**MIGRATION AND INNOVATION**

**AWS CLOUD ADOPTION FRAMEWORK(AWS CAF)**

At the highest level, the AWS Cloud Adoption Framework (AWS CAF) organises guidance into six areas of focus, called Perspectives. Each Perspective addresses distinct responsibilities. The planning process helps the right people across the organisation prepare for the changes ahead.

**In general, the Business, People, and Governance Perspectives focus on business capabilities, whereas the Platform, Security, and Operations Perspectives focus on technical capabilities.**

**BUSINESS PERSPECTIVE**

The Business Perspective ensures that IT aligns with business needs and that IT investments link to key business results.

Use the Business Perspective to create a **strong business case for cloud adoption and prioritise cloud adoption initiatives**. Ensure that your business strategies and goals align with your IT strategies and goals.

Common roles in the Business Perspective include:

* Business managers
* Finance managers
* Budget owners
* Strategy stakeholders

**PEOPLE PERSPECTIVE**

The People Perspective **supports development of an organisation-wide change management strategy for successful cloud adoption.**

Use the People Perspective to evaluate organisational structures and roles, new skill and process requirements, and identify gaps. This helps prioritise training, staffing, and organisational changes.

Common roles in the People Perspective include:

* Human resources
* Staffing
* People managers

**GOVERNANCE PERSPECTIVE**

The Governance Perspective focuses on the skills and processes to align IT strategy with business strategy. This ensures that you **maximise the business value and minimise risks.**

Use the Governance Perspective to understand how to update the staff skills and processes necessary to ensure business governance in the cloud. Manage and measure cloud investments to evaluate business outcomes.

Common roles in the Governance Perspective include:

* Chief Information Officer (CIO)
* Program managers
* Enterprise architects
* Business analysts
* Portfolio managers

**PLATFORM PERSPECTIVE**

The Platform Perspective includes principles and patterns for i**mplementing new solutions on the cloud, and migrating on-premises workloads to the cloud.**

Use a variety of architectural models to understand and communicate the structure of IT systems and their relationships. Describe the architecture of the target state environment in detail.

**Helps you design,implement, and optimise aws infrastructure**.

Common roles in the Platform Perspective include:

* Chief Technology Officer (CTO)
* IT managers
* Solutions architects

**SECURITY PERSPECTIVE**

The Security Perspective ensures that the organisation **meets security objectives** for visibility, auditability, control, and agility.

Use the AWS CAF to structure the selection and implementation of security controls that meet the organisation’s needs.

Common roles in the Security Perspective include:

* Chief Information Security Officer (CISO)
* IT security managers
* IT security analysts

**OPERATIONS PERSPECTIVE**

The Operations Perspective h**elps you to enable, run, use, operate, and recover IT workloads to the level agreed upon with your business stakeholders.**

Define how day-to-day, quarter-to-quarter, and year-to-year business is conducted. Align with and support the operations of the business. The AWS CAF helps these stakeholders define current operating procedures and identify the process changes and training needed to implement successful cloud adoption.

Common roles in the Operations Perspective include:

* IT operations managers
* IT support managers

**MIGRATION STRATEGIES**

six of the most common migration strategies that you can implement are:

* Rehosting
* Replatforming
* Refactoring/re-architecting
* Repurchasing
* Retaining
* Retiring

**Rehosting**

Rehosting also known as “lift-and-shift” involves moving applications without changes.

In the scenario of a large legacy migration, in which the company is looking to implement its migration and scale quickly to meet a business case, the majority of applications are rehosted.

**Replatforming**

Replatforming, also known as “lift, tinker, and shift,” involves making a few cloud optimizations to realise a tangible benefit. Optimization is achieved without changing the core architecture of the application.

**Refactoring or Re-Architecting**

Refactoring (also known as re-architecting) involves reimagining how an application is architected and developed by using cloud-native features. Refactoring is driven by a strong business need to add features, scale, or performance that would otherwise be difficult to achieve in the application’s existing environment.

**Repurchasing**

Repurchasing involves moving from a traditional licence to a software-as-a-service model.This migration strategy involves moving to a different product.

For example, a business might choose to implement the repurchasing strategy by migrating from a customer relationship management (CRM) system to Salesforce.com.

**Retaining**

Retaining consists of keeping applications that are critical for the business in the source environment. This might include applications that require major refactoring before they can be migrated, or, work that can be postponed until a later time.

**Retiring**

Retiring is the process of removing applications that are no longer needed.

**AWS SNOW FAMILY**

The AWS Snow Family is a collection of physical devices that help to physically transport up to exabytes of data into and out of AWS.

AWS Snow Family is composed of AWS Snowcone, AWS Snowball, and AWS Snowmobile.

These devices offer different capacity points, and most include built-in computing capabilities. AWS owns and manages the Snow Family devices and integrates with AWS security, monitoring, storage management, and computing capabilities.

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**AWS Snowcone**

AWS Snowcone is a small, rugged, and secure edge computing and data transfer device. It features 2 CPUs, 4 GB of memory, and up to 14 TB of usable storage.

**AWS Snowball**

AWS Snowball offers two types of devices:

**Snowball Edge Storage Optimised** devices are well suited for large-scale data migrations and recurring transfer workflows, in addition to local computing with higher capacity needs.

* Storage: 80 TB of hard disk drive (HDD) capacity for block volumes and Amazon S3 compatible object storage, and 1 TB of SATA solid state drive (SSD) for block volumes.
* Compute: 40 vCPUs, and 80 GiB of memory to support Amazon EC2 sbe1 instances (equivalent to C5).

**Snowball Edge Compute Optimised** provides powerful computing resources for use cases such as machine learning, full motion video analysis, analytics, and local computing stacks.

* Storage: 80-TB usable HDD capacity for Amazon S3 compatible object storage or Amazon EBS compatible block volumes and 28 TB of usable NVMe SSD capacity for Amazon EBS compatible block volumes.
* Compute: 104 vCPUs, 416 GiB of memory, and an optional NVIDIA Tesla V100 GPU. Devices run Amazon EC2 sbe-c and sbe-g instances, which are equivalent to C5, M5a, G3, and P3 instances.

**INNOVATION WITH AWS**

When examining how to use AWS services, it is important to focus on the desired outcomes. You are properly equipped to drive innovation in the cloud if you can clearly articulate the following conditions:

* The current state
* The desired state
* The problems you are trying to solve

**Serverless Applications**

With AWS, serverless refers to applications that don’t require you to provision, maintain, or administer servers. You don’t need to worry about fault tolerance or availability. AWS handles these capabilities for you.

**AWS Lambda** is an example of a service that you can use to run serverless applications. If you design your architecture to trigger Lambda functions to run your code, you can bypass the need to manage a fleet of servers.

Building your architecture with serverless applications enables your developers to focus on their core product instead of managing and operating servers.

**Artificial Intelligence**

AWS offers a variety of services powered by artificial intelligence (AI).

For example, you can perform the following tasks:

* Convert speech to text with **Amazon Transcribe**.
* Discover patterns in text with **Amazon Comprehend**.
* Identify potentially fraudulent online activities with **Amazon Fraud Detector.**
* Build voice and text chatbots with **Amazon Lex**.

**Machine Learning**

Traditional machine learning (ML) development is complex, expensive, time consuming, and error prone. AWS offers Amazon SageMaker to remove the difficult work from the process and empower you to build, train, and deploy ML models quickly.

You can use ML to analyse data, solve complex problems, and predict outcomes before they happen.

**Amazon SageMaker**: Quickly build, train, and deploy machine learning models at scale.

Tools like **Amazon SageMaker and Amazon Augmented AI, or Amazon A2I**, provide a machine learning platform that any business can build upon without needing PhD level expertise in-house. Or perhaps, ready-to-go AI solutions like **Amazon Lex**, the heart of Alexa.

**Amazon Textract.** Extracting text and data from documents to make them more usable for your enterprise instead of them just being locked away in a repository

**AWS DeepRacer** is an autonomous 1/18 scale race car that you can use to test reinforcement learning models.