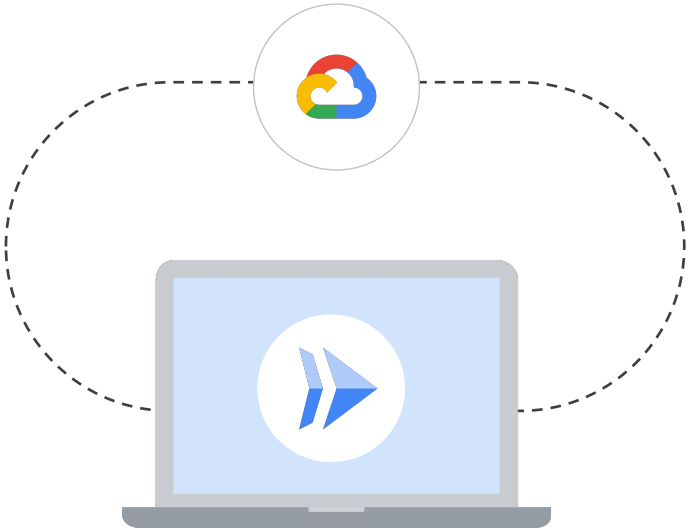
Google Cloud

Application Development with Cloud Run



October 2023

Welcome to the course on Application Development with Cloud Run. This course provides the foundation for developing applications with Cloud Run, and consists of two individual courses.

In the first course, you learn about containers and how to build and package container images. This course provides an introduction to Cloud Run and Google Kubernetes Engine, two platforms for running containerized applications on Google Cloud.

In the second course, you learn about the fundamentals of Cloud Run, including the resource model, container lifecycle, and autoscaling. You learn how to develop, test, and deploy applications to Cloud Run, use service identity and IAM, and integrate Cloud Run applications with Google Cloud services.

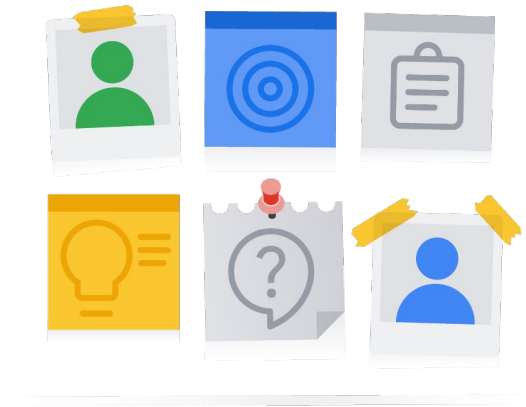
Introduction

Your instructor and you

Background

Position

Organization



Let’s start with some Introductions:

- Your instructor + You
- Background
- Position
- Organization

Course format

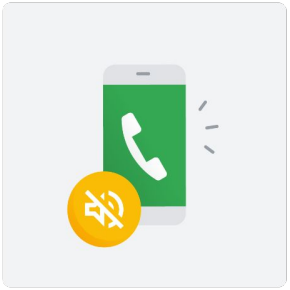
Presentations

Quizzes

Labs

We use slide decks, quizzes, and labs throughout the course as instruction materials.

Etiquette



No calls

No recording

Ask questions

Course etiquette:

- Recording this class is prohibited.
- Please silence your phone and take calls outside.
- Ask questions.

Audience and prerequisites

Target audience

- Cloud architects, cloud engineers, application developers

Prerequisites

- Knowledge of Google Cloud
- Some experience with Google Cloud console
- Basic programming experience in Node.js and Python
- Understanding of HTTP
- Experience with HTTP client tools such as *curl*

Target Audiences:

- Cloud Architects, cloud engineers, and application developers

Prerequisites:

- Knowledge of Google Cloud
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Learning objectives

- Define containers and container images.
- Build and package applications into container images.
- Identify best practices to create, test, and secure containers.
- Understand the basics of Cloud Run and Google Kubernetes Engine.

Learning objectives for the course on Developing Containerized Applications on Google Cloud.

Learning objectives

- Understand the fundamentals of Cloud Run.
- Develop and test applications locally.
- Use service identity and IAM with Cloud Run.
- Integrate Cloud Run applications with Google Cloud services.

Learning objectives for the fundamentals course on Developing Applications with Cloud Run on Google Cloud.

Course modules

01 Introduction to Containers

02 Introduction to Cloud Run and Google Kubernetes Engine

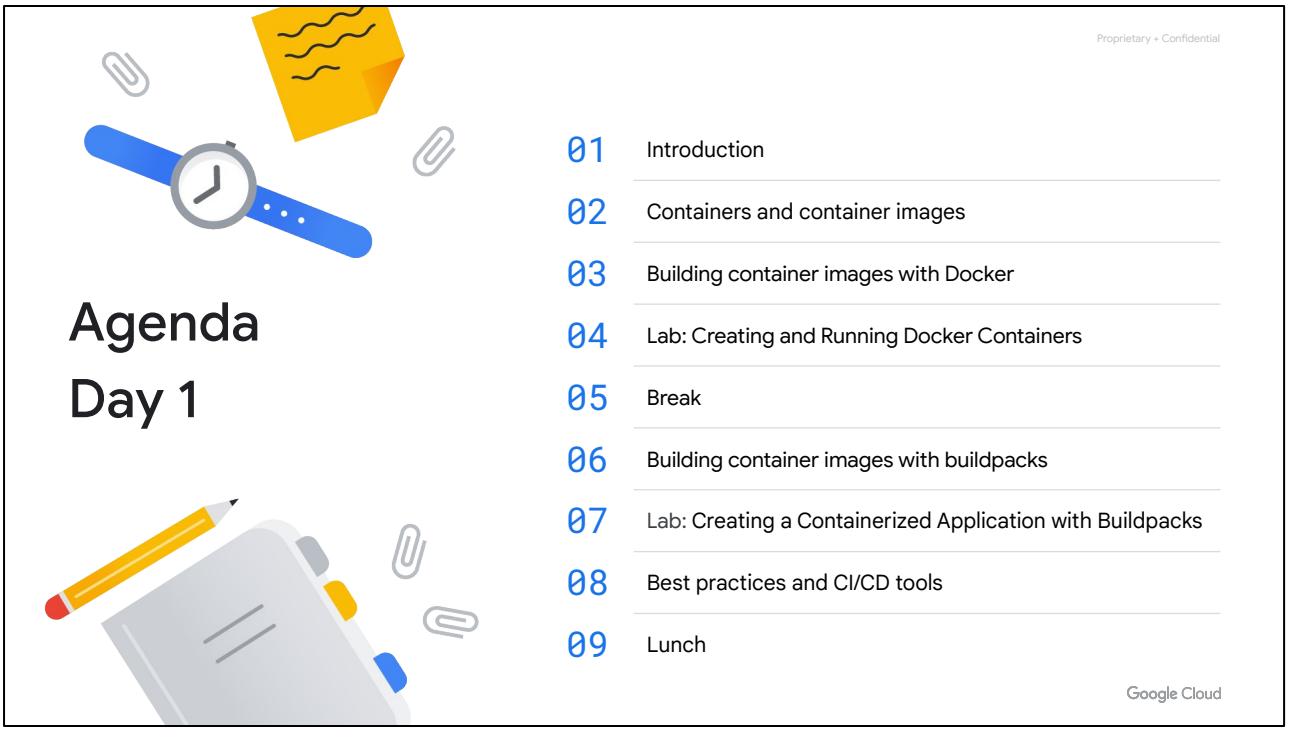
03 Fundamentals of Cloud Run

04 Service Identity and Authentication

05 Application Development, Testing, and Integration

The course covers the following topics:

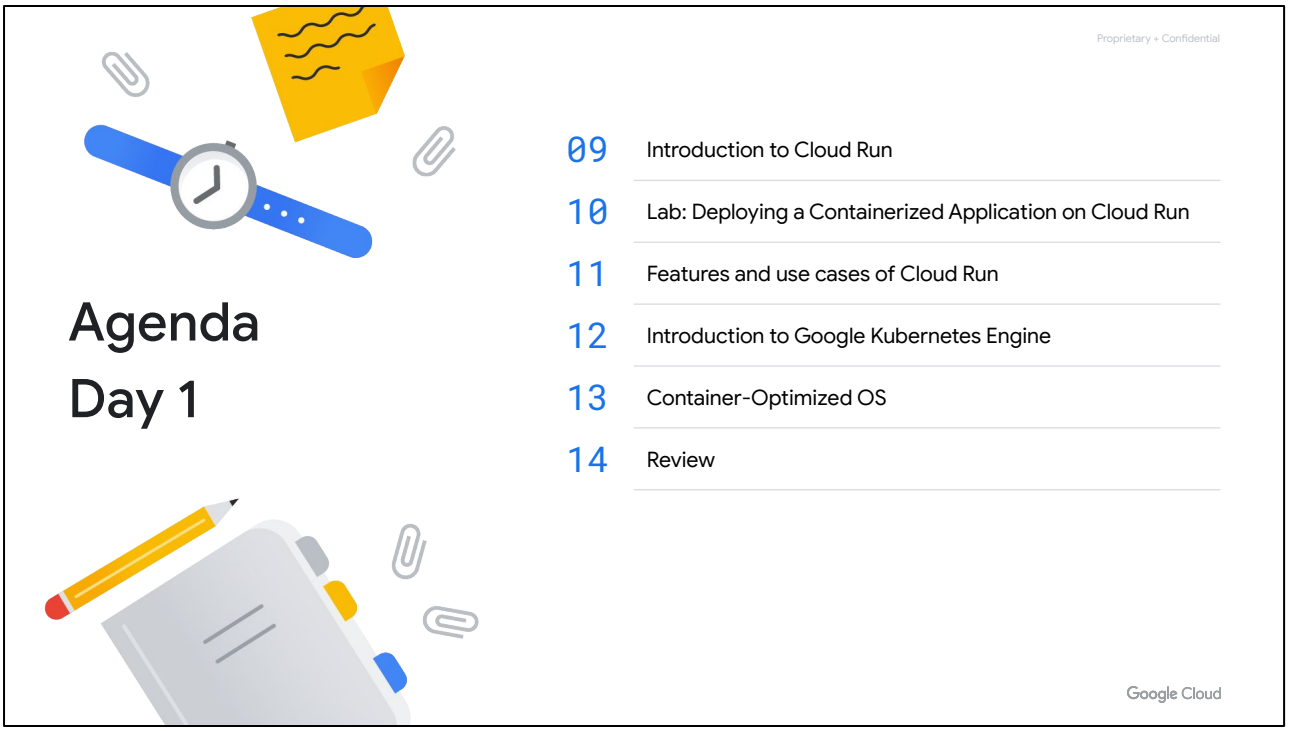
- Introduction to Containers
- Introduction to Cloud Run and Google Kubernetes Engine
- Fundamentals of Cloud Run
- Service Identity and Authentication
- Application Development, Testing, and Integration



Here's the agenda for today:

We discuss what are containers and container images, and how you can build images with Docker.
You then do a lab to create and run a Docker container followed by a short break.

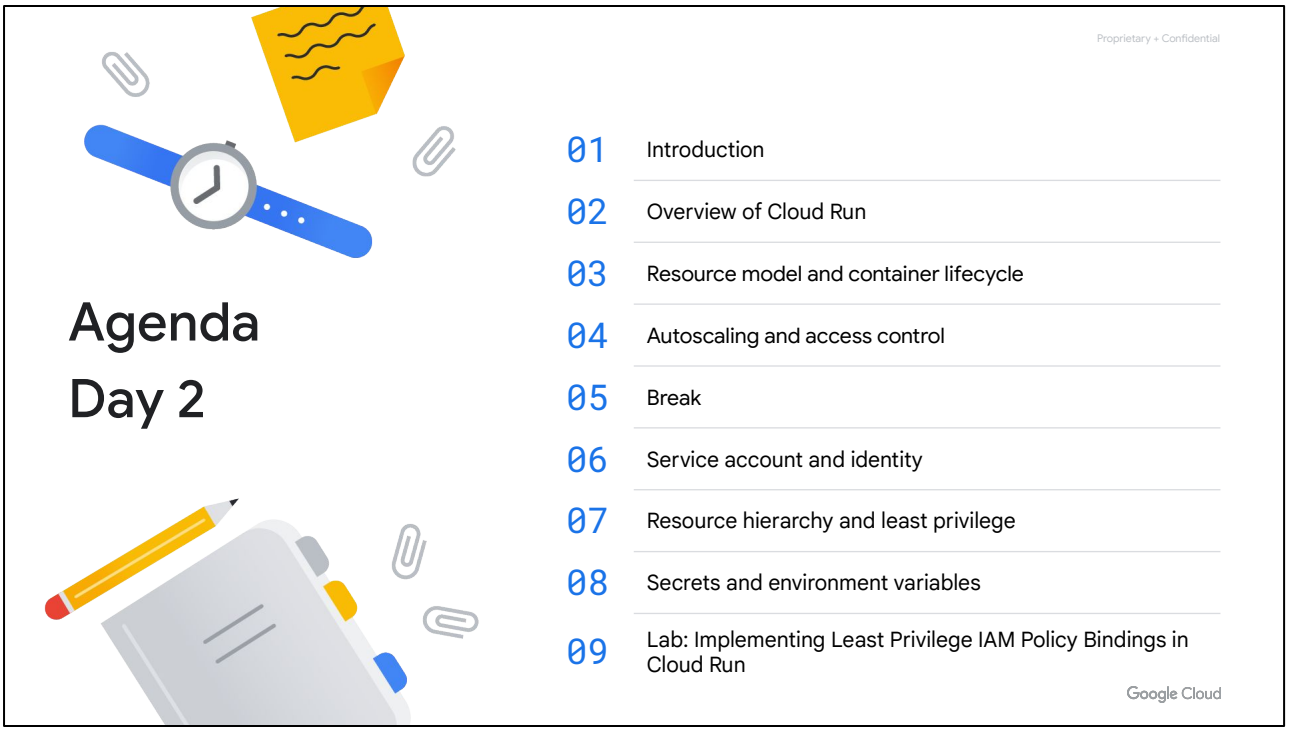
After the break, we'll discuss how you can build container images with buildpacks, and briefly review some best practices and CI/CD tools when working with containers.



After lunch, you'll learn about Cloud Run and do a lab to deploy a containerized application on Cloud Run.

We'll also discuss the features of Cloud Run and some of its use cases.

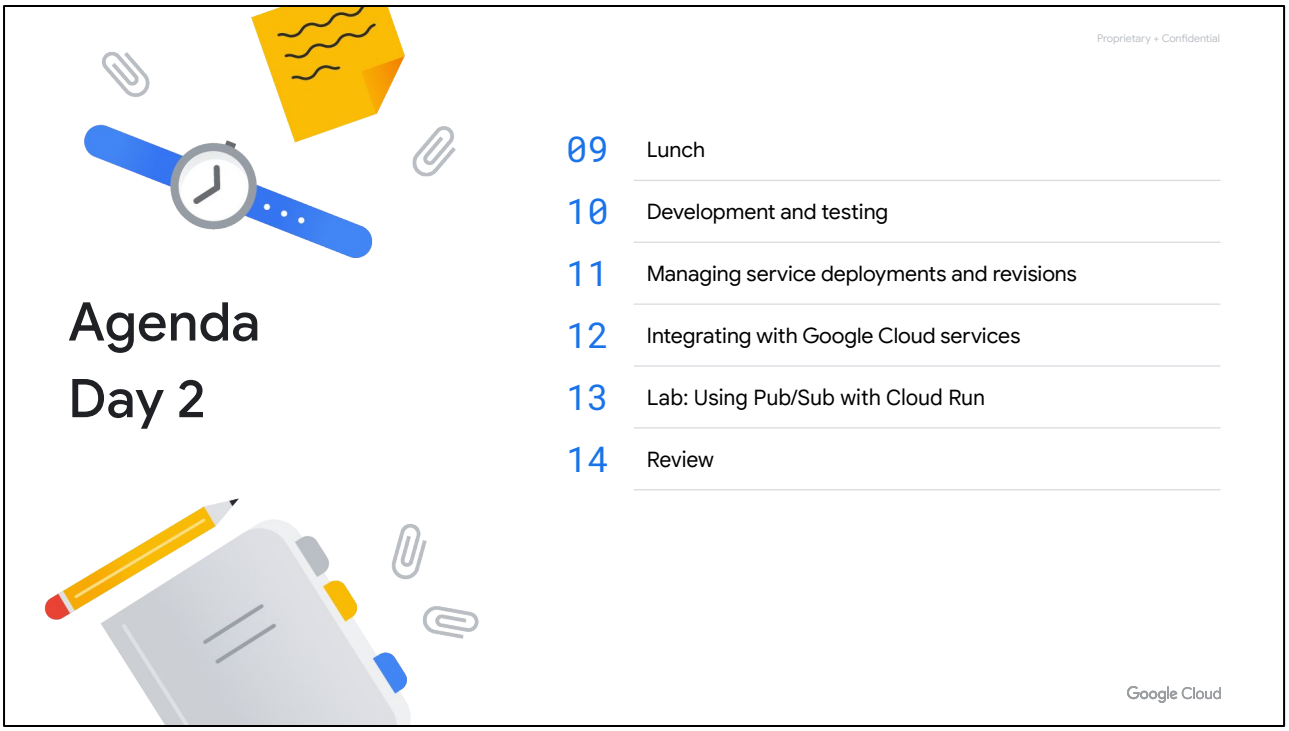
Finally, you learn about the other container platforms supported on Google Cloud: Google Kubernetes Engine, and Container-Optimized OS.



Here's the agenda for today:

We start with an overview of Cloud Run, and discuss its resource model and container lifecycle. You learn how Cloud Run autoscales container instances and about access control to Cloud Run services.
After a short break, we discuss service accounts and identity in Cloud Run, do a brief review on the Google Cloud resource hierarchy, the principle of least privilege, and learn how to use secrets and environment variables with Cloud Run.

You also complete a lab on implementing least privilege in Cloud Run.



After lunch, we discuss how to develop and test your Cloud Run application, how to manage service deployments and revisions, and how to integrate your Cloud Run application with other Google Cloud services.

You also complete a lab on using Pub/Sub with Cloud Run.

Lab environment

For each lab, Qwiklabs offers:

- A free set of resources for a fixed amount of time
- A clean environment with permissions

Qwiklabs provisions you with Google Account credentials, so you can access the Google Cloud console for each lab at no cost. Specifically, for each lab, Qwiklabs offers:

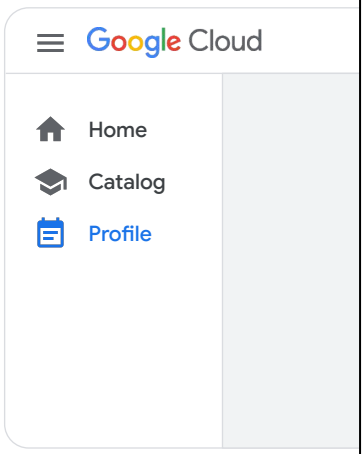
- A free set of resources for a fixed amount of time
- A clean environment with permissions

Open Qwiklabs

1. **Open an incognito window** (or private/anonymous window).
2. **Go** to the Qwiklabs URL that your instructor provides.
3. **Sign in** with existing account or **join** with new account (with email that you used to register for the course).
4. Launch the course from **Profile**.

Access issues

The process to open Qwiklabs can differ based on credentials used. Please let your trainer know if you have any access issues.



Go ahead and open Qwiklabs:

1. **Open an incognito window** (or private/anonymous window). Use of an incognito browser window reduces the risk that you will accidentally do the labs using your own Google Cloud account instead of Qwiklabs.
2. **Go** to the Qwiklabs URL that your instructor provides.
3. **Sign in** with an existing account or **join** with a new account (with email that you used to register for the course).
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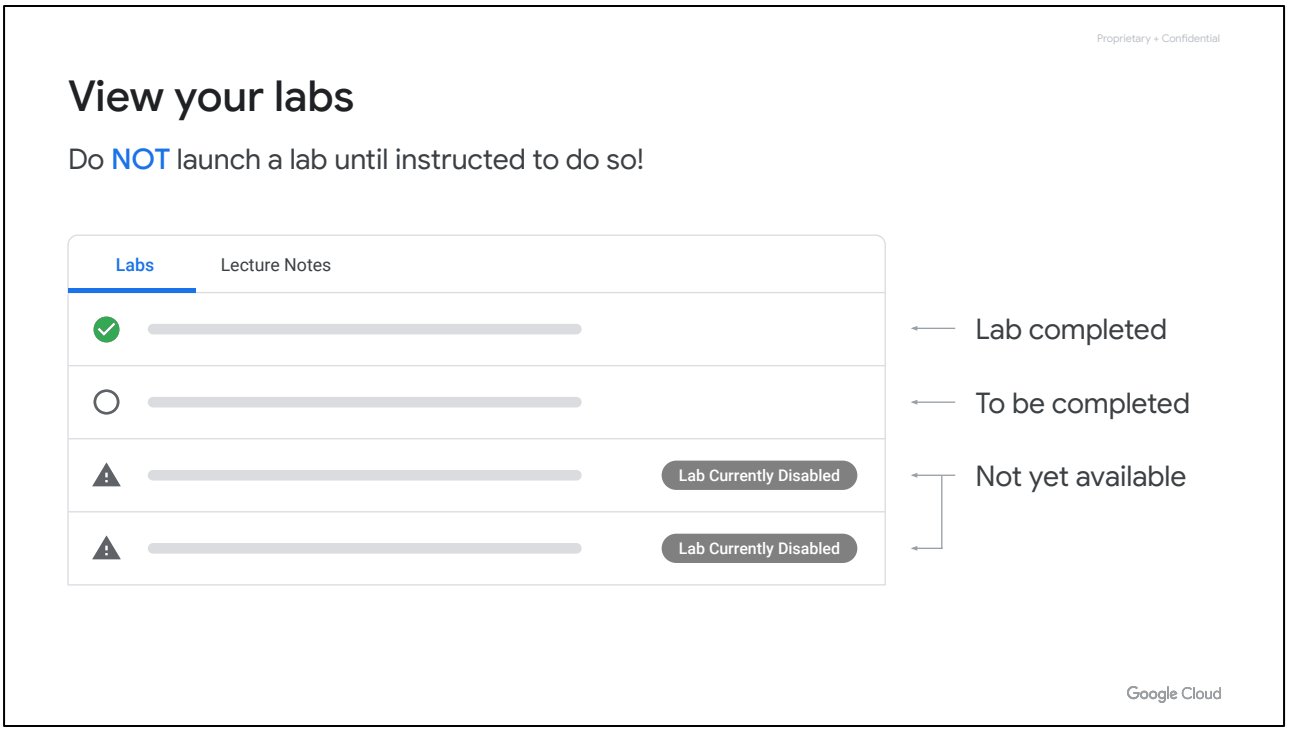
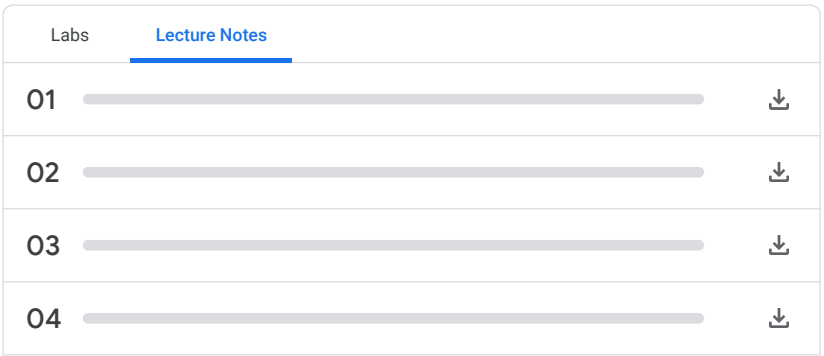


After you launch the course, you can view your labs. The lab list will indicate whether a lab is:

- Completed (by you)
- To be completed
- Not yet available

Your instructor will let you know when it's time to launch a lab. After you start a lab, you can't pause or restart it, so you need a continuous block of time to complete the work.

View lecture notes



You can download the notes as PDF files.

Within the course, you can also view the lecture notes. You can download them as PDF files.

Questions and answers