CPO300

Architecting with Google Cloud Platform: Infrastructure

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CPO300 - Version: 1

3 days Course

Description:

This three-day instructor-led class introduces participants to the comprehensive and flexible infrastructure and platform services provided by Google Cloud Platform. Through a combination of presentations, demos, and hands-on labs, participants explore and deploy solution elements, including infrastructure components such as networks, systems and applications services. This course also covers deploying practical solutions including securely interconnecting networks, customer-supplied encryption keys, security and access management, quotas and billing, and resource monitoring.

Intended audience:

Cloud Solutions Architects, DevOps Engineers.
Individuals using Google Cloud Platform to create new solutions or to integrate existing systems, application environments, and infrastructure with the Google Cloud Platform.

Prerequisites:

Completion of Google Cloud Platform Fundamentals or equivalent experience
Basic proficiency with command-line tools and Linux operating system environments
Systems Operations experience, including deploying and managing applications, either on-premises or in a public cloud environment

Objectives:

Consider the entire range of Google Cloud Platform technologies in their plans.
Learn methods to develop, implement, and deploy solutions.
Distinguish between features of similar or related products and technologies.
Recognize a wide variety of solution domains, use cases, and applications.
Develop essential skills for managing and administering solutions.
Develop knowledge of solution patterns -- methods, technologies, and designs that are used to implement security, scalability, high availability, and other desired qualities.

Topics:

Module 1: Introduction to Google Cloud Platform

- Google Cloud Platform (GCP) Infrastructure
- Using GCP
- Lab: Console and Cloud Shell
- Demo: Projects
- Lab: Infrastructure Preview

Module 2: Virtual Networks

- Virtual Private Cloud (VPC), Projects, Networks, Subnetworks, IP addresses, Routes, Firewall rules
- Subnetworks for resource management instead of physical network topology
- Lab: Virtual Networking
- Lab: Bastion Host

Module 3: Virtual Machines

- Compute Engine
- Lab: Creating Virtual Machines
- Compute options (vCPU and Memory)
- Images
- Common Compute Engine actions
- Lab: Working with Virtual Machines

Module 4: Cloud IAM

- Organizations, Roles, Members, Service accounts, Cloud IAM best practices
- Lab: Cloud IAM

Module 5: Data Storage Services

- Cloud Storage
- Lab: Cloud Storage
- Cloud SQL
- Lab: Cloud SQL
- Cloud Spanner, Cloud Datastore
- Lab: Cloud Datastore
- Cloud Bigtable

Module 6: Resource Management

- Cloud Resource Manager, Quotas, Labels, Names, Billing
- Demo: Billing Administration
- Lab: Examining Billing Data with BigQuery

Module 7: Resource Monitoring

- Stackdriver, Monitoring
- Lab: Resource Monitoring (Stackdriver)
- Logging, Error Reporting, Tracing, Debugging
- Lab: Error Reporting and Debugging (Stackdriver)

Module 8: Interconnecting Networks

- Cloud Virtual Private Network (VPN)
- Lab: Virtual Private Networks (VPN)
- Cloud Router, Cloud Interconnect, External Peering, Cloud DNS

Module 9: Load Balancing

- Managed Instance Groups, HTTPS load balancing, Cross-region and content-based load balancing, SSL proxy/TCP proxy load balancing, Network load balancing
- Lab: VM Automation and Load Balancing

Module 10: Autoscaling

- Autoscaling, Policies, Configuration
- Lab: Autoscaling

Module 11: Infrastructure Automation with Google Cloud Platform APIs

- Infrastructure automation, Images, Metadata, Scripts, Google Cloud API
- Lab: Google Cloud Platform API Infrastructure Automation

Module 12: Infrastructure Automation with Deployment Manager

- Deployment Manager, Configuration, Cloud Launcher
- Lab: Deployment Manager

Module 13: Managed Services

- Cloud Dataproc, Cloud Dataflow, BigQuery, Cloud Datalab

Module 14: Application Infrastructure Services

- Cloud Pub/Sub, API Management, Cloud Functions, Cloud Source Repositories, Specialty APIs

Module 15: Application Development Services

- App Engine

Module 16: Containers

- Containers, Kubernetes Engine, Container Registry
- Lab: Kubernetes Load Balancing
- Kubernetes Engine, App Engine, or Containers on Compute Engine?