# Google Cloud Training Helpful Resources

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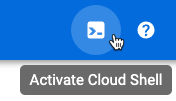
### Direct link to the classroom:

<https://googlecloud.qwiklabs.com/classrooms/7983/>

### Direct link to the end of class survey:

<https://bit.ly/3iWUyL3>

### How to start labs (replaces most “Task 0/setup” tasks):

1. Read the lab introduction and overview.
2. Click the **Start Lab** button.
3. Open a new Incognito window, and navigate to <https://console.cloud.google.com> .
4. Log in with the temp credentials from the exercise (below *End Lab* button).
5. Agree/accept all the end-user agreement stuff.
6. Use the dropdown in the upper-left corner of the cloud console to set the project to the one that starts: qwiklabs-gcp-\*\*\*\*\*\*
7. Activate Cloud Shell and wait for it to come up completely. 
   1. If Cloud Shell won’t open, close the Cloud Shell tab, refresh the page, and try again.
   2. If it still won’t come up, close the incognito window, open a new one, log back into your project (step 3), and try again.
   3. If that still won’t work, stop the lab and start it from scratch.
8. (Optional) Open Cloud Shell in its own tab using the button.
9. Sanity check:
   1. Is Cloud Shell in the qwiklabs-gcp-\*\*\* context (check the tab)?
   2. Is the main console window using the qwiklabs-gcp-\*\*\* project?
   3. Are you logged into the Console using the temp account from the exercise?
10. If a “Provisioning” message appears above your temp credentials in Qwiklabs, wait for it to go away before continuing with the exercise.

## Helpful Links

### General:

* Google Cloud Console: <https://console.cloud.google.com/>
* GCP podcast: <https://www.gcppodcast.com/>
* Kubernetes podcast: <https://kubernetespodcast.com/>
* GCP blog: <https://cloud.google.com/blog/>
* GCP newsletter: <https://cloud.google.com/newsletter>
* Google Regions: <https://cloud.google.com/about/locations>
* Google Cloud Release Notes: <https://cloud.google.com/release-notes>
* Google cloud developer’s cheat sheet (product list): <https://github.com/gregsramblings/google-cloud-4-words>
* GCP for AWS people: <https://cloud.google.com/docs/compare/aws>
* GCP for Azure people: <https://cloud.google.com/docs/compare/azure>
* Installing the GCP Cloud SDK: <https://cloud.google.com/sdk/install>
* gcloud cheat sheet: <https://cloud.google.com/sdk/docs/cheatsheet>
* Interactive cloud shell: <https://cloud.google.com/sdk/docs/interactive-gcloud>
* Check latency from you to every GCP Region: <http://www.gcping.com/>
* Info on GCP Certification: <https://cloud.google.com/certification>
* Google microservice demo: <https://github.com/GoogleCloudPlatform/microservices-demo>
* 12 Factor app methodology (for microservices):  
  <https://en.wikipedia.org/wiki/Twelve-Factor_App_methodology>  
  <https://12factor.net/>

### Compute Technologies:

* Cloud Run: Serverless for containerized applications: <https://cloud.google.com/run/docs/>
* Cloud Functions: Event-driven serverless functions: <https://cloud.google.com/functions/docs/>
* Compute Engine: VMs, GPUs, TPUs, Disks: <https://cloud.google.com/compute/docs/>
* Compute engine shielded VMs: <https://cloud.google.com/security/shielded-cloud/shielded-vm>
* GCE Machine Types: <https://cloud.google.com/compute/docs/machine-types>
* App Engine: Managed app platform: <https://cloud.google.com/appengine/docs/>
* Cloud Endpoints: <https://cloud.google.com/endpoints/docs/openapi/architecture-overview>
* Apigee overview: <https://cloud.google.com/apigee/api-management>
* Migrate for Compute Engine: <https://cloud.google.com/migrate/compute-engine/docs/4.10>

#### Kubernetes:

* Children’s illustrated guide to Kubernetes: <https://youtu.be/4ht22ReBjno>
  + Text version: <https://www.cncf.io/the-childrens-illustrated-guide-to-kubernetes/>
* Google Kubernetes Engine docs: <https://cloud.google.com/kubernetes-engine/docs>
* Docker Hub (base images): <https://hub.docker.com/search/?type=image>
* GKE security overview: <https://cloud.google.com/kubernetes-engine/docs/concepts/security-overview>
* GKE related IAM roles: <https://cloud.google.com/iam/docs/understanding-roles#kubernetes-engine-roles>
* Kubernetes resource list: <https://kubernetes.io/docs/reference/kubectl/overview/#resource-types>
* Kubectl cheat sheet: <https://kubernetes.io/docs/reference/kubectl/cheatsheet/>
* Kubectl cheat sheet2: <https://linuxacademy.com/blog/containers/kubernetes-cheat-sheet/>
* GKE Hardening your cluster (and links to other security articles): <https://cloud.google.com/kubernetes-engine/docs/how-to/hardening-your-cluster>
* GKE Private clusters: <https://cloud.google.com/kubernetes-engine/docs/concepts/private-cluster-concept>
* Info on pod resource specifications: <https://kubernetes.io/docs/concepts/configuration/manage-resources-containers/>
* More info on pod resource specifications: <https://cloud.google.com/blog/products/gcp/kubernetes-best-practices-resource-requests-and-limits>
* GKE docs on Windows Applications: <https://cloud.google.com/kubernetes-engine/docs/how-to/deploying-windows-app>
* Info on deploying Windows pods: <https://cloud.google.com/blog/products/containers-kubernetes/how-to-deploy-a-windows-container-on-google-kubernetes-engine>
* Binary Auth: <https://cloud.google.com/binary-authorization/docs>
* GKE rolling updates: <https://cloud.google.com/kubernetes-engine/docs/how-to/updating-apps>
* GKE quotas and limits: <https://cloud.google.com/kubernetes-engine/quotas>
* GKE Cluster autoscaling: <https://cloud.google.com/kubernetes-engine/docs/concepts/cluster-autoscaler>
* GKE node autoscaling: <https://cloud.google.com/kubernetes-engine/docs/how-to/horizontal-pod-autoscaling>
* Using container-native load balancing: <https://cloud.google.com/kubernetes-engine/docs/how-to/container-native-load-balancing>
* NetworkPolicy documentation: <https://kubernetes.io/docs/concepts/services-networking/network-policies/>
* StatefulSet demo: <https://kubernetes.io/docs/concepts/workloads/controllers/statefulset/>

##### Better control over Secrets:

* + GKE Application layer secrets: <https://cloud.google.com/kubernetes-engine/docs/how-to/encrypting-secrets>
  + Hashicorp Vault: <https://www.vaultproject.io/>

##### Istio

* + Istio homepage: <https://istio.io/>
  + Istio architecture overview: <https://istio.io/latest/docs/ops/deployment/architecture/#:~:text=An%20Istio%20service%20mesh%20is,all%20network%20communication%20between%20microservices>
  + Istio deployment models: <https://istio.io/docs/ops/deployment/deployment-models/>
  + Destination rule documentation: <https://istio.io/docs/reference/config/networking/destination-rule/>
  + Some Istio performance info: <https://istio.io/docs/ops/deployment/performance-and-scalability/>
* More than you ever wanted to know about mTLS (The Illustrated TLS Connection): <https://tls.ulfheim.net/>
* Installing Prometheus: <https://prometheus.io/docs/prometheus/latest/getting_started/>
* Adding the Prometheus collector for Stackdriver: <https://cloud.google.com/stackdriver/docs/solutions/kubernetes-engine/prometheus>

##### Anthos

* Anthos doc homepage: <https://cloud.google.com/anthos/docs>
* Anthos technical overview: <https://cloud.google.com/anthos/docs/concepts/overview>
* Anthos GKE (GKE on-prem) docs: <https://cloud.google.com/anthos/gke/docs/on-prem>
* Anthos Service Mesh documentation: <https://cloud.google.com/service-mesh/docs>
* Multi-cluster Anthos Ingress (to load balance over multiple clusters): <https://cloud.google.com/kubernetes-engine/docs/concepts/ingress-for-anthos>
* Structure and layout of the ACM Git repository: <https://cloud.google.com/anthos-config-management/docs/concepts/repo>
* Installing ACM: <https://cloud.google.com/anthos-config-management/docs/how-to/installing>
* Anthos GKE (GKE On-Prem) docs: <https://cloud.google.com/anthos/gke/docs/on-prem>
* Anthos GKE release notes: <https://cloud.google.com/anthos/gke/docs/on-prem/release-notes>
* Anthos install guide (start here): <https://cloud.google.com/anthos/gke/docs/on-prem/how-to/install-overview-basic>
* Example Anthos install *config.yaml* file: <https://storage.cloud.google.com/patrick-haggerty/admin-uc1-config.yaml>
* Integrating your Anthos GKE cluster with ADFS: <https://cloud.google.com/anthos/gke/docs/on-prem/how-to/oidc-adfs>
* Migrate for Anthos (GKE): <https://cloud.google.com/migrate/anthos/docs/getting-started>

### Networking:

* Networking (VPC) in GCP: <https://cloud.google.com/vpc/docs/>
* VPC Overview: <https://cloud.google.com/vpc/docs/overview>
* Shared VPC Network docs: <https://cloud.google.com/vpc/docs/shared-vpc>
* Shared VPC limits and quotas: <https://cloud.google.com/vpc/docs/quota#shared-vpc>
* Network Pricing: <https://cloud.google.com/compute/network-pricing>
* Cloud VPN: <https://cloud.google.com/network-connectivity/docs/vpn/concepts/overview>
* Interconnect: <https://cloud.google.com/network-connectivity/docs/interconnect/concepts/dedicated-overview>
* Choosing a Load Balancer: <https://cloud.google.com/load-balancing/docs/choosing-load-balancer>
* VPC Flow Logs: <https://cloud.google.com/vpc/docs/using-flow-logs>
* Packet Mirroring: <https://cloud.google.com/vpc/docs/packet-mirroring>
* Serverless VPC connector (put Cloud Run, App Engine, Functions, etc. on VPC): <https://cloud.google.com/vpc/docs/configure-serverless-vpc-access>
* Overview of VPC Service Controls: <https://cloud.google.com/vpc-service-controls/docs/overview>
* Creating a VPC Service Control access level: <https://cloud.google.com/access-context-manager/docs/create-basic-access-level>
* Firewall rule overview: <https://cloud.google.com/vpc/docs/firewalls>
* Hierarchical firewall policies: <https://cloud.google.com/vpc/docs/firewall-policies>
* Network Intelligence Center: <https://cloud.google.com/network-intelligence-center/docs>

### Storage and Databases:

* GCP Storage Products: <https://cloud.google.com/products/storage>
* Cloud Storage pricing: <https://cloud.google.com/storage/pricing>
* CDN: <https://cloud.google.com/cdn/docs>
* Cloud Transfer Service Docs: <https://cloud.google.com/storage-transfer/docs>
* On-prem transfer service: <https://cloud.google.com/storage-transfer/docs/on-prem-overview>
* Cloud SQL documentation: <https://cloud.google.com/sql/docs>
* Cloud SQL Pricing: <https://cloud.google.com/sql/pricing>
* Spanner docs: <https://cloud.google.com/spanner/docs>
* Firestore docs: <https://cloud.google.com/firestore/docs>
* Firestore native vs Datastore (legacy) mode: <https://cloud.google.com/datastore/docs/firestore-or-datastore>
* Firestore best practices (latency): <https://cloud.google.com/firestore/docs/best-practices>
* Google data storage: Colossus: <https://cloud.google.com/files/storage_architecture_and_challenges.pdf>
* Nice video overview of Google’s storage infrastructure (Colossus): <https://www.youtube.com/embed/q4WC_6SzBz4>

### Operations (Stackdriver), SRE, and Billing:

#### Monitoring

* + Monitoring documentation: <https://cloud.google.com/monitoring/docs>
  + Alerting in GCP: <https://cloud.google.com/monitoring/alerts>
  + GCP monitoring metrics: <https://cloud.google.com/monitoring/api/metrics_gcp>
  + Metrics, time series, and resources overview: <https://cloud.google.com/monitoring/api/v3/metrics>
  + Custom metrics: <https://cloud.google.com/monitoring/custom-metrics>
  + Monitoring Query Language: <https://cloud.google.com/monitoring/mql>
  + Monitoring IAM Roles: <https://cloud.google.com/iam/docs/understanding-roles#monitoring-roles>
  + Monitoring official resource names: <https://cloud.google.com/monitoring/api/resources>
  + VM Monitoring Agent: <https://cloud.google.com/monitoring/agent/install-agent>
  + Managing logging and monitoring agent policies: <https://cloud.google.com/stackdriver/docs/solutions/managing-agent-policies>

#### Logging

* + Cloud Logging documentation: <https://cloud.google.com/logging/docs>
  + New Logs Viewer preview docs: <https://cloud.google.com/logging/docs/view/logs-viewer-interface>
  + LogEntry type docs: <https://cloud.google.com/logging/docs/reference/v2/rest/v2/LogEntry>
  + Using Log Queries: <https://cloud.google.com/logging/docs/view/building-queries>
  + Log query builder language ref: <https://cloud.google.com/logging/docs/view/logging-query-language>
  + Network telemetry: <https://cloud.google.com/vpc/docs/using-flow-logs>
  + Cloud Audit Logs: <https://cloud.google.com/logging/docs/audit>
  + VM Logging Agent: <https://cloud.google.com/logging/docs/agent/installation>
  + Load Balancer logging: <https://cloud.google.com/load-balancing/docs/https/https-logging-monitoring>
  + Storing logs in Cloud Storage: <https://cloud.google.com/logging/docs/central-log-storage>
  + Info on Access Transparency Logs: <https://cloud.google.com/logging/docs/audit/access-transparency-overview>
  + Exporting log data to Splunk: <https://cloud.google.com/solutions/exporting-stackdriver-logging-for-splunk>
  + Audit log aggregation sinks: <https://cloud.google.com/logging/docs/export/aggregated_sinks>
  + Managing logging and monitoring agent policies: <https://cloud.google.com/stackdriver/docs/solutions/managing-agent-policies>
  + VPC Flow Logs: <https://cloud.google.com/vpc/docs/using-flow-logs>

#### Error Reporting

* + Error Reporting: <https://cloud.google.com/error-reporting/docs>

#### Debugger

* + Debugger: <https://cloud.google.com/debugger/docs>
  + Setting up the debugger: <https://cloud.google.com/debugger/docs/setup>

#### Trace

* + Trace: <https://cloud.google.com/trace/docs>
  + Trace setup: <https://cloud.google.com/trace/docs/setup>

#### Profiler

* + Profiler: <https://cloud.google.com/profiler/docs>
  + About Profiler: <https://cloud.google.com/profiler/docs/about-profiler>
  + Reading Flame graphs: <https://cloud.google.com/profiler/docs/concepts-flame>

#### Pricing, SRE, etc.

* + Operations suite doc homepage: <https://cloud.google.com/stackdriver/docs>
  + GCP Billing: <https://cloud.google.com/billing/docs>
  + Operations Suite Pricing: <https://cloud.google.com/stackdriver/pricing>
  + Operations suite cost optimization: <https://cloud.google.com/solutions/stackdriver-cost-optimization>
  + GCP Current status information: <https://status.cloud.google.com/>
  + GCP Pricing Calculator: <https://cloud.google.com/products/calculator>
  + Google’s SRE books: <https://landing.google.com/sre/books/>
  + SLI/SLO handout: <https://cre.page.link/art-of-slos-handbook-pdf-letter>
  + High Availability: <https://en.wikipedia.org/wiki/High_availability>
  + Postmortem examples: <https://landing.google.com/sre/sre-book/chapters/postmortem/>   
    <https://www.atlassian.com/incident-management/postmortem/templates>  
    <https://response.pagerduty.com/after/post_mortem_template/>

### Big Data and AI/ML:

* BigQuery Docs: <https://cloud.google.com/bigquery/docs>
* BigQuery pricing: <https://cloud.google.com/bigquery/pricing>
* A little history on BigQuery: <https://towardsdatascience.com/bigquery-the-unlikely-birth-of-a-cloud-juggernaut-b5ad476525b7>
* Running Big Queries over external data: <https://cloud.google.com/bigquery/external-data-sources>
* BigQuery permissions: <https://cloud.google.com/bigquery/docs/access-control>
* BigQuery table access control: <https://cloud.google.com/bigquery/docs/table-access-controls-intro>
* BigQuery column-level security: <https://cloud.google.com/bigquery/docs/column-level-security>
* BigQuery roles: <https://cloud.google.com/iam/docs/understanding-roles#bigquery-roles>
* Dataflow documentation: <https://cloud.google.com/dataflow/docs>
* Apache Beam programming guide: <https://beam.apache.org/documentation/programming-guide/>
* DataPrep: <https://cloud.google.com/dataprep/docs>
* Data Fusion: <https://cloud.google.com/data-fusion/docs>
* Natural Language API home: <https://cloud.google.com/natural-language>
* NLP content categories: <https://cloud.google.com/natural-language/docs/categories>
* Data Loss Prevention API demo: <https://cloud.google.com/dlp/demo/#!/>
* Data Loss Prevention (DLP) documentation: <https://cloud.google.com/dlp/docs>
* Auto scanning a bucket with DLP, send results to Security Command Center: <https://cloud.google.com/dlp/docs/sending-results-to-scc>

### Tools:

* GCP Cloud Build: <https://cloud.google.com/cloud-build/docs>
* Cloud Build example: <https://cloud.google.com/cloud-build/docs/quickstart-build>
* Binary Auth: <https://cloud.google.com/binary-authorization/docs>
* Interaction with Google through the APIs: <https://cloud.google.com/apis/docs/overview>
* Cloud Foundation Toolkit, infrastructure automation examples: <https://cloud.google.com/foundation-toolkit>
* Deployment Manager Quickstart: <https://cloud.google.com/deployment-manager/docs/quickstart>
* Terraform for GCP: <https://www.terraform.io/docs/providers/google/index.html>
* GCP Private Catalog (private app store or marketplace): <https://cloud.google.com/private-catalog/docs>
* Pub/Sub documentation home page: <https://cloud.google.com/pubsub/docs>
* Creating and managing labels: <https://cloud.google.com/resource-manager/docs/creating-managing-labels>
* GCP Resource Names: <https://cloud.google.com/iam/docs/full-resource-names>

### Security:

* Understanding Google Cloud IAM Roles: <https://cloud.google.com/iam/docs/understanding-roles>
* Identity Aware Proxy (IAP) docs: <https://cloud.google.com/iap/docs>
* TCP Forwarding through IAP (substitute for jump boxes): <https://cloud.google.com/iap/docs/tcp-forwarding-overview>
* GCP Compliance info: <https://cloud.google.com/security/compliance>
* Video on getting into a Google Data Center: <https://youtu.be/kd33UVZhnAA>
* Cloud Armor: <https://cloud.google.com/armor/docs>
* Encryption in transit: <https://cloud.google.com/security/encryption-in-transit>
* Google Encryption at rest details: <https://cloud.google.com/security/encryption-at-rest/default-encryption>
* Google Cloud Key Management Service: <https://cloud.google.com/kms/docs>
* Federating GCP and AD: <https://cloud.google.com/architecture/identity/federating-gcp-with-active-directory-introduction>
* GCP Directory Sync: <https://support.google.com/a/answer/106368?hl=en>
* GCP Managed AD: <https://cloud.google.com/managed-microsoft-ad/docs/quickstart-create-domain>
* Understanding Service Accounts: <https://cloud.google.com/iam/docs/understanding-service-accounts>
* Service Account keys: <https://cloud.google.com/iam/docs/creating-managing-service-account-keys>
* Creating short-lived Service Accounts: <https://cloud.google.com/iam/docs/creating-short-lived-service-account-credentials>
* Intro to Org Policies: <https://cloud.google.com/resource-manager/docs/organization-policy/overview>
* Org policy constraints: <https://cloud.google.com/resource-manager/docs/organization-policy/org-policy-constraints>
* OWASP top 10: <https://owasp.org/www-project-top-ten/>
* Best practices for DDOS protection: <https://cloud.google.com/files/GCPDDoSprotection-04122016.pdf>
* Security partner info: <https://cloud.google.com/security/partners/>
* Security Command Center documentation: <https://cloud.google.com/security-command-center/docs>
* Forseti (security scanner) tutorials: <https://cloud.google.com/community/tutorials/private-forseti-with-scc-integration>
* Forseti home page: <https://forsetisecurity.org/>

### Links added during class: