recorder.initStream();
86 }
87
88 function disableRecordButton() {
89   $('#record_button').css('opacity', '0.4');
90 }
91 function enableRecordButton() {
92   $('#record_button').css('opacity', '1.0');
93 }
94
95 function screenLogger(text, data) {
96   log.innerHTML += "\n" + text + " " + (data || '');
97 }
98 </script>
99 </body>
100 </html>
```

2: Favorites





**TRANSCRIBE
AUDIO INTO TEXT**

[All Categories >](#) Search[Filter](#)

Infrastructure

[Compute](#)[Storage](#)[Network](#)[Security](#)[Containers](#)[VMware](#)

Platform

[Boilerplates](#)[APIs](#)[Application Services](#)[Blockchain](#)[Cloud Foundry Apps](#)[Data & Analytics](#)[DevOps](#)[Finance](#)[Functions](#)[Integrate](#)[Internet of Things](#)[Mobile](#)[Network](#)[Security](#)[Watson](#)

Infrastructure

Compute

Build your virtual environments.



Bare Metal Server

Bare metal servers provide the raw horsepower you demand for your processor-intensive and disk I/O-

[IBM](#)

Virtual Server

Our virtual servers deliver a higher degree of transparency, predictability, and automation for all

[IBM](#)

Storage

Order storage.



Block Storage

Persistent iSCSI based storage with high-powered performance and capacity up to 12TB.

[IBM](#)

File Storage

Fast and flexible NFS-based file storage with capacity options from 20GB to 12TB.

[IBM](#)

Object Storage

Provides flexible, cost-effective, and scalable cloud storage for unstructured data.

[Lite](#)[IBM](#)

Network

Order network.



Content Delivery Network

The Content Delivery Network service distributes content where it is needed. The first time content is requested,

[IBM](#)

Direct Link Dedicated

Directly connect to IBM Cloud with a single tenant connection via a dedicated circuit or cross-connect

[IBM](#)

Direct Link Dedicated Hosting

Establish unparalleled network performance to and from your resources to IBM Cloud platform. Support for th

[IBM](#)

Direct Link Exchange

Aggregate your MPLS, VPLS, or EVPN into the IBM network through VLANs using one of our global netw

[IBM](#)

Domain Name Service

IBM Cloud offers domain registration services complete with dedicated support staff, knowledgeable custom

[IBM](#)

IPSec VPN

VPN access is designed to allow users to remotely manage all servers and services associated with the

[IBM](#)



\$24,000

Who is Stevie?
(\$1,000)
\$1,000

\$77,147

Who is Brain
Stoker?
\$ 17,973

\$21,600

Who is
Tom Hanks?
\$16,000



All Categories

Search

Filter

Infrastructure

Compute

Storage

Network

Security

Containers

VMware

Platform

Boilerplates

APIs

Application Services

Blockchain

Cloud Foundry Apps

Data & Analytics

DevOps

Finance

Functions

Integrate

Internet of Things

Mobile

Network

Security

Watson



Build cognitive apps that help enhance, scale, and accelerate human expertise.

**Conversation**

Add a natural language interface to your application to automate interactions with your end users. Common

[Lite](#) [IBM](#)**Discovery**

Add a cognitive search and content analytics engine to applications.

[Lite](#) [IBM](#)**Knowledge Studio**

Build custom models to teach Watson the language of your domain.

[IBM](#)**Language Translator**

Translate text from one language to another for specific domains.

[Lite](#) [IBM](#)**Natural Language Classifier**

Natural Language Classifier performs natural language classification on question texts. A user would be able

[IBM](#)**Natural Language Understanding**

Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and

[Lite](#) [IBM](#)**Personality Insights**

The Watson Personality Insights derives insights from transactional and social media data to identify

[Lite](#) [IBM](#)**Speech to Text**

Low-latency, streaming transcription

[Lite](#) [IBM](#)**Text to Speech**

Synthesizes natural-sounding speech from text.

[Lite](#) [IBM](#)**Tone Analyzer**

Tone Analyzer uses linguistic analysis to detect three types of tones from communications: emotion, socia

[Lite](#) [IBM](#)**Visual Recognition**

Find meaning in visual content! Analyze images for scenes, objects, faces, and other content. Choose a

[IBM](#)

[View all](#)

Speech to Text

The Speech to Text service converts the human voice into the written word. It can be used anywhere there is a need to bridge the gap between the spoken word and their written form, including voice control of embedded systems, transcription of meetings and conference calls, and dictation of email and notes. This easy-to-use service uses machine intelligence to combine information about grammar and language structure with knowledge of the composition of the audio signal to generate an accurate transcription. The following languages and features are currently available:

[Lite](#)[IBM](#)[View Docs](#)

AUTHOR IBM

PUBLISHED 12/12/2017

TYPE Service

LOCATION Sydney, Germany, United Kingdom, US South

Service name:

Choose a region/location to deploy in:

Choose an organization:

Choose a space:

Features

- Available Languages

English (US), English (UK), Japanese, Arabic (MSA, Broadband model only), Mandarin, Portuguese (Brazil), Spanish, French (Broadband model only)

- Mobile SDKs (BETA)

Mobile SDKs are now available to enable native interaction on iOS and Android devices.

- SoftBank

A localized version of this Watson service is available in Japan. Visit the following link for details: <http://www.softbank.jp/biz/watson>

- Metadata

Receive a metadata object in the JSON response that includes confidence score (per word), start/end time (per word), and alternate hypotheses / N-Best (per phrase). A new option for returning word alternatives per (sequential) time intervals is now available.

- Keyword Spotting (BETA)

Optional ability to search for one or more keywords in the audio stream. The returned metadata includes the beginning time, end time and confidence score for each instance of the keyword found. Keyword Spotting is currently available at no additional charge.

Pricing Plans

Monthly prices shown are for country or region: United States

PLAN	FEATURES	PRICING
✓	Lite First hundred minutes are free	Free



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Speech to Text-di

Location: US South Org: jarred.128 Space: dev



Getting started tutorial

Last Updated: 2017-11-04 | [Edit in GitHub](#)

The IBM® Speech to Text service transcribes audio to text to enable speech transcription capabilities for applications. This cURL-based tutorial can help you get started quickly with the service. The examples show you how to call the service's sessionless `POST /v1/recognize` method to request a transcription.

Before you begin

- Create an instance of the service:
 - If you're seeing this, you created your service instance. Now get your credentials.
 - Create a project from a service:
 - ① Go to the Watson Developer Console [Services](#) page.
 - ② Select Speech to Text, click **Add Services**, and either sign up for a free IBM Cloud account or log in.
 - ③ Type `speech-tutorial` as the project name and click **Create Project**.
 - Copy the credentials to authenticate to your service instance:
 - From the service dashboard (what you're looking at):
 - ① Click the **Service credentials** tab.
 - ② Click **View credentials** under **Actions**.
 - ③ Copy the `username`, `password`, and `url` values.
 - From your `speech-tutorial` project in the Developer Console, copy the `username`, `password`, and `url` values for "`speech_to_text`" from the **Credentials** section.
 - Make sure you have cURL:
 - The examples use cURL to call methods of the HTTP interface. Install the version for your operating system from [curl.haxx.se](#). Install the version that supports the Secure Sockets Layer (SSL) protocol. Make sure to include the installed binary file on your `PATH` environment variable.

If you use IBM Cloud Dedicated, you create a service instance from the [Speech to Text](#) page in the Catalog. For details about how to find your service credentials, see [Service credentials for Watson services](#).



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Speech to Text-di

Location: US South Org: jarred.128 Space: dev

⋮

Service credentials

Credentials are provided in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

[View More](#)

Service credentials

[New credential +](#)

⋮

Click New credentials to create a set of credentials for this instance





Getting started

Manage

Service credentials

Plan

Connections

Watson /

Speech to Text-di

Location: US South

Org: jarred.128

Space



Add new credential

Name:

Credentials-1

[View More](#)**Add Inline Configuration Parameters (Optional):**

Provide service-specific configuration parameters in a valid JSON object

Choose File...**Cancel****Add****New credential** 



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Speech to Text-di

Location: US South Org: jarred.128 Space: dev



Service credentials

Credentials are provided in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

[View More](#)

Service credentials

[New credential +](#)

10 ▾ Items per page | 1-1 of 1 items

1 of 1 pages < 1 >

<input type="checkbox"/> KEY NAME	DATE CREATED	ACTIONS
<input type="checkbox"/> Credentials-1	Dec 27, 2017 - 07:46:15	View credentials ▾



```
{  
  "url": "https://stream.watsonplatform.net/speech-to-text/api",  
  "username": "751cffdf-1...-5fa3be0b346e",  
  "password": "aM5...!"  
}
```



SERVER SIDE

Code

Parameters

Runtime

Endpoints

Connected Triggers

Enclosing Sequences

Actions /

speechToText

Code Node.js 8

Reset

Save

```
1  var SpeechToTextV1 = require('watson-developer-cloud/speech-to-text/v1');
2  const stream = require('stream');
3
4
5  function main(params) {
6
7    return new Promise(function (resolve, reject) {
8      var speech_to_text = new SpeechToTextV1({
9        username: params.SPEECH_TO_TEXT_USERNAME,
10       password: params.SPEECH_TO_TEXT_PASSWORD
11     });
12    // Get audio file from request
13    const data = params._ow_body;
14
15    // Create Stream from audio file
16    var bufferStream = new stream.PassThrough();
17    bufferStream.end(new Buffer(params._ow_body, 'base64'));
18    const audio = bufferStream;
19
20    // Request parameters for Watson Speech to Text
21    // https://www.ibm.com/watson/developercloud/speech-to-text/api/v1/#recognize_sessionless_nonmp12
22    var speechToTextParams = {
23      audio: audio,
24      content_type: 'audio/wav',
25      timestamps: true
26    };
27    // Call Watson Speech to Text
28    speech_to_text.recognize(speechToTextParams, function (error, response) {
29      if (error) {
30        reject({error: error});
31      } else {
32        resolve(response);
33      }
34    });
35  });
36 }
```

Actions /

speechToText

Code Node.js 8

```
1 var SpeechToTextV1 = require('watson-developer-cloud/speech-to-text/v1');
2 const stream = require('stream');
4
5 function main(params) {
6   return new Promise(function (resolve, reject) {
7     var speech_to_text = new SpeechToTextV1({
8       username: params.SPEECH_TO_TEXT_USERNAME,
9       password: params.SPEECH_TO_TEXT_PASSWORD
10    }),
11    // Get audio file from request
12    const data = params._raw_body;
13
14    // Create Stream from audio file
15    var bufferStream = new stream.PassThrough();
16    bufferStream.end(new Buffer(params._raw_body, 'base64'));
17    const audio = bufferStream;
18
19    // Request parameters for Watson Speech to Text
20    // https://www.ibm.com/watson/developercloud/speech-to-text/api/v1/#recognize_sessionless_nonmp3
21    var speechToTextParams = {
22      audio: audio,
23      content_type: 'audio/wav',
24      timestamps: true
25    };
26    // Call Watson Speech to Text
27    speech_to_text.recognize(speechToTextParams, function (error, response) {
28      if (error) {
29        reject({error: error});
30      } else {
31        resolve(response);
32      }
33    });
34  });
35);
36 }
```

Reset  Save 



Code

Parameters

Runtime

Endpoints

Connected Triggers

Enclosing Sequences

Actions /

speechToText

Parameters i

Add + Reset Save **Parameter Name****Parameter Value**

SPEECH_TO_TEXT_USERNAME

751cffdf--5fa3be0b346e



SPEECH_TO_TEXT_PASSWORD

aM5

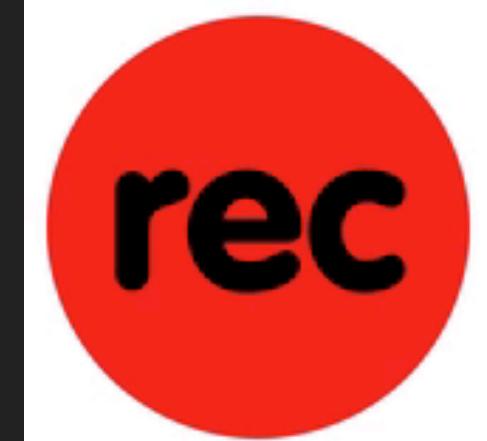


FRONT END

```
var dataBlob = new Blob([e.detail], {type: 'audio/wav'});
$.ajax({
  url: 'https://service.us.apiconnect.ibmcloud.com/gws/apigateway/api/b9295e6c011185a1acafeb26d61e15ad49b5d48325f7ce16ed84996227602ce5/api/speechToText',
  type: 'POST',
  data: dataBlob,
  processData: false,
  headers: {
    'Content-Type': 'audio/wav'
  },
  success: function (data, textStatus, jqXHR) {
    screenLogger(JSON.stringify(data, null, 2));
    doInit();
  },
  error: function (jqXHR, textStatus, errorThrown) {
    screenLogger(jqXHR);
    doInit();
  }
});
```

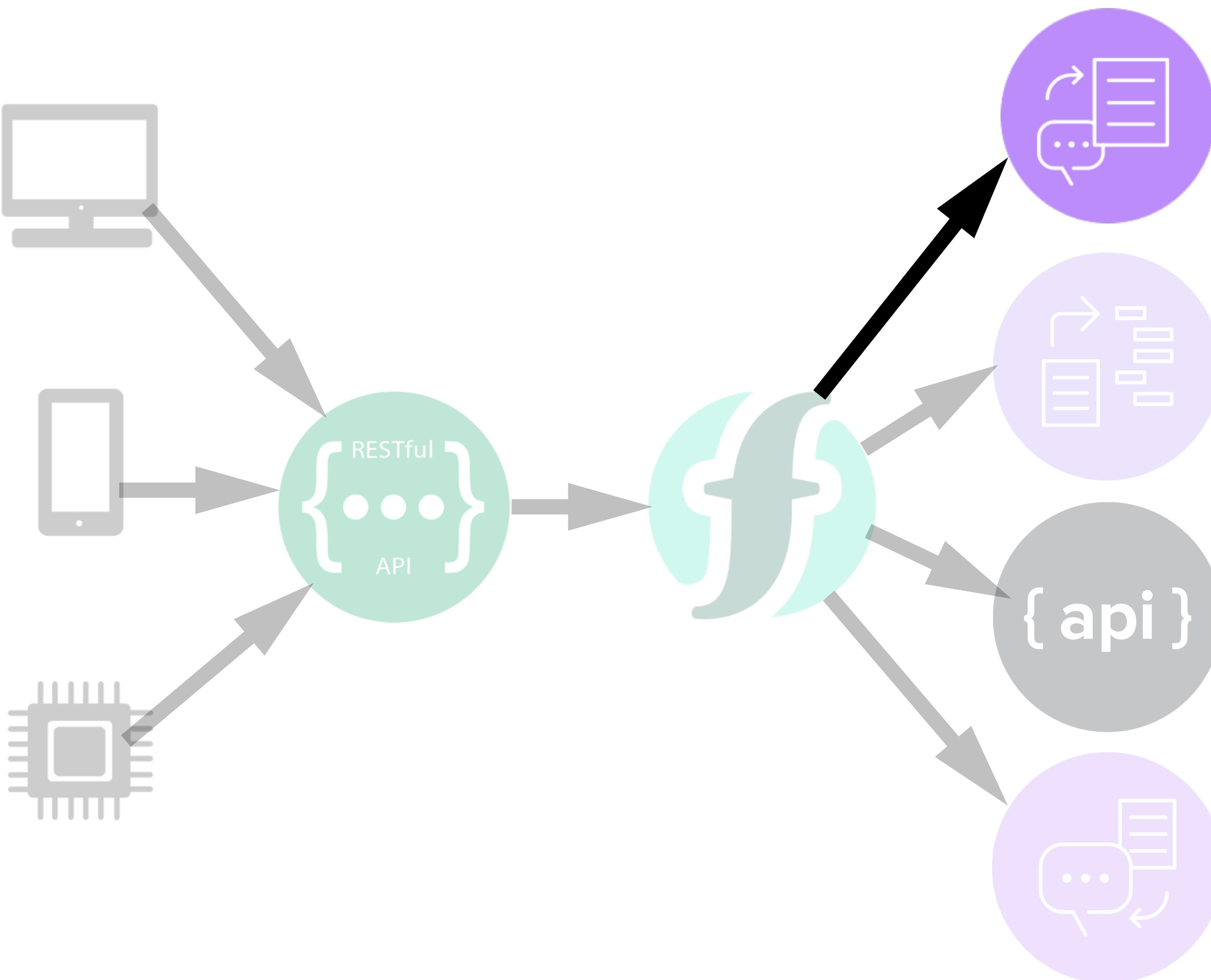
<https://github.com/chris-rudmin/opus-recorder>

Speech to Text Example



Log







- ▶ Transcribe the audio into text
- ▶ Natural Language Processing (NLP)
- ▶ Take action
- ▶ Respond with audio and data

NATURAL LANGUAGE PROCESSING (NLP)

All Categories

Infrastructure

Compute

Storage

Network

Security

Containers

VMware

Platform

Boilerplates

APIs

Application Services

Blockchain

Cloud Foundry Apps

Data & Analytics

DevOps

Finance

Functions

Integrate

Internet of Things

Mobile

Network

Security

Watson

>

Search

Filter

Build cognitive apps that help enhance, scale, and accelerate human expertise.

**Conversation**

Add a natural language interface to your application to automate interactions with your end users. Common

Lite

IBM

**Discovery**

Add a cognitive search and content analytics engine to applications.

Lite

IBM

**Knowledge Studio**

Build custom models to teach Watson the language of your domain.

IBM

**Language Translator**

Translate text from one language to another for specific domains.

Lite

IBM

**Natural Language Classifier**

Natural Language Classifier performs natural language classification on question texts. A user would be able

IBM

**Natural Language Understanding**

Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and

Lite

IBM

**Personality Insights**

The Watson Personality Insights derives insights from transactional and social media data to identify

Lite

IBM

**Speech to Text**

Low-latency, streaming transcription

Lite

IBM

**Text to Speech**

Synthesizes natural-sounding speech from text.

Lite

IBM

**Tone Analyzer**

Tone Analyzer uses linguistic analysis to detect three types of tones from communications: emotion, socia

Lite

IBM

**Visual Recognition**

Find meaning in visual content! Analyze images for scenes, objects, faces, and other content. Choose a

IBM

[View all](#)

Natural Language Understanding

Analyze text to extract meta-data from content such as concepts, entities, keywords, categories, sentiment, emotion, relations, semantic roles, using natural language understanding. With custom annotation models developed using Watson Knowledge Studio, identify industry/domain specific entities and relations in unstructured text.

[Lite](#) [IBM](#)[View Docs](#)

AUTHOR	IBM
PUBLISHED	12/12/2017
TYPE	Service
LOCATION	Sydney, Germany, United Kingdom, US South

Service name:

Choose a region/location to deploy in:

Choose an organization:

Choose a space:

Features

- Concepts
- Entities
- Keywords
- Categories
- Sentiment
- Emotion
- Relations
- and many more ...

Pricing Plans

Monthly prices shown are for country or region: United States

PLAN	FEATURES	PRICING
✓ Lite	<p>30,000 NLU Items Per Month</p> <p>1 Custom Model</p> <p>NOTE: A NLU item is based on the number of data units enriched and the number of enrichment features applied. A data unit is 10,000 characters or less. For example: extracting Entities and Sentiment from 15,000 characters of text is (2 Data Units * 2 Enrichment Features) = 4 NLU Items. A custom model refers to an annotation model developed with Watson Knowledge Studio.</p>	Free

The Lite plan gets you started with 30,000 NLU Items per month at no cost. This plan also enables use of one custom model published through Watson Knowledge Studio.



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Natural Language Understanding-vk

Location: US South Org: jarred.128 Space: dev



Getting started tutorial

Last Updated: 2017-11-03 | [Edit in GitHub](#)

In this short tutorial, we introduce Natural Language Understanding by analyzing some sample text for sentiment.

Before you begin

- Create an instance of the service:
 - If you're seeing this, you created your service instance. Now get your credentials.
 - Create a project from a service:
 - ① Go to the Watson Developer Console [Services](#) page.
 - ② Select Natural Language Understanding, click **Add Services**, and either sign up for a free IBM Cloud account or log in.
 - ③ Type **sentiment-tutorial** as the project name and click **Create Project**.
 - Copy the credentials to authenticate to your service instance:
 - From the service dashboard (what you're looking at):
 - ① Click the **Service credentials** tab.
 - ② Click **View credentials** under **Actions**.
 - ③ Copy the `username`, `password`, and `url` values.
 - From your **sentiment-tutorial** project in the Developer Console, copy the `username`, `password`, and `url` values for "natural_language_understanding" from the **Credentials** section.
 - Make sure you have cURL:
 - The examples use cURL to call methods of the HTTP interface. Install the version for your operating system from [curl.haxx.se](#). Install the version that supports the Secure Sockets Layer (SSL) protocol. Make sure to include the installed binary file on your `PATH` environment variable.

If you use IBM Cloud Dedicated, create your service instance from the [Natural Language Understanding](#) page in the Catalog. For details about how to find your service credentials, see [Service credentials for Watson services](#).



[Step 1: Analyze sample content for sentiment](#)



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Natural Language Understanding-vk



Location: US South Org: jarred.128 Space: dev

Service credentials

Credentials are provided in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

[View More](#)

Service credentials

[New credential +](#)

Click New credentials to create a set of credentials for this instance



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Natural Language Understanding-vk

Location: US South Org: jarred.128 Space:

X

Add new credential

Name:

Credentials-1

[View More](#)**Add Inline Configuration Parameters (Optional):**

Provide service-specific configuration parameters in a valid JSON object

Choose File...**Cancel****Add****New credential**

⋮



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Natural Language Understanding-vk



Location: US South Org: jarred.128 Space: dev

Service credentials

Credentials are provided in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

[View More](#)

Service credentials

[New credential +](#)

10 ▾ Items per page | 1-1 of 1 items

1 of 1 pages < 1 >

<input type="checkbox"/> KEY NAME	DATE CREATED	ACTIONS
<input type="checkbox"/> Credentials-1	Dec 27, 2017 - 11:00:40	View credentials ▾

```
{  
  "url": "https://gateway.watsonplatform.net/natural-language-understanding/api",  
  "username": "45878e6d-[REDACTED]-40d3dae4db0a",  
  "password": "ZGS[REDACTED]"  
}
```



SERVER SIDE

Code

Parameters

Runtime

Endpoints

Connected Triggers

Enclosing Sequences

Actions /

naturalLanguageUnderstanding

Code Node.js 8

Change Input

Invoke

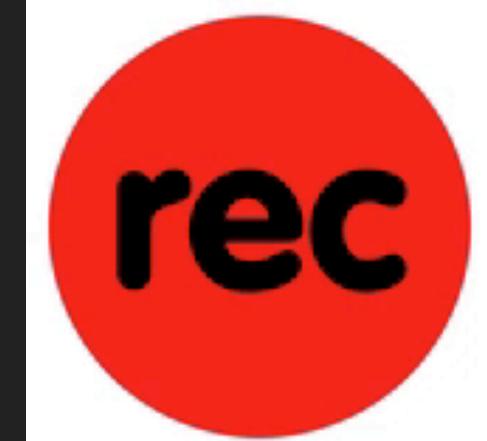
```
1  var SpeechToTextV1 = require('watson-developer-cloud/speech-to-text/v1');
2  var NaturalLanguageUnderstandingV1 = require('watson-developer-cloud/natural-language-understanding/v1.js');
3  const stream = require('stream');
4
5
6  function main(params) {
7
8    return new Promise(function (resolve, reject) {
9      getTranscriptFromAudio(params)
10     .then(function (transcript) {
11       var naturalLanguageUnderstandingParams = {
12         'text': transcript,
13         'features': {
14           'keywords': {
15             'limit': 2
16           },
17           'entities': {
18             'limit': 2
19           }
20         }
21       };
22       var natural_language_understanding = new NaturalLanguageUnderstandingV1({
23         'username': params.NATURAL_LANGUAGE_UNDERSTANDING_USERNAME,
24         'password': params.NATURAL_LANGUAGE_UNDERSTANDING_PASSWORD,
25         'version_date': '2017-02-27'
26       });
27       // Call Natural Language Understanding
28       // https://www.ibm.com/watson/developercloud/natural-language-understanding/api/v1/#post-analyze
29       natural_language_understanding.analyze(naturalLanguageUnderstandingParams, function (err, response) {
30         if (err) {
31           reject({error: err});
32         } else {
33           resolve(response);
34         }
35       });
36     })
37     .catch(function (error) {
38       reject({error: error});
39     });
40   });
41 }
```

FRONT END

```
var dataBlob = new Blob([e.detail], {type: 'audio/wav'});
$.ajax({
  url: 'https://service.us.apiconnect.ibmcloud.com/gws/apigateway/api/b9295e6c011185a1acafeb26d61e15ad49b5d48325f7ce16ed84996227602ce5/api/naturalLanguageUnderstanding',
  type: 'POST',
  data: dataBlob,
  processData: false,
  headers: {
    'Content-Type': 'audio/wav'
  },
  success: function (data, textStatus, jqXHR) {
    screenLogger(JSON.stringify(data, null, 2));
    doInit();
  },
  error: function (jqXHR, textStatus, errorThrown) {
    screenLogger(jqXHR);
    doInit();
  }
});
```

<https://github.com/chris-rudmin/opus-recorder>

Natural Language Understanding Example



Log



“WHO ARE DONALD TRUMP AND BARACK OBAMA”

Log

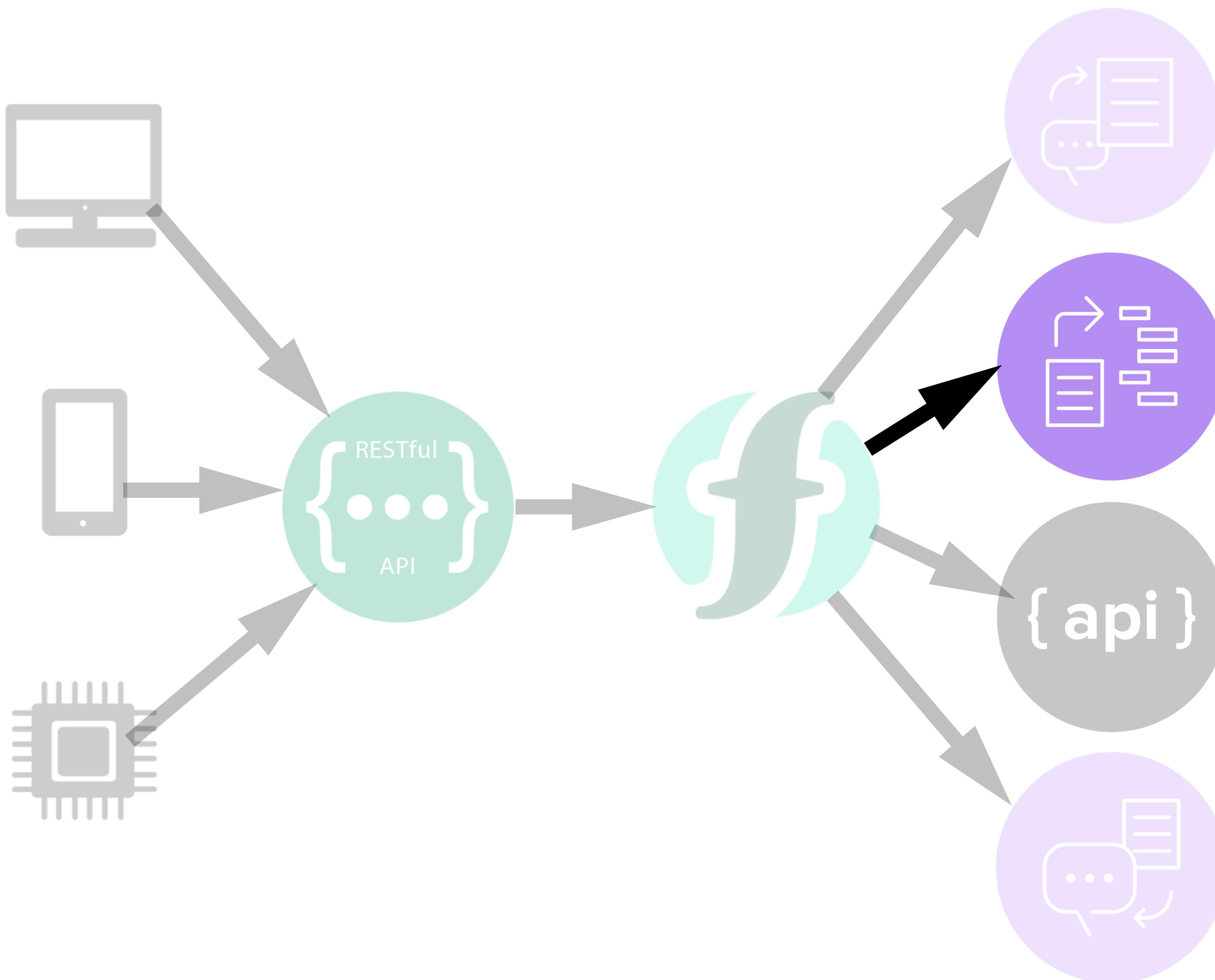
```
{  
  "usage": {  
    "text_units": 1,  
    "text_characters": 38,  
    "features": 2  
  },  
  "language": "en",  
  "keywords": [  
    {  
      "text": "Donald Trump",  
      "relevance": 0.952963  
    },  
    {  
      "text": "Barack Obama",  
      "relevance": 0.952136  
    }  
  ],  
  "entities": [  
    {  
      "count": 1,  
      "text": "Donald Trump",  
      "relevance": 0.33,  
      "type": "Person",  
      "disambiguation": {  
        "subtype": [  
          "AwardNominee",  
          "AwardWinner",  
          "Celebrity",  
          "CompanyFounder",  
          "TVPersonality",  
          "TVProducer",  
          "FilmActor",  
          "TVActor"  
        ],  
        "name": "Donald Trump",  
        "dbpedia_resource": "http://dbpedia.org/resource/Donald_Trump"  
      }  
    },  
    {  
      "count": 1,  
      "text": "Barack Obama",  
      "relevance": 0.33,  
      "type": "Person",  
      "disambiguation": {  
        "subtype": [  
          "Politician",  
          "President",  
          "Appointer",  
          "AwardWinner",  
          "Celebrity",  
          "PoliticalAppointer",  
          "U.S.Congressperson",  
          "USPresident",  
          "TVActor"  
        ],  
        "name": "Barack Obama",  
        "dbpedia_resource": "http://dbpedia.org/resource/Barack_Obama"  
      }  
    }  
  ]  
}
```

**"MAKE A
PHONE
CALL TO
JARRED
OLSON"**

Log

```
{  
  "usage": {  
    "text_units": 1,  
    "text_characters": 33,  
    "features": 2  
  },  
  "language": "en",  
  "keywords": [  
    {  
      "text": "Jared Olson",  
      "relevance": 0.918405  
    },  
    {  
      "text": "phone",  
      "relevance": 0.535628  
    }  
],  
  "entities": [  
    {  
      "type": "Person",  
      "text": "Jared Olson",  

```





- ▶ Transcribe the audio into text
- ▶ Natural Language Processing (NLP)
- ▶ Take action
- ▶ Respond with audio and data

TAKE ACTION

✉ Support Center

Q Weather in your city [Sign In](#) [Sign Up](#)

°C °F



Weather Maps API Price Partners Stations Widgets News About

Weather forecast

[Home](#) / Weather forecast

Your city name

Search

Current location

Current weather and forecasts in your city

Main Daily Hourly Chart Map

Weather in Sandusky, US



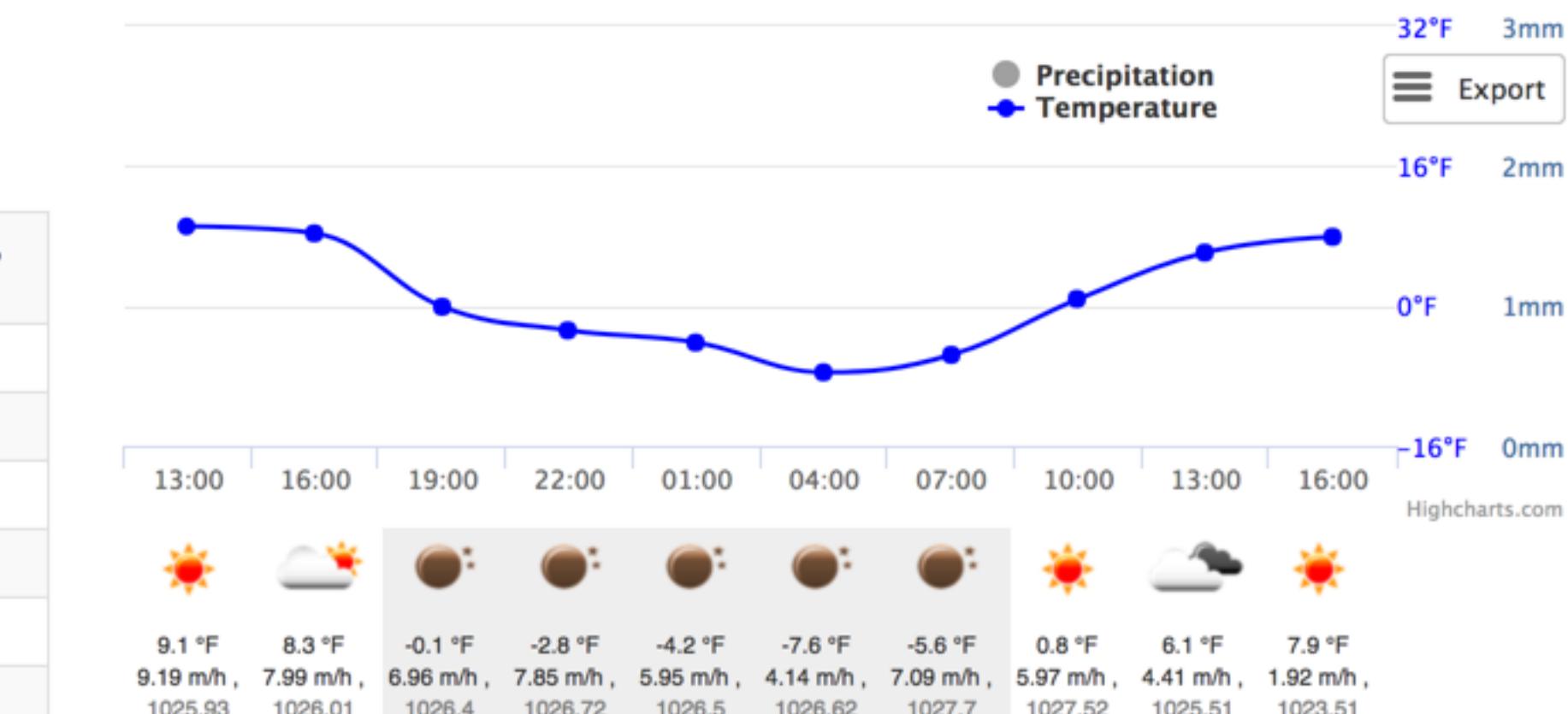
5 °F

Clear sky

11:37 Dec 27 [Wrong data?](#)

Wind	Fresh Breeze, 8.1 m/h, West (260)
Cloudiness	Sky is clear
Pressure	1038 hpa
Humidity	60 %
Sunrise	07:56
Sunset	17:08
Geo coords	[41.45, -82.71]

Weather and forecasts in Sandusky, US



13 day weather forecast

Wed 27 Dec		9.1 °F	-4.2 °F	sky is clear
Today		9.19 m/h		clouds: 8 %, 1025.93 hpa
Thu 28 Dec		6.1 °F	5.6 °F	light snow
		4.41 m/h		clouds: 56 %, 1025.51 hpa
Fri 29 Dec		12.5 °F	11.3 °F	light snow
		11.36 m/h		

SERVER SIDE

Code

Parameters

Runtime

Endpoints

Connected Triggers

Enclosing Sequences

Actions /

takeAction

Code Node.js 8

Change Input

Invoke

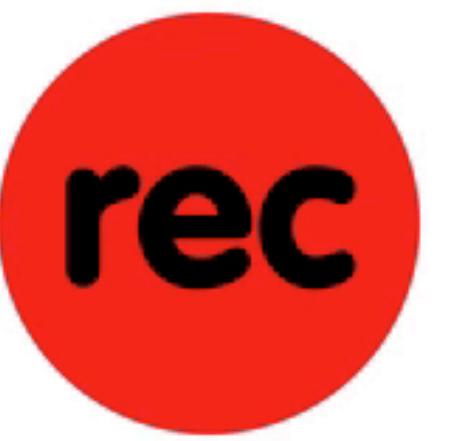
```
1 var SpeechToTextV1 = require('watson-developer-cloud/speech-to-text/v1');
2 var NaturalLanguageUnderstandingV1 = require('watson-developer-cloud/natural-language-understanding/v1.js');
3 const stream = require('stream');
4 var request = require('request');
5
6 function main(params) {
7
8 return new Promise(function (resolve, reject) {
9     getTranscriptFromAudio(params)
10    .then(function (transcript) {
11        doNaturalLanguageUnderstanding(params, transcript)
12        .then(function (location) => {
13            request.get(`http://api.openweathermap.org/data/2.5/weather?q=${location},us&units=imperial&appid=${params.WEATHER_APP_ID}`, function (err, data) {
14                resolve(JSON.parse(data.body));
15            });
16        })
17        .catch(function (error) => {
18            reject({error: error});
19        });
20    })
21    .catch(function (error) {
22        reject({error: error});
23    });
24 });
25 }
26
27 function doNaturalLanguageUnderstanding(params, transcript) {
28 return new Promise(function (resolve, reject) {
29     getTranscriptFromAudio(params)
30    .then(function (transcript) {
31        var naturalLanguageUnderstandingParams = {
32            'text': transcript,
33            'features': {
34                'keywords': {
35                    'limit': 2
36                },
37                'entities': {
38                    'limit': 2
39                }
40            }
41        };
42        var natural_language_understanding = new NaturalLanguageUnderstandingV1({
43            'username': params.NATURAL_LANGUAGE_UNDERSTANDING_USERNAME,
```

FRONT END

```
var dataBlob = new Blob([e.detail], {type: 'audio/wav'});
$.ajax({
  url: 'https://service.us.apiconnect.ibmcloud.com/gws/apigateway/api/b9295e6c011185a1acafeb26d61e15ad49b5d48325f7ce16ed84996227602ce5/api/takeAction',
  type: 'POST',
  data: dataBlob,
  processData: false,
  headers: {
    'Content-Type': 'audio/wav'
  },
  success: function (data, textStatus, jqXHR) {
    screenLogger(JSON.stringify(data, null, 2));
    doInit();
  },
  error: function (jqXHR, textStatus, errorThrown) {
    screenLogger(jqXHR);
    doInit();
  }
});
```

<https://github.com/chris-rudmin/opus-recorder>

Take Action Example



Log



“WHAT IS THE WEATHER IN DETROIT”

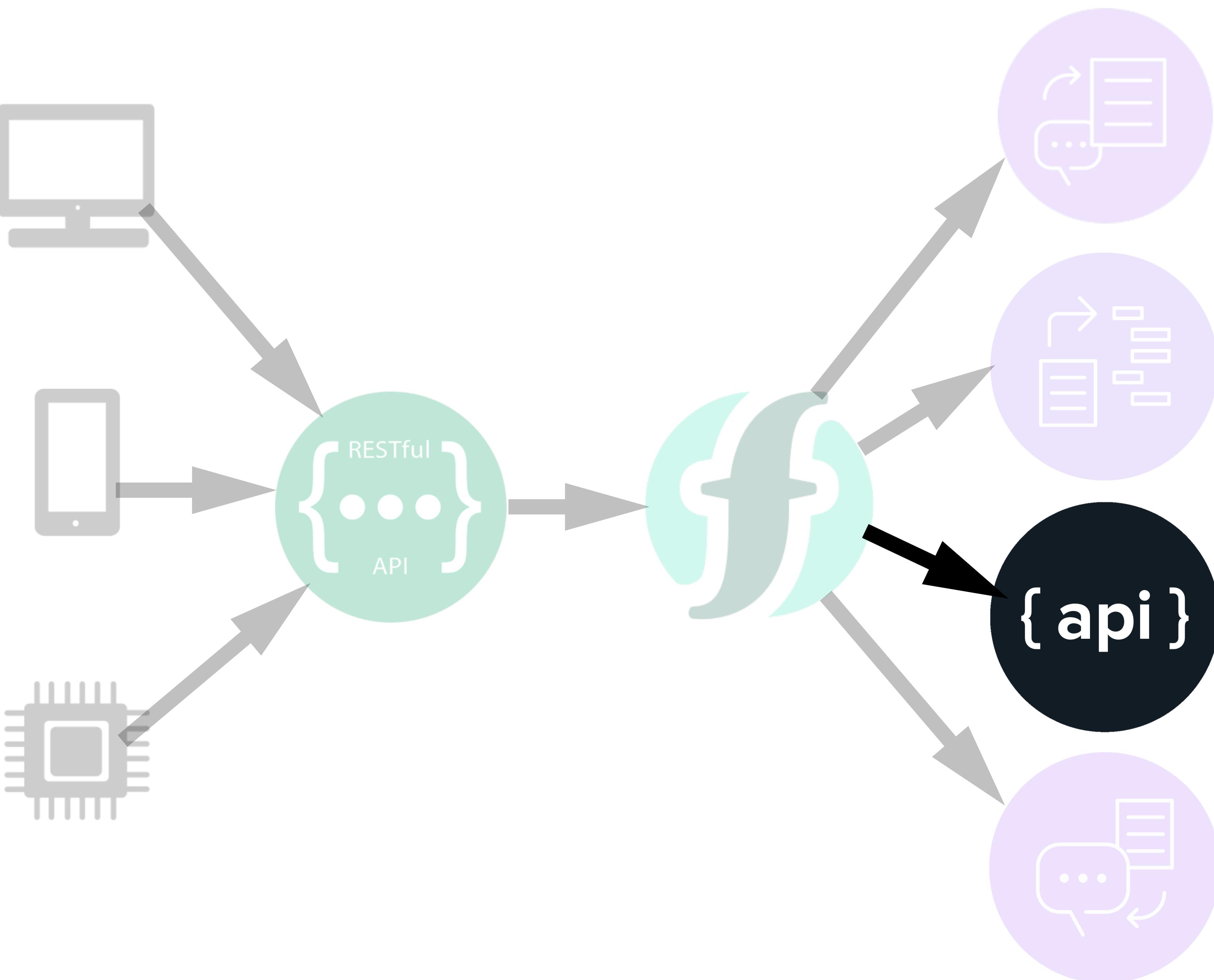
Log

```
{  
  "name": "Detroit",  
  "dt": 1514391540,  
  "main": {  
    "temp_min": 3.2,  
    "pressure": 1037,  
    "humidity": 60,  
    "temp": 6.96,  
    "temp_max": 10.4  
  },  
  "sys": {  
    "country": "US",  
    "id": 1460,  
    "sunrise": 1514379644,  
    "message": 0.0053,  
    "sunset": 1514412422,  
    "type": 1  
  },  
  "wind": {  
    "speed": 11.41,  
    "deg": 270  
  },  
  "base": "stations",  
  "id": 4990729,  
  "coord": {  
    "lon": -83.06,  
    "lat": 42.35  
  },  
  "clouds": {  
    "all": 1  
  },  
  "weather": [  
    {  
      "id": 701,  
      "main": "Mist",  
      "description": "mist",  
      "icon": "50d"  
    }  
  ],  
  "visibility": 16093,  
  "cod": 200  
}
```

“WHAT IS THE WEATHER IN COLUMBUS”

Log

```
{  
  "name": "Columbus",  
  "dt": 1514392500,  
  "main": {  
    "temp_min": 42.8,  
    "pressure": 1030,  
    "humidity": 93,  
    "temp": 44.26,  
    "temp_max": 46.4  
  },  
  "sys": {  
    "country": "US",  
    "id": 772,  
    "sunrise": 1514378430,  
    "message": 0.0037,  
    "sunset": 1514414562,  
    "type": 1  
  },  
  "wind": {  
    "speed": 4.7,  
    "deg": 40  
  },  
  "base": "stations",  
  "id": 4188985,  
  "coord": {  
    "lon": -84.99,  
    "lat": 32.46  
  },  
  "clouds": {  
    "all": 90  
  },  
  "weather": [  
    {  
      "id": 701,  
      "main": "Mist",  
      "description": "mist",  
      "icon": "50d"  
    }  
  ],  
  "visibility": 16093,  
  "cod": 200  
}
```





- ▶ Transcribe the audio into text
- ▶ Natural Language Processing (NLP)
- ▶ Take action
- ▶ Respond with audio and data

**RESPOND WITH
AUDIO AND DATA**

All Categories

Search

Filter

Infrastructure

Compute

Storage

Network

Security

Containers

VMware

Platform

Boilerplates

APIs

Application Services

Blockchain

Cloud Foundry Apps

Data & Analytics

DevOps

Finance

Functions

Integrate

Internet of Things

Mobile

Network

Security

Watson



Build cognitive apps that help enhance, scale, and accelerate human expertise.

**Conversation**

Add a natural language interface to your application to automate interactions with your end users. Common

[Lite](#) [IBM](#)**Discovery**

Add a cognitive search and content analytics engine to applications.

[Lite](#) [IBM](#)**Knowledge Studio**

Build custom models to teach Watson the language of your domain.

[IBM](#)**Language Translator**

Translate text from one language to another for specific domains.

[Lite](#) [IBM](#)**Natural Language Classifier**

Natural Language Classifier performs natural language classification on question texts. A user would be able

[IBM](#)**Natural Language Understanding**

Analyze text to extract meta-data from content such as concepts, entities, emotion, relations, sentiment and

[Lite](#) [IBM](#)**Personality Insights**

The Watson Personality Insights derives insights from transactional and social media data to identify

[Lite](#) [IBM](#)**Speech to Text**

Low-latency, streaming transcription

[Lite](#) [IBM](#)**Text to Speech**

Synthesizes natural-sounding speech from text.

[Lite](#) [IBM](#)**Tone Analyzer**

Tone Analyzer uses linguistic analysis to detect three types of tones from communications: emotion, socia

[Lite](#) [IBM](#)**Visual Recognition**

Find meaning in visual content! Analyze images for scenes, objects, faces, and other content. Choose a

[IBM](#)

[View all](#)

Text to Speech

The Text to Speech service processes text and natural language to generate synthesized audio output complete with appropriate cadence and intonation. It is available in several voices:

[Lite](#)[IBM](#)[View Docs](#)

AUTHOR	IBM
PUBLISHED	12/12/2017
TYPE	Service
LOCATION	Sydney, Germany, United Kingdom, US South

Service name:

Choose a region/location to deploy in:

Choose an organization:

Choose a space:

Features

- **English (US)**
2 female voices, 1 male voice (Watson's voice from Jeopardy)
- **French**
1 female voice
- **Italian**
1 female voice
- **Spanish (North American)**
1 female voice
- **Japanese**
1 female voice
- **TTS customization API (BETA)**
Allows customers to create custom dictionaries containing their own word pronunciations for up to 20K words. Customization is currently available at no additional charge.
- **English (UK)**
1 female voice
- **German**
1 female voice, 1 male voice
- **Spanish (Castilian)**
1 female voice, 1 male voice
- **Portuguese (Brazil)**
1 female voice
- **Mobile SDKs (BETA)**
Mobile SDKs are now available to enable native interaction on iOS and Android devices.
- **SoftBank**
A localized version of this Watson service is available in Japan. Visit the following link for details: <http://www.softbank.jp/biz/watson>

Pricing Plans

Monthly prices shown are for country or region: United States

Need Help?
[Contact IBM Cloud Sales](#)

Estimate Monthly Cost
[Cost Calculator](#)

[Create](#)



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Text to Speech-x0

Location: US South Org: jarred.128 Space: dev

:

Getting started tutorial

Last Updated: 2017-10-20 | [Edit in GitHub](#)

The IBM® Text to Speech service converts written text to natural-sounding speech to provide speech-synthesis capabilities for applications. This cURL-based tutorial can help you get started quickly with the service. The examples show you how to call the service's `POST` and `GET /v1/synthesize` methods to request an audio stream.

Before you begin

- Create an instance of the service:
 - If you're seeing this, you created your service instance. Now get your credentials.
 - Create a project from a service:
 - ① Go to the Watson Developer Console [Services](#) page.
 - ② Select Text to Speech, click **Add Services**, and either sign up for a free IBM Cloud account or log in.
 - ③ Type `text-to-speech-tutorial` as the project name and click **Create Project**.
- Copy the credentials to authenticate to your service instance:
 - From the service dashboard (what you're looking at):
 - ① Click the **Service credentials** tab.
 - ② Click **View credentials** under **Actions**.
 - ③ Copy the `username`, `password`, and `url` values.
 - From your `text-to-speech-tutorial` project in the Developer Console, copy the `username`, `password`, and `url` values for "text_to_speech" from the **Credentials** section.
- Make sure you have cURL:
 - The examples use cURL to call methods of the HTTP interface. Install the version for your operating system from [curl.haxx.se](#). Install the version that supports the Secure Sockets Layer (SSL) protocol. Make sure to include the installed binary file on your `PATH` environment variable.

If you use IBM Cloud Dedicated, create your service instance from the [Text to Speech](#) page in the Catalog. For details about how to find your service credentials, see [Service credentials for Watson services](#).



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Text to Speech-x0

Location: US South Org: jarred.128 Space: dev



Service credentials

Credentials are provided in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

[View More](#)

Service credentials

[New credential +](#)

Click New credentials to create a set of credentials for this instance



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Text to Speech-x0

Location: US South

Org: jarred.128

Space

X

Add new credential

Name:

Credentials-1

View More

Add Inline Configuration Parameters (Optional):

Provide service-specific configuration parameters in a valid JSON object

Choose File...

Cancel

Add

New credential

⋮



Getting started

Manage

Service credentials

Plan

Connections

Watson /

Text to Speech-x0

Location: US South Org: jarred.128 Space: dev



Service credentials

Credentials are provided in JSON format. The JSON snippet lists credentials, such as the API key and secret, as well as connection information for the service.

[View More](#)[New credential +](#)

Service credentials

[New credential +](#)

10 ▾ Items per page | 1-1 of 1 items

1 of 1 pages < 1 >

KEY NAME

DATE CREATED

ACTIONS

 Credentials-1

Dec 27, 2017 - 12:11:18

[View credentials](#) ▾

```
{  
  "url": "https://stream.watsonplatform.net/text-to-speech/api",  
  "username": "382e7559-[REDACTED]-46e9cf3b329f",  
  "password": "Rla![REDACTED]"  
}
```



SERVER SIDE



Code

Parameters

Runtime

Endpoints

Connected Triggers

Enclosing Sequences

Actions /

respondWithData

Code Node.js 8

Change Input

Invoke

```
1 var SpeechToTextV1 = require('watson-developer-cloud/speech-to-text/v1');
2 var NaturalLanguageUnderstandingV1 = require('watson-developer-cloud/natural-language-understanding/v1.js');
3 var TextToSpeechV1 = require('watson-developer-cloud/text-to-speech/v1');
4 const stream = require('stream');
5 var request = require('request');
6
7 function main(params) {
8
9     return new Promise(function (resolve, reject) {
10         getTranscriptFromAudio(params)
11             .then(function (transcript) {
12                 doNaturalLanguageUnderstanding(params, transcript)
13                     .then(function (location) => {
14                         getWeatherData(params, location)
15                             .then(function (weatherData) => {
16                                 var text_to_speech = new TextToSpeechV1({
17                                     username: params.TEXT_TO_SPEECH_USERNAME,
18                                     password: params.TEXT_TO_SPEECH_PASSWORD
19                                 });
20
21                                 const text = `The current forecast in ${location} is ${weatherData.weather[0].description}, with a high temperature of ${weatherData.main.temp_max} degrees`;
22                                 var textToSpeechParams = {
23                                     text: text,
24                                     voice: 'en-US_AllisonVoice',
25                                     accept: 'audio/mp3'
26                                 };
27
28 //https://www.ibm.com/watson/developercloud/text-to-speech/api/v1/#synthesize_audio
29                                 text_to_speech.synthesize(textToSpeechParams, function (error, data) {
30                                     if (error) {
31                                         reject({error: error});
32                                     }
33                                     const base64EncodedAudio = data.toString('base64');
34                                     const responseObject = {
35                                         text: text,
36                                         transcript: transcript,
37                                         base64EncodedAudio: base64EncodedAudio,
38                                     };
39                                     resolve(responseObject);
40                                 });
41                             });
42             })
43         .catch(function (error) => {
44             reject(error);
45         });
46     });
47 }
```

FRONT END

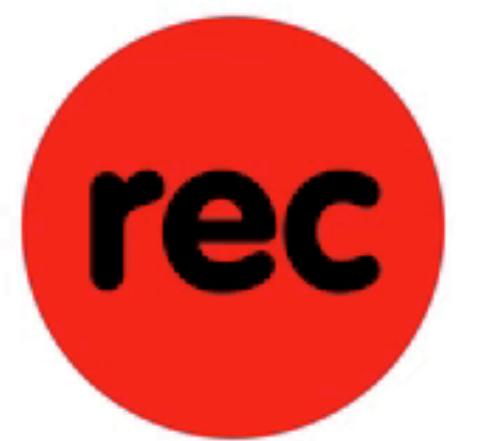
```
var dataBlob = new Blob([e.detail], {type: 'audio/wav'});
$.ajax({
  url: 'https://service.us.apiconnect.ibmcloud.com/gws/apigateway/api/b9295e6c011185a1acafeb26d61e15ad49b5d48325f7ce16ed84996227602ce5/api/respondWithData',
  type: 'POST',
  data: dataBlob,
  processData: false,
  headers: {
    'Content-Type': 'audio/wav'
  },
  success: function (data, textStatus, jqXHR) {
    screenLogger(JSON.stringify(data, null, 2));

    $('#playback').attr("src", `data:audio/mpeg;base64,${data.base64EncodedAudio}`);
    $('#playback').trigger('play');

    doInit();
  },
  error: function (jqXHR, textStatus, errorThrown) {
    screenLogger(jqXHR);
    doInit();
  }
});
```

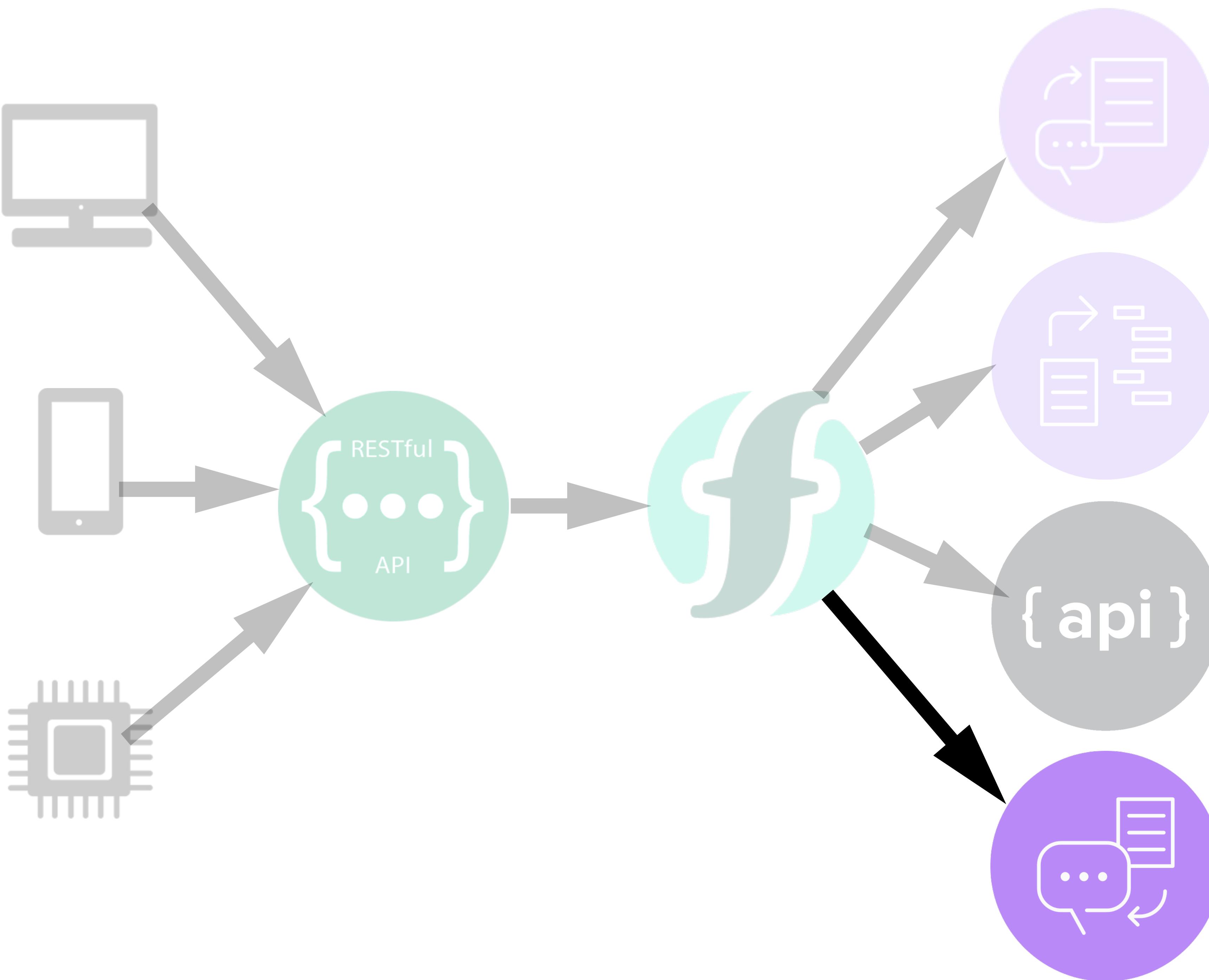
<https://github.com/chris-rudmin/opus-recorder>

Respond With Data Example



Log







- ▶ Transcribe the audio into text
- ▶ Natural Language Processing (NLP)
- ▶ Take action
- ▶ Respond with audio and data

PRICING



©2016FOX

Change pricing plan

PLAN	FEATURES	PRICING	
<input type="checkbox"/>	Lite	100 Minutes per Month	Free
<input checked="" type="checkbox"/>	Standard	Standard Minutes (First 1,000 minutes are free)	Expand each section to view details
TYPE		TIERS	PRICING
plus OPTIONAL Custom Language Model Add-on per MINUTE		1 - 100	\$0.03 USD/plus OPTIONAL Custom Language Model Add-on per MINUTE
MINUTE		1 - 250,000	\$0.02 USD/MINUTE
		250,001 - 500,000	\$0.015 USD/MINUTE
		500,001 - 1,000,000	\$0.0125 USD/MINUTE
		1,000,001+	\$0.01 USD/MINUTE
		1,000,000+	
<input type="checkbox"/>	Premium	Premium Plans offer developers and organizations a single tenant instance of one or more Watson services for better isolation and security. These plans offer compute-level isolation on the existing shared platform, as well as end-to-end encrypted data while in transit and at rest. For more information, or to purchase a premium plan, visit: https://ibm.biz/contact-wdc-premium	

SPEECH TO TEXT

Lite

PLAN INCLUDES

30,000 NLU Items Per Month

1 Custom Model

NOTE: A NLU item is based on the number of data units enriched and the number of enrichment features applied. A data unit is 10,000 characters or less. For example: extracting Entities and Sentiment from 15,000 characters of text is (2 Data Units * 2 Enrichment Features) = 4 NLU Items. A custom model refers to an annotation model developed with Watson Knowledge Studio.

N/A

Lite plan services are deleted after 30 days of inactivity.

DETAILS

Change pricing plan

PLAN	FEATURES	PRICING
<input type="checkbox"/> Lite	30,000 NLU Items Per Month 1 Custom Model NOTE: A NLU item is based on the number of data units enriched and the number of enrichment features applied. A data unit is 10,000 characters or less. For example: extracting Entities and Sentiment from 15,000 characters of text is (2 Data Units * 2 Enrichment Features) = 4 NLU Items. A custom model refers to an annotation model developed with Watson Knowledge Studio.	Free
<input checked="" type="checkbox"/> Standard	Unlimited NLU Items Per Month You will be charged per NLU Item You will be charged per Custom Model NOTE: A NLU item is based on the number of data units enriched and the number of enrichment features applied. A data unit is 10,000 characters or less. For example: extracting Entities and Sentiment from 15,000 characters of text is (2 Data Units * 2 Enrichment Features) = 4 NLU Items. A custom model refers to an annotation model developed with Watson Knowledge Studio.	Expand each section to view details

TYPE	TIERS	PRICING
Custom Model Instance per Month	1 - 1	\$800.00 USD/Custom Model Instance per Month
NLU Item	1 - 250,000 250,001 - 5,000,000 5,000,000+	\$0.003 USD/NLU Item \$0.001 USD/NLU Item \$0.0002 USD/NLU Item

NLU

Change pricing plan

PLAN	FEATURES	PRICING
<input checked="" type="checkbox"/> Lite	10,000 Characters per Month	Free
<input type="checkbox"/> Standard	Standard Characters (First 1,000,000 characters are free)	\$0.02 USD/THOUSAND CHAR
<input type="checkbox"/> Premium	Premium Plans offer developers and organizations a single tenant instance of one or more Watson services for better isolation and security. These plans offer compute-level isolation on the existing shared platform, as well as end-to-end encrypted data while in transit and at rest. For more information, or to purchase a premium plan, visit: https://ibm.biz/contact-wdc-premium	

TEXT TO SPEECH

USE CASES

SPEECH TO TEXT

- ▶ Videos
- ▶ Podcasts
- ▶ Voicemails
- ▶ Phone Calls
- ▶ Meeting Minutes
- ▶ Educational

NATURAL LANGUAGE PROCESSING

- ▶ Preprocess a Search Query
- ▶ Keyword Extraction
- ▶ Sentiment Analysis

TEXT TO SPEECH

- ▶ Translation
- ▶ Educational
- ▶ Visually Impaired

This repository Search Pull requests Issues Marketplace Explore

Watch 0 Star 0 Fork 0

JarredOlson / build-your-own-voice-assistant

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

Presentation and corresponding code to building your own voice assistant using IBM Cloud

Add topics

4 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find file Clone or download

JarredOlson Adding PDF of Slides Latest commit 08efa66 2 days ago

functions	Initial Commit	2 days ago
img	Initial Commit	2 days ago
lib	Initial Commit	2 days ago
.gitignore	ignoring node_modules	2 days ago
01_speechToText.html	Initial Commit	2 days ago
02_naturalLanguageUnderstanding.html	Initial Commit	2 days ago
03_takeAction.html	Initial Commit	2 days ago
04_respondWithData.html	Initial Commit	2 days ago
BuildYourOwnVoiceAssistant.pdf	Adding PDF of Slides	2 days ago
Readme.md	Initial Commit	2 days ago
package-lock.json	Initial Commit	2 days ago

Readme.md

<https://github.com/chris-rudmin/opus-recorder>
<https://openweathermap.org/current>
https://www.ibm.com/watson/developercloud/speech-to-text/api/v1/#recognize_sessionless_nonmp12
<https://www.ibm.com/watson/developercloud/natural-language-understanding/api/v1/#post-analyze>

<https://github.com/JarredOlson/build-your-own-voice-assistant>

This repository Search Pull requests Issues Marketplace Explore

Watch 0 Star 0 Fork 0

JarredOlson / build-your-own-voice-assistant

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

Branch: master build-your-own-voice-assistant / functions / Create new file Upload files Find file History

JarredOlson Initial Commit Latest commit ab022ec 2 days ago

..

01_speechToText.js Initial Commit 2 days ago

02_naturalLanguageUnderstanding.js Initial Commit 2 days ago

03_takeAction.js Initial Commit 2 days ago

04_respondWithData.js Initial Commit 2 days ago

© 2018 GitHub, Inc. Terms Privacy Security Status Help Contact GitHub API Training Shop Blog About

<https://github.com/JarredOlson/build-your-own-voice-assistant>

THANKS!

@JARREDOOLSON