3-2-1: Cloud Migration Considerations

After completing this episode, you should be able to:

- Identify and explain the cloud migration considerations, given a scenario

Description: In this episode, the learner will examine key aspects of cloud migrations to consider. We will explore cost, management overhead, service availability, compliance, and more.

- Describe the significance or importance of cloud migration planning
    - Identify and assessing the various common technical and operational factors of the new environment can:
        - Ensure a smooth transition
        - Optimize performance
        - Mitigate risk
        - Minimize downtime
        - Improve the user experience
        - Reduce unnecessary costs
- Describe the key aspects of cloud migrations to consider
    - Cost and management overhead
    - Platform compatibility, vendor lock-in, service availability, resources (storage, compute, networking)
    - Regulatory and compliance
- Describe the considerations of each aspect
    - Cost
        - Estimate the cost of cloud resources and services, to ensure the migration and.
        - This can include
            - Aligning with budgetary constraints
            - Meeting financial objectives
            - Calculating expenditures
            - Identifying potential savings
    - Management overhead
        - Reduce the effort required to manage cloud resources
        - This can include
            - Leveraging automation
            - Implementing continuous monitoring
            - Utilizing various cloud-based management services
    - Platform compatibility
        - Ensure that your applications and data are compatible with the target cloud platform
        - This can include:
            - Operating system
            - Middleware
            - Runtime environments
    - Vendor lock-in
        - Evaluate the degree of dependence on a specific cloud provider’s technologies and services
        - Implement strategies for maintaining flexibility and avoiding vendor lock-in
        - This can include:
            - Identify the current and future business objectives
            - Researching current and future service offerings
            - Provide and communicate details of findings

- Storage
  - Evaluate data storage needs to select the most suitable storage services
  - This can include:
    - Volume
    - Storage type (object, block, file)
    - Access patterns (frequent, infrequent, archival)
    - Performance requirements (NVMe, SSD, traditional HDD, archival)
- Compute
  - Choose the appropriate compute resources that match or exceed current on-premises or cloud capabilities.
  - Assess compute requirements
  - This can include:
    - CPU requirements (vCPU, vCore, count)
    - Memory requirements (low-latency, general purpose, capacity)
- Networking
  - Plan for the networking architecture
  - This can include
    - Bandwidth needs
    - Performance capabilities
    - Connectivity between cloud and on-premises environments
      - Internet
      - VPN
      - Direct connection
- Service Availability
  - Evaluate the availability and redundancy of cloud services
  - Ensure business continuity and disaster recovery (BCDR) requirements are met
  - Research service-level agreements to determine the availability levels (e.g. 99.9%, 99.95%, 99.99)
- Regulatory
  - Identify any regulatory requirements affecting where and how data is stored and processed
  - Especially critical for industries subject to specific regulations
- Compliance
  - Ensure that the cloud environment complies with industry standards and certifications relevant to your business
  - This can include:
    - GDPR for privacy requirements
    - HIPAA for healthcare requirements
    - PCI-DSS for credit card transactions
- Environmental Factors:
  - Power and Cooling
    - Understand the environmental impact of migrating to the cloud
    - This can include potential reductions in on-premises power and cooling requirements or to region-specific natural disasters (e.g., earthquakes, wildfires, tornados, hurricanes)