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 selection of instance types optimized for different use cases.

Use Cases:
Hosting web applications
Running backend servers
Batch processing
Scientific computing

Benefits:
Flexibility to choose instance types based on performance and cost requirements
Easy scalability to handle varying workloads
Pay-as-you-go pricing model
Integration with other AWS services such as Amazon S3 and Amazon

RDS

Challenges:
Managing instances and ensuring optimal
resource utilization
Optimizing costs, especially with on-
demand instances
Ensuring proper security configurations
and compliance

2. Amazon Simple Storage Service (Amazon S3)

Description:
Amazon S3 is an object storage service
that offers industry-leading scalability,
data availability, security, and
performance. It allows storing and
retrieving any amount of data from
anywhere.

Use Cases:
Backup and restore
Archival storage
Big data analytics
Static website

hosting

Benefits:
Highly durable and available storage
solution
Scalable to accommodate any amount of
data
Cost-effective with multiple storage
classes for different use cases
Secure with robust access control and
encryption features

Challenges:
Managing and organizing large volumes of
data
Understanding and managing storage
costs
Ensuring data security and compliance
with regulatory requirements

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 supports multiple
database engines, including Amazon
Aurora, PostgreSQL, MySQL, MariaDB,
Oracle, and SQL Server.

Use Cases:
Web and mobile applications
Enterprise applications
Online transaction processing (OLTP)
Data warehousing

Benefits:
Automated backups, patching, and
maintenance
High availability with Multi-AZ
deployments
Scalability with read replicas
Integration with AWS Identity and
Access Management (IAM) for security

Challenges:
Fine-tuning database performance
Managing costs, especially for high-
availability configurations
Ensuring compliance with data

governance policies

4. Amazon Lambda
Description:
AWS Lambda is a serverless compute service that lets you run code without provisioning or managing servers. You pay only for the compute time you consume.

Use Cases:
Real-time file processing
Data transformation
Backend services for mobile and web applications
Automated backups and event-driven workflows

Benefits:
No server management required
Automatic scaling based on the number of requests
Cost-effective with pay-per-use pricing
Seamless integration with other AWS

services

Challenges:
Cold start latency for infrequently used
functions
Debugging and monitoring distributed
applications
Managing function deployment and
versioning

5. Amazon Virtual Private Cloud (Amazon
VPC)
Description:
Amazon VPC allows you to provision a
logically isolated section of the AWS cloud
where you can launch AWS resources in a
virtual network you define. It provides
control over your network settings,
including IP address ranges, subnets,
and routing tables.

Use Cases:
Hosting multi-tier web applications
Running isolated development and test

environments
Creating hybrid cloud architectures
Implementing security and compliance
requirements

Benefits:
Complete control over the virtual
networking environment
Secure communication between AWS
resources and on-premises infrastructure
Fine-grained network security with
security groups and network ACLs
Integration with AWS Direct Connect
for private connectivity

Challenges:
Designing and managing complex network
configurations
Ensuring network security and monitoring
traffic
Managing costs associated with data
transfer and VPC components

6. Amazon Elastic Block Store (Amazon

EBS)

Description:
Amazon EBS provides persistent block storage volumes for use with Amazon EC2 instances. Each EBS volume is automatically replicated within its Availability Zone to protect from component failure.

Use Cases:
Databases
Enterprise applications
Containerized workloads
Big data analytics

Benefits:
High performance for both throughput and IOPS-intensive workloads
Scalable storage that can be dynamically resized
Backup and restore capabilities with snapshots
Consistent low-latency

performance

Challenges:
Managing and optimizing storage costs
Ensuring data durability and backup
strategies
Performance tuning based on workload
requirements

7. Amazon CloudFront
Description:
Amazon CloudFront is a fast content
delivery network (CDN) service that
securely delivers data, videos,
applications, and APIs to customers
globally with low latency and high
transfer speeds.

Use Cases:
Accelerating static and dynamic content
delivery
Streaming video and audio
Securing and distributing APIs
Serving software

downloads

Benefits:
Global network of edge locations for low-latency content delivery
Integrated with AWS Shield for DDoS protection
Pay-as-you-go pricing model
Real-time metrics and logs for monitoring

Challenges:
Configuring and managing CDN settings
Ensuring content security and compliance
Optimizing costs based on data transfer and request pricing

8. AWS Identity and Access Management (IAM)
Description:
AWS IAM enables you to manage access to AWS services and resources securely. You can create and manage AWS users and groups, and use permissions to allow and deny their access to AWS

resources.

Use Cases:
Controlling access to AWS resources
Managing user permissions and roles
Enforcing security policies
Auditing and monitoring access

Benefits:
Fine-grained access control to AWS
resources
Integration with multi-factor
authentication (MFA) for added security
Centralized management of users, roles,
and permissions
Compliance with security standards and
regulations

Challenges:
Managing and organizing complex
permission structures
Ensuring least-privilege access across the
organization
Keeping track of changes and auditing
access