Migration

Cloud Migration Planning

- **Phase 1**: Assess the workloads to be migrated
- **Phase 2**: Plan the foundation
- **Phase 3**: Deploy the workloads
- **Phase 4**: Optimize your environment

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Cloud Migration Approaches

In28 Minutes

- You have a **combination of following options**:
  - **Rehosting** ("lift and shift")
  - **Replatforming**
    - Few adjustments to suit the cloud
    - Example: Containerizing
  - **Repurchasing**
    - Move to a new, cloud-native product
      - Move to a new database
  - **Refactoring**
    - Example: Serverless Computing
    - Most expensive
  - **Retiring**
    - End of service
  - **Retaining**
    - Do NOT move to Cloud
    - Stay on-premises

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Cloud Migration Planning - Phases 1 & 2

In28 Minutes

- **Phase 1: Assess the workloads to be migrated**
  - Take inventory and Catalog apps
  - Experiment and design proofs of concept
  - Calculate total cost of ownership
  - Choose which workloads to migrate first
    - Based on Business value, Teams, Dependencies, Refactoring effort, Licensing and compliance needs, Availability and reliability requirements
- **Phase 2: Plan the foundation**
  - Design Resource Organization Hierarchy, Configure IAM (users, groups, integrate with Identity Provider (IdP)) and Design network topology and connectivity
  - Plan for Security (data, apps), Monitoring (and alerting) and Governance
  - Plan your Migration Team

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Cloud Migration Planning - Phases 3 & 4

In 28 Minutes

- **Phase 3: Deploy the workloads**
  - Migrate Data
    - Consider Cost, Time, Offline versus online transfer options and Security
  - Deploy Applications
  - Prefer automation :
    - Automate configuration management with Ansible, Chef or Puppet
    - Automate build and deployment using Jenkins, SonarQube, Cloud Build or Spinnaker
    - Implement Infrastructure as Code using Terraform or Deployment Manager
- **Phase 4: Optimize your environment**
  - Ensure that logging, monitoring and alerting are in place
  - Reduce overhead by preferring Managed Services
  - Optimize costs using autoscaling

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Database Migration - MS SQL Server to GCP

In 28 Minutes

- Cloud SQL for SQL Server is fully managed
- **Migration Steps**
  - Create a Cloud SQL for SQL Server instance
  - Move backup of your database to Cloud Storage
  - Import the database into Cloud SQL for SQL Server
  - Validate the imported data

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Migration - Deploying Containers to GCP

In 28 Minutes

Option	Details
App Engine flexible environment	Highly scalable BUT cannot scale down to ZERO Doesn't let you customize underlying Compute Engine VMs Very less management burden
Cloud Run and Cloud Run for Anthos	Highly scalable AND You can scale down to zero instances Cannot customize the environment Almost ZERO Management burden
Google Kubernetes Engine (GKE) and Anthos clusters	Highly scalable You need to manage the clusters You can customize cluster nodes as per your needs
Compute Engine	You can use Container-Optimized OS (COS) image with Docker installed `gcloud compute instances create-with-container VM_NAME --container-image DOCKER_IMAGE` Launches your container on startup of VM **NOT Recommended**: You need to manage everything : Scalability,