Name - Saudabh Singhal Role. Full Stack Web Developer.

Key AWS Services for IT Infrastructure and SD

1) Amazon Elastic Compute Cloud (Amazon EC2)

Description

Amazon EC2 provides resizable compute capacity in the cloud, allowing users to quickly scale computing resources as needed. It offers a wide variety of instance types optimized for different use cases.

Use Cases

- Hosting Web applications
- Running backend servers
- Batch processing
- Scientific Computing
- High-performance computing

Benefits

- Flexibility
- Scalability
- Cost-Efficiency
- Integration.

Challenges

- Management: Requires management of instances, including monitoring, patching and scaling.
- Cost Optimization: Ensuring efficient use of resources to avoid unnecessary costs.

2) Amazon Simple Storage Service (Amazon S3)

Description

Amazon S3 is an object service that offers industry-leading scalability, data availability, security, and performance. It is designed to store and retrieve any amount of data from anywhere.

Use Cases:

- Backup and disaster recovery
- Data lakes and big data analytics
- Static website hosting.
- Content storage and distribution
- Archiving and compliance data storage

Benefits

- Durability (Design for 99.999999% (11 9's) of durability
- Scalability (Virtual unlimited storage capacity)
- Accessibility (Data access from anywhere over web)
- Security (Fine grained access control and encryption features)

Challenges

- Data Management: Managing large amounts of data and ensuring efficient organization.
- Cost Management: Potential for high costs with large volumes of data and frequent access.

3) Amazon Relational Database Service (Amazon RDS)

Description

Amazon RDS makes it easy to set up, operate and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while managing time-consuming database administration tasks.

Use cases

- Web and mobile applications.
- E-commerse platforms
- Data ~~web~~ warehousing
- Business Applications.

Benefits

- Automated Administration
- Scalability
- High Availability
- Security

Challenges

- Cost: Can be expensive for large-scale deployment
- Complexity: Initial ~~step~~ setup and configuration can be complex for certain databases.
- Limited Customization: Less control over the underlying infrastructure compared to self managed databases.

4) Amazon Virtual Private Cloud (Amazon VPC)

Description

Amazon VPC allows users to provision a logically isolated section of the AWS cloud where they can launch AWS resources in a virtual network they define.

It provides control over the network environment, including IP address ranges, subnets, route tables and gateways.

Use Cases

- Hosting multi-tier web applications.
- Securely connecting dual cloud resources to on-premise data centers
- Isolated environments for development and testing.
- Controlling network access to AWS resources

Benefits

- Isolation
- Customization.
- Connectivity
- Integration

Challenges

- Complexity: Requires network management skills for setup and maintenance.