**PROJECTS**

**HANDS ON LAB:**

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| **NUMBER** | 1 |
| **LAB TITLE** | Google Cloud Fundamentals: Getting started with Cloud Marketplace |
| **OBJECTIVES** | Learn how to launch a solution using Cloud marketplace |
| **TASKS** | * **S**ign in to the gcp console * **U**se cloud marketplace to deploy a Lamp stack * Verify deployment |
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| **NUMBER** | 2 |
| **LAB TITLE** | GCP Fundamentals: Getting started with Compute Engine. |
| **OBJECTIVES** | * **C**reate a compute engine virtual machine using the gcp console. * **C**reate a compute engine virtual machine * using the gcloud cmd * **C**onnect between the two instances. |
| **TASKS** | * **C**reate a compute engine virtual machine using the gcp console. * **C**reate a compute engine virtual machine * using the gcloud cmd * **C**onnect between the two instances. |
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| **NUMBER** | 3 |
| **LAB TITLE** | GCP Fundamentals: Getting started with Cloud Storage and Cloud SQL |
| **OBJECTIVES** | * Create a cloud storage bucket and place an image into it * Create a cloud sql instance and configure it * Connect to the cloud sql instance from a web server * Use the image n the cloud storage bucket on a web page |
| **TASKS** | * Sign in to the gcp console * Deploy a webserver vm instance * Create a cloud storage bucket using the gsutil command line * Create the cloud sql instance * Configure an application in the compute engine instance to use cloud sql * Configure an application in a compute engine instance to use a cloud storage object |
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| **NUMBER** | 4 |
| **LAB TITLE** | ESSENTIAL GCP INFRASTRUCTURE: FOUNDANTION (Working with Virtual Machines) |
| **OBJECTIVES** | * Customize an application server * Install and configure necessary software * Configure network access * Schedule regular backups |
| **TASKS** | * Create the Vm * Prepare the Data Disk * Install and run the application * Allow client traffic * Schedule regular backups * Server Maintenance * Review |
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| **NUMBER** | 5 |
| **LAB TITLE** | ESSENTIAL GCP INFRASTRUCTURE: CORE SERVICES (CLOUD IAM) |
| **OBJECTIVES** | * Use cloud IAM to implement access control * Restrict access to specific features or resources. * Use the service account user role |
| **TASKS** | * Setup for two users * Explore the IAM console * Prepare a resource for access testing * Remove project access * Add storage access * Set up the service account user * Explore the service account user * Review. |
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| **NUMBER** | 6 |
| **LAB TITLE** | ESSENTIAL GCP INFRASTRUCTURE: FOUNDATION (console and cloud shell) |
| **OBJECTIVES** | * Get access to Google cloud * Create a cloud storage bucking using cloud console * Create a cloud storage bucket using Cloud shell * Become familiar with cloud shell features |
| **TASKS** | * Create a bucket using the cloud console * Access cloud shell * Create a bucket using cloud shell * Explore more cloud shell features. * Create a persistent state in cloud shell * Review the google cloud interface. |
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| **NUMBER** | 7 |
| **LAB TITLE** | ESSENTIAL GCP INFRASTRUCTURE: FOUNDATION (infrastructure preview) |
| **OBJECTIVES** | * Use marketplace to build a Jenkins continuous integration environment * Verify that you can manage the services from the Jenkins UI * Administer the service from the virtual machine host through ssh. |
| **TASKS** | * Use marketplace to build a deployment * Examine the deployment * Administer the service * Review. |
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| **NUMBER** | 8 |
| **LAB TITLE** | Essential Google Cloud Infrastructure: Core infrastructure (getting started with Kubernetes engine) |
| **OBJECTIVES** | * Provision a Kubernetes cluster using Kubernetes engines * Deploy and manage docker containers using kubectl |
| **TASKS** | * Sign in the gcp console * Confirm that needed apis are enabled * Start a Kubernetes engine cluster * Run and deploy a container |
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| **NUMBER** | 9 |
| **LAB TITLE** | Essential Google Cloud Infrastructure: Core infrastructure (getting started with App Engine) |
| **OBJECTIVES** | * Initialize App engine * Preview an app engine application running locally in cloud shell * Deploy an app engine application, so that others can reach it * Disable an app engine application, when you no longer want it to be visible |
| **TASKS** | * Initialize app engine * Run hello world application locally * Deploy and run hello world on app engine * Disable the application |
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| **NUMBER** | 10 |
| **LAB TITLE** | Essential Google Cloud Infrastructure: Core infrastructure (getting started with deployment manager and cloud monitoring) |
| **OBJECTIVES** | * Create a Deployment Manager deployment * Update a deployment manager deployment * View the load on a VM instance using cloud monitoring |
| **TASKS** | * Sign in to the GCP console * Confirm that needed APIs are enabled * Create a deployment manager deployment * Update a deployment manager deployment * View the load on a vm instance using Cloud Monitoring |
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| **NUMBER** | 11 |
| **LAB TITLE** | Essential Google Cloud Infrastructure: Core infrastructure (getting started with Big Query) |
| **OBJECTIVES** | * Load data from Cloud storage into Big query * Perform a query on the data in Big query |
| **TASKS** | * Sign in to the GCP console * Load data from cloud storage into BigQuery * Perform a query on the data using the bq command |
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| **NUMBER** | 12 |
| **LAB TITLE** | Essential Google Cloud Infrastructure: FOUNDATION (creating virtual machines) |
| **OBJECTIVES** | * Create several standard VMs * Create advanced VMs |
| **TASKS** | * Create a utility virtual machine * Create a windows virtual machine * Create a custom virtual machine * Review |
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| **NUMBER** | 13 |
| **LAB TITLE** | Essential Google Cloud Infrastructure: core services (implementing cloud sql) |
| **OBJECTIVES** | * Create a cloud sql database * Configure a virtual machine to run a proxy * Create a connection between an application and cloud sql * Connect an application to cloud sql using private ip address |
| **TASKS** | * Create a cloud sql database * Configure a proxy on a virtual machine * Connect an application to the cloud sql instance * Connect to a cloud sql via internal IP |
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| **NUMBER** | 14 |
| **LAB TITLE** | Architecting with Google Kubernetes Engine: foundation (working with Cloud build) |
| **OBJECTIVES** | * Use container to build and push containers * Use container registry to store and deploy containers |
| **TASKS** | * Lab setup * Confirm that needed APIs are enabled * Building containers with Docker file and cloud build * Building containers with a build configuration file and cloud build * Building and testing containers with a build configuration file and cloud build |
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| **NUMBER** | 15 |
| **LAB TITLE** | Architecting with Google Kubernetes Engine: foundation (ak8s-03 creating a GKE cluster via GCP console.) |
| **OBJECTIVES** | * Use container to build and push containers * Use container registry to store and deploy containers |
| **TASKS** | * Lab setup * Confirm that needed APIs are enabled * Building containers with Docker file and cloud build * Building containers with a build configuration file and cloud build * Building and testing containers with a build configuration file and cloud build |
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