



Digital Transformation with Google Cloud

GCP Cloud Digital Leader | Cloud Concepts, Migration & Innovation

Why Cloud? Traditional IT vs Cloud

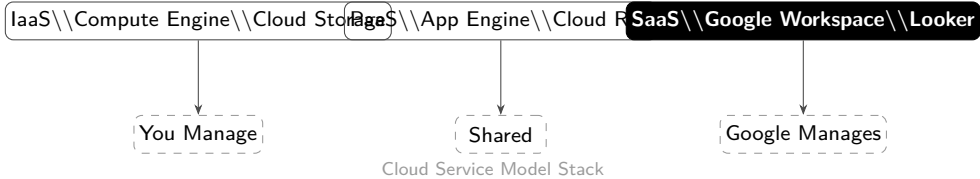


Cloud Adoption Journey

Cloud computing provides on-demand access to computing resources (servers, storage, networking, databases) over the internet with pay-as-you-go pricing. Google Cloud operates on the same infrastructure that powers Google Search, Gmail, and YouTube.

Aspect	Traditional IT	Cloud
Provisioning	Weeks to months	Minutes
CapEx vs OpEx	Large upfront CapEx	OpEx pay-per-use
Scaling	Manual, over-provision	Auto-scaling on demand
Maintenance	In-house team	Managed by provider
Global reach	Build own DCs	Instant global deployment
Innovation	Slow, hardware-bound	Fast iteration, managed services

Cloud Service Models



Cloud Service Model Stack

IaaS	Infrastructure as a Service - you manage OS, runtime, apps. Google manages hardware, networking, storage. (Compute Engine, Cloud Storage)
PaaS	Platform as a Service - you manage application code. Google manages OS, runtime, scaling. (App Engine, Cloud Run, Cloud Functions)
SaaS	Software as a Service - fully managed applications. (Google Workspace, BigQuery, Looker)

① Digital Transformation

Cloud adoption follows: Tactical (lift-and-shift) > Strategic (re-platform) > Transformational (cloud-native). Match approach to business goals.

Compute Engine

CR Cloud Run

CF Cloud Functions

GKE

AE App Engine

BM Bare Metal



Cloud Service Models

Google Cloud Global Infrastructure

Google Cloud spans 40+ regions, 120+ zones, and 187+ network edge locations. Each region contains multiple zones (independent failure domains) connected by low-latency fiber. Google's private network backbone carries traffic between regions.

Region	Independent geographic area (e.g., us-central1, europe-west1). Choose regions close to users for latency and to meet data residency requirements.
Zone	Isolated deployment area within a region (e.g., us-central1-a). Deploy across zones for high availability.
Multi-region	Geo-redundant storage/services spanning multiple regions (e.g., US, EU). For maximum durability and availability.
Edge locations	Points of presence (PoPs) for Cloud CDN and Google Global Load Balancing. Serve content closer to users.

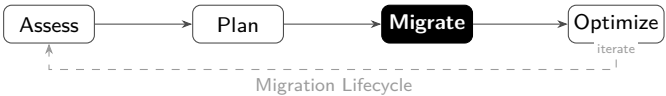
- Google's network is one of the largest in the world, carrying ~40% of internet traffic daily
- Premium Tier networking routes traffic on Google's private backbone; Standard Tier uses public internet
- Each zone has independent power, cooling, and networking to isolate failures

💡 Exam Insight

Questions focus on business value, not technical depth. Think ROI, TCO, and organizational change.

Migration to Google Cloud

The 6 Rs framework guides migration strategy for each workload. Google recommends an assess-plan-migrate-optimize lifecycle supported by tools like Migration Center, Migrate for Compute Engine, and Database Migration Service.



The 6 Rs of Migration

Rehost (Lift & Shift)	Move workloads as-is to cloud VMs. Fastest path, minimal changes. Use Migrate for Compute Engine.
Replatform (Lift & Optimize)	Minor modifications to leverage managed services (e.g., move MySQL to Cloud SQL). Better cost and reliability.
Refactor (Re-architect)	Redesign for cloud-native (containers, microservices, serverless). Highest effort but best long-term value.
Repurchase	Replace with a SaaS equivalent (e.g., on-prem CRM to Salesforce, on-prem analytics to Looker).
Retire	Decommission workloads that are no longer needed. Reduces cost and complexity.
Retain	Keep on-premises for now (regulatory, latency, or complexity reasons). Revisit later.

Total Cost of Ownership (TCO)

TCO analysis compares the full cost of on-premises infrastructure vs cloud, including hidden costs like facilities, cooling, staffing, software licenses, and opportunity cost of slow provisioning.

- On-prem hidden costs: facilities, power, cooling, hardware refresh, networking, staffing, disaster recovery
- Cloud pricing models: on-demand, committed use discounts (CUDs), sustained use discounts (SUDs), preemptible/spot VMs
- Committed Use Discounts save 57-70% for 1-3 year commitments on Compute Engine and Cloud SQL
- Active Assist provides recommendations for right-sizing VMs, idle resource cleanup, and CUD purchases

- Google Cloud Pricing Calculator helps estimate monthly costs before migration

Cost Optimization Strategies

Right-sizing	Use recommendations to match VM size to actual workload needs. Avoid over-provisioning.
Autoscaling	Scale resources up/down based on demand. Pay only for what you use.
Spot/Preemptible VMs	Up to 91% discount for fault-tolerant batch workloads. Can be re-claimed with 30s notice.
Storage lifecycle	Automatically transition data from Standard to Nearline/Coldline/Archive as access frequency decreases.
Budgets & alerts	Set budget thresholds in Cloud Billing to get alerts before costs exceed expectations.

57-70%

CUD Savings

91%

Max Spot Discount

30%

SUD Savings

Innovation and Business Value

Digital transformation is not just about moving to cloud — it is about using cloud capabilities to innovate, create new business models, and improve customer experience. Google Cloud enables this through data analytics, AI/ML, and modern application development.

- API-first approach: expose services as APIs for partner/developer ecosystems (Apigee API Management)
- Data-driven decisions: BigQuery for petabyte-scale analytics, Looker for business intelligence
- AI/ML democratization: AutoML for no-code models, Vertex AI for custom ML, pre-trained APIs for vision/language/speech
- Modern app development: Cloud Run for serverless containers, GKE for Kubernetes orchestration
- Sustainability: Google Cloud matches 100% of energy with renewable sources, carbon-intelligent computing

Official resources

⚠️ Check the current exam guide

The certification page (checked 2026-10-05) says a **new version** of the exam has been live since August 12: check the current exam guide before you study these sheets.

STUDY GUIDE 1 link

Cloud Digital Leader study guide

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