Hewlett Packard Enterprise

HPE Digital Learner Google Cloud for Developers (Intermediate) Content Pack

HPE Content Pack number	CP020
Content Pack length	20 Hours
Content Pack category	Category 2
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This self-paced eLearning Content Pack provides the required training to help transition a traditional IT architect into a cloud architect utilizing the Google public cloud environment. This is a comprehensive intermediate training series that includes many core areas required to plan, design and implement modern cloud infrastructures, applications and data in the Google public cloud. This training is intended for IT personnel who need to rapidly uplift their IT/cloud skills as part of an ongoing business and operational strategy to migrate IT to Google public cloud.

Audience

- IT professionals including managers, engineers and developers evaluating or implementing application environments on Google Cloud Platform

- Data professionals who are responsible for provisioning and optimizing big data solutions and data enthusiasts getting started with Google Cloud Platform

- Software developers, architects or deployment engineers who are interested in container-based infrastructure

- Solution developers, solution architects and systems operations professionals looking to learn Google Cloud SQL to implement and maintain Cloud SQL environments, and to create and deploy applications that store data in Cloud SQL

- Individuals looking to obtain the Google Qualified Cloud SQL Developer certification

- G Suite administrators who are responsible for G Suite user management

Content Pack objectives

This Content Pack provides the information necessary needed to transition a traditional IT architect into a cloud architect capable of working within a typical Google public cloud environment. This training series provides Google public cloud introductory and fundamentals training while focusing on key technology areas, including Kubernetes (introductory, deployment on the Google public cloud, Kubernetes concepts and Kubernetes clusters), SQL (SQL for developers, instance management, etc.), and G Suite (admin and user management, group/OU management, email and calendar management, security, service and mobile development management). This training will help the student transition to a cloud architect role within a typical Google public cloud environment and will also assist with the path to Google Certification.

Detailed Content Pack outline

Google Cloud

Google Cloud Platform offers a wide array of powerful IaaS and SaaS cloud solutions. In this course, the various service features and options are explored as well as the necessary steps for getting started with Google Cloud Platform with a Google email account.

- Explain the value features of Google Cloud Platform products and services
- Identify the services components of the Google Cloud Platform, including Compute Engine, App Engine, Container Engine, container registry and cloud function
- Identify the storage and database services components of the Google Cloud Platform, including Cloud Storage, Cloud SQL, Cloud Bigtable, Cloud Datastore and Persistent Disk
- Identify the big data services components of the Google Cloud Platform, including BigQuery, Cloud Dataflow, Cloud Dataproc, Cloud Datalab, Cloud Pub/Sub and Genomics
- Identify the networking services components of the Google Cloud Platform, including cloud virtual network, cloud load balancing, cloud CDN, cloud interconnect and cloud DNS
- Define the concepts and components associated with Google Cloud infrastructure and services
- Define Google Cloud regions with examples
- Define Google Cloud zones with examples
- Differentiate between Cloud Platform's platform as a service (PaaS), software-as-a-service (SaaS), and infrastructure as a service (IaaS)

- Identify the features of Google Cloud Platform's storage and database services
- Identify the features of Google Cloud Platform's networking services
- Identify the features of Google Cloud Platform's big data services
- Manage platform projects, permissions and resources
- Register for a free trial of Google Cloud Platform using a Gmail account
- Create a project using the Google Cloud Platform Console
- Realize options for identity and access management
- Deploy a LAMP stack using Google Cloud Launcher
- Recognize different ways to interact with the Google Cloud Platform
- Recognize the basic components, terms and features of Google Cloud Platform

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Google Cloud Basics

In this course, you will discover the characteristics that define cloud computing. This course explores cloud types such as public and community, and also covers common cloud service models.

- Define which items define cloud computing
- Recognize how cloud computing can provide business advantages
- Define what public clouds are and when they should be used
- Define what private clouds are and when they should be used
- Define what community clouds are and when they should be used

- Define what hybrid clouds are and when they should be used
- Describe SaaS cloud services
- Describe IaaS cloud services
- Describe PaaS cloud services
- Describe DRaaS cloud services

Google Cloud Platform Fundamentals

Google Cloud Platform (GCP) offers several solutions to streamline any enterprise while keeping costs low. This course covers these benefits, including how to navigate GCP and how to choose between the various data processing products it provides.

- Describe GCP and its use with big data
- Recognize the various services offered by GCP
- Identify the benefits of GCP for data engineers with use case scenarios
- Compare GCP with other models for data engineering
- Perform the steps necessary to create a GCP account

- Describe the Web Admin UI features of the Google Cloud Platform console
- Demonstrate the steps in creating a project
- Demonstrate a GCP process of using BigQuery to query a dataset
- Recognize the various GCP data products and services

Introduction to Kubernetes

In this course, you will learn how to configure and use Kubernetes on a local machine.

- Describe Kubernetes and how it is used for container management
- Describe Docker and how it is used with Kubernetes
- Install Docker
- Work with Docker
- Navigate and use Docker Hub
- Work with Docker Swarms
- Work with Docker commands to clean up images and containers

- Describe using Kubernetes on a local machine
- Install Minikube on a Windows 10 local machine
- Install Minikube locally on a Mac operating system
- Install Kubernetes on an Ubuntu Linux local machine
- Use Kubectl command line interface tool
- Use Kubernetes on a local machine

Kubernetes on Google Cloud Platform

In this course, you will learn how to run Kubernetes on the Google Cloud Platform.

- Create a Kubernetes cluster using the Google Cloud Platform Console
- Use Google Cloud Shell to create a Kubernetes cluster
- Install the Google Cloud SDK
- Install the kubectl command line tool in the Google Cloud SDK shell
- Use gcloud and kubectl

- Delete clusters and services using the Google Cloud SDK shell
- Deploy containers from Google Cloud Launcher to Kubernetes
- Use the Kubernetes Engine dashboards on the Google Cloud Platform
- Use the compute engine dashboard and API
- Work with Kubernetes on the Google Cloud Platform

Kubernetes Concepts

In this course, you will learn the key concepts and controllers involved in Kubernetes. This will help you get an in depth understanding of how it works.

- Work with containers in Kubernetes
- Use nodes in Kubernetes
- Work with pods in Kubernetes
- Work with a Replication Controller in Kubernetes
- Use Services in Kubernetes
- Work with Volumes in Kubernetes
- Use Secrets and ConfigMaps in Kubernetes
- Describe Names in Kubernetes
- Work with annotations in Kubernetes

- Work with labels and selectors in Kubernetes
- Use namespaces in Kubernetes
- Work with PetSets in Kubernetes
- Work with Ingress objects in Kubernetes
- Implement autoscaling in Kubernetes
- Use ReplicaSets in Kubernetes
- Use Deployments in Kubernetes
- Work with StatefulSets in Kubernetes
- Work with DaemonSets in Kubernetes
- Implement Jobs in Kubernetes
- Work with Kubernetes concepts

Kubernetes Clusters

In this course, you will learn about Kubernetes clusters and how to use the kubectl command-line tool to create, start, stop, delete and much more.

- Create a Kubernetes cluster on Google Cloud Platform and using Minikube on Windows 10
- Resize a Kubernetes cluster
- Stop a Kubernetes cluster
- Delete a cluster in Kubernetes
- Upgrade a Kubernetes cluster
- Describe Kubeconfig files
- Share a Kubernetes cluster
- Authenticate a cluster in Kubernetes
- Create Kubernetes alpha clusters

- Work with Kubernetes Cluster Autoscaler
- Prepare an environment to work with multicluster Ingress with Kubernetes clusters
- Deploy an application to multiple Kubernetes clusters
- Work with the kubemci command line tool to deploy global multicluster Ingress with Kubernetes clusters
- Test global multicluster Ingress with Kubernetes clusters
- Perform a tear down of a multicluster Ingress deployment
- Work with Kubernetes clusters

Kubernetes API and Components

In this course, you will learn about the Kubernetes API and other key components of Kubernetes.

- Describe the Kubernetes Master
- Describe Kubernetes nodes and add-ons
- Use the Kubernetes API
- Work with the autoscaling API in Kubernetes
- Use the batch API in Kubernetes
- Work with the apps API in Kubernetes

- Recall how to work with the extensions API in Kubernetes
- Describe the Kubernetes API server
- Work with the Kubernetes controller manager
- Describe the use of the Kubernetes scheduler function
- Use the Kubernetes network proxy
- Work with kubelet
- Work with the Kubernetes API

Google Cloud SQL for Developers: Instance Management in the Developers Console

Google Cloud SQL allows developers to quickly create and manage instances of MySQL. It offers various tools for completing the tasks required to create and maintain the Cloud SQL environments as well as to create and deploy applications that store data in Cloud SQL. In this course, you will learn what Cloud SQL offers and how to use the Google Developers Console to create and manage Cloud SQL instances. This course is one of a series in the Skillsoft learning path that covers the objectives for the Google Cloud SQL Qualification exam CPE303.

- Describe Cloud SQL
- Describe the benefits and features of Cloud SQL
- Identify the billing plans Google offers for Cloud SQL
- Describe the regions and zones used for Google Cloud Platform for storing data in Cloud SQL
- Create a basic instance in Cloud SQL using the Developers Console
- Define a network and specify external addresses in Google Cloud Platform
- Define the external networks allowed to connect to a Cloud SQL instance with an IP address using the Developers Console
- Create a client SSL certification to connect to a Cloud SQL instance using Secure Socket Layer protocol using the Developers Console
- Configure MySQL flags for a Cloud SQL instance using the Developers Console
- Create a database in a Cloud SQL instance using the Developers Console
- Create user accounts to allow applications to connect to MySQL instance via IP using the Developers Console

- Edit the settings defined for a Cloud SQL instance using the Developers Console
- Schedule backups and review backup history for a Cloud SQL instance using the Developers Console
- Restore a Cloud SQL instance from a backup, including to another instance, using the Developers Console
- Describe Cloud SQL Replication
- Enable Cloud SQL Read Replicas
- Stop, start, promote and check the status of a Cloud SQL read replica
- Enable external read replicas for a Cloud SQL instance
- View Cloud SQL instance usage data in the Developers Console
- View Cloud SQL instance operation logs and view and export MySQL error logs
- Add a project member to manage a Cloud SQL instance
- Import data to Cloud SQL through the Developers Console
- Export data from Cloud SQL through the Developers Console
- Migrate MySQL 5.5 to MySQL 5.6 using the Developers Console
- Create and manage a Google Cloud SQL Instance using the Developers Console

Google Cloud SQL for Developers: Interacting, Connecting and Management

Google Cloud SQL allows applications created in the Google App Engine to access instances and their databases. Connections can be made using the various SDKs to post and view database information. Client libraries can also be used to allow access to the Google SQL API for managing the instances. In this course, you will learn how to connect to Cloud SQL instances using the MySQL client through the Google Cloud Compute and Google App Engine. You will also learn how to manage Cloud SQL instances using the Cloud SQL API. This course is one of a series in the Skillsoft learning path that covers the objectives for the Google Cloud SQL Qualification exam CPE303

- Install the MySQL client and configure the instance to allow access
- Identify connection strings for user accounts and connect to a Cloud SQL instance using the MySQL client
- Connect to a Cloud SQL instance using an SSL connection
- Use the MySQL client to manage a Cloud SQL instance
- Connect to Cloud SQL using MySQL client from Google Cloud Compute Engine instance
- Connect to Cloud SQL instances using MySQL Workbench, including SSL connections
- Connect to Cloud SQL instances using Toad for MySQL, including SSL connections
- Connect to Cloud SQL instances using SQuirrel SQL
- Connect to Cloud SQL instances using SSL connections to SQuirrel SQL
- Authorize a Java application in Google App Engine to access Cloud SQL
- Grant access to a Cloud SQL instance for the Python app in App Engine and create the database and tables it will use
- Identify and verify connections to a Cloud SQL instance

- Identify performance issues in a Cloud SQL instance
- Connect to a Cloud SQL instance using the MySQL client and manage an instance using the Google Cloud SDK
- Identify the size and access limits to Cloud SQL from the Google App Engine applications
- Describe the REST API provided by Cloud SQL and OAuth 2.0 used to authorize requests
- Install the Google Cloud SDK and ensure the Cloud SQL API is installed
- Perform basic tasks using the Cloud SQL API
- Perform imports and exports, create SSL certificates and assign IPv4 addresses using the Cloud SQL API in a Cloud SQL instance
- Perform imports and exports using the Cloud SQL API in a Cloud SQL Instance
- Perform backups using the Cloud SQL API for a Cloud SQL instance
- Perform point-in-time recovery using the Cloud SQL API for a Cloud SQL instance
- Use the client libraries to allow client applications access to use the Google Cloud SQL API to manage a Cloud SQL instance

Google G Suite Admin: User Management

This course begins with a G Suite overview and is followed by various user configurations that are the responsibility of the G Suite administrator. Administrative task delegation will be demonstrated in addition to the creation of custom roles.

- List G Suite components
- Describe G Suite sign up requirements
- Create a G Suite account in the cloud.
- Describe the purpose of a G Suite user account
- Discuss how G Suite users are created
- Create G Suite users manually
- Import G Suite users from a CSV file
- Use email to invite users to G Suite
- Recognize how to rename and move G Suite users

- List G Suite user settings
- Modify G Suite user settings
- Recognize when G Suite user accounts should be suspended or removed
- Suspend and delete G Suite user accounts
- Recover a deleted G Suite user account
- Describe G Suite user password settings
- Manage G Suite user password settings
- Describe how administrative role delegation works
- Assign an existing role
- Create a custom role and delegate it for administrative access
- Describe and configure G Suite user accounts

G Suite: Group and OU Management

This course focuses on the creation and management of G Suite users and organizational units.

- Describe how G Suite groups are used
- Discuss how to create G Suite groups
- Describe G Suite group settings
- Create and modify groups
- Recognize when to disable and delete G Suite groups
- Recognize how to disable and delete G Suite groups
- Share documents, videos and sites with G Suite groups

- Manage permissions and group settings
- Manage G Suite group sharing and permissions
- Describe the benefits of using organizational units in G Suite
- Create a G Suite OU (organizational unit)
- Manage services by OU
- Work with groups and OUs in G Suite

G Suite: Email and Calendar Management

This course will demonstrate how G Suite mail settings, such as attachment and spam filtering, improve the user mail experience. Sharing calendars and creating calendar resources such as conference rooms makes scheduling efficient.

- Describe G Suite mail routing
- Work with G Suite mail sender lists
- Configure domain and IP address whitelists
- List email best practices
- Recognize why email filtering makes email usage efficient
- Configure an email message footer and control inbound message file attachments
- Configure a Sender Policy Framework DNS record

- Describe which types of items can be migrated to G Suite
- Migrate email, contacts and calendar items to G Suite
- Describe G Suite calendaring options
- Describe the purpose of calendar sharing and list the benefits
- Create and share a group calendar
- Delegate calendar access to others
- Create and work with calendar resources
- Manage G Suite email and calendaring

G Suite: Security, Service and Mobile Device Management

In this course, you will learn about service configuration settings that control G Suite storage, sharing, and Chrome and Google Sync settings. Alerts can also be configured to notify administrators of service changes. User authentication options can enhance security. G Suite allows for centralized mobile device management.

- Recognize how G Suite sharing works
- Configure sharing settings
- Describe Chrome policy settings
- Configure Chrome policy settings
- Perform Google Drive storage capacity planning for your domain
- Understand the impact of various G Suite Service settings
- Configure G Suite Service settings
- Improve security and performance as well as troubleshooting with usage reports
- Set up alerts to notify administrators via email

- Describe the steps Google takes to secure tenant data
- Describe the purpose of G Suite exception groups
- Use exception groups to manage security options
- List various G Suite user authentication options
- Configure G Suite user authentication options
- Describe the need for centralized mobile device management
- Install G Suite mobile device apps
- Configure Android settings
- Configure Google Sync settings
- Control user access from a mobile device
- Configure G Suite security, service settings and manage mobile devices

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