

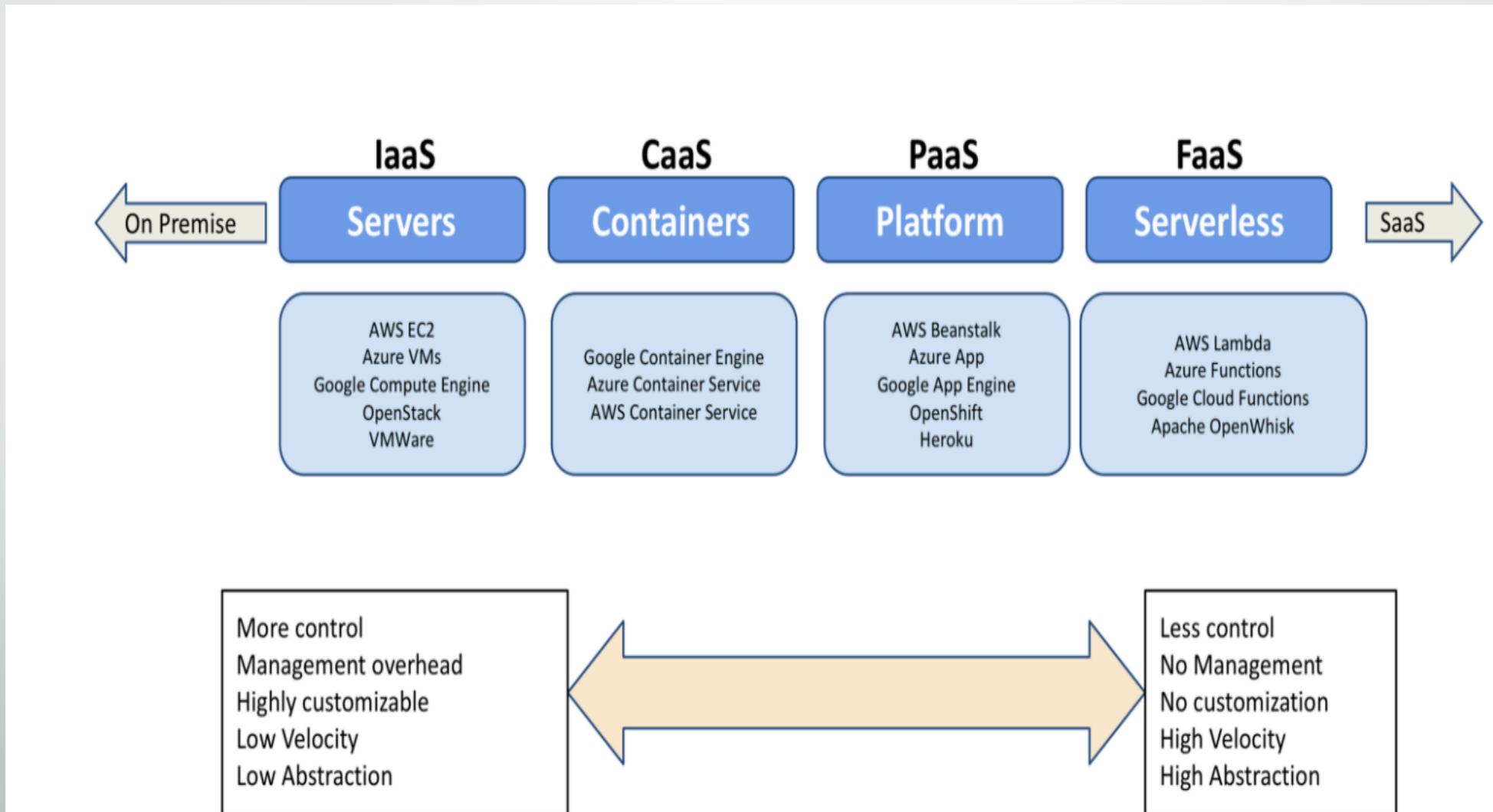


Google Cloud Function: Serverless Practical

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Foundation :





Model:

Programming Model

- Event Driven
- Shares Nothing
- Stateless

Operational Model

- Zero Ops
- Managed Security
- Auto Scaling

Billing Model

- Pay for usage
- Cost scales to zero



Project Creation:

Google Cloud Platform Search products and resources ▾

New Project

Project name * GCF00 ?

Project ID: gcf00-280304. It cannot be changed later. [EDIT](#)

Organization [REDACTED] ?

This project will be attached to bits-pilani.ac.in.

Location * [REDACTED] BROWSE

Parent organization or folder

[CREATE](#) CANCEL



GCF Creation:

The screenshot shows the Google Cloud Platform homepage with a blue header. On the left, there's a navigation bar with the text "Google Cloud Platform" and a dropdown menu labeled "GCF00". To the right of the header is a search bar with the placeholder "Search products and resources". On the far right of the header are several small icons: a grid, a person, a gear, a bell, and a question mark. The main content area features a large white box with a shadow. Inside this box, the text "Google Cloud Functions" is displayed in a large, bold, black font. Below this, a detailed description reads: "Google Cloud Functions is a lightweight, event-based, asynchronous compute solution that allows you to create small, single-purpose functions that respond to cloud events without the need to manage a server or a runtime environment". At the bottom of the white box is a blue button with the text "CREATE FUNCTION" in white capital letters.

GCF

GCF Creation:



Google Cloud Platform GCF00 Search products and resources

Name * GCF

Memory allocated * 256 MB

Trigger HTTP

URL https://us-central1-gcf00-280304.cloudfunctions.net/GCF

Authentication Allow unauthenticated invocations
Check this if you are creating a public API or website.
This is a shortcut to assign the IAM Invoker role to the special identifier allUsers. You can use IAM to edit this setting after the function is created.

Source code

Inline editor

ZIP upload

ZIP from Cloud Storage

Cloud Source repository

Runtime Node.js 10

INDEX.JS PACKAGE.JSON

```
2  * Responds to any HTTP request.
3  *
4  * @param {!express:Request} req HTTP request context.
5  * @param {!express:Response} res HTTP response context.
6  */
7  exports(gcf = (req, res) => [
8    "let message = req.query.message || req.body.message || 'Hello',
9    res.status(200).send(message);
10   ];
11 }
```

Function to execute * gcf

ENVIRONMENT VARIABLES, NETWORKING, TIMEOUTS AND MORE

CREATE CANCEL

This screenshot shows the 'Create function' page in the Google Cloud Platform console. The 'Name' field is set to 'GCF'. The 'Memory allocated' field is set to '256 MB'. The 'Trigger' is set to 'HTTP'. The 'Source code' section shows the 'Inline editor' selected, displaying a simple Node.js function named 'gcf' that responds to any HTTP request with a default message or one provided in the query or body. The 'Runtime' is set to 'Node.js 10'. At the bottom, the 'Function to execute' dropdown also contains 'gcf'. There are sections for 'ENVIRONMENT VARIABLES, NETWORKING, TIMEOUTS AND MORE' which are currently collapsed. At the very bottom are 'CREATE' and 'CANCEL' buttons.

GCF

GCF Testing:



Google Cloud Platform GCF00 Search products and resources

Cloud Functions Function details EDIT DELETE COPY VIEW LOGS

✓ GCF
Version 1, deployed at Jun 14, 2020, 1:11:20 PM

GENERAL TRIGGER SOURCE PERMISSIONS TESTING

Triggering event ?
1 {}
2

TEST THE FUNCTION

Output
\$ Hello GCF!

Logs
Fetching log entries...

This screenshot shows the Google Cloud Platform (GCP) interface for managing Cloud Functions. The top navigation bar includes the GCF00 project name and a search bar. Below the navigation is a toolbar with Cloud Functions, Function details, and various management options like Edit, Delete, Copy, and View Logs. The main content area displays a function named 'GCF' (Version 1, deployed on June 14, 2020). The 'TESTING' tab is selected, showing the triggering event configuration (which is currently empty). Below this, there's a 'TEST THE FUNCTION' section with an output window displaying the message '\$ Hello GCF!'. At the bottom, there's a 'Logs' section with the status 'Fetching log entries...'. The overall layout is clean and follows GCP's standard design principles.

GCF

GCF http trigger:



≡ Google Cloud Platform GCF00 ▾

Search products and resources

Cloud Functions Function details EDIT DELETE COPY VIEW LOGS

✓ GCF

Version 1, deployed at Jun 14, 2020, 1:11:20 PM

GENERAL TRIGGER SOURCE PERMISSIONS TESTING

Trigger type

HTTP

URL

<https://us-central1-gcf00-280304.cloudfunctions.net/GCF>

This screenshot shows the Google Cloud Platform interface for a Cloud Function named "GCF". The "TRIGGER" tab is selected. The function is triggered via HTTP, with the URL provided. The function has been deployed successfully, showing Version 1 deployed at Jun 14, 2020, 1:11:20 PM.

GCF

GCF http trigger output:



us-central1-gcf00-280304.cloudfunctions.net/GCF

Hello GCF!

GCF deploy cmd line:



```
amrits-MacBook-Pro:gcr-python-flask-project ihealth$ gcloud init
Welcome! This command will take you through the configuration of gcloud.

Settings from your current configuration [default] are:
core:
  account: 2019ht66564@wilp.bits-pilani.ac.in
  disable_usage_reporting: 'True'
  project: gcr-00

Pick configuration to use:
[1] Re-initialize this configuration [default] with new settings
[2] Create a new configuration
Please enter your numeric choice: 2

Enter configuration name. Names start with a lower case letter and
contain only lower case letters a-z, digits 0-9, and hyphens '-': gcf-00
Your current configuration has been set to: [gcf-00]

You can skip diagnostics next time by using the following flag:
  gcloud init --skip-diagnostics

Network diagnostic detects and fixes local network connection issues.
Checking network connection...done.
Reachability Check passed.
Network diagnostic passed (1/1 checks passed).

Choose the account you would like to use to perform operations for
this configuration:
[1] 2019ht66564@wilp.bits-pilani.ac.in
[2] Log in with a new account
Please enter your numeric choice: 1

You are logged in as: [2019ht66564@wilp.bits-pilani.ac.in].

Pick cloud project to use:
[1] gcf00-280304
[2] Create a new project
Please enter numeric choice or text value (must exactly match list
item): 1

Your current project has been set to: [gcf00-280304].

Not setting default zone/region (this feature makes it easier to use
[gcloud compute] by setting an appropriate default value for the
--zone and --region flag).
See https://cloud.google.com/compute/docs/gcloud-compute section on how to set
default compute region and zone manually. If you would like [gcloud init] to be
able to do this for you the next time you run it, make sure the
Compute Engine API is enabled for your project on the
https://console.developers.google.com/apis page.

Your Google Cloud SDK is configured and ready to use!

* Commands that require authentication will use 2019ht66564@wilp.bits-pilani.ac.in by default
* Commands will reference project `gcf00-280304` by default
Run `gcloud help config` to learn how to change individual settings

This gcloud configuration is called [gcf-00]. You can create additional configurations if you work with multiple accounts and/or projects.
Run `gcloud topic configurations` to learn more.

Some things to try next:
* Run `gcloud --help` to see the Cloud Platform services you can interact with. And run `gcloud help COMMAND` to get help on any gcloud command.
* Run `gcloud topic --help` to learn about advanced features of the SDK like arg files and output formatting
amrits-MacBook-Pro:gcr-python-flask-project ihealth$ █
```



GCF deploy cmd line:

```
amrits-MacBook-Pro:GCF ihealth$ ls -ltr
total 24
-rw-r--r-- 1 ihealth  staff  29 Jun  7 23:08 README.md
-rw-r--r--@ 1 ihealth  staff   50 Jun 14 14:10 package.json
-rw-r--r--@ 1 ihealth  staff  133 Jun 14 14:18 index.js
amrits-MacBook-Pro:GCF ihealth$ gcloud functions deploy 'gcf-100' --runtime nodejs8 --trigger-http --entry-point=gcffun
Allow unauthenticated invocations of new function [gcf-100]? (y/N)? y

Deploying function (may take a while - up to 2 minutes)...done.
availableMemoryMb: 256
entryPoint: gcffun
httpsTrigger:
  url: https://us-central1-gcf00-280304.cloudfunctions.net/gcf-100
ingressSettings: ALLOW_ALL
labels:
  deployment-tool: cli-gcloud
name: projects/gcf00-280304/locations/us-central1/functions/gcf-100
runtime: nodejs8
serviceAccountEmail: gcf00-280304@appspot.gserviceaccount.com
sourceUploadUrl: https://storage.googleapis.com/gcf-upload-us-central1-04fc9d1a-771c-4dbf-91d3-724df2143644/0192311c-74ad-4c97-8d8c-995aebb7d04c.zip?GoogleAccessId=service-94064384873@gcf-admin-robot.iam.gserviceaccount.com&Expires=1592117350&Signature=P%2Fh4eHVO%2BUX4q7IuvYttHQhLxwBiHQk5s1TSfBVRR35WWBL0w9pMYYq6RuryHkZrbpcUxUURDf3DlGjf8Z5e6a9Mt9SbmbJCHywNwE19x30WZH%2Bz7F4LkEjP2rgTrT9RzphRox6LkpLZ40nxiTgq6Gz31HezBlIFhXANMpS775nWjeqCAVmcrP2mqeqh5QBd0h%2FHTeizCZq6a77a15hkPTaRYgadFugS8PzPY%2BnIcna5%2FqFx2uYjU%2BHT0velp327sCiecWRnugFDxiGo%2Ft4IiFu4uc6SuVhxwfVTk%2F%2FN1mRUGzGp9JmMphC%2F1sP5rlb43W6DZOp1HHZ%2Bt1KY0g%3D%3D
status: ACTIVE
timeout: 60s
updateTime: '2020-06-14T06:19:54.318Z'
versionId: '1'
amrits-MacBook-Pro:GCF ihealth$
```

GCF : Background Functions



GCF trigger cmd line:

```
amrits-MacBook-Pro:GCF ihealth$ curl https://us-central1-gcf00-280304.cloudfunctions.net/gcf-100  
{"msg":"Hello! GCF ServerLess guys ..."}amrits-MacBook-Pro:GCF ihealth$
```

Cloud Scheduler creation:

The screenshot shows the Google Cloud Platform interface with a blue header bar. On the left, there's a sidebar with the text "Cloud Scheduler". The main content area has a title "Google Cloud Scheduler" and a description: "Google Cloud Scheduler is a fully managed cron job scheduling service. Use it to trigger jobs on App Engine, send Pub/Sub messages, or hit an arbitrary HTTP/S endpoint on a recurring schedule." At the bottom of this section are two buttons: "CREATE JOB" and "BROWSE DOCS".

GCF : Asynchronous Function



Cloud Scheduler : Region Selection

≡ Google Cloud Platform GCF00 ▾

Cloud Scheduler Create job

1 Select a location — 2 Create a job

Where would you like your Cloud Scheduler jobs to live?

Select a region for your Cloud Scheduler jobs. Note: you cannot change the region for this project later.

A world map with various regions highlighted by blue and orange location pins. Labeled regions include: NORTH AMERICA (multiple pins), EUROPE (multiple pins), ASIA (multiple pins), AFRICA (one pin), SOUTH AMERICA (one pin), and OCEANIA (one pin). The map also shows the Atlantic Ocean, Indian Ocean, and Pacific Ocean. A dashed line separates the Northern Hemisphere from the Southern Hemisphere.

Map data ©2020 [Terms of Use](#)

Select a region * ▾

NEXT

GCF : Background Functions

Cloud Scheduler : Job Creation



Google Cloud Platform GCF00

Cloud Scheduler Create a job

Name * tryme
Must be unique across all jobs in this project

Description

Frequency * 0 9 * * 1
Schedules are specified using unix-cron format. E.g. every minute: "* * * * *", every 3 hours: "0 */3 * * *", every monday at 9:00: "0 9 * * 1". [Learn more](#)

Timezone * Singapore Standard Time (SGT)

Target * Pub/Sub

Topic * test-me

Payload * testing

CREATE **CANCEL**

GCF : Background Functions



Cloud Function Creation:

Google Cloud Platform GCF00 Search products and resources

Cloud Functions Create function

Trigger

Cloud Pub/Sub

Select a Cloud Pub/Sub topic *

projects/gcf00-280304/topics/test-me

Source code

Inline editor

ZIP upload

ZIP from Cloud Storage

Cloud Source repository

Runtime

Node.js 10

INDEX.JS PACKAGE.JSON

```
1  /**
2   * Triggered from a message on a Cloud Pub/Sub topic.
3   *
4   * @param {Object} event Event payload.
5   * @param {Object} context Metadata for the event.
6   */
7 exports.helloPubSub = (event, context) => {
8   const message = event.data
9   ? Buffer.from(event.data, 'base64').toString()
10  : 'Hello, World from GCF';
11  console.log(message);
12};
13
```

Function to execute *

helloPubSub

ENVIRONMENT VARIABLES, NETWORKING, TIMEOUTS AND MORE

CREATE CANCEL

GCF : Background Functions

Run Cloud Scheduler: Invokes Cloud Functions



Google Cloud Platform GCF00 Search products and resources

Cloud Scheduler Jobs + CREATE JOB C REFRESH EDIT || PAUSE ▶ RESUME DELETE

Filter jobs

Name ↑	State	Description	Frequency	Target	Last run	Result	Logs	Run
tryme	Enabled		0 9 * * 1 (Asia/Singapore)	Topic : test-me	Jun 14, 2020, 11:11:27 PM	Success	View	RUN NOW

Google Cloud Platform GCF00 Search products and resources

Operations Logging CLASSIC CREATE METRIC CREATE SINK SAVE SEARCH C ▶ SHOW LIBRARY

Logs Viewer Logs-based Metrics Logs Router Logs Ingestion

New features are available in the Logs Viewer Preview. To switch between the preview and classic interfaces, use the drop-down in the top action bar. [View Blog](#) Dismiss Launch preview

Filter by label or text search

Cloud Function, handleded-by-cron, us-central1 All logs Any log level Last hour Jump to now

Showing logs from the last hour ending at 11:20 PM (HKT) Download logs View Options

No older entries found matching current filter in the last hour. Load older logs

2020-06-14 23:10:37.457 HKT Cloud Functions CreateFunction us-central1:handleded-by-cron 2019ht66564@wilp.bits-pilani.ac.in {"@type":"type.googleapis.com/google.cloud.audit...
2020-06-14 23:12:17.076 HKT Cloud Functions CreateFunction us-central1:handleded-by-cron 2019ht66564@wilp.bits-pilani.ac.in {"@type":"type.googleapis.com/google.cloud.audit...
2020-06-14 23:14:02.939 HKT handleded-by-cron 4d7rctxvevif Function execution started
2020-06-14 23:14:03.061 HKT handleded-by-cron 4d7rctxvevif Hello, World from GCF
2020-06-14 23:14:03.143 HKT handleded-by-cron 4d7rctxvevif Function execution took 204 ms, finished with status: 'ok'
2020-06-14 23:18:48.544 HKT handleded-by-cron 4d7rqmx7ffah Function execution started
2020-06-14 23:18:48.554 HKT handleded-by-cron 4d7rqmx7ffah testing
2020-06-14 23:18:48.555 HKT handleded-by-cron 4d7rqmx7ffah Function execution took 12 ms, finished with status: 'ok'

Load newer logs



Thank You

