Cloud Computing

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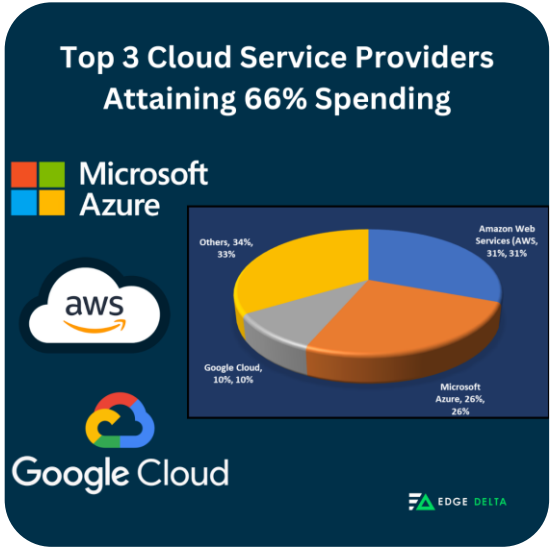
WHAT IS CLOUD COMPUTING.?

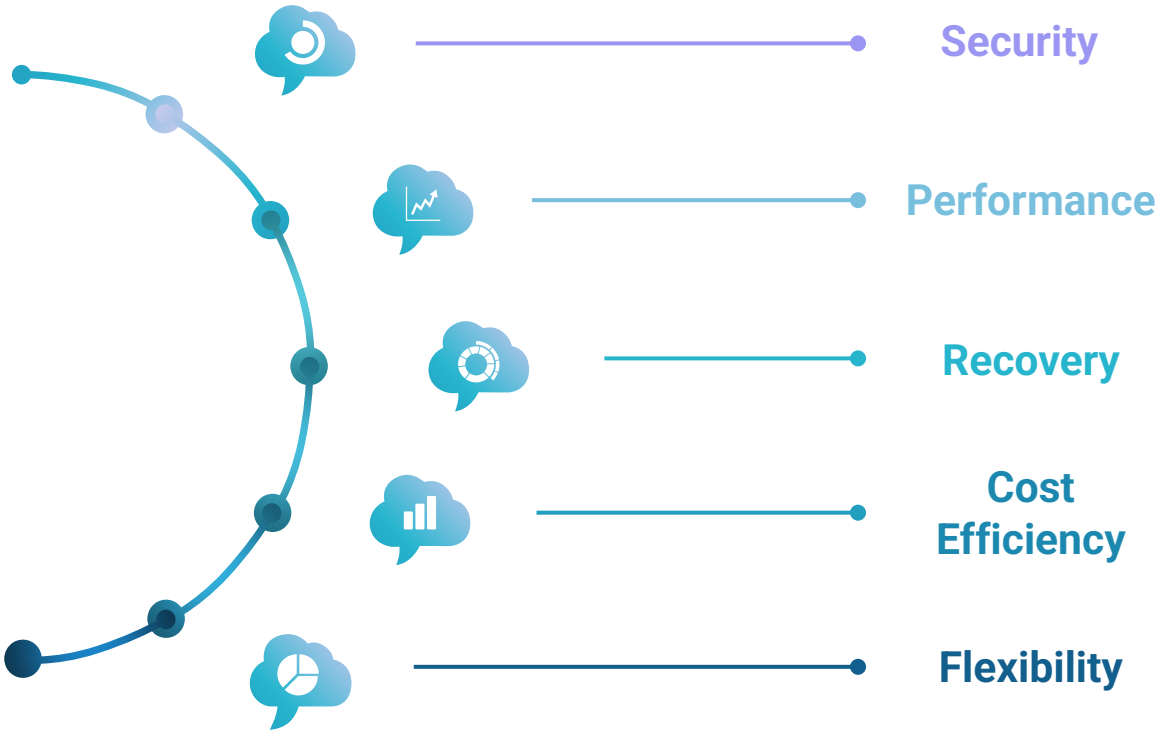
Cloud computing is the delivery of computing services over the internet ("the cloud") to provide faster innovation, flexible resources, and economies of scale. Instead of owning and maintaining physical hardware or data centers, individuals and organizations can access and use resources such as servers, storage, databases, networking, software, and analytics on-demand.

Key Features of Cloud Computing

- ❑ On-Demand Self-Service
- ❑ Broad Network Access
- ❑ Resource Pooling
- ❑ Scalability
- ❑ Measured Service



BENEFITS OF CLOUD COMPUTING



- Security
- Performance
- Recovery
- Cost Efficiency
- Flexibility

CYMBAL SUPERSTORE'S CLOUD SOLUTION ENVIRONMENT

Cymbal Superstore utilizes a Google Cloud Solution Environment to streamline operations, improve scalability, and ensure secure management of resources. This environment supports their transition to a modern, cloud-native infrastructure.

Implementation Steps for Cymbal Superstore

Provision Resources: Allocate compute instances, storage, and database services.

Configure Security: Set IAM roles and enable encryption for data security.

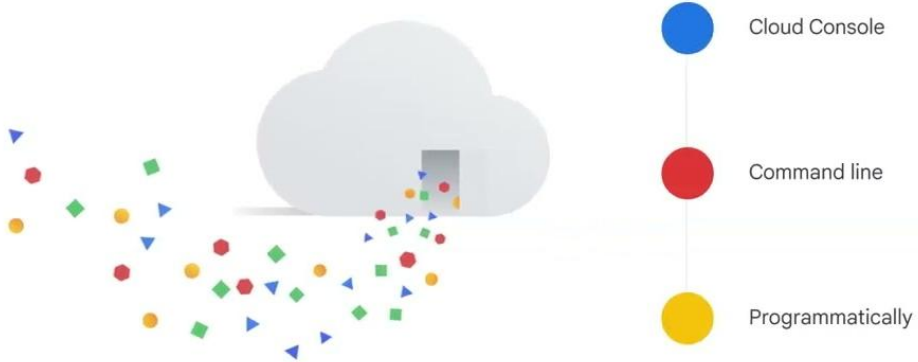
Establish Networking: Create VPCs and integrate load balancing for traffic management.

Enable Monitoring: Set up dashboards for real-time performance insights.

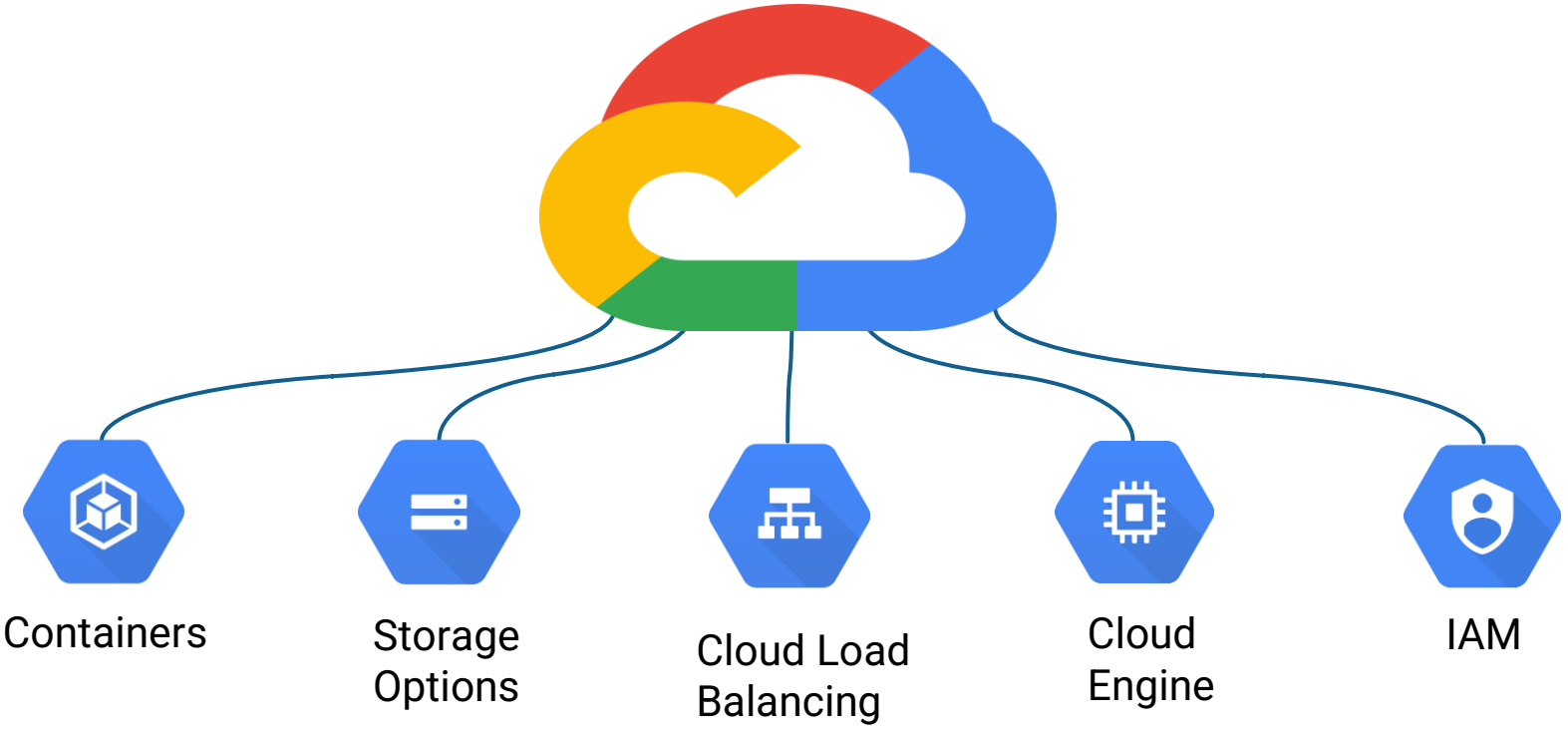
Test and Optimize: Validate resource configuration and optimize for cost and performance.

Benefits for Cymbal Superstore

- ❖ Scalable infrastructure to handle growing demands.
- ❖ Enhanced data security and compliance.
- ❖ Cost-efficient resource management.
- ❖ Real-time insights for operational efficiency.



GOOGLE CLOUD FUNDAMENTALS: CORE INFRASTRUCTURE



ESSENTIAL GOOGLE CLOUD INFRASTRUCTURE: FOUNDATION

01

Google Cloud console

Web user interface

02

Cloud Shell and Google Cloud CLI

Command-line interface

03

REST-based API

For custom applications

04

Cloud Mobile App

For iOS and Android

- Enhanced security with isolation.
- Scalability for expanding network requirements.
- Flexibility to create subnets for better resource organization.

- Cost-effective: Pay only for the resources used.
- Scalability: Quickly scale up or down as needed.
- Flexibility: Test and deploy applications without hardware constraints.

ESSENTIAL GOOGLE CLOUD INFRASTRUCTURE: CORE SERVICES

GCP Has 4 Core Services

Identity and Access Management (IAM)

Resource Management

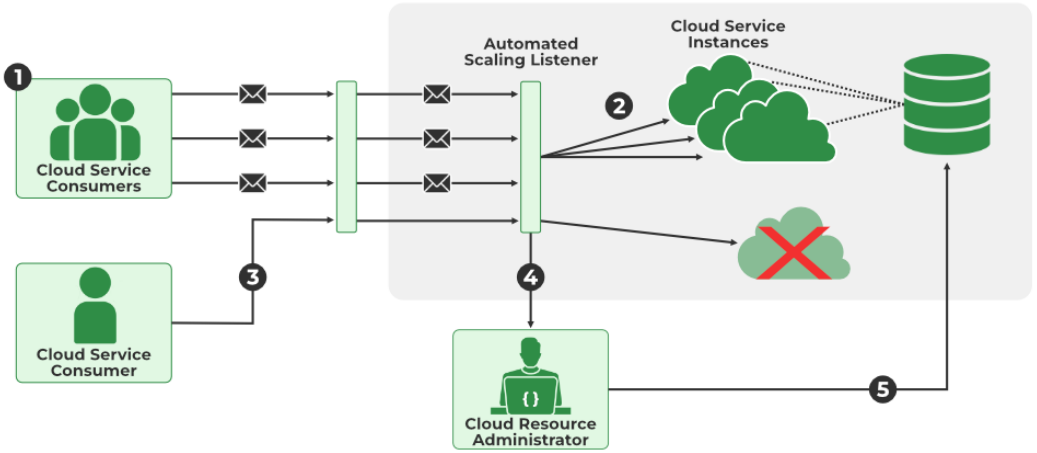
Resource Monitoring

ELASTIC GOOGLE CLOUD INFRASTRUCTURE: SCALING AND AUTOMATION

Auto Scaling: Automatically adjust the number of instances based on demand to optimize performance and cost.

Managed Instance Groups: Simplify management and ensure high availability of instances by grouping them together.

Load Balancing: Distribute incoming traffic across multiple instances to ensure scalability and reliability.



Infrastructure as Code with Terraform

Infrastructure as Code (IaC) with Terraform allows you to manage and provision IT infrastructure using code, automating tasks like creating and updating servers, networks, and databases.

Key Concepts:

1. Declarative Configuration: Define desired infrastructure state, and Terraform ensures it matches.
2. Provisioning: Automates the creation, update, and deletion of resources.
3. Version Control: Store infrastructure code in Git for collaboration and tracking.
4. State Management: Tracks infrastructure state for consistency.
5. Modules: Reusable configurations for common infrastructure patterns.

Benefits:

- ✓ Consistency across environments
- ✓ Automation of manual tasks
- ✓ Scalable infrastructure management
- ✓ Improved team collaboration

GOOGLE KUBERNETES ENGINE

Google Kubernetes Engine (GKE) is a managed, scalable platform provided by Google Cloud for running containerized applications using Kubernetes, an open-source container orchestration tool. GKE simplifies the process of deploying, managing, and scaling applications by automating infrastructure management tasks such as provisioning, monitoring, and scaling clusters.

Key Features:

Automated Cluster Management: GKE automatically handles tasks like cluster setup, scaling, and upgrading.

High Availability: Ensures reliable and fault-tolerant applications by distributing containers across multiple nodes.

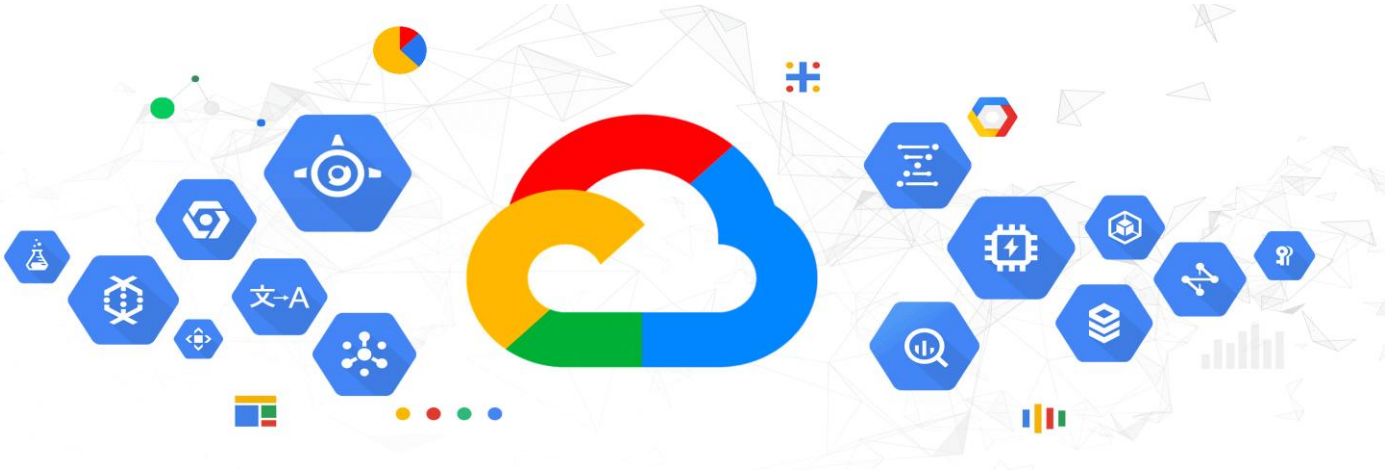
Integrated Google Cloud Services: Seamlessly integrates with other Google Cloud services like Cloud Storage, Big Query, and Cloud Monitoring.

Auto-Scaling: Automatically scales applications based on resource demand and traffic.

Security: Provides robust security features such as role-based access control (RBAC), identity and access management (IAM), and network policies.

CONCLUSION

In conclusion, cloud computing has revolutionized the way businesses and individuals access and manage technology resources. By offering scalable, cost-effective, and secure solutions, it eliminates the need for heavy infrastructure investments and maintenance. With its flexibility, accessibility, and high reliability, cloud computing enables faster innovation and smoother operations. As the demand for digital transformation continues to grow, cloud computing will remain a key driver in shaping the future of technology and business.



Thank You