

# Cloud Functions (2nd Gen) Serverless Functions on Cloud Run



# What are they?

Cloud Functions 2nd gen **are Cloud Run services** + an event handling layer

You write single-purpose code (Python, Node.js, Go...)

Google wraps it in a container, deploys to Cloud Run, scales automatically

Pay per invocation + per compute second (just like Cloud Run)

# Comparison

Aspect	FastAPI Service	Cloud Run Job	Cloud Function
Framework	FastAPI + Uvicorn	Pure Python script	functions-framework
HTTP Interface	✅ Full REST API	❌ No HTTP	✅ Single HTTP endpoint
Containerization	✅ Docker required	✅ Docker required	❌ Just code
Deployment	Cloud Build + Docker	Cloud Build + Docker	Direct upload
Runtime Limits	Unlimited	Unlimited	9 minutes max
Memory Limits	Up to 32GB	Up to 32GB	Up to 8GB
Cold Start	~1-3 seconds	~1-3 seconds	~100ms
Complexity	Medium	Low	Lowest

# Simple function

python

```
import functions_framework

@functions_framework.http
def hello_world(request):
    name = request.args.get("name", "World")
    return {"message": f"Hello, {name}!"}
```

# Deployment

- GUI
- CLI
- Cloudbuild (same as cloud run and cloud run jobs, minus dockerfile)

## Example cloudbuild.yaml

```
steps:
- name: 'gcr.io/cloud-builders/gcloud'
  args:
    - functions
    - deploy
    - weather-ingestion
    - '--runtime=python311'
    - '--trigger-http'
    - '--entry-point=weather_ingestion'
    - '--source=.'
    - '--env-vars-file=env.yaml'
    - '--set-secrets=API_KEY=WEATHER_API_KEY:latest'
    - '--region=europe-north2'
```

# Supported triggers

**HTTP**

**Pub/Sub**

**Cloud Storage events**

**Eventarc events** (Audit Logs, custom events)

# Workflows and scheduler

- Functions can be run by scheduler
- They can also be run as part of a workflow