Google Cloud Platform(GCP) Certification Series: 1.3 Installing and configuring the command line interface (CLI), specifically the Cloud SDK.

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We had a brief discussion about GCP command line interface in our blog some time ago. Please go through it before jumping directly into the topic.

GCP Learning Series: Cloud Console and Cloud Shell

Google cloud platform can be used in various ways through API, cloud shell and cloud console. Most…

medium.com

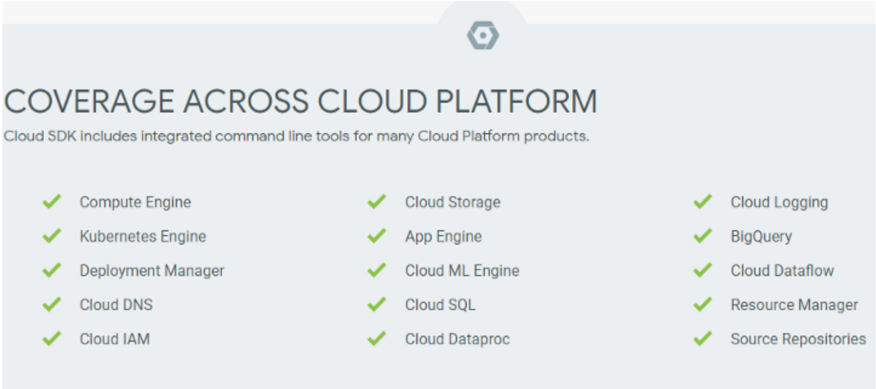
In this blog, we will go through the installation of Cloud SDK in local computer/laptop. We will also see how you can install cloud SDK in compute engine inside the Google Cloud Platform.

Clod SDK is a set of tools in GCP for managing the cloud. SDK basically contains gcloud,gsutil and bq commands that can be used to access and manage the compute engine, cloud storage, big query, and other product and services from command line environment. You can also use automated scripts for managing these instances.

managing virtual machines from gcloud is the easiest way to perform various tasks in VM.

gcloud can also be used to manage networks, firewalls, storage, and more without having to use the console. With gcloud, managing configurations for your Compute Engine environment are just a few keystrokes away.

Cloud SDK covers a wide range of services in GCP.



COVERAGE ACROSS CLOUD PLATFORM

Cloud SDK includes integrated command line tools for many Cloud Platform products.

- ✓ Compute Engine
- ✓ Kubernetes Engine
- ✓ Deployment Manager
- ✓ Cloud DNS
- ✓ Cloud IAM
- ✓ Cloud Storage
- ✓ App Engine
- ✓ Cloud ML Engine
- ✓ Cloud SQL
- ✓ Cloud Dataproc
- ✓ Cloud Logging
- ✓ BigQuery
- ✓ Cloud Dataflow
- ✓ Resource Manager
- ✓ Source Repositories

coverage

You can use various commands to manage all the products in GCP.

gcloud Tool

gcloud manages authentication, local configuration, developer workflow, and interactions with the Cloud Platform APIs.

gsutil Tool

gsutil provides command line access to manage Cloud Storage buckets and objects.

Powershell cmdlets (Windows)

Google Cloud Tools for PowerShell is a collection of Windows PowerShell cmdlets for managing Google Cloud Platform resources within the Windows PowerShell environment.

bq Tool

bq allows you to run queries, manipulate datasets, tables, and entities in BigQuery through the command line.

kubectl Tool

kubectl orchestrates the deployment and management of Kubernetes container clusters on gcloud.

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You can install cloud SDK in the following systems

a. Linux

b. Mac OS

c. Windows

Along with this, you may also use browser-based SDK which gives you 5 GB of persistent disk.

In all cases, the main motive is to use commands available in SDK from different platforms.

Let us install Cloud SDK in Linux.

Linux [Red Hat]

You don’t need to download manually and install cloud SDK in Linux.

You should install repository prior to installing SDK.

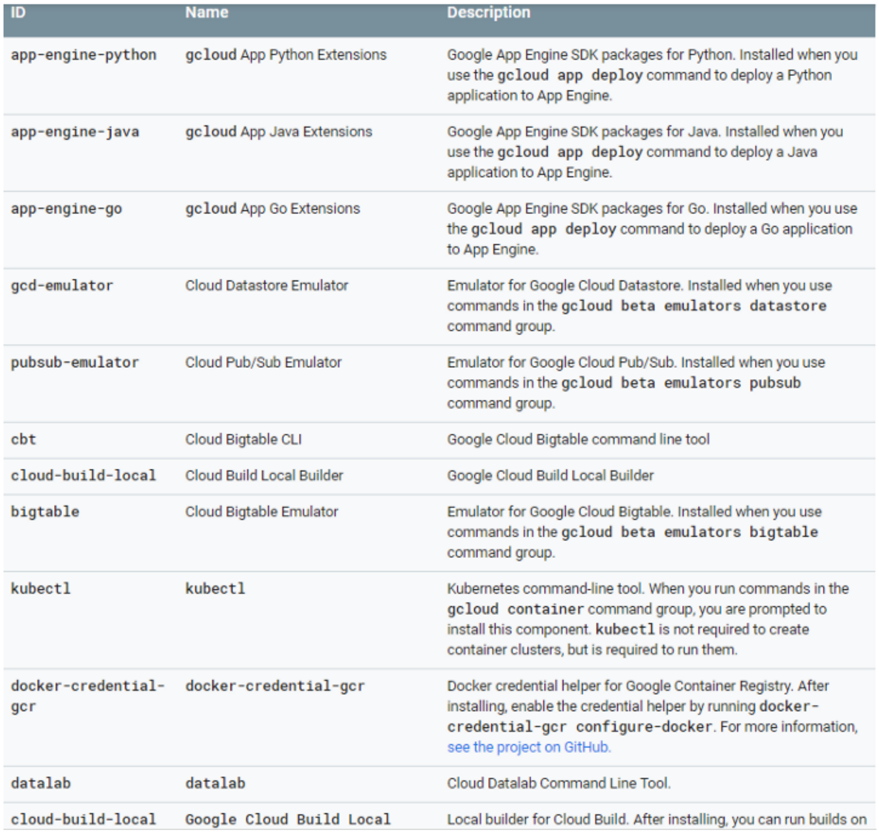
The command for installing repo is :

```
sudo tee -a /etc/yum.repos.d/google-cloud-sdk.repo << EOM
[google-cloud-sdk]
name=Google Cloud SDK
baseurl=https://packages.cloud.google.com/yum/repos/cloud-
sdk-el7-x86_64
enabled=1
gpgcheck=1
repo_gpgcheck=1
gpgkey=https://packages.cloud.google.com/yum/doc/yum-key.gpg
       https://packages.cloud.google.com/yum/doc/rpm-
package-key.gpg
EOM
```

After that command for installing the cloud SDK is

```
#yum install google-cloud-sdk
```

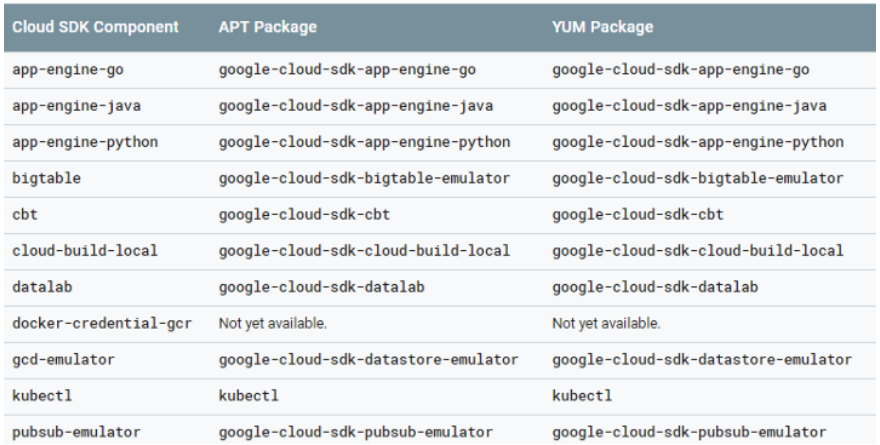
Additional components that contain dependencies for various commands are also available in the SDK, but not installed by default.



ID	Name	Description
`app-engine-python`	`gcloud` App Python Extensions	Google App Engine SDK packages for Python. Installed when you use the `gcloud app deploy` command to deploy a Python application to App Engine.
`app-engine-java`	`gcloud` App Java Extensions	Google App Engine SDK packages for Java. Installed when you use the `gcloud app deploy` command to deploy a Java application to App Engine.
`app-engine-go`	`gcloud` App Go Extensions	Google App Engine SDK packages for Go. Installed when you use the `gcloud app deploy` command to deploy a Go application to App Engine.
`gcd-emulator`	Cloud Datastore Emulator	Emulator for Google Cloud Datastore. Installed when you use commands in the `gcloud beta emulators datastore` command group.
`pubsub-emulator`	Cloud Pub/Sub Emulator	Emulator for Google Cloud Pub/Sub. Installed when you use commands in the `gcloud beta emulators pubsub` command group.
`cbt`	Cloud Bigtable CLI	Google Cloud Bigtable command line tool
`cloud-build-local`	Cloud Build Local Builder	Google Cloud Build Local Builder
`bigtable`	Cloud Bigtable Emulator	Emulator for Google Cloud Bigtable. Installed when you use commands in the `gcloud beta emulators bigtable` command group.
`kubectl`	`kubectl`	Kubernetes command-line tool. When you run commands in the `gcloud container` command group, you are prompted to install this component. `kubectl` is not required to create container clusters, but is required to run them.
`docker-credential-gcr`	`docker-credential-gcr`	Docker credential helper for Google Container Registry. After installing, enable the credential helper by running `docker-credential-gcr configure-docker`. For more information, see the project on GitHub.
`datalab`	`datalab`	Cloud Datalab Command Line Tool.
`cloud-build-local`	`Google Cloud Build Local`	Local builder for Cloud Build. After installing, you can run builds on

additional component

While using other package managers Cloud SDK can be packaged with the additional element



Cloud SDK Component	APT Package	YUM Package
app-engine-go	google-cloud-sdk-app-engine-go	google-cloud-sdk-app-engine-go
app-engine-java	google-cloud-sdk-app-engine-java	google-cloud-sdk-app-engine-java
app-engine-python	google-cloud-sdk-app-engine-python	google-cloud-sdk-app-engine-python
bigtable	google-cloud-sdk-bigtable-emulator	google-cloud-sdk-bigtable-emulator
cbt	google-cloud-sdk-cbt	google-cloud-sdk-cbt
cloud-build-local	google-cloud-sdk-cloud-build-local	google-cloud-sdk-cloud-build-local
datalab	google-cloud-sdk-datalab	google-cloud-sdk-datalab
docker-credential-gcr	Not yet available.	Not yet available.
gcd-emulator	google-cloud-sdk-datastore-emulator	google-cloud-sdk-datastore-emulator
kubectl	kubectl	kubectl
pubsub-emulator	google-cloud-sdk-pubsub-emulator	google-cloud-sdk-pubsub-emulator

other components

For example, the `google-cloud-sdk-app-engine-java` component can be installed as follows:

```
#yum install google-cloud-sdk-app-engine-java
```

Linux[Debian]

The process to install Cloud SDK in Debian based Linux is similar to the red hat. This package contains the `gcloud` , `gcloud alpha` , `gcloud beta` , `gsutil` , and `bq` commands only.

It does not include `kubectl` or the App Engine extensions required to deploy an application using `gcloud` commands

1. Create an environment variable for the correct distribution:

```
export CLOUD_SDK_REPO="cloud-sdk-$(lsb_release -c -s)"
```

2. Add the Cloud SDK distribution URI as a package source:

```
echo "deb http://packages.cloud.google.com/apt
$CLOUD_SDK_REPO main" | sudo tee -a
/etc/apt/sources.list.d/google-cloud-sdk.list
```

Note: If you have apt-transport-https installed, you can use “https” instead of “HTTP” in this step.

3. Import the Google Cloud public key:

- curl https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -

Troubleshooting Tip: If you are unable to get the latest updates due to an expired key, obtain the latest apt-get.gpg key file.

4. Update and install the Cloud SDK:

- sudo apt-get update && sudo apt-get install google-cloud-sdk

Note: For additional options, such as disabling prompts or dry runs, refer to the `apt-get` man pages.

5. Optionally, install any of these additional components:

- `google-cloud-sdk-app-engine-python`
- `google-cloud-sdk-app-engine-python-extras`
- `google-cloud-sdk-app-engine-java`
- `google-cloud-sdk-app-engine-go`
- `google-cloud-sdk-datalab`
- `google-cloud-sdk-datastore-emulator`
- `google-cloud-sdk-pubsub-emulator`
- `google-cloud-sdk-cbt`
- `google-cloud-sdk-cloud-build-local`
- `google-cloud-sdk-bigtable-emulator`
- `kubectl`

6. For example, the `google-cloud-sdk-app-engine-java` component can be installed as follows:

- sudo apt-get install google-cloud-sdk-app-engine-java

7. Run `gcloud init` to get started:

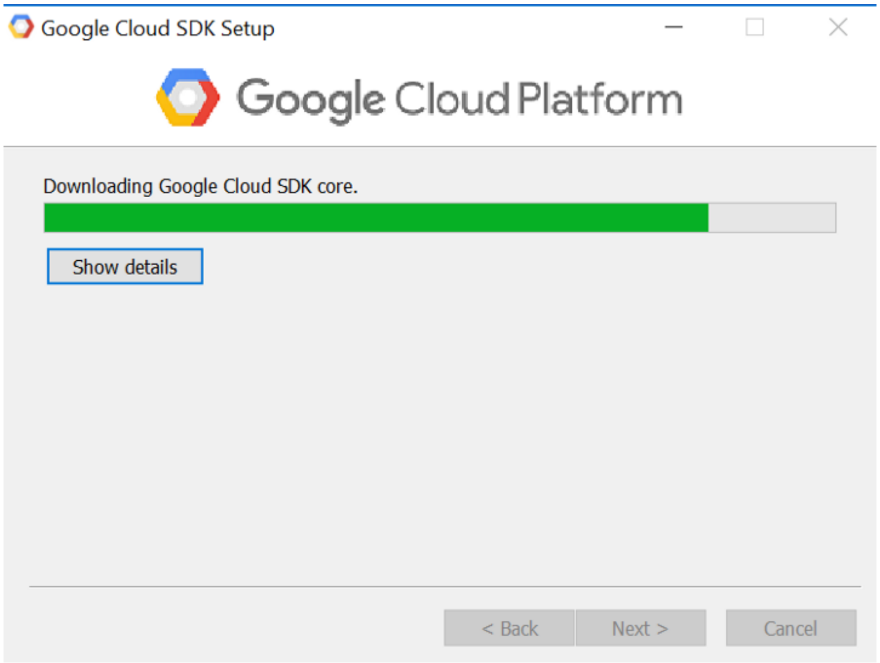
- gcloud init

Windows

There are two approaches to installing cloud SDK on windows

1. Download the Cloud SDK installer. The installer is signed by Google Inc.
2. Launch the installer and follow the prompts.

Cloud SDK requires Python 2 with a release version of Python 2.7.9 or later. The installer will install all necessary dependencies, including the needed Python version, by default. If you already have Python 2.x.y installed and want to use the existing installation, you can uncheck the option to **install Bundled Python**.



Google Cloud SDK Setup

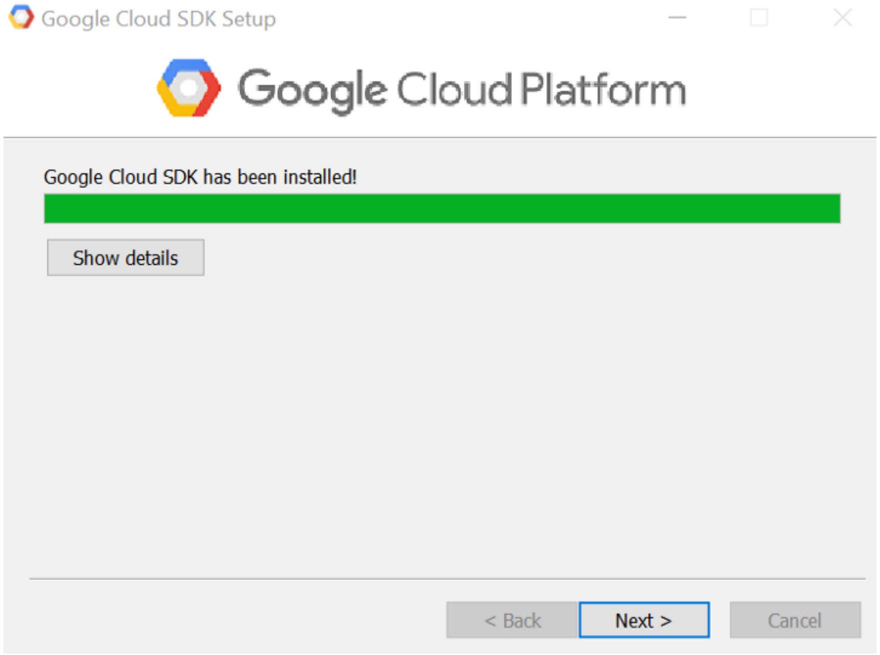
Downloading Google Cloud SDK core.

1. After installation has completed, accept the following options:

- **Start Cloud SDK Shell**

- **Run gcloud init**

2. The default installation does not include the App Engine extensions required to deploy an application using `gcloud` commands.



Google Cloud SDK has been installed!

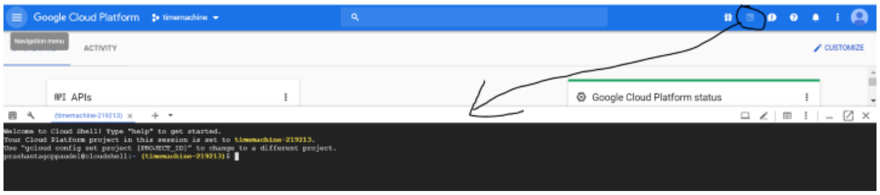
You can also install the latest version from a downloaded `.zip` file:

1. Download google-cloud-sdk.zip and extract its contents. (Right click on the downloaded file and select **Extract All**.)
2. Launch the `google-cloud-sdk\install.bat` script and follow the installation prompts.
3. When the installation finishes, restart the command prompt (`cmd.exe`).
4. Run `gcloud init`:

C:\> gcloud init

Web-Browser Shell

After you are logged into the cloud console click on the command prompt icon in the right top of the page which will lunch cloud shell with cloud SDK pre-installed. This is the best way to use google cloud SDK.



```
Welcome to Cloud Shell! Type "help" to get started.
Your Cloud Platform project in this session is set to timemachine-219213.
Use "gcloud config set project [PROJECT_ID]" to change to a different project.
prashantagcppaudel@cloudshell:~ (timemachine-219213)$
```

Sometimes it may take a while to lunch depending on speed and browser but once loaded you can use all the tools like gcloud, gsutil, bq etc

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Of all the tools and methods browser-based SDK seems to be the fastest and easiest way to work in GCP.

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Now lets look at the commands in SDK.

Google says:

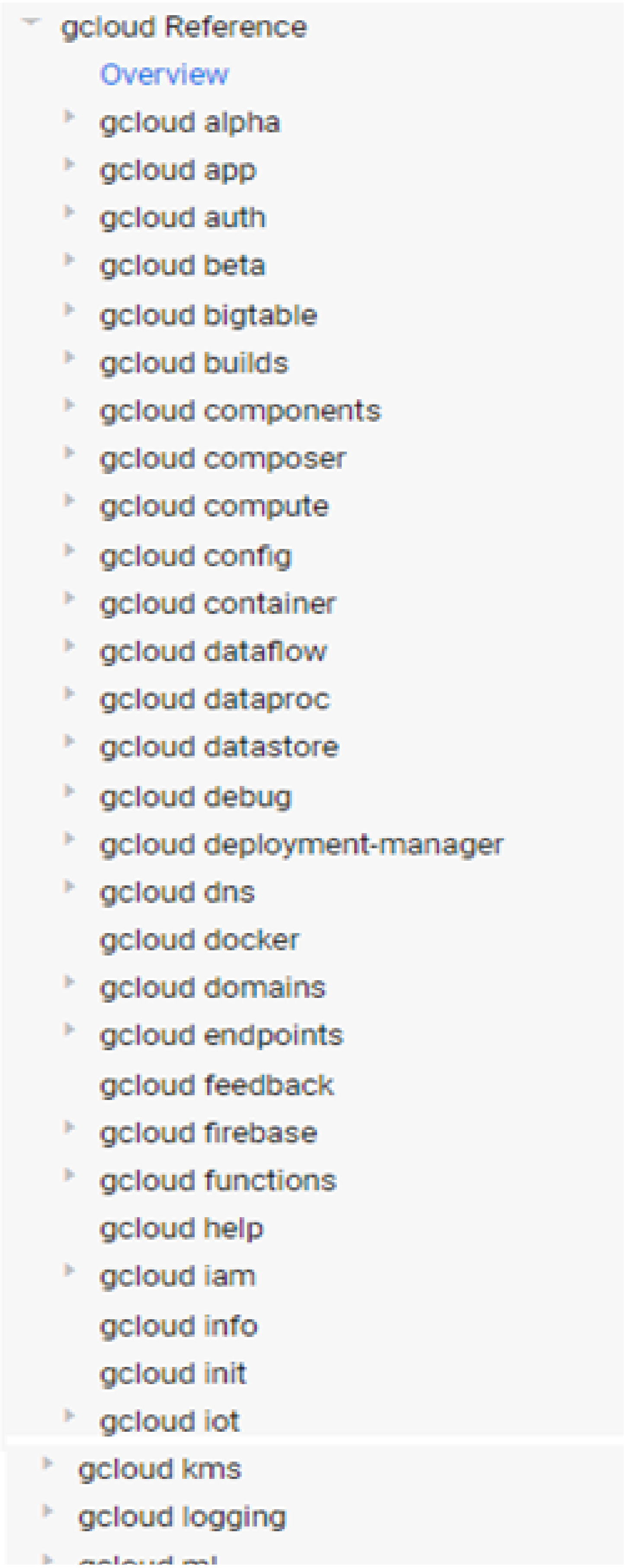
Release levels

`gcloud` commands have the following release levels:

Release levelLabelDescriptionGeneral AvailabilityNoneCommands are considered fully stable and available for production use. Advance warnings will be made for commands that break current functionality and documented in the release notes.Beta `beta` Commands are functionally complete, but may still have some outstanding issues. Breaking changes to these commands may be made without notice.Alpha `alpha` Commands are in early release and may change without notice.Preview `preview` Commands may be unstable and may change without notice.

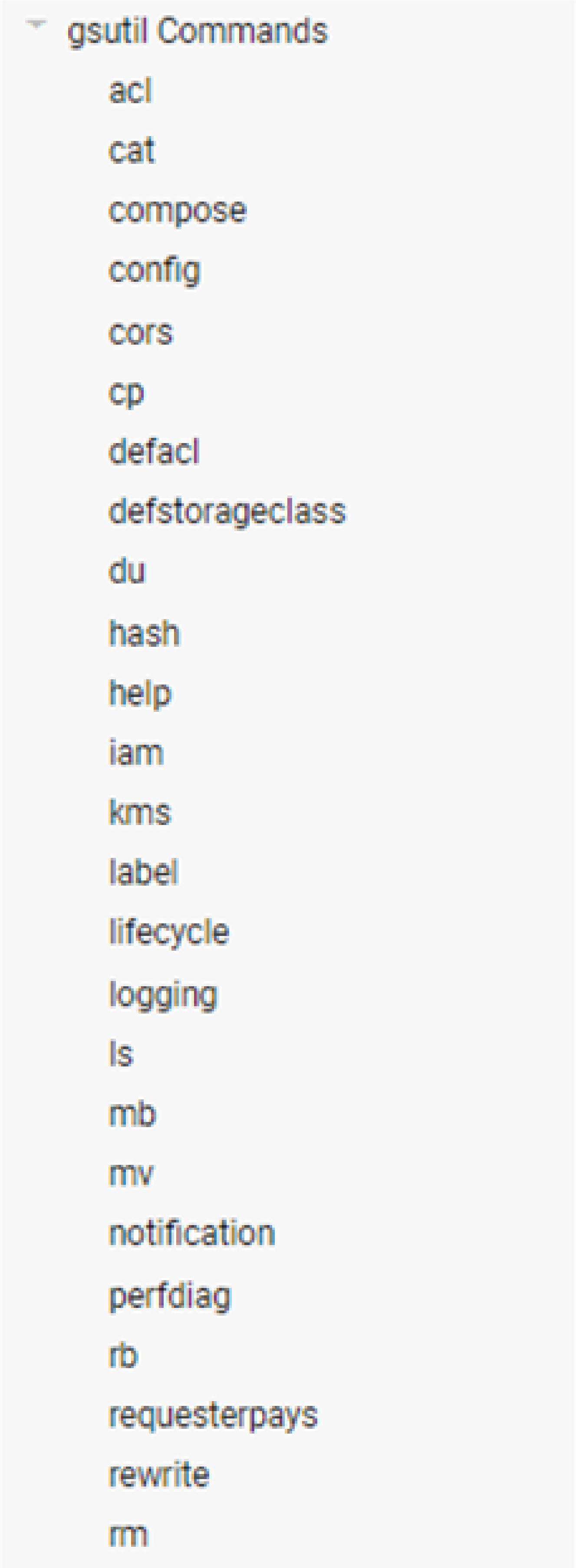
The `alpha` and `beta` components are not installed by default when you install the SDK. You must install theseseparately using the `gcloud components install` command. If you try to run an alpha or beta command and the corresponding component is not installed, `gcloud` will prompt you to install it.

gcloud and gsutil commands are listed below.



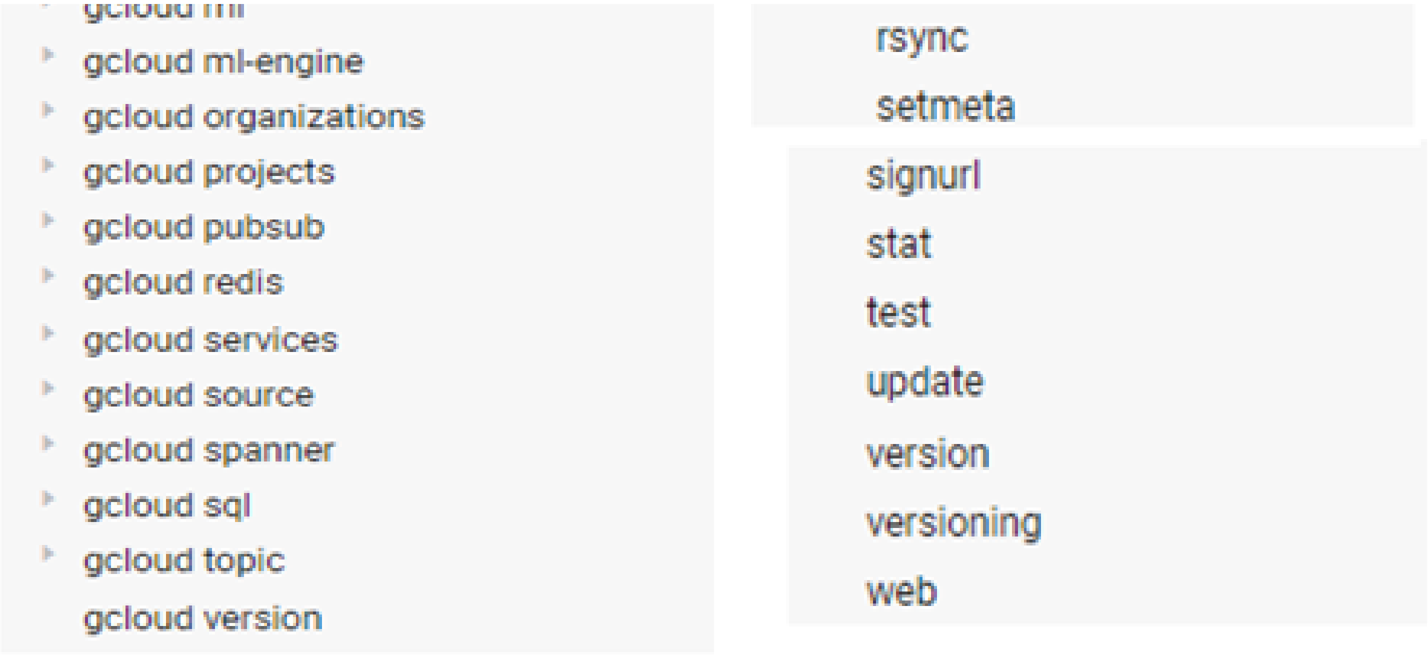
gcloud Reference

- Overview
- gcloud alpha
- gcloud app
- gcloud auth
- gcloud beta
- gcloud bigtable
- gcloud builds
- gcloud components
- gcloud composer
- gcloud compute
- gcloud config
- gcloud container
- gcloud dataflow
- gcloud dataproc
- gcloud datastore
- gcloud debug
- gcloud deployment-manager
- gcloud dns
- gcloud docker
- gcloud domains
- gcloud endpoints
- gcloud feedback
- gcloud firebase
- gcloud functions
- gcloud help
- gcloud iam
- gcloud info
- gcloud init
- gcloud iot
- gcloud kms
- gcloud logging
- gcloud ml



gsutil Commands

- acl
- cat
- compose
- config
- cors
- cp
- defacl
- defstorageclass
- du
- hash
- help
- iam
- kms
- label
- lifecycle
- logging
- ls
- mb
- mv
- notification
- perfdiag
- rb
- requesterpays
- rewrite
- rm



gcloud ml
gcloud ml-engine
gcloud organizations
gcloud projects
gcloud pubsub
gcloud redis
gcloud services
gcloud source
gcloud spanner
gcloud sql
gcloud topic
gcloud version

rsync
setmeta
signurl
stat
test
update
version
versioning
web

gcloud commands

We will not go into deep in all the commands mentioned above but list some of them which are used frequently.

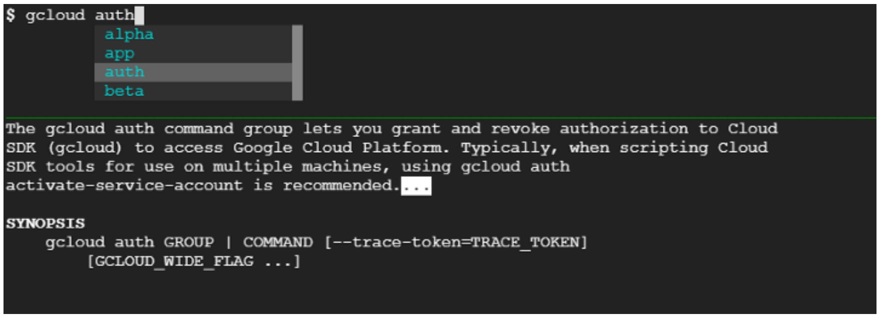
```
#gcloud --help -------> help page
#gcloud -h --------------> Help for structuring command
#gcloud project create PROJECT_ID ---------> create new
project
#gcloud project describe PROJECT_ID
#gcloud projects list -----------------> list projects
#gcloud project delete PROJECT_ID
#gcloud config set project PROJECT_ID ------> set project in
shell
```

You can see from the commands that google has structured commands in a way it is easier to do rather than remembering whole commands. There is always possible to find next portion of command by typing -h.

GCP's New interactive CLI

To install interactive CLI in your default web browser shell.

```
$ gcloud components install alpha
$ gcloud alpha interactive
```



```
$ gcloud auth
         alpha
         app
         auth
         beta

The gcloud auth command group lets you grant and revoke authorization to Cloud
SDK (gcloud) to access Google Cloud Platform. Typically, when scripting Cloud
SDK tools for use on multiple machines, using gcloud auth
activate-service-account is recommended....

SYNOPSIS
    gcloud auth GROUP | COMMAND [--trace-token=TRACE_TOKEN]
        [GCLOUD_WIDE_FLAG ...]
```

In this way we installed , configure and use various commands using google cloud SDK in CLI mode.