

[AI & Machine Learning Products](https://cloud.google.com/products/machine-learning/) (<https://cloud.google.com/products/machine-learning/>)

[Cloud Speech-to-Text](https://cloud.google.com/speech-to-text/) (<https://cloud.google.com/speech-to-text/>)

[Documentation](https://cloud.google.com/speech-to-text/docs/) (<https://cloud.google.com/speech-to-text/docs/>) [Guides](#)

# Transcribing videos

This tutorial shows how to transcribe the audio track from a video file using Speech-to-Text.

Audio files can come from many different sources. Audio data can come from a phone (like voicemail) or the soundtrack included in a video file.

Cloud Speech-to-Text can use one of several machine learning *models* (<https://cloud.google.com/speech-to-text/docs/basics#select-model>) to transcribe your audio file, to best match the original source of the audio. You can get better results from your speech transcription by specifying the source of the original audio. This allows Cloud Speech-to-Text to process your audio files using a machine learning model trained for data similar to your audio file.

## Objectives

- Send a audio transcription request for a video file to Cloud Speech-to-Text.

## Costs

This tutorial uses billable components of Cloud Platform, including:

- Speech-to-Text

Use the [Pricing Calculator](#)

(<https://cloud.google.com/products/calculator/#id=411d8ca1-210f-4f2c-babd-34c6af2b5538>) to generate a cost estimate based on your projected usage. New Cloud Platform users might be eligible for a [free trial](#) (<https://cloud.google.com/free-trial>).

## Before you begin

This tutorial has several prerequisites:

- You've set up a Speech-to-Text project (<https://cloud.google.com/speech-to-text/docs/quickstart-client-libraries>) in the Google Cloud Console.
- You've set up your environment using Application Default Credentials (<https://cloud.google.com/speech-to-text/docs/quickstart-client-libraries>) in the Google Cloud Console.
- You have set up the development environment for your chosen programming language.
- You've installed the Google Cloud Client Library (<https://cloud.google.com/speech-to-text/docs/reference/libraries>) for your chosen programming language.

## Preparing the audio data

Before you can transcribe audio from a video, you must extract the data from the video file. After you've extracted the audio data, you must store it in a Cloud Storage bucket (<https://cloud.google.com/storage/docs/key-terms#buckets>) or convert it to base64-encoding.

**Note:** If you use a client library for transcription, you don't need to store or convert the audio data. You only need to extract the audio data from the video file before sending a transcription request.

### Extract the audio data

You can use any file conversion tool that handles audio and video files, such as FFmpeg (<https://www.ffmpeg.org/>).

Use the code snippet below to convert a video file to an audio file using `ffmpeg`.

```
ffmpeg -i video-input-file audio-output-file
```



### Store or convert the audio data

You can transcribe an audio file stored on your local machine or in a Cloud Storage bucket (<https://cloud.google.com/storage/docs/key-terms#buckets>).

Use the following command to upload your audio file to an existing Cloud Storage bucket using the [gsutil tool](https://cloud.google.com/storage/docs/gsutil) (<https://cloud.google.com/storage/docs/gsutil>).

```
gsutil cp audio-output-file storage-bucket-uri
```



If you use a local file and plan to send a request using the `curl` tool from the command line, you must convert the audio file to [base64-encoded data](https://cloud.google.com/speech-to-text/docs/base64-encoding) (<https://cloud.google.com/speech-to-text/docs/base64-encoding>) first.

Use the following command to convert an audio file to a text file.

```
base64 audio-output-file -w 0 > audio-data-text
```



## Sending a request

Use the following code to send a transcription request to Cloud Speech-to-Text.

### PROTOCOL

### NODE.JS

### PYTHON

### JAVA

Refer to the [speech:recognize](https://cloud.google.com/speech-to-text/docs/reference/rest/v1/speech/recognize)

(<https://cloud.google.com/speech-to-text/docs/reference/rest/v1/speech/recognize>) API endpoint for complete details.

To perform synchronous speech recognition, make a `POST` request and provide the appropriate request body. The following shows an example of a `POST` request using `curl`. The example uses the access token for a service account set up for the project using the Google Cloud [Cloud SDK](https://cloud.google.com/sdk) (<https://cloud.google.com/sdk>). For instructions on installing the Cloud SDK, setting up a project with a service account, and obtaining an access token, see the [quickstart](https://cloud.google.com/speech-to-text/docs/quickstart-protocol) (<https://cloud.google.com/speech-to-text/docs/quickstart-protocol>).

```
curl -s -H "Content-Type: application/json" \  
  -H "Authorization: Bearer "$(gcloud auth application-default print-access-token \  
  https://speech.googleapis.com/v1/speech:recognize \  
  --data "{  
  'config': {  
    'encoding': 'LINEAR16',  
    'sampleRateHertz': 16000,  
    'languageCode': 'en-US',  
    'model': 'video'  
  },  
  'audio': {
```



```
'uri': 'gs://cloud-samples-tests/speech/Google_Gnome.wav'  
}  
}"
```

See the [RecognitionConfig](#)

(<https://cloud.google.com/speech-to-text/docs/reference/rest/v1/RecognitionConfig>) reference documentation for more information on configuring the request body.

If the request is successful, the server returns a **200 OK** HTTP status code and the response in JSON format:

```
{  
  "results": [  
    {  
      "alternatives": [  
        {  
          "transcript": "OK Google stream stranger things from  
Netflix to my TV okay stranger things from  
Netflix playing on TV from the people that brought you  
Google home comes the next evolution of the smart home  
and it's just outside your window me Google know hi  
how can I help okay no what's the weather like outside  
the weather outside is sunny and 76 degrees he's right  
okay no turn on the hose I'm holding sure okay no I'm can  
I eat this lemon tree leaf yes what about this Daisy yes  
but I wouldn't recommend it but I could eat it okay  
Nomad milk to my shopping list I'm sorry that sounds like  
an indoor request I keep doing that sorry you do keep  
doing that okay no is this compost really we're all  
compost if you think about it pretty much everything is  
made up of organic matter and will return",  
          "confidence": 0.9251011  
        }  
      ]  
    }  
  ]  
}
```

## Cleaning up

To avoid incurring charges to your Google Cloud Platform account for the resources used in this tutorial:

## Deleting the project

The easiest way to eliminate billing is to delete the project that you created for the tutorial.

To delete the project:


**Caution:** Deleting a project has the following effects:

- **Everything in the project is deleted.** If you used an existing project for this tutorial, when you delete it, you also delete any other work you've done in the project.
- **Custom project IDs are lost.** When you created this project, you might have created a custom project ID that you want to use in the future. To preserve the URLs that use the project ID, such as an **appspot.com** URL, delete selected resources inside the project instead of deleting the whole project.

If you plan to explore multiple tutorials and quickstarts, reusing projects can help you avoid exceeding project quota limits.

1. In the Cloud Console, go to the **Manage resources** page.

[GO TO THE MANAGE RESOURCES PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/IAM-ADMIN/PROJ\)](https://console.cloud.google.com/iam-admin/projects)

2. In the project list, select the project you want to delete and click **Delete** .

3. In the dialog, type the project ID, and then click **Shut down** to delete the project.


## Deleting instances

To delete a Compute Engine instance:

1. In the Cloud Console, go to the **VM Instances** page.

[GO TO THE VM INSTANCES PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/COMPUTE/INSTANCES\)](https://console.cloud.google.com/compute/instances)

2. Click the checkbox for the instance you want to delete.

3. Click **Delete**  to delete the instance.

## Deleting firewall rules for the default network

To delete a firewall rule:

1. In the Cloud Console, go to the **Firewall Rules** page.

**[GO TO THE FIREWALL RULES PAGE \(HTTPS://CONSOLE.CLOUD.GOOGLE.COM/NETWORKING/FIREV](https://console.cloud.google.com/networking/firewall-rules)**

2. Click the checkbox for the firewall rule you want to delete.

3. Click **Delete**  to delete the firewall rule.

## What's next

## What's next

- Learn how to [get timestamps for audio](https://cloud.google.com/speech-to-text/docs/async-time-offsets).  
(<https://cloud.google.com/speech-to-text/docs/async-time-offsets>)
- Identify [different speakers in an audio file](https://cloud.google.com/speech-to-text/docs/multiple-voices).  
(<https://cloud.google.com/speech-to-text/docs/multiple-voices>)

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