



# Module 10

## AWS Cloud Journey

- The cloud journey refers to the process of moving an organization's IT infrastructure, applications, and services to the cloud. The journey typically involves a series of steps, including assessment, planning, migration, and optimization.
- AWS provides a range of services and tools to help customers on their cloud journey. These services and tools can be used to assess the readiness of an organization's IT environment for the cloud, plan and execute a migration to the cloud, and optimize the performance and cost of cloud-based applications and services.
- The first step in the cloud journey is typically an assessment of an organization's IT environment. This assessment involves evaluating the current state of an organization's infrastructure, applications, and services, and identifying areas where the cloud can provide benefits, such as cost savings, scalability, and agility.
- Once an assessment has been completed, the next step is typically planning. Planning involves selecting the right cloud services and tools to meet an organization's needs, designing the architecture of cloud-based applications and services, and identifying the steps required to migrate existing workloads to the cloud.
- Migration is the process of moving existing workloads and applications to the cloud. AWS provides a range of tools and services to help customers execute their migration, including AWS Migration Hub, which provides a central hub for tracking and managing migrations, and AWS Application Discovery Service, which helps identify dependencies and requirements for migrating applications.
- After migration, the final step in the cloud journey is optimization. Optimization involves monitoring and managing cloud-based applications and services to ensure they are performing efficiently and cost-effectively. AWS provides a range of services and tools to help customers optimize their cloud-based applications and services, including AWS Trusted Advisor, which provides recommendations for optimizing costs, security, and performance, and Amazon CloudWatch, which provides monitoring and management tools for cloud-based applications and services.
- Throughout the cloud journey, AWS provides customers with a range of resources and support to help them succeed, including training and certification programs, online documentation and tutorials, and 24/7 customer support. By leveraging these resources and support, customers can accelerate their cloud journey, and gain the benefits of cloud computing, including increased agility, scalability, and cost savings.

## AWS Well-Architected Framework

It helps you understand how to design and operate reliable, secure, efficient, and cost-effective systems in the AWS cloud.

- The AWS Well-Architected Framework is a set of best practices and guidelines for designing and operating reliable, secure, efficient, and cost-effective systems in the cloud.
- The framework provides a structured approach for evaluating and improving architectures based on five pillars: operational excellence, security, reliability, performance efficiency, and cost optimization.
- The operational excellence pillar focuses on ensuring that systems are running efficiently and effectively, with a focus on automation, monitoring, and continuous improvement.
- The security pillar focuses on ensuring that systems are secure and compliant, with a focus on implementing strong security controls and monitoring security events.
- The reliability pillar focuses on ensuring that systems are available and resilient, with a focus on designing for fault tolerance, disaster recovery, and high availability.
- The performance efficiency pillar focuses on ensuring that systems are efficient and scalable, with a focus on optimizing workloads and resources to achieve optimal performance and cost efficiency.
- The cost optimization pillar focuses on ensuring that systems are cost-effective, with a focus on optimizing costs and reducing waste.
- The AWS Well-Architected Framework is not prescriptive, and can be applied to a range of architectures and workloads, including web applications, data processing systems, and machine learning applications.

- The framework can be used to evaluate existing architectures, or to guide the design of new architectures. AWS provides a range of tools and services to help customers apply the framework, including the AWS Well-Architected Tool, which provides a self-service tool for evaluating architectures against the framework, and the AWS Well-Architected Partner Program, which provides access to AWS-certified partners who can help customers apply the framework to their architectures and workloads.
- By leveraging the AWS Well-Architected Framework, customers can ensure that their systems are designed and operated to meet the highest standards of security, reliability, efficiency, and cost-effectiveness, and can achieve optimal performance and business outcomes in the cloud.

The Well-Architected Framework is based on six pillars:

1. Operational excellence
  - a. is the ability to run and monitor systems to deliver business value and to continually improve supporting processes and procedures.
2. Security
  - a. The **Security** pillar is the ability to protect information, systems, and assets while delivering business value through risk assessments and mitigation strategies.
3. Reliability
  - a. **Reliability** is the ability of a system to do the following:
    - Recover from infrastructure or service disruptions
    - Dynamically acquire computing resources to meet demand
    - Mitigate disruptions such as misconfigurations or transient network issues
4. Performance efficiency
  - a. **Performance efficiency** is the ability to use computing resources efficiently to meet system requirements and to maintain that efficiency as demand changes and technologies evolve.
5. Cost optimization
  - a. **Cost optimization** is the ability to run systems to deliver business value at the lowest price point.
6. Sustainability
  - a. Sustainability is the ability to continually improve sustainability impacts by reducing energy consumption and increasing efficiency across all components of a workload by maximizing the benefits from the provisioned resources and minimizing the total resources required.

## Advantages of cloud computing

1. Scalability: Cloud computing allows businesses to scale their computing resources up or down as needed, based on demand. This can help businesses save money and avoid the costs of investing in expensive hardware and software that they may not always need.
2. Flexibility: Cloud computing provides businesses with greater flexibility in terms of accessing data and applications. Employees can access data and applications from any location, using any device with an internet connection.
3. Cost Savings: Cloud computing can help businesses save money on hardware, software, and IT support costs. With cloud computing, businesses only pay for the resources they use, and they don't need to invest in expensive infrastructure to support their computing needs.
4. Improved Collaboration: Cloud computing can improve collaboration among employees and teams by providing a central location for storing and sharing data and applications.
5. Disaster Recovery: Cloud computing provides businesses with a more reliable and cost-effective disaster recovery solution, as data is stored in multiple locations and can be easily accessed in the event of a disaster.

## Disadvantages of cloud computing

1. Security: Cloud computing can raise security concerns, as data and applications are stored outside of an organization's physical control. Businesses need to ensure that they are working with a cloud provider that has strong security measures in place to protect their data.

2. Dependence on Internet Connectivity: Cloud computing relies on internet connectivity, and if internet connectivity is lost, businesses may not be able to access data and applications.
3. Limited Customization: Cloud computing can limit the ability of businesses to customize their computing environment, as they are reliant on the services and features provided by their cloud provider.
4. Cost Management: While cloud computing can provide cost savings, it can also lead to unexpected costs if businesses are not careful in managing their resources and usage.
5. Compliance and Regulations: Businesses need to ensure that their cloud provider is compliant with applicable regulations and standards, particularly in industries such as healthcare and finance where compliance requirements are particularly stringent.