

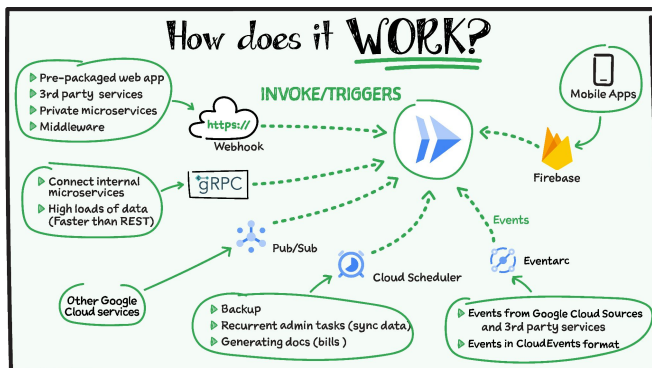
Review: Developing Applications with Cloud Run on Google Cloud: Fundamentals

Congratulations on completing this fundamentals course on Developing Applications with Cloud Run on Google Cloud.

Let's review the topics that were discussed and the skills you gained in this course.

Cloud Run overview

- 1 Your container-based application handles web requests.
- 2 Cloud Run handles the serving of HTTPS requests to your application.
- 3 Run your application on Cloud Run as a service or as a job.



By completing this course, you learned about the Cloud Run resource model, and how a service that runs on Cloud Run can be invoked with HTTPS requests.

You also learned that Cloud Run runs your containerized application as a service or as a job.

Container lifecycle



We discussed the states in the lifecycle of a container running on Cloud Run, from starting to stopped and all the transitions between them.

Scaling configuration

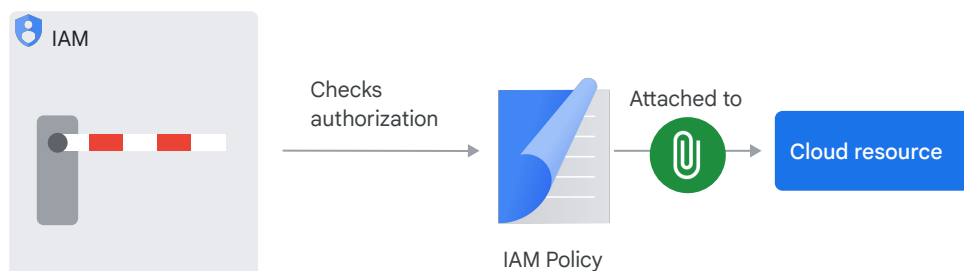
- 1 Use the minimum instances setting to prevent Cloud Run from scaling to zero container instances.
- 2 Manage traffic load to your downstream services with the maximum instances setting.
- 3 To lower CPU, memory usage and related costs, control the number of requests processed by a container instance with the concurrency setting.



We also discussed how Cloud Run automatically scales the number of container instances of your Cloud Run service, based on the number of requests to the service.

You learned about the different configuration settings to reduce service latency, improve performance with concurrency, and control throughput to downstream services that are used by your application.

Access control



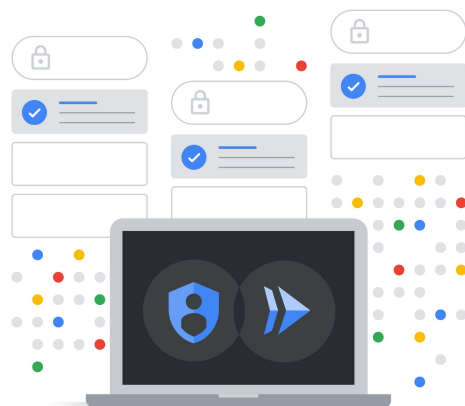
You learned how to control access to your services on Cloud Run with IAM policies and with network settings.

To control access, you can add individual users or principals (identities) to a Cloud Run service or job with the desired roles and permissions.

To control network access to your service, configure Cloud Run ingress settings at the service level.

Service identity and authentication

- 1 A service account is used to provide the Cloud Run service identity.
- 2 Use IAM policy bindings with predefined or custom roles to resources that your service needs to access.
- 3 Follow the principle of least privilege when granting permissions to access resources.



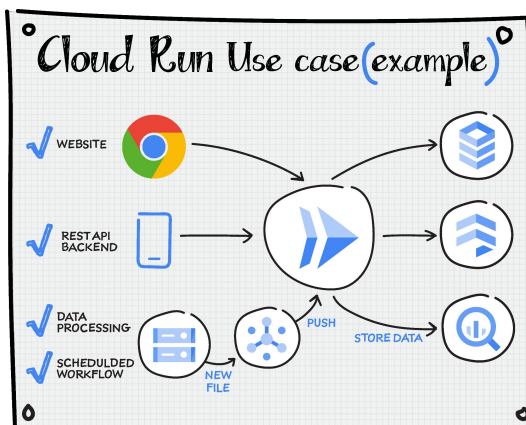
In the module on service identity and authentication, you learned about service accounts and how they can provide your Cloud Run service with its own identity. We discussed the role of the service account when accessing Google Cloud APIs and how they can be used for service to service communication.

We reviewed how resources in Google Cloud are organized hierarchically. You learned about policy bindings, how they are inherited by resources from their parents, and how they are used to allow or deny access to resources.

We also discussed the principle of least privilege that should be followed when granting roles and permissions to members including service accounts.

Is your application a good fit for Cloud Run?

- 1 Your service must listen for requests on the configured port, and return a response within a specified time.
- 2 Use Cloud Code with popular IDEs to easily create, deploy, and integrate applications with Google Cloud.
- 3 Test your application locally with Cloud Code, the gcloud CLI, or with Docker before deploying to Cloud Run.



In the final module, we discussed some of the criteria that you can use to decide whether your application is a good fit for Cloud Run.

As a service running on Cloud Run, your container must listen for requests on the configured port, and return a response within a specified time.

You also learned ways to build, and test your application before deploying it to Cloud Run.

With the source-based approach, you can build your source code with Buildpacks and deploy to Cloud Run.

You can use Cloud Code with popular IDEs to easily develop, deploy, and integrate your applications with Google Cloud.

You can also test your application locally with Cloud Code, the gcloud CLI, or with Docker before deploying to Cloud Run.

Service revisions

- 1 A service revision on Cloud Run is immutable.
- 2 Changing any service configuration settings results in the creation of a new revision.
- 3 You can split traffic between service revisions based on percentage of requests.



We also discussed how you deploy a service and manage service revisions on Cloud Run.

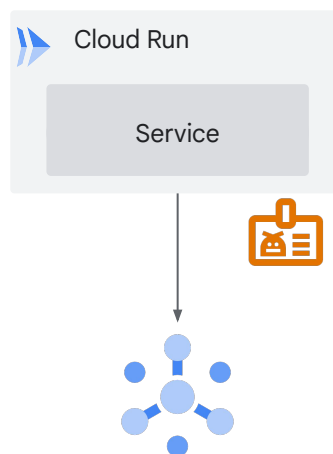
When you deploy a container image, Cloud Run creates a service revision. A service revision is immutable.

You learned that changing any configuration settings of your Cloud Run service results in the creation of a new revision.

You can also split traffic between service revisions based on the percentage of requests received by the service.

Integrating Cloud services

- 1 Connect to supported Google Cloud services from your Cloud Run application with client libraries.
- 2 Connect to a Memorystore for Redis instance from your Cloud Run service with Serverless VPC Access.



Finally, we discussed how to integrate with supported Google Cloud services such as Pub/Sub from your Cloud Run application with client libraries.

And, how to connect to internal resources such as Memorystore from your Cloud Run service with Serverless VPC Access.

What's next?



Cloud Developer Learning Path

A curated collection of on-demand courses, labs, and skill badges that provide you with hands-on experience with Google Cloud technologies essential to the Cloud Developer role.

1

Getting started with Application Development

2

Developing Applications with Cloud Run on Google Cloud

3

Getting Started with Google Kubernetes Engine

4

Service Orchestration and Choreography on Google Cloud

Now that you've completed this course on Developing Applications with Cloud Run on Google Cloud, you might consider learning more about other services such as Google Kubernetes Engine, and about Service Orchestration and Choreography on Google Cloud.

Some of these courses are part of a set of courses and quests in the [Cloud Developer learning path](#) that you can subscribe to, and expand your knowledge and skills on Google Cloud.