3-1-1: Examining Cloud Migration Types

After completing this episode, you should be able to:

- Identify and explain cloud migration types, given a scenario

Description: In this episode, the learner will examine various cloud migration types. We will explore "On-premise to Cloud," "Cloud to Cloud," "Cloud to On-premises," and more.

- Describe what cloud migration
    - o The strategic process of moving digital assets such as data, applications, and IT processes between on-premises data centers, cloud environments, or from one cloud platform to another
    - o Migration strategies enhance efficiency, scalability, and flexibility, tailored to business needs and compliance
- Describe common cloud migration strategies
    - o On-premises to Cloud
        - ♠ Moving assets from local data centers to the cloud
        - ♠ Considerations
            - ♠ Enhances scalability and flexibility
            - ♠ Can reduce costs
            - ♠ Allows integration of advanced cloud services, such as serverless computing, for improved efficiency
        - ♠ Examples: Betabrand, Spotify
    - o Cloud to On-premises
        - ♠ Transferring assets from the cloud back to on-premises data centers.
        - ♠ Considerations
            - ♠ Cloud-based tools facilitate smooth data transfers back to on-premises, ensuring data integrity and minimizing transition downtime.
        - ♠ Example: Dropbox (note - technically a hybrid migration, reducing dependency on AWS, regaining greater control over their storage)
    - o Cloud-to-Cloud
        - ♠ Shifting assets from one cloud environment to another.
        - ♠ Considerations
            - ♠ Utilizes inter-cloud services and APIs for efficient migration, with benefits like reduced data transfer costs and enhanced security.
        - ♠ Examples: GitLab, Shopify, Waze (Waze is technically a cloud to multi-cloud migration)
- Describe some practical considerations for cloud migrations
    - o On-premises to Cloud
        - ♠ Best for scalability and innovation, improving disaster recovery, and data analytics capabilities
    - o Cloud to On-premises
        - ♠ Targeting compliance or control needs, useful for data or application repatriation.
    - o Cloud to Cloud
        - ♠ Optimizes resources by leveraging different cloud providers' strengths, suitable for achieving cost savings, compliance, or accessing specialized services.
- Describe the significance of understanding cloud migrations
    - o Can help organizations navigate digital transformation effectively
    - o Offers scalability, resilience, and efficiency, aligning IT operations with business goals.
- Simulation-Based Scenarios for Migration Types
    - o Scenario 1: On-premises to Cloud Migration for a Financial Services Firm
        - ♠ Objective

- ♠ Migrate a financial services firm's customer data and transaction processing systems from on-premises servers to a cloud environment
- ♠ Enhance scalability
- ♠ Introduce advanced analytics capabilities
- ♠ Tasks
  - ♠ Evaluate and select the appropriate cloud service model (IaaS, PaaS, or SaaS).
  - ♠ Plan data migration while ensuring compliance with financial regulations.
  - ♠ Implement and test the cloud environment before full migration.
  - ♠ Monitor the migration process for issues, ensuring minimal downtime.
- ♠ Cloud Benefit: Utilizes the cloud's scalability and advanced services for real-time transaction processing and analytics while ensuring data security and regulatory compliance.
- o Scenario 2: Cloud-to-On-premises Migration for a Healthcare Application
  - ♠ Objective
    - ♠ Meet new data sovereignty regulations.
    - ♠ Move a healthcare application and its sensitive patient data from a public cloud environment back to on-premises infrastructure
  - ♠ Tasks
    - ♠ Ensure the on-premises infrastructure meets the necessary security and compliance standards.
    - ♠ Plan a phased migration to minimize service disruption.
    - ♠ Validate data integrity and application functionality post-migration.
  - ♠ Cloud considerations
    - ♠ Implement cloud-based data transfer tools to efficiently synchronize and migrate large volumes of sensitive data securely
- o Scenario 3: Cloud-to-Cloud Migration for an E-commerce Platform
  - ♠ Objective
    - ♠ Transition an existing e-commerce platform from one cloud service provider to another to capitalize
    - ♠ Implement enhanced AI/ML capabilities for personalized shopping experiences provided by the new CSP
  - ♠ Tasks
    - ♠ Assess and compare the offerings and capabilities of both cloud providers.
    - ♠ Design a migration strategy that includes
      - ♠ Data and storage transfer
      - ♠ Application re-deployment
      - ♠ Testing
      - ♠ Minimal downtime.
    - ♠ Execute the migration, ensuring seamless service continuity for users.
  - ♠ Cloud considerations
    - ♠ Implement inter-cloud connectivity and data transfer services for a smooth transition
    - ♠ Leveraging the target cloud's AI/ML services for enhanced customer experiences

Additional References

Spotify (bare metal to cloud migration using GCP): https://engineering.atspotify.com/2019/12/views-from-the-cloud-a-history-of-spotifys-journey-to-the-cloud-part-1-2/#Getting%20to%20The%20Cloud

Waze (Cloud to multicloud migration): https://cloud.google.com/blog/products/gcp/guest-post-multi-cloud-continuous-delivery-using-spinnaker-at-waze