Welcome to the Architecting with Google Kubernetes Engine course series.

It's fair to say that Kubernetes is a hot technology today. Why? Here are several reasons why people are excited about it and adopting it rapidly. Kubernetes solves problems that people in IT have wrestled with for years. And it's very forward-looking too: Kubernetes is a great foundation for microservices architectures, a paradigm that's one of the main reasons today's applications are as scalable and resilient as they are. Google Kubernetes Engine reduces toil inherent in running Kubernetes and opens up new ways to make applications highly reliable.

The course series will teach you how to implement solutions using Google Kubernetes Engine, or GKE, including building, scheduling, load balancing, and monitoring workloads, as well as providing for discovery of services, managing role-based access control and security, and providing persistent storage to these applications. The pecourse series assumes that you have a general IT background, including working at the Linux command line, and working with networks and Web servers.

Each module aims to build on your ability to architect with GKE, and includes hands-on labs for you to experience functionalities first-hand.

Introductions

Your instructor + You

Background

Position

Organization

Google Cloud

Agenda - Day 1

	Module	Lab
1	Introduction to Google Cloud	• Accessing the Cloud Console and Cloud Shell
2	Introduction to Containers and Kubernetes	• Working with Cloud Build
3	Kubernetes Architecture	• Deploying GKE
4	Kubernetes Operations	• Deploying GKE Clusters from Cloud Shell • Upgrading GKE Clusters
5	Deployments, Jobs, and Scaling	• Creating GKE Deployments • Deploying Jobs on GKE

Google Cloud

In the first module, you'll be introduced to a range of Google Cloud services and features, with a view to helping you choose the right Google Cloud services to create your own cloud solution.

You'll learn about creating a container using Cloud Build, and store a container in Container Registry. You'll also compare and contrast the features of Kubernetes and Google Kubernetes Engine, also referred to as GKE.

In addition to conceptualizing the Kubernetes architecture, you'll deploy a Kubernetes cluster using GKE, deploy Pods to a GKE cluster, and view and manage Kubernetes objects.

In the Kubernetes Operations module, you'll be introduced to the cube ctl command, a utility used to control Kubernetes clusters.

The next module addresses how to create and use Deployments, as well as create and run Jobs and CronJobs.

Agenda - Day 2

	Module	Lab
5	Deployments, Jobs, and Scaling	• Configuring Pod Autoscaling and NodePools
6	Google Kubernetes Engine Networking	• Configuring GKE Networking • Creating Services and Ingress Resources
7	Persistent Data and Storage	• Configuring Persistent Storage for GKE • Working with GKE Secrets and ConfigMaps

Google Cloud

The Deployments, Jobs, and Scaling module continues on Day 2. You'll also be introduced to Helm, a package manager that allows you to organize Kubernetes objects in packages called charts.

The GKE Networking module will introduce the creation of Services, and the use of load balancers to expose Services to external clients.

Understanding and working with different Kubernetes storage abstractions is addressed in the Persistent Data and Storage module.

Agenda - Day 3

	Module	Lab
8	Access Control and Security in Kubernetes and Google Kubernetes Engine	• Securing GKE with Cloud IAM and Pod Security Policies • Implementing Role-Based Access Control with GKE
9	Google Kubernetes Engine Logging and Monitoring	• Configuring Kubernetes Engine native Monitoring and Logging • Configuring Liveness and Readiness Probes
10	Using Google Cloud Managed Storage Services with GKE	• Using Cloud SQL with Google Kubernetes Engine
11	Using CI/CD to Deploy Kubernetes Workloads	• Using Cloud Build to Implement CI/CD for Google Kubernetes Engine

On Day 3, in the access control and security module, you'll learn how to define Identity and Access Management roles for GKE, as well as Kubernetes Pod security policies.

There's no way to deliver a reliable and maintainable solution unless you've built an infrastructure for logging and monitoring. Monitoring your application lets you make decisions about it based on data rather than on gut impressions

You'll be introduced to use cases for a range of Google Cloud managed storage services within Kubernetes applications. You could implement your own storage systems, and that's a valid choice. But using managed services can get you into production faster, so they are worth your consideration.

Lastly, you'll learn about implementing a Continuous Integration and Continuous Delivery architecture for your Kubernetes workloads. You will be using the Cloud Build tool to create the CI/CD pipeline.

Facilities

Parking

Facilities

Food

Google Cloud

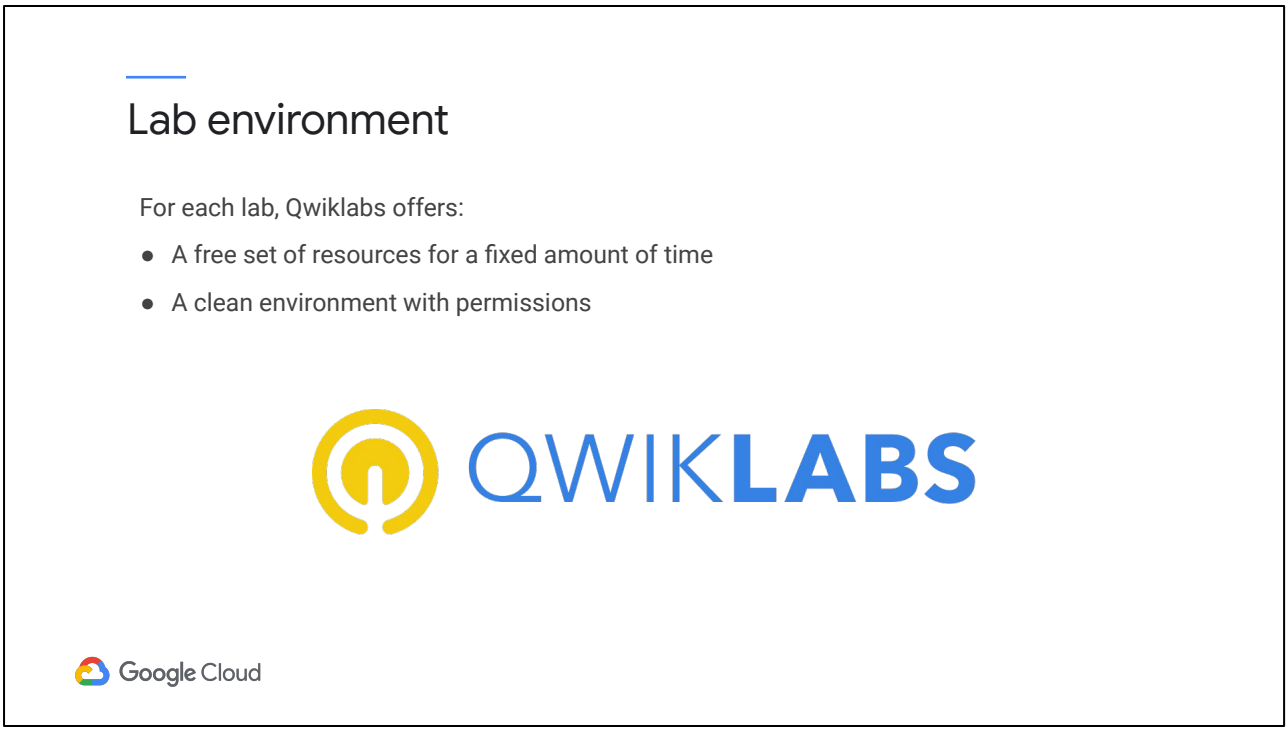
Course etiquette

Please silence your phone and take calls outside.

Recording this class is prohibited.

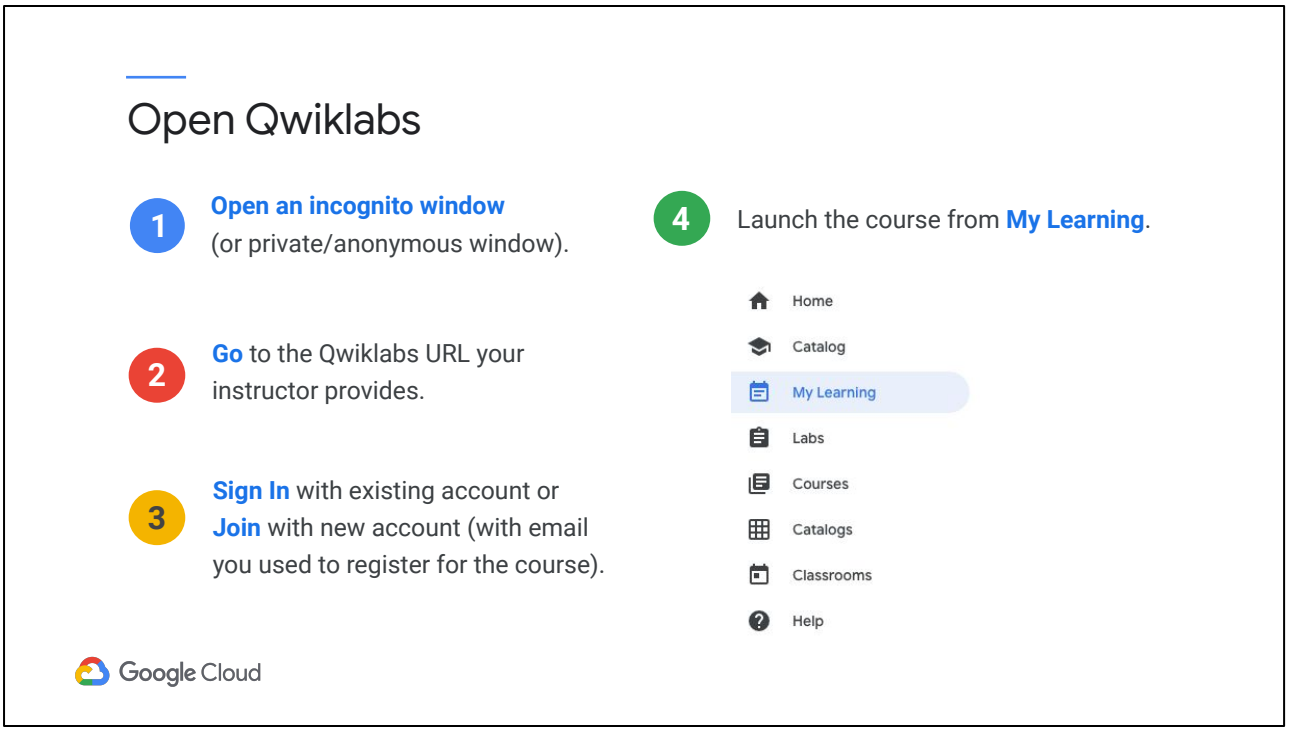
Ask questions interactively or via chat (online).

Google Cloud



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:

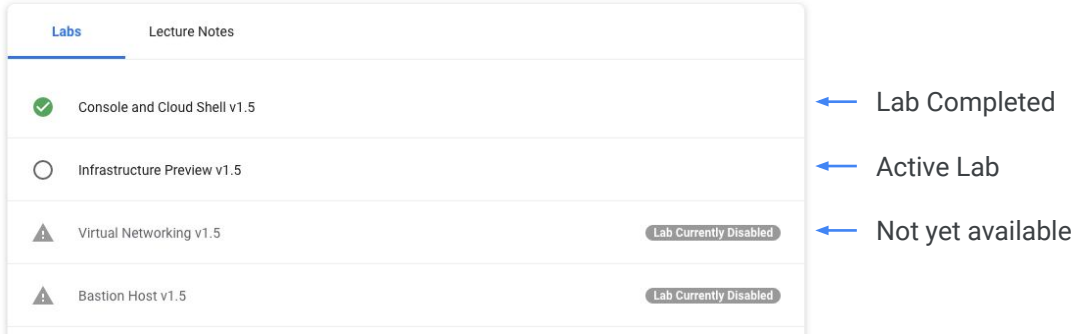
- A free set of resources for a fixed amount of time.
- A clean environment with permissions.



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 your instructor provides.
3. **Sign** in with an existing account or **Join** with a new account (with email you used to register for the course).
4. Launch the course from **My Learning**.

View your labs



Do NOT launch a lab until instructed to do so!

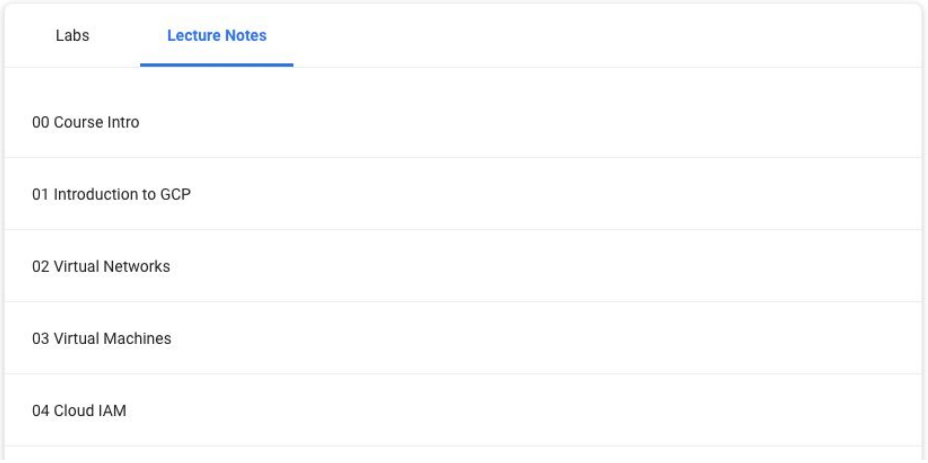
Google Cloud

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

- Completed (by you)
- Active
- Not yet available

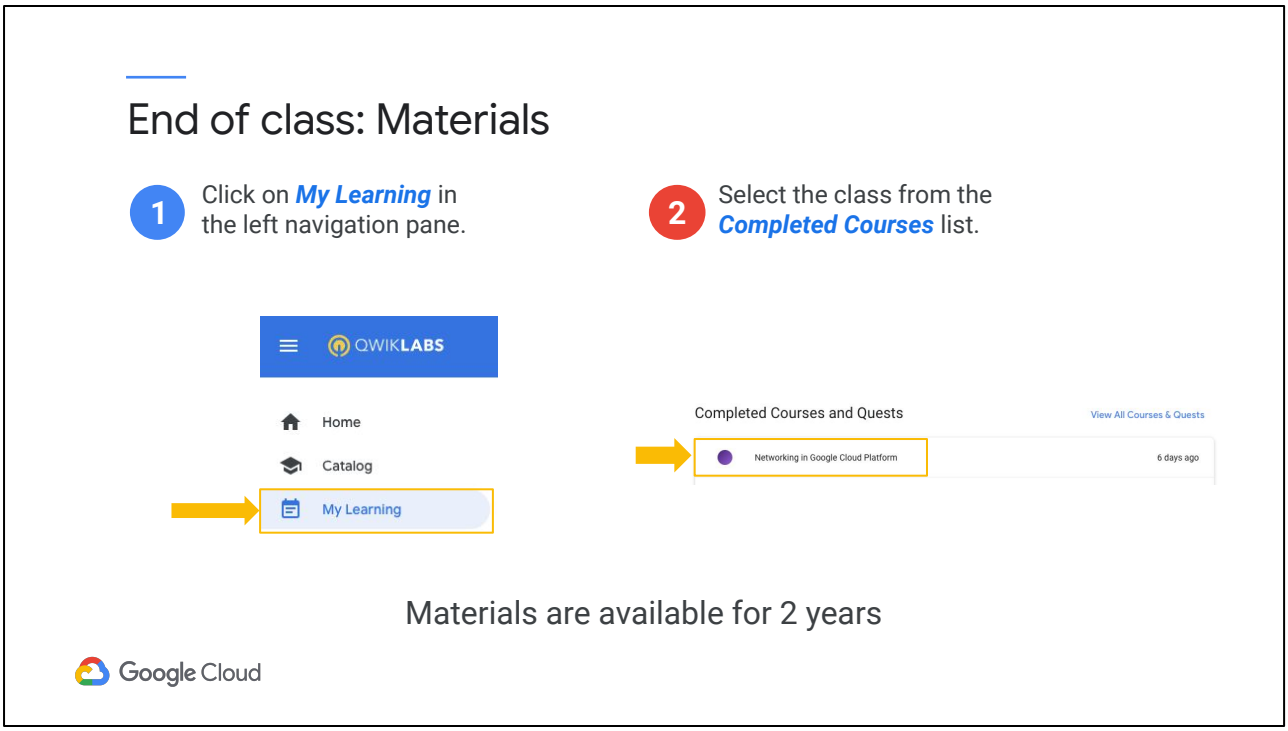
Your instructor will let you know when it's time to launch a lab. Once you start a lab, you won't be able to pause and restart it, so you'll need a continuous block of time to complete the work.

View lecture notes



Google Cloud

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



You can view the course materials within Qwiklabs:

1. Click ***My Learning*** in the left navigation pane.
2. Select the class from the ***Completed Courses*** list.

Materials are available for two years following the completion of a course.


Google Cloud