

Google Cloud Training Helpful Resources

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Did you know, ROI Training provides training on Google Cloud, Amazon Web Services, Microsoft Azure, Python, Java, Security, Technology Project Management? Click [here](#) to learn more.

Direct link to the classroom:

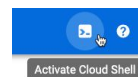
<https://googlecloud.qwiklabs.com/classrooms/7983/>


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.



- a. If Cloud Shell won't open, close the Cloud Shell tab, refresh the page, and try again.
 - b. 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.
 - c. 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:
 - a. Is Cloud Shell in the qwiklabs-gcp-*** context (check the tab)?
 - b. Is the main console window using the qwiklabs-gcp-*** project?
 - c. 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:

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