

# INFOSOFT IT SOLUTIONS

**Training | Projects | Placements**

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## **GOOGLE CLOUD STORAGE TRAINING**

### **• 1 Introduction to Cloud Computing**

- Overview of cloud computing concepts.
- \* Definition of Cloud Computing
- \* Cloud Service Models
- \* Cloud Deployment Models
- Advantages of cloud storage over traditional storage solutions.

### **• 2 Google Cloud Platform Over view**

- . Introduction to Google Cloud Platform (GCP).
  - \* Overview of Google Cloud Platform
  - \* History and Evolution of GCP
  - \* Global Infrastructure and Regions
  - \* Integration and Interoperability
- Overview of GCP services and their functionalities.

### •3 Google Cloud Storage Basics

- Introduction to Google Cloud Storage (GCS).
- \* Overview of Google Cloud Storage
- \* History and Evolution of GCS
- \* Core Concepts and Terminology
- \* Monitoring and Logging
- Understanding storage classes: Standard, Nearline, Cold line, and Archive.
- Use cases for different storage classes.

### •4 Creating and Managing Buckets

- Creating buckets in GCS.
- \* Introduction to Buckets
- \* Using the Google Cloud Console
- \* Using the Command-Line Interface (CLI)
- \* Bucket Logging and Monitoring
- Configuring bucket settings: permissions, logging, versioning, lifecycle policies, etc.
- Best practices for bucket management.

### •5 Working with Objects

- Uploading and downloading objects to/from buckets.
- Managing object permissions.
- Using tools like g sutil and Cloud Storage Client Libraries.

### •6 Data Transfer and Import/Export

- Transferring data into and out of GCS.
- Using transfer services for large-scale data movement.
- Importing/exporting data using physical media.

### •7 Data Security and Access Control

- Understanding GCS security features.
- Identity and Access Management (IAM) roles and permissions.
- Encryption options for data at rest and in transit.
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- **8 Monitoring and Logging:**

- Monitoring storage usage and performance.
- Setting up logging and monitoring for GCS activities.
- Using Stack driver for storage monitoring and logging.

- **9 Data Lifecycle Management**

- Implementing lifecycle policies for managing data.
- Automating data archival and deletion.
- Cost optimization strategies using lifecycle management.

- **10 Advanced Topics**

- Using GCS with other GCP services (Big Query, Compute Engine, etc.).
- Integrating GCS with third-party tools and services.
- Performance optimization techniques.

## **1 Advanced Bucket Management**

- Bucket Lifecycle Management Policies
- Object Versioning and Object Lifecycle Actions
- Bucket Locking and Retention Policies
- Signed URLs and Policy Documents
- Bucket-level IAM Policies and Permissions
- Best Practices for Secure Bucket Configuration

## **2: Advanced Object Operations**

- Large Object Uploads and Resumable Uploads
- Object Composition and Concatenation
- Object Metadata Management and Custom Metadata
- Object Annotations and Labels
- Object Change Notifications and Pub/Sub Integration
- Object Preprocessing with Cloud Functions or Cloud Run

### **3: Advanced Data Transfer Techniques**

- Data Transfer Service for Large-Scale Data Migration
- Transfer Appliance for Offline Data Transfer
- Third-Party Tools and Services Integration
- Parallel Data Transfer Strategies
- Data Transfer Optimization and Performance Tuning
- Advanced Data Transfer Monitoring and Logging

### **4: Advanced Security and Compliance**

- Customer-Managed Encryption Keys (CMEK) for GCS
- Key Management Service (KMS) Integration
- Object-level Access Controls with Signed URLs and Signed Policy Documents
- VPC Service Controls for Enhanced Data Security
- Compliance Considerations and Certifications (e.g., HIPAA, GDPR)
- Data Governance and Data Loss Prevention (DLP) Strategies

### **5: Advanced Monitoring and Troubleshooting**

- Stack driver Monitoring and Logging for GCS
- Custom Metrics and Alerts Configuration
- Advanced Logging Filters and Querying Techniques
- Diagnosing and Troubleshooting Performance Issues
- Event-Driven Monitoring and Automated Remediation
- Best Practices for Incident Response and Recovery

### **6: Advanced Integration and Interoperability**

- GCS Integration with Other GCP Services (e.g., Big Query, Dataflow)
- Multi-Cloud Data Management Strategies
- Hybrid Cloud Storage Solutions
- Object Storage Federation and Cross-Region Replication
- Interoperability with On-Premises Storage Systems
- Best Practices for Data Integration and Interoperability

## **7: Advanced Cost Optimization Strategies**

- Cost Analysis and Optimization Tools
- Optimizing Storage Class Selection Based on Access Patterns
- Lifecycle Management Policies for Cost Reduction
- Optimizing Object Size and Compression Techniques
- Resource Sharing and Cost Allocation Strategies
- Forecasting and Budgeting for GCS Usage

## **8: Advanced Performance Optimization**

- Performance Tuning for Object Read and Write Operations
- Optimizing Network Throughput and Latency
- Request Parallelization and Connection Pooling
- Advanced Caching Strategies for GCS Objects
- CDN Integration for Content Delivery Optimization
- Performance Testing and Benchmarking Techniques

## **9: Advanced Use Cases and Solutions**

- Real-time Data Streaming and Analytics with GCS
- Machine Learning Data Preparation and Training Pipelines
- Content Distribution and Media Streaming Solutions
- IoT Data Ingestion and Processing Architectures
- Disaster Recovery and Business Continuity Solutions
- Industry-Specific Use Cases and Solutions (e.g., Healthcare, Financial Services)