

Table of Content

1	Intro to AWS Migration.....	8
1.1	Why Migrate to AWS:	8
1.2	AWS Migration Process:.....	8
2	AWS Migration Tools	9
2.1	AWS Server Migration Service (SMS):.....	9
2.2	AWS Database Migration Service (DMS):	9
2.3	AWS Snowball:	9
2.4	AWS Migration Hub:	9
2.5	Cloud Endure Migration:.....	10
2.6	AWS Data Sync:	10
2.7	AWS Server less Application Model (SAM):	10
2.8	AWS Migration and Transfer Service:	10
	AWS Cloud Adoption Framework (AWS CAF)	12
1	AWS Cloud Adoption Framework (AWS CAF)	12
2	Key Components and Characteristics:	12
2.1	Foundational Guidance:.....	12
2.2	Perspectives:	12
2.3	Six Perspectives:.....	12
2.4	Maturity Continuum:	13
2.5	Principles and Best Practices:	13
2.6	Organizational Change:.....	13
2.7	Prescriptive Guidance:	13
2.8	Flexibility:	13
3	Purpose:	13

3.1	Accelerate Cloud Adoption:	13
3.2	Mitigate Risks:	13
3.3	Align Business and IT Objectives:	13
3.4	Enable Cross-Functional Collaboration:	14
3.5	Improve Maturity:	14
4	Transformation Domains	14
4.1	Business Transformation:	14
4.2	People Transformation:	14
4.3	Governance Transformation:	15
4.4	Technology Transformation:	15
5	ITERATIVE AND INCREMENTAL Cloud Transformation Phases	15
5.1	Envision:	15
5.2	Align:	16
5.3	Launch:	16
5.4	Scale:	16
	The 6 R's of migration	17
1	The 6 R's of migration	17
1.1	Rehost (Lift and Shift):	17
1.2	Replatform (Lift, Tinker, and Shift):	17
1.3	Refactor (Rearchitect):	17
1.4	Rearchitect:	17
1.5	Retain:	17
1.6	Retire:	18
	Six core perspectives of the Cloud Adoption Framework	19
2	Six core perspectives of the Cloud Adoption Framework	19
2.1	Business Perspective:	19

2.2	People Perspective:.....	19
2.3	Governance Perspective:	19
2.4	Platform Perspective:.....	20
2.5	Security Perspective:.....	20
2.6	Operations Perspective:.....	20
AWS Application Discovery Service		21
1	AWS Application Discovery Service:	21
2	Key Features:.....	21
2.1	Data Collection:.....	21
2.2	Data Exploration:	21
2.3	Data Export:	21
2.4	Integration:	21
3	Advanced Features:	21
3.1	Secure Data Handling:.....	22
4	Benefits:	22
4.1	Informed Migration:	22
4.2	Reduced Downtime:	22
4.3	Cost Efficiency:	22
AWS Application Migration Service		23
1	AWS Application Migration Service	23
2	Core Features:.....	23
2.1	LiftandShift Approach:	23
2.2	Continuous Data Replication:	23
2.3	Diverse Source Support:.....	23
2.4	Wide OS Compatibility:	23
3	Benefits of AWS Application Migration Service:.....	24

3.1	Minimal Downtime:	24
3.2	Cost Savings:	24
3.3	User Friendly:	24
3.4	Geographical Flexibility:.....	24
AWS Migration Hub		25
1	AWS Migration Hub	25
2	Key Benefits:	25
2.1	Unified View:.....	25
2.2	Flexibility:	25
2.3	Cost Efficiency:	25
3	Core Features	26
3.1	Centralized Tracking:.....	26
3.2	Integration with AWS Services:.....	26
3.3	Application Discovery:	26
3.4	Understanding Dependencies:.....	26
3.5	Recommendations & Insights:	26
4	Additional Details:	27
4.1	Holistic Migration Management:	27
4.2	Data Flow and Collaboration:	27
4.3	Informed Decision Making:.....	27
4.4	Continuous Improvement:	27
AWS Schema Conversion Tool (AWS SCT)		28
1	AWS Schema Conversion Tool (AWS SCT)	28
2	Key Benefits:	28
2.1	Automatic Conversion:	28
2.2	Migration Support:.....	28

2.3	Comprehensive Analysis:	28
3	Use Cases:	28
3.1	RDBMS to AWS Aurora Migration:.....	29
3.2	On Premises to Cloud Migration:.....	29
3.3	Cross Database Engine Migration:	29
4	Core Features of AWS Schema Conversion Tool (AWS SCT):.....	29
4.1	Application Adaptation:	29
4.2	Data Warehouses Migration:.....	29
4.3	NoSQL Transitions:.....	29
4.4	Custom Rules:	30
5	Cost:	30
5.1	AWS SCT is Free:	30
	AWS Transfer Family	31
1	AWS Transfer Family	31
2	Key Benefits:	31
2.1	Multiple Protocols Support:.....	31
2.2	Hassle Free Migration:	31
2.3	Direct Integration:.....	31
2.4	Managed by AWS:.....	31
3	Core Features:.....	32
3.1	Flexible Authentication:	32
3.2	Monitoring & Logging:	32
3.3	Global Availability:	32
4	Security:	32
4.1	IAM Integration:.....	32
4.2	Encrypted Transfers:	33

AWS Snow Family.....	34
1 AWS Snow Family.....	34
2 Key Features:.....	34
2.1 Petabyte Scale Data Movement:	34
2.2 Low Cost Devices for Offline Data Transfer:	34
2.3 Rentable Snow Devices:	34
2.4 Security and Ruggedization:.....	34
2.5 Variety of Options:	35
2.6 Rigorous Testing in Extreme Conditions:	35
3 AWS Snow cone:	35
4 Key Features:.....	35
4.1 Portability and Edge Computing:	35
4.2 Ruggedized Design:	36
4.3 Secure Data Handling:.....	36
4.4 Reliable Offline Transfer:	36
4.5 Versatile Deployment:	36
5 AWS Snowball:	36
6 Key Features:.....	37
6.1 High Speed Data Transfer:	37
6.2 No Storage or Processing Power Restrictions:	37
6.3 Offline or Distant Storage Transfers:	37
6.4 Edge Computing Support:	37
6.5 Ruggedized Chassis and Tamper Evident Box:	37
7 AWS Snowmobile:.....	38
8 Key Features:.....	38
8.1 Exabyte Scale Data Migration:	38

8.2	Massive Data Transfer Capacity:.....	38
8.3	Versatile Data Transfer Scenarios:.....	38
8.4	Secure, Quick, and Economical:.....	39
	Quiz Study Material	40
1	MCQ 1 Explanation	40
1.1	Leverage Managed Services:.....	40
1.2	Explore Server less Computing:	40
1.3	Utilize AWS Support Plans:	40
1.4	Implement Infrastructure as Code (IaC):	40
1.5	Training and Skill Development:	41
1.6	Collaborate with AWS Partners:	41
1.7	Monitoring and Automation:.....	41

Intro to AWS Migration

1 Intro to AWS Migration

Amazon Web Services (AWS) migration refers to the process of moving an organization's IT infrastructure, applications, and data from on premises environments or other cloud providers to the AWS cloud platform. Migration to AWS offers businesses the opportunity to leverage scalable and flexible cloud services, enabling cost savings, improved performance, and increased agility.

1.1 Why Migrate to AWS:

- **Scalability:** AWS provides the ability to scale resources up or down based on demand, allowing organizations to adapt quickly to changing workloads.
- **Cost Savings:** By migrating to AWS, organizations can often reduce capital expenses associated with maintaining on premises hardware.
- **Global Reach:** AWS has a global network of data centers, enabling organizations to deploy applications closer to end-users for reduced latency and improved performance.
- **Innovation:** AWS offers a wide range of services, including artificial intelligence, machine learning, analytics, and Internet of Things (IoT), enabling organizations to innovate rapidly.

1.2 AWS Migration Process:

- **Discovery and Planning:** Assess current IT assets, applications, and dependencies. Plan the migration strategy and choose the appropriate migration method.
- **Server and Data Migration:** Execute the migration plan, moving servers, databases, and data to AWS.
- **Application Migration:** Adapt applications to run efficiently in the cloud, considering factors like scalability, fault tolerance, and security.
- **Validation and Testing:** Ensure that migrated applications and data work as expected through thorough testing.
- **Optimization:** Optimize the environment post migration to leverage AWS features and achieve cost savings.

2 AWS Migration Tools

Amazon Web Services (AWS) provides a range of tools and services to facilitate different aspects of the migration process. These tools help organizations migrate their applications, databases, and other workloads to AWS efficiently.

Here are some primary AWS migration tools:

2.1 AWS Server Migration Service (SMS):

- **Purpose:** Automates the migration of on premises virtual machines (VMs) to AWS.
- **Key Features:**
 - Supports VMware and Microsoft Hyper-V environments.
 - Incremental replication for ongoing changes.
 - Schedule and orchestrate server migrations.

2.2 AWS Database Migration Service (DMS):

- **Purpose:** Facilitates the migration of databases to AWS.
- **Key Features:**
 - Supports homogeneous and heterogeneous database migrations.
 - Continuous data replication with minimal downtime.
 - Compatible with various database engines, including MySQL, PostgreSQL, Oracle, SQL Server, and others.

2.3 AWS Snowball:

- **Purpose:** Facilitates largescale data transfer to and from AWS using physical devices.
- **Key Features:**
 - Secure and durable data transport.
 - Supports importing and exporting data in and out of the AWS Cloud.
 - Available in both standard and edge configurations.

2.4 AWS Migration Hub:

- **Purpose:** Provides a central location to track the progress of application migrations across multiple AWS and partner solutions.
- **Key Features:**

- Real-time visibility into the status of application migrations.
- Integration with other migration tools and services.
- Streamlined migration management.

2.5 Cloud Endure Migration:

- **Purpose:** An automated migration service that simplifies largescale migrations.
- **Key Features:**
 - Continuous, block level replication of source machines.
 - Near zero downtime during cutover.
 - Supports a wide range of source environments, including physical, virtual, and cloud.

2.6 AWS Data Sync:

- **Purpose:** Enables fast and secure online data transfer between on premises storage and Amazon S3.
- **Key Features:**
 - Optimize and accelerate data transfers.
 - Supports bandwidth throttling and scheduling.
 - Integrates with AWS Key Management Service (KMS) for data encryption.

2.7 AWS Server less Application Model (SAM):

- **Purpose:** A framework for building server less applications on AWS.
- **Key Features:**
 - Simplifies the deployment of server less applications.
 - Extends AWS Cloud Formation to provide a simplified way of defining Amazon API Gateway APIs, AWS Lambda functions, and Amazon Dynamo DB tables.

2.8 AWS Migration and Transfer Service:

- **Purpose:** A suite of services to help customers migrate data to AWS efficiently.
- **Key Components:**
 - AWS Data Sync: For online data transfer.
 - AWS Snowball: For largescale data transfer.
 - AWS Snowmobile: For massive data transfer in Exabyte scale.

These tools are designed to address various migration scenarios and requirements. Organizations often choose a combination of these tools based on their specific needs and the nature of the workloads being migrated. It is important to consult the official AWS documentation and consider factors such as data transfer speeds, downtime tolerance, and compatibility when selecting migration tools.

AWS Cloud Adoption Framework (AWS CAF)

1 AWS Cloud Adoption Framework (AWS CAF)

The AWS Cloud Adoption Framework (AWS CAF) is a set of guidelines, best practices, and strategies developed by Amazon Web Services (AWS) to help organizations plan and execute their journey to the cloud effectively. It provides a structured approach to cloud adoption, addressing not only the technical aspects but also organizational, business, and cultural considerations.

The primary purpose of the AWS Cloud Adoption Framework is to assist organizations in achieving their business objectives through successful cloud adoption.

2 Key Components and Characteristics:

2.1 Foundational Guidance:

AWS CAF offers foundational guidance for organizations at different stages of their cloud adoption journey. It provides a framework that helps organizations align their business objectives with technical strategies.

2.2 Perspectives:

It considers multiple perspectives, including business, people, governance, and platform aspects, to ensure a holistic and well-rounded approach to cloud adoption.

2.3 Six Perspectives:

AWS CAF is organized into six perspectives, each addressing specific areas:

- **Business Perspective:** Aligning cloud adoption with business goals.
- **People Perspective:** Addressing organizational culture, skills, and roles.
- **Governance Perspective:** Establishing governance, policies, and controls.
- **Platform Perspective:** Focusing on the technical aspects of the cloud platform.
- **Security Perspective:** Integrating security considerations throughout the adoption process.
- **Operations Perspective:** Ensuring effective operations in the cloud environment.

2.4 Maturity Continuum:

AWS CAF introduces a maturity continuum that helps organizations assess their current state of cloud adoption maturity and identify areas for improvement.

2.5 Principles and Best Practices:

It outlines principles and best practices to guide decision making and actions across various perspectives.

2.6 Organizational Change:

Recognizes the importance of organizational change management and provides guidance on managing the cultural shift associated with cloud adoption.

2.7 Prescriptive Guidance:

Offers prescriptive guidance in the form of whitepapers, frameworks, and tools to help organizations implement best practices.

2.8 Flexibility:

Recognizes that every organization is unique and provides flexibility in applying the framework according to specific business requirements.

3 Purpose:

3.1 Accelerate Cloud Adoption:

AWS CAF is designed to accelerate cloud adoption by providing organizations with a structured approach to planning and implementing their cloud strategies.

3.2 Mitigate Risks:

Helps organizations identify and mitigate risks associated with cloud adoption, ensuring a secure and compliant transition.

3.3 Align Business and IT Objectives:

Aligns business objectives with IT strategies, ensuring that cloud adoption contributes directly to organizational goals.

3.4 Enable Cross-Functional Collaboration:

Facilitates collaboration among business leaders, IT teams, security professionals, and other stakeholders by providing a common framework and language.

3.5 Improve Maturity:

Guides organizations in improving their maturity in cloud adoption, helping them progress along the continuum from initial stages to advanced, and optimized cloud practices.

4 Transformation Domains

Four transformation domains collectively address different aspects of an organization's cloud adoption journey. These domains provide a structured approach to organizing and understanding the key elements involved in a cloud transformation.

The four transformation domains are:

4.1 Business Transformation:

- **Purpose:** Aligning cloud adoption with business objectives and outcomes.
- **Key Focus Areas:**
 - Defining business goals and drivers for cloud adoption.
 - Identifying key performance indicators (KPIs) to measure success.
 - Aligning cloud initiatives with organizational strategy.
 - Building a business case for cloud adoption.

4.2 People Transformation:

- **Purpose:** Addressing the organizational and cultural aspects of cloud adoption.
- **Key Focus Areas:**
 - Assessing and developing the skills and competencies required for the cloud.
 - Defining new roles and responsibilities in the cloud-operating model.
 - Implementing change management strategies to address cultural shifts.
 - Fostering a culture of innovation, collaboration, and continuous learning.

4.3 Governance Transformation:

- **Purpose:** Establishing governance, policies, and controls for cloud adoption.
- **Key Focus Areas:**
 - Defining cloud governance principles and policies.
 - Establishing a cloud governance model and organizational structure.
 - Implementing mechanisms for cost management and optimization.
 - Ensuring compliance with regulatory and security requirements.

4.4 Technology Transformation:

- **Purpose:** Focusing on the technical aspects of adopting cloud platforms and services.
- **Key Focus Areas:**
 - Selecting appropriate cloud services and architectures.
 - Implementing solutions for scalability, resilience, and high availability.
 - Integrating security best practices into the architecture.
 - Optimizing the use of cloud native features and services.

Each transformation domain addresses a specific dimension of the overall cloud adoption process. Successful cloud adoption involves a holistic approach that encompasses not only technological considerations but also the alignment of business goals, organizational culture, and governance practices. By addressing these four domains, organizations can navigate the complexities of cloud transformation and drive meaningful, sustainable change across their entire ecosystem.

5 ITERATIVE AND INCREMENTAL Cloud Transformation Phases

AWS Cloud Adoption Framework then recommends a set of four iterative and incremental Cloud transformation phases.

5.1 Envision:

- **Purpose:** Define the vision and objectives for cloud adoption.
- **Key Activities:**
 - Establish a clear understanding of business goals and outcomes.

- Define the strategic reasons for adopting cloud services.
- Identify key stakeholders and their expectations.

5.2 Align:

- **Purpose:** Align the organization with cloud adoption goals.
- **Key Activities:**
 - Align business and IT stakeholders on cloud adoption objectives.
 - Develop a comprehensive cloud adoption strategy.
 - Assess the organization's readiness and potential challenges.

5.3 Launch:

- **Purpose:** Initiate the practical aspects of cloud adoption.
- **Key Activities:**
 - Develop a detailed migration plan and execution strategy.
 - Start migrating workloads to the cloud.
 - Implement foundational cloud services and governance.

5.4 Scale:

- **Purpose:** Expand and optimize cloud adoption across the organization.
- **Key Activities:**
 - Expand the migration to additional workloads.
 - Optimize operations for efficiency and cost-effectiveness.
 - Implement continuous improvement processes.
 - Scale cloud adoption across the organization.

The 6 R's of migration

1 The 6 R's of migration

The six R's of migration refer to six strategies or approaches that organizations can consider when planning and executing the migration of applications and workloads to the cloud. Each "R" represents a different strategy for handling existing applications and determining the most appropriate path for migration. The six R's are:

1.1 Rehost (Lift and Shift):

- Description: Move existing applications to the cloud without making significant changes.
- Purpose: Quick migration with minimal modification, suitable for applications with a short lifespan or those that do not require significant changes.

1.2 Replatform (Lift, Tinker, and Shift):

- Description: Make some adjustments to applications for better performance or cost optimization during migration.
- Purpose: Optimize applications for the cloud environment without a complete overhaul, balancing between speed and optimization.

1.3 Refactor (Rearchitect):

- Description: Restructure or rewrite applications to take full advantage of cloud native features.
- Purpose: Achieve better performance, scalability, and cost efficiency by adapting applications to leverage cloud native services and architectures.

1.4 Rearchitect:

- Description: Redesign applications from scratch to fully exploit cloud capabilities.
- Purpose: Transform applications to be entirely cloud native, taking advantage of server less computing, micro services, and other modern cloud paradigms.

1.5 Retain:

- Description: Keep existing applications in their current state without migrating.
- Purpose: Suitable for applications that are not cost-effective or feasible to migrate due to various constraints.

1.6 Retire:

- Description: Decommission or phase out applications that are no longer needed.
- Purpose: Eliminate unnecessary applications to reduce complexity and costs.

The 6 R's provide a framework for organizations to assess their application portfolio and determine the most appropriate migration strategy for each application. The choice of strategy depends on factors such as application complexity, business requirements, and the desired outcomes of the migration. It allows organizations to tailor their migration approach to achieve a balance between speed, cost effectiveness, and optimization.

Six core perspectives of the Cloud Adoption Framework

2 Six core perspectives of the Cloud Adoption Framework

The AWS Cloud Adoption Framework (CAF) is organized into six core perspectives, each addressing specific aspects of cloud adoption. These perspectives provide a holistic approach to cloud adoption, covering various dimensions that organizations need to consider.

The six core perspectives are:

2.1 Business Perspective:

- **Focus:** Aligning cloud adoption with business goals and outcomes.
- **Key Aspects:**
 - Defining business goals and drivers for cloud adoption.
 - Establishing a clear understanding of how cloud adoption contributes to business success.
 - Identifying key performance indicators (KPIs) to measure the impact of cloud adoption on business outcomes.

2.2 People Perspective:

- **Focus:** Addressing the organizational and cultural aspects of cloud adoption.
- **Key Aspects:**
 - Assessing and developing the skills and competencies required for the cloud.
 - Defining new roles and responsibilities in the cloud-operating model.
 - Implementing change management strategies to address cultural shifts.
 - Fostering a culture of innovation, collaboration, and continuous learning.

2.3 Governance Perspective:

- **Focus:** Establishing governance, policies, and controls for cloud adoption.
- **Key Aspects:**
 - Defining cloud governance principles and policies.
 - Establishing a cloud governance model and organizational structure.

- Implementing mechanisms for cost management and optimization.
- Ensuring compliance with regulatory and security requirements.

2.4 Platform Perspective:

- **Focus:** Focusing on the technical aspects of adopting cloud platforms and services.
- **Key Aspects:**
 - Selecting appropriate cloud services and architectures.
 - Implementing solutions for scalability, resilience, and high availability.
 - Integrating security best practices into the architecture.
 - Optimizing the use of cloud native features and services.

2.5 Security Perspective:

- **Focus:** Integrating security considerations throughout the cloud adoption process.
- **Key Aspects:**
 - Implementing security controls and best practices.
 - Conducting risk assessments and ensuring compliance.
 - Establishing identity and access management (IAM) policies.
 - Incorporating encryption and data protection measures.

2.6 Operations Perspective:

- **Focus:** Ensuring effective operations in the cloud environment.
- **Key Aspects:**
 - Implementing cloud operations best practices.
 - Monitoring and managing the performance and health of cloud resources.
 - Establishing incident response and recovery procedures.
 - Implementing continuous improvement processes.

These perspectives provide a comprehensive framework for organizations to plan, execute, and optimize their cloud adoption journey. By considering each perspective, organizations can address the multidimensional nature of cloud adoption and ensure a well-rounded approach that aligns with business objectives and technical requirements.

AWS Application Discovery Service

1 AWS Application Discovery Service:

Aids in migration projects by providing crucial insights into on premises data centers. Reveals connections between applications and their dependencies, facilitating a comprehensive understanding of the existing infrastructure.

2 Key Features:

2.1 Data Collection:

- Gathers detailed information about servers and applications.
- Utilizes both agent based and agentless methods for data collection, ensuring flexibility in different environments.

2.2 Data Exploration:

- Provides in-depth infrastructure data, including server configurations and application details.
- Offers insights into server performance, helping organizations assess resource utilization.

2.3 Data Export:

- Supports seamless export of discovered data to AWS migration tools.
- Allows export as CSV for custom analysis, providing flexibility in data utilization.

2.4 Integration:

- Facilitates centralized migration views through AWS Migration Hub.
- Enhances coordination and collaboration by providing a single location for tracking migration progress.

3 Advanced Features:

3.1 Secure Data Handling:

- Description: Ensures the security and privacy of user data.
- Key Aspect: Data remains within the user's AWS account and region.
- Security Measure: No external access is allowed without explicit permission.

4 Benefits:

4.1 Informed Migration:

- Description: Enhanced visibility leads to better decision-making in workload migration.
- Key Aspect: Comprehensive insights into dependencies and infrastructure details.
- Outcome: Users can make well-informed decisions throughout the migration process.

4.2 Reduced Downtime:

- Description: Detailed understanding of dependencies helps minimize disruptions during migration.
- Key Aspect: Insights into application interrelationships and dependencies.
- Outcome: Enables organizations to plan and execute migrations with minimal impact on operations.

4.3 Cost Efficiency:

- Description: Identifies underused resources, contributing to potential cost savings in the cloud.
- Key Aspect: Comprehensive data on server performance and resource utilization.
- Outcome: Allows organizations to optimize resource allocation, leading to increased cost efficiency.

These advanced features and associated benefits emphasize the focus on security, decision support, operational continuity, and cost optimization. AWS Application Discovery Service not only aids in migration planning but also prioritizes security and efficiency throughout the entire process, contributing to a successful and streamlined cloud migration experience.

AWS Application Migration Service

1 AWS Application Migration Service

AWS Application Migration Service is designed to facilitate the seamless migration of applications to AWS, minimizing disruptions while ensuring compatibility and retaining performance.

2 Core Features:

2.1 LiftandShift Approach:

- Description: Enables the migration of applications without making changes to their architecture or code.
- Key Benefit: Streamlines the migration process, reducing the need for extensive modifications.

2.2 Continuous Data Replication:

- Description: Utilizes continuous data replication to transfer source machines to a staging area in AWS.
- Key Benefit: Achieves migration with zero downtime, ensuring business continuity.

2.3 Diverse Source Support:

- Description: Supports migration from various sources, including physical servers, virtual machines, and other cloud infrastructures.
- Key Benefit: Offers flexibility in migration scenarios, accommodating diverse IT environments.

2.4 Wide OS Compatibility:

- Description: Compatible with a broad range of operating systems, including Windows and Linux.
- Key Benefit: Ensures compatibility with different application stacks and environments.

3 Benefits of AWS Application Migration Service:

3.1 Minimal Downtime:

- Description: Enables seamless migrations, allowing businesses to remain operational throughout the migration process.
- Key Advantage: Minimizes disruptions to business operations, ensuring continuous availability.

3.2 Cost Savings:

- Description: Evades the costs associated with conventional migration tools.
- Key Advantage: Provides a cost-effective solution for application migration, contributing to overall savings.

3.3 User Friendly:

- Description: The automated migration process reduces manual steps and potential errors.
- Key Advantage: Enhances the ease of use and efficiency by automating repetitive tasks, reducing the risk of human error.

3.4 Geographical Flexibility:

- Description: Allows businesses to migrate to any AWS region based on compliance, proximity, and cost needs.
- Key Advantage: Offers flexibility in choosing the AWS region that best aligns with regulatory requirements, proximity to users, and cost considerations.

These benefits collectively position AWS Application Migration Service as a solution that not only simplifies the migration process but also adds value by minimizing downtime, reducing costs, and providing flexibility in geographical choices.

AWS Migration Hub

1 AWS Migration Hub

AWS Migration Hub is a centralized service provided by Amazon Web Services, strategically designed to streamline and expedite the migration process for applications, data, and workloads to the AWS Cloud.

2 Key Benefits:

2.1 Unified View:

- **Description:** Offers a consolidated and centralized view of the migration status across various tools.
- **Key Advantage:** Reduces the need for tracking progress in multiple places, providing a unified and comprehensive overview.

2.2 Flexibility:

- **Description:** Allows seamless integration and transition between various AWS migration tools and third-party partner solutions.
- **Key Advantage:** Provides flexibility to choose and adapt tools based on specific migration requirements, optimizing the migration strategy.

2.3 Cost Efficiency:

- **Description:** Utilizing AWS Migration Hub comes at no additional charge.
- **Key Advantage:** Users pay only for the migration tools and AWS resources they consume, ensuring cost efficiency in the migration process.

AWS Migration Hub serves as a pivotal tool for organizations seeking a streamlined, cost effective, and flexible approach to managing and tracking their migration projects to the AWS Cloud. By offering a unified view and integrating with various migration tools, it provides a comprehensive solution for effective migration management.

3 Core Features

3.1 Centralized Tracking:

- **Monitor Progress:**
- **Description:** AWS Migration Hub allows users to monitor the progress of all migrations from a centralized dashboard.
- **Key Benefit:** Streamlines tracking, providing a unified view of the status of various migration activities.

3.2 Integration with AWS Services:

- **Connectivity with AWS Services:**
- **Description:** Integrates seamlessly with various AWS services, including AWS Application Discovery Service, AWS Database Migration Service, and others.
- **Key Benefit:** Enables a cohesive and interconnected migration ecosystem, facilitating data flow and collaboration between different AWS services.

3.3 Application Discovery:

- **Identification of On Premises Applications:**
- **Description:** Utilizes services like AWS Application Discovery Service to identify on premises applications.
- **Key Benefit:** Gathers comprehensive information about on premises applications, setting the foundation for informed migration decisions.

3.4 Understanding Dependencies:

- **Description:** Provides insights into the dependencies of on premises applications.
- **Key Benefit:** Enables organizations to understand the intricacies of application interrelationships, essential for planning successful migrations.

3.5 Recommendations & Insights:

- **Data Driven Guidance:**
- **Description:** Offers data driven guidance for optimizing migrations.
- **Key Benefit:** Provides actionable insights based on data analysis, assisting in making informed decisions for efficient and optimized migrations.

- **Post Migration Improvements:**
- Description: Suggests recommendations for post migration improvements.
- Key Benefit: Guides organizations in making enhancements after migration, ensuring continuous optimization and efficiency.

4 Additional Details:

4.1 Holistic Migration Management:

Centralized tracking extends to cover all aspects of the migration process, fostering effective management and coordination.

4.2 Data Flow and Collaboration:

Integration with various AWS services fosters seamless data flow and collaboration, creating a unified ecosystem for migration activities.

4.3 Informed Decision Making:

The combination of application discovery and dependency insights ensures that migration decisions are well informed and consider the complete application landscape.

4.4 Continuous Improvement:

The provision of recommendations and insights supports a culture of continuous improvement, guiding organizations in optimizing their migrations and post migration operations.

AWS Migration Hub's capabilities in centralized tracking, integration with AWS services, application discovery, and data driven recommendations contribute to a comprehensive and efficient approach to managing the migration lifecycle. The service enhances visibility, collaboration, and decision making throughout the migration journey.

AWS Schema Conversion Tool (AWS SCT)

1 AWS Schema Conversion Tool (AWS SCT)

AWS Schema Conversion Tool (AWS SCT) is a solution provided by Amazon Web Services, designed to aid in the migration of relational databases, data warehouses, and NoSQL databases to AWS. It achieves this by converting database schemas to formats that are compatible with the target AWS databases.

2 Key Benefits:

2.1 Automatic Conversion:

- Description: AWS SCT automatically converts source database schemas to formats that are compatible with the target AWS databases.
- Key Benefit: Streamlines the migration process by automating the conversion of database schemas, reducing manual effort.

2.2 Migration Support:

- Description: Beyond schema conversion, AWS SCT supports data migration by integrating with AWS Database Migration Service (DMS).
- Key Benefit: Provides end-to-end migration support, ensuring a comprehensive solution for moving both schema and data to AWS.

2.3 Comprehensive Analysis:

- Description: AWS SCT offers detailed reports on conversion readiness, indicating what can be automatically converted and what requires manual handling.
- Key Benefit: Provides insights into the complexity of the migration, helping users make informed decisions and allocate resources effectively.

3 Use Cases:

3.1 RDBMS to AWS Aurora Migration:

AWS SCT is commonly used to convert schemas from traditional relational database management systems (RDBMS) to AWS Aurora, a fully managed relational database service.

3.2 On Premises to Cloud Migration:

Supports migration initiatives from on premises databases to AWS, ensuring compatibility and optimization for the cloud environment.

3.3 Cross Database Engine Migration:

Enables the migration of databases across different database engines, promoting flexibility in technology choices.

AWS SCT plays a pivotal role in simplifying and expediting the migration process to AWS by automating schema conversion and supporting data migration. Its ability to provide detailed analysis reports enhances transparency and supports informed decision-making throughout the migration journey.

4 Core Features of AWS Schema Conversion Tool (AWS SCT):

4.1 Application Adaptation:

- **Description:** Scans application source code to analyze and adapt SQL statements, making them compatible with the target database.
- **Key Benefit:** Ensures that not only the schema but also the application code is adapted for seamless compatibility with the chosen database.

4.2 Data Warehouses Migration:

- **Description:** Facilitates the migration from on premises data warehouse solutions such as Teradata or Netezza to Amazon Redshift.
- **Key Benefit:** Optimizes the transition of data warehousing workloads to Amazon Redshift, a fully managed data warehouse service.

4.3 NoSQL Transitions:

- **Description:** Supports the migration from NoSQL databases like MongoDB to Amazon Document DB, a managed NoSQL database service.

- Key Benefit: Enables organizations to transition seamlessly from NoSQL to Amazon Document DB, maintaining data integrity.

4.4 Custom Rules:

- Description: Allows for extensibility with user-defined conversion rules, accommodating unique scenarios and specific requirements.
- Key Benefit: Provides flexibility and customization for organizations with specific needs not covered by standard conversion rules.

5 Cost:

5.1 AWS SCT is Free:

- AWS Schema Conversion Tool itself is provided free of charge by AWS.
- **Charges Apply for Associated AWS Services:**
- While AWS SCT is free, charges apply for the associated AWS services that are utilized during the migration process.
- Examples of associated services include AWS Database Migration Service (DMS) for data migration.

AWS SCT, with its core features and cost structure, offers organizations a versatile and adaptable solution for migrating databases to AWS, supporting a variety of use cases and providing customization options for unique scenarios.

AWS Transfer Family

1 AWS Transfer Family

AWS Transfer Family is a fully managed service provided by Amazon Web Services, specifically designed for secure file transfers both into and out of Amazon S3 or Amazon EFS. This service accommodates multiple transfer protocols, making it versatile for different use cases.

2 Key Benefits:

2.1 Multiple Protocols Support:

- Description: Seamlessly supports multiple file transfer protocols, including SFTP (SSH File Transfer Protocol), FTPS (FTP Secure), and FTP (File Transfer Protocol).
- Key Benefit: Enables flexibility and accommodates diverse client requirements by supporting widely used transfer protocols.

2.2 Hassle Free Migration:

- Description: Facilitates transition without the need to change existing operations or workflows.
- Key Benefit: Ensures a smooth migration process, allowing organizations to adopt the service without significant disruptions.

2.3 Direct Integration:

- Description: Integrates directly with Amazon S3 buckets and Amazon EFS file systems.
- Key Benefit: Enables direct and efficient file transfers to and from these storage solutions, streamlining data movement within the AWS ecosystem.

2.4 Managed by AWS:

- Description: Fully managed service by AWS, alleviating the need for users to handle scaling, patching, or maintenance tasks.
- Key Benefit: Allows organizations to focus on their core operations, as AWS takes care of the operational aspects of the file transfer service.

AWS Transfer Family provides organizations with a secure, scalable, and managed solution for file transfers, supporting various protocols and seamlessly integrating with AWS storage solutions. Its fully managed nature allows organizations to leverage the service without the burden of operational overhead.

3 Core Features:

3.1 Flexible Authentication:

- Description: Provides a range of identity solutions for authentication, allowing users to choose the most suitable method for their file transfer needs.
- Key Aspect: Offers flexibility in user authentication, accommodating various identity and access management scenarios.

3.2 Monitoring & Logging:

- Description: Incorporates Amazon Cloud Watch for activity tracking, monitoring, and logging of file transfer operations.
- Key Aspect: Enables organizations to gain insights into transfer activities, ensuring visibility and accountability.

3.3 Global Availability:

- Description: Utilizes AWS's expansive infrastructure for widespread data transfers, ensuring global availability and efficient data movement.
- Key Aspect: Leverages the global presence of AWS to optimize the reach and speed of file transfers across regions.

4 Security:

4.1 IAM Integration:

- Description: Integrates with AWS Identity and Access Management (IAM), providing secure role based access control for data access.

- Key Aspect: Ensures that access to data is governed by IAM policies, enhancing security through well-defined roles and permissions.

4.2 Encrypted Transfers:

- Description: Ensures data integrity and privacy during transfers by supporting encryption for data in transit.
- Key Aspect: Enhances security by encrypting the data as it moves between the client and AWS Transfer Family, safeguarding against unauthorized access.

AWS Transfer Family's core features emphasize security, flexibility, and scalability, making it a robust solution for organizations with diverse file transfer needs. The integration with AWS services enhances its capabilities, providing a secure and efficient file transfer service within the AWS ecosystem.

AWS Snow Family

1 AWS Snow Family

The AWS Snow Family is a suite of physical devices designed to facilitate the movement and processing of large amounts of data at the edge, addressing scenarios where offline data transfer is more practical or cost effective. The primary goal of the Snow Family is to create low-cost devices that enable users to move their data offline, particularly for organizations dealing with petabytes of data.

2 Key Features:

2.1 Petabyte Scale Data Movement:

- Description: Capable of moving and processing petabytes of data at the edge.
- Key Benefit: Addresses the challenges of handling extremely large datasets by providing efficient and scalable offline data transfer solutions.

2.2 Low Cost Devices for Offline Data Transfer:

- Description: Aims to create cost-effective devices that enable offline data transfer.
- Key Benefit: Provides a practical solution for organizations looking to move significant amounts of data without relying solely on online data transfer methods.

2.3 Rentable Snow Devices:

- Description: Users can rent a Snow device to facilitate the secure and efficient transfer of their data to the cloud.
- Key Benefit: Offers a convenient and flexible approach to data transfer, allowing users to leverage AWS Snow devices on a temporary basis as needed

2.4 Security and Ruggedization:

- Description: Integrates high levels of security and ruggedization into compute and storage devices.
- Key Benefit: Ensures the safety and integrity of data during transit, even in challenging environments or extreme conditions.

2.5 Variety of Options:

- Description: Offers a variety of device options, including optimization for space or weight constraints, portability, and flexible networking options.
- Key Benefit: Provides organizations with the flexibility to choose the Snow device that best fits their specific requirements and constraints.

2.6 Rigorous Testing in Extreme Conditions:

- Description: Snow devices undergo rigorous testing in the extreme conditions.
- Key Benefit: Ensures the reliability and performance of the devices, even in harsh environments, supporting data transfer in diverse scenarios.

The AWS Snow Family serves as a practical solution for organizations facing challenges related to the scale and logistics of data movement, providing them with versatile, secure, and ruggedized devices to facilitate offline transfers to the cloud.

3 AWS Snow cone:

AWS Snow cone is a highly portable edge computing and data transport device, representing the most compact and portable member of the AWS Snow Family. It is specifically designed for use outside of conventional data centers, providing a ruggedized, secure, and reliable solution for scenarios where data needs to be gathered, processed, and transferred in challenging or remote environments.

4 Key Features:

4.1 Portability and Edge Computing:

- Description: Extremely portable, designed for edge computing, and provides computation, storage, and network accessibility in a small form factor.
- Key Benefit: Enables users to deploy computing resources nearly anywhere, bringing processing capabilities closer to the data source.

4.2 Ruggedized Design:

- Description: Built with a ruggedized design to withstand challenging environmental conditions.
- Key Benefit: Ensures the device's reliability and performance even in harsh and demanding situations, making it suitable for field deployments.

4.3 Secure Data Handling:

- Description: Incorporates security features to handle data securely during gathering, processing, and transfer.
- Key Benefit: Maintains the confidentiality and integrity of data, aligning with AWS's commitment to data security.

4.4 Reliable Offline Transfer:

- Description: Data can be gathered, processed, and either shipped to AWS for offline transfer or transferred using AWS Data Sync.
- Key Benefit: Provides flexibility in data transfer options, allowing users to choose the most suitable method based on their requirements and connectivity constraints.

4.5 Versatile Deployment:

- Description: Users can deploy the portable Snow cone device nearly anywhere, providing computation, storage, and network accessibility.
- Key Benefit: Offers versatility in deployment scenarios, enabling users to bring computing capabilities to remote locations or edge environments.

AWS Snow cone is positioned as a versatile and reliable solution for edge computing and data transport in scenarios where conventional data center infrastructure is impractical or unavailable. Its small size, rugged design, and security features make it suitable for a wide range of use cases, providing organizations with the ability to extend their computing capabilities to the edge.

5 AWS Snowball:

AWS Snowball is a service designed to facilitate the quick and secure transfer of large volumes of data to the cloud. It is particularly useful for scenarios where there are limitations on storage or processing

power and when there is a need to expedite the transfer of data from offline or distant storage locations to the cloud.

6 Key Features:

6.1 High Speed Data Transfer:

- Description: Enables the rapid transfer of terabytes of data to the cloud.
- Key Benefit: Facilitates the efficient and timely migration of large datasets, overcoming challenges associated with traditional online transfers.

6.2 No Storage or Processing Power Restrictions:

- Description: Provides the possibility of transferring data quickly to the cloud without restrictions on storage or processing power.
- Key Benefit: Removes limitations on local resources, allowing organizations to move substantial amounts of data without being constrained by on premises infrastructure.

6.3 Offline or Distant Storage Transfers:

- Description: Expedites the transfer of data from offline or distant storage locations to the cloud.
- Key Benefit: Addresses scenarios where data is stored in locations with limited connectivity, making it suitable for remote or isolated environments.

6.4 Edge Computing Support:

- Description: Handles computing tasks with minimal to no connectivity, accelerating application performance in remote, sterile edge locations.
- Key Benefit: Enables organizations to perform computing tasks at the edge, improving application performance even in locations with limited network connectivity.

6.5 Ruggedized Chassis and Tamper Evident Box:

- Description: Snowball features a ruggedized chassis, integrated organization, and tamper evident box to safeguard user data during transit.
- Key Benefit: Ensures the security and integrity of data while it is in transit, providing protection against tampering or unauthorized access.

AWS Snowball addresses the challenges associated with largescale data transfers to the cloud, providing organizations with a practical and secure solution for moving data quickly, even in scenarios where connectivity is limited or nonexistent. Its robust design and security features make it suitable for a variety of use cases across different industries.

7 AWS Snowmobile:

AWS Snowmobile is an Exabyte scale data migration tool designed to transport enormous volumes of data to AWS. A unique and specialized solution involves a semitrailer truck towing a ruggedized 45-foot shipping container. This container is capable of moving up to 100 petabytes (PB) of data, making it an unparalleled option for organizations with massive datasets.

8 Key Features:

8.1 Exabyte Scale Data Migration:

- **Description:** Designed for Exabyte scale data migration, allowing organizations to move extremely large volumes of data to AWS.
- **Key Benefit:** Enables the transfer of data at an unprecedented scale, addressing the needs of organizations with massive datasets.

8.2 Massive Data Transfer Capacity:

- **Description:** The semitrailer truck towing the ruggedized shipping container can move up to 100 petabytes of data.
- **Key Benefit:** Offers an extraordinary level of data transfer capacity, making it suitable for scenarios that involve massive amounts of information, such as video libraries or complete data center migrations.

8.3 Versatile Data Transfer Scenarios:

- **Description:** Facilitates the transfer of massive amounts of data, including video libraries, image repositories, or even entire data center migrations to the cloud.

- Key Benefit: Provides versatility in addressing diverse use cases where traditional online transfer methods may not be practical or efficient.

8.4 Secure, Quick, and Economical:

- Description: Offers a more secure, quick, and economical data transfer solution compared to traditional methods, especially when dealing with Exabyte scale data.
- Key Benefit: Optimizes the data transfer process, ensuring security, speed, and cost effectiveness for organizations moving vast amounts of data to AWS.

AWS Snowmobile stands out as an extraordinary solution for organizations facing the challenge of migrating Exabyte scale datasets to the cloud. Its specialized design and capabilities make it a unique and efficient tool for addressing the data transfer needs of the most substantial datasets in various industries.

Quiz Study Material

1 MCQ 1 Explanation

A company is considering a migration from on premises to the AWS Cloud. The company's IT team needs to offload support of the workload. What should the IT team do to accomplish this goal?

To offload the support of the workload when migrating from on-premises to the AWS Cloud, the IT team should consider the following steps:

1.1 Leverage Managed Services:

Take advantage of AWS's extensive portfolio of managed services. AWS provides fully managed services for various components such as databases, storage, machine learning, and more. By using these managed services, the IT team can offload operational tasks, including routine maintenance, backups, and scaling, to AWS, allowing them to focus more on strategic initiatives.

1.2 Explore Server less Computing:

Consider adopting server less computing, such as AWS Lambda. With server less architectures, the cloud provider takes care of the underlying infrastructure, and developers only need to focus on writing code. This offloads much of the operational burden from the IT team, allowing them to concentrate on application development and business logic.

1.3 Utilize AWS Support Plans:

Subscribe to an appropriate AWS Support plan that aligns with the company's needs. AWS Support plans provide access to AWS experts and resources, which can be valuable in troubleshooting issues, optimizing performance, and getting guidance on best practices. It offloads certain support responsibilities to AWS, ensuring that the IT team has additional support when needed.

1.4 Implement Infrastructure as Code (IaC):

Embrace Infrastructure as Code (IaC) to automate the provisioning and management of infrastructure. Tools like AWS Cloud Formation allow the IT team to define infrastructure-using code, making it easier to replicate environments, maintain consistency, and reduce manual intervention. Automation reduces the need for extensive support and troubleshooting.

1.5 Training and Skill Development:

Invest in training and skill development for the IT team to ensure they have the necessary expertise in AWS services and best practices. This not only enhances their ability to manage workloads in the cloud effectively but also empowers them to leverage cloud-native solutions that require less manual support.

1.6 Collaborate with AWS Partners:

Engage with AWS Partners who specialize in managed services, migrations, and cloud optimization. AWS Partners can provide additional support and expertise, offloading specific responsibilities to them, especially during the migration and post-migration phases.

1.7 Monitoring and Automation:

Implement robust monitoring solutions to proactively identify and address issues. Use automation for tasks such as scaling, backups, and disaster recovery, reducing the manual support effort required to manage the workload.

By following these steps, the IT team can effectively offload the support of the workload to AWS, allowing them to focus on strategic initiatives, innovation, and application development. This shift in operational responsibilities can lead to increased efficiency, scalability, and agility in the cloud environment.