

AWS Migration Strategy

AWS Migration Strategies

After completing this module, you should be able to:

- Create a business case for AWS Cloud Migration
- Understand AWS Cloud Adoption framework (CAF)
- Understand Cloud Adoption Journey
- 6R Migration patterns
- Apply Well-Architected framework on AWS Target Architecture



Defining Migration To AWS

3

- Migration to AWS environment is a combination of strategy, best practices, processes and AWS migration services
- Moving resources from an organization's On-Premises (Source Environment) to AWS environment (Target Environment) usually involves migration of the below type of resources to AWS
 - Server
 - Application
 - Database
 - Data
- A Well-defined strategy and Well-Architected framework is necessary to carry out a successful Migration.

Business Cases for Migrating to AWS

- ▶ Migrating On-Premise resources to Cloud provides lots of benefits as given below.
- **Trade capital expense for variable expense**
- **Benefit from massive economies of scale**
- **Stop guessing about capacity**
- **Increase speed and agility**
- **Stop spending money to maintain data centers**
- **Go global in minutes**

AWS Advantage – Continuous Cost Reduction

5

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Cost Savings and Flexibility



Replace up-front
capital expense with
low variable cost



Economies of scale
allow AWS to continually
lower costs

**Continual Price
Reductions**



Pricing model choice
to support variable &
stable workloads



Save more money as
you grow bigger

**Tiered Pricing
Volume Discounts
Custom Pricing**

AWS Economics Center

6

The AWS Economics Center provides access to tools , information and resources to compare the costs of AWS Services could be used by business leaders and Architects quantify The economic benefits of Cloud Computing

- AWS TCO Calculator
- AWS Simple Calculator
- AWS Cost Explorer
- AWS Trusted Advisor



AWS Total Cost Of Ownership(TCO) Calculator

7

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AWS Total Cost of Ownership (TCO) Calculator

Basic

Use this calculator to compare the cost of running your applications in an on-premises or colocation environment to AWS. Describe your on-premises or colocation configuration to produce a detailed cost comparison with AWS. You can switch between the basic and advanced views to provide additional configuration details.

Select Currency

United States Dollar

What type of environment are you comparing against?



On-Premises



Colocation

Which AWS region is ideal for your geo requirements?

US East (N. Virginia)

Choose workload type:

General

Servers

Are you comparing physical servers or virtual machines?



Physical Servers



Virtual Machines

Provide your configuration details:

Server Type <i>i</i>	App. Name <i>i</i>	Number of VMs <i>i</i>	CPU Cores <i>i</i>	Memory(GB) <i>i</i>	Hypervisor <i>i</i>	Guest OS <i>i</i>	DB Engine <i>i</i>	
Non DB ⌵	<input type="text"/>	1 - 10000	1 - 32	1 - 256	VMware ⌵	Linux ⌵		

AWS TCO Reports

8

AWS Total Cost of Ownership (TCO) Calculator

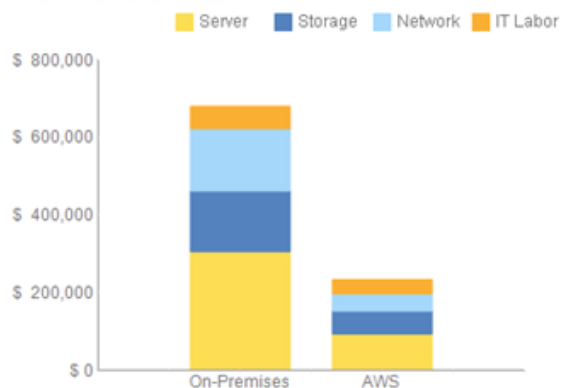
« Change Input

On-Premises vs. AWS Summary

You could save **66%** a year by moving your infrastructure to AWS.

Your three year total savings would be **\$ 446,263**.

3 Years Cost Breakdown



3 Yr. Total Cost of Ownership		
	On-Premises	AWS
Server	\$ 306,023	\$ 93,863
Storage	\$ 156,200	\$ 58,949
Network	\$ 160,480	\$ 45,228
IT-Labor	\$ 57,600	\$ 36,000
Total	\$ 680,303	\$ 234,039

Your On-Premises Cost Breakdown

Server



Hardware : \$ 123,695 [40%] Software : \$ 100,918 [33%]
Overhead : \$ 81,410 [27%]

Storage



Raw Capacity : \$ 89,600 [54%] Backup : \$ 12,600 [8%]
Overhead : \$ 54,000 [32%] Admin : \$ 10,800 [6%]

Your AWS Cost Breakdown

Compute EC2



3 Yr Heavy RI : \$ 58,634 [62%] 3 yr Medium RI : \$ 28,425 [30%]
On Demand : \$ 6,804 [8%]

Storage



EBS : \$ 53,873 [91%]
S3 : \$ 5,076 [9%]

AWS Simple Monthly Calculator

9



SIMPLE MONTHLY CALCULATOR

Need Help? [Watch the Videos](#) or [Read How A](#)

Get Started with AWS: [Learn more about our Free Tier](#) or [Sign Up for an AWS Account »](#)

FREE USAGE TIER: New Customers get free usage tier for first 12 months

Reset All

Services

Estimate of your Monthly Bill (\$ 0.00)

Choose region: US East (N. Virginia)

Inbound Data Transfer is Free and Outbound Data Transfer is 1 GB free per region per mo

Amazon EC2



Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides resizable compute capacity in the cloud. It is designed to make web-scale computing easier for developers. Amazon Elastic Block Store (EBS) provides persistent storage to Amazon EC2 instances.

Amazon S3

Amazon Route
53

FREE TIER: For ALB 10 free rules will be applicable.

Amazon
CloudFront

Compute: Amazon EC2 Instances:

	Description	Instances	Usage	Type	Billing Option	Monthly Cost
	Add New Row					

Amazon RDS

Amazon
DynamoDB

Amazon
ElastiCache

Compute: Amazon EC2 Dedicated Hosts:

	Description	Number of Hosts	Usage	Type	Billing Option
	Add New Row				

Amazon
CloudWatch

Amazon SES

Amazon SNS

Amazon Elastic
Transcoder

Storage: Amazon EBS Volumes:

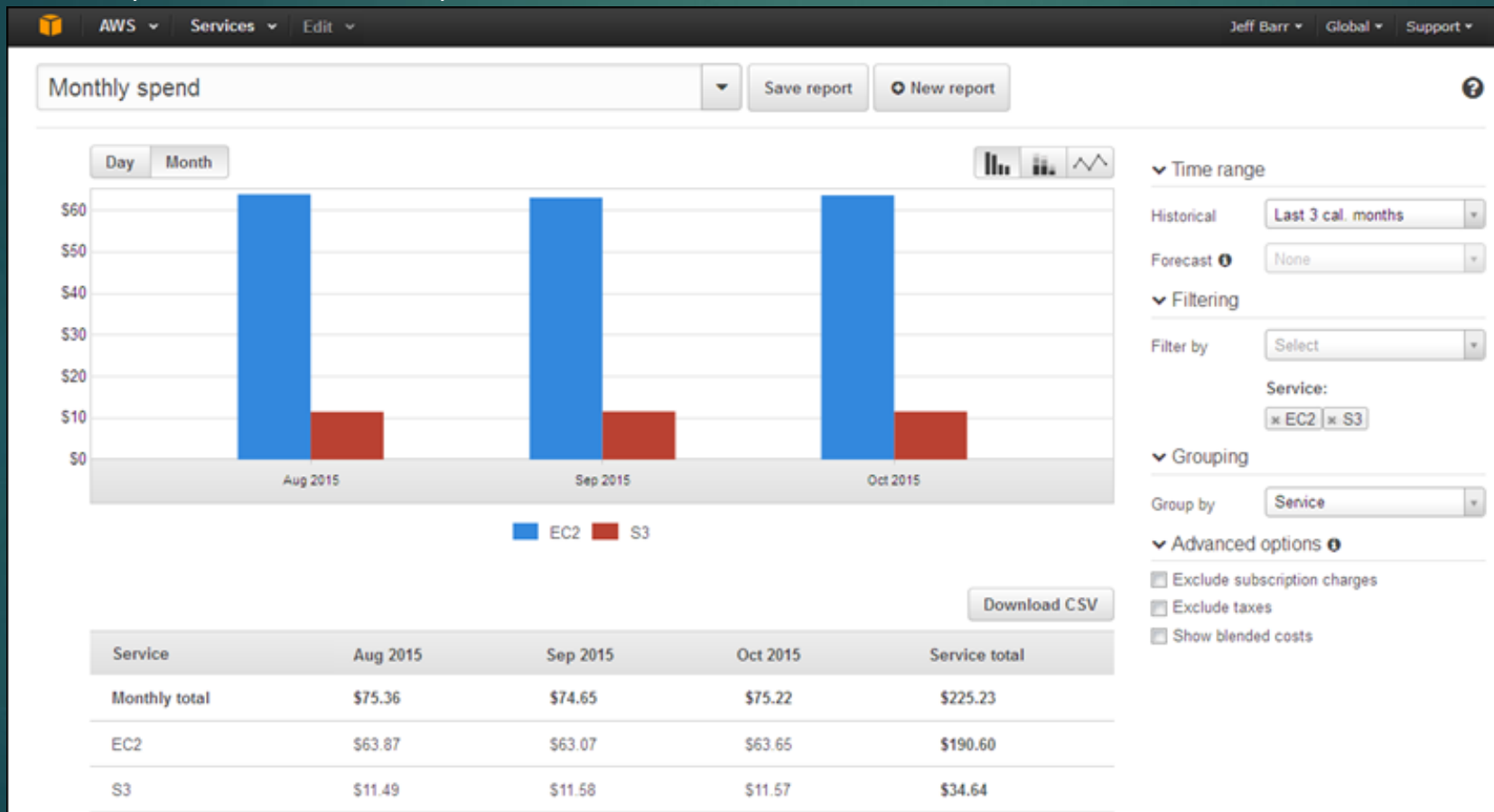
	Description	Volumes	Volume Type	Storage	IOPS	Baseline Throughput	Snapshot Storage
	Add New Row						

Amazon
WorkSpaces

AWS Cost Explorer

10

AWS Cost Explorer allows you to explore and forecast your AWS costs. You can use Cost Explorer's built-in filtering and grouping facilities to analyze your expenditures by Account, Service, Tag, Availability Zone, Purchase Option, and API Operation.



AWS Trusted Advisor

11

AWS Trusted Advisor inspects your AWS environment and makes recommendations for saving money, improving system performance and reliability, or closing security gaps.

The screenshot displays the AWS Trusted Advisor Dashboard. The top navigation bar includes 'Services', 'Edit', 'Select a Region', and 'Help'. The left sidebar lists 'Dashboard', 'Cost Optimizing', 'Performance', 'Security', 'Fault Tolerance', and 'Preferences'. The main content area is titled 'Trusted Advisor Dashboard' and features four primary categories, each with a set of status icons (green checkmarks, yellow triangles, and red exclamation marks) and a 'Download' button. Below these categories are two sections: 'Recent Changes' and 'What's New'.

Category	Green Checkmarks	Yellow Triangles	Red Exclamation Marks	Excluded Items	Additional Info
Cost Optimizing	2	4	0	0	Potential monthly savings: \$80.45
Performance	8	0	0	0	
Security	4	3	2	2	
Fault Tolerance	10	2	1	0	

Recent Changes

Change	Date
AWS CloudTrail Logging	7/22/14
Security Groups - Specific Ports Unrestricted	7/21/14

What's New

- Check: Service Limits check improvements
- Check: AWS CloudTrail and 4 Amazon Route 53 checks
- Check: CloudFront Content Delivery Optimization
- Feature: AWS Trusted Advisor notifications

Choose language: English

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What is Cloud Adoption Framework (CAF)

- Helps Organizations understand how cloud adoption transforms the way they work and it provides structure to identify and address gaps in skills and processes .

 BUSINESS	 PLATFORM
 PEOPLE	 SECURITY
 GOVERNANCE	 OPERATIONS

Ref : <https://aws.amazon.com/whitepapers/#framework-and-methodologies>

CAF Core Perspectives

13

CAF Core Perspectives



Business Perspective

Identifying, delivering, and measuring business impact using architectural approaches that align technical delivery to business imperatives.



Platform Perspective

Represents the technology services of the AWS cloud platform. Provides patterns, guidance, and tools for optimal use of the technology services and services to implement.



Maturity Perspective

Defining the target state architecture of the organization and creating the required blueprints and roadmaps.



People Perspective

Defining and acquiring the skills needed to adopt the AWS cloud platform. Examples guidance include role descriptions, training, certification and mentoring.



Process Perspective

Managing portfolios, programs and projects to deliver expected business outcome on time and within budget, while keeping risks at acceptable levels.



Security Perspective

Defining and implementing the required levels of security, governance, and risk management to achieve compliance.

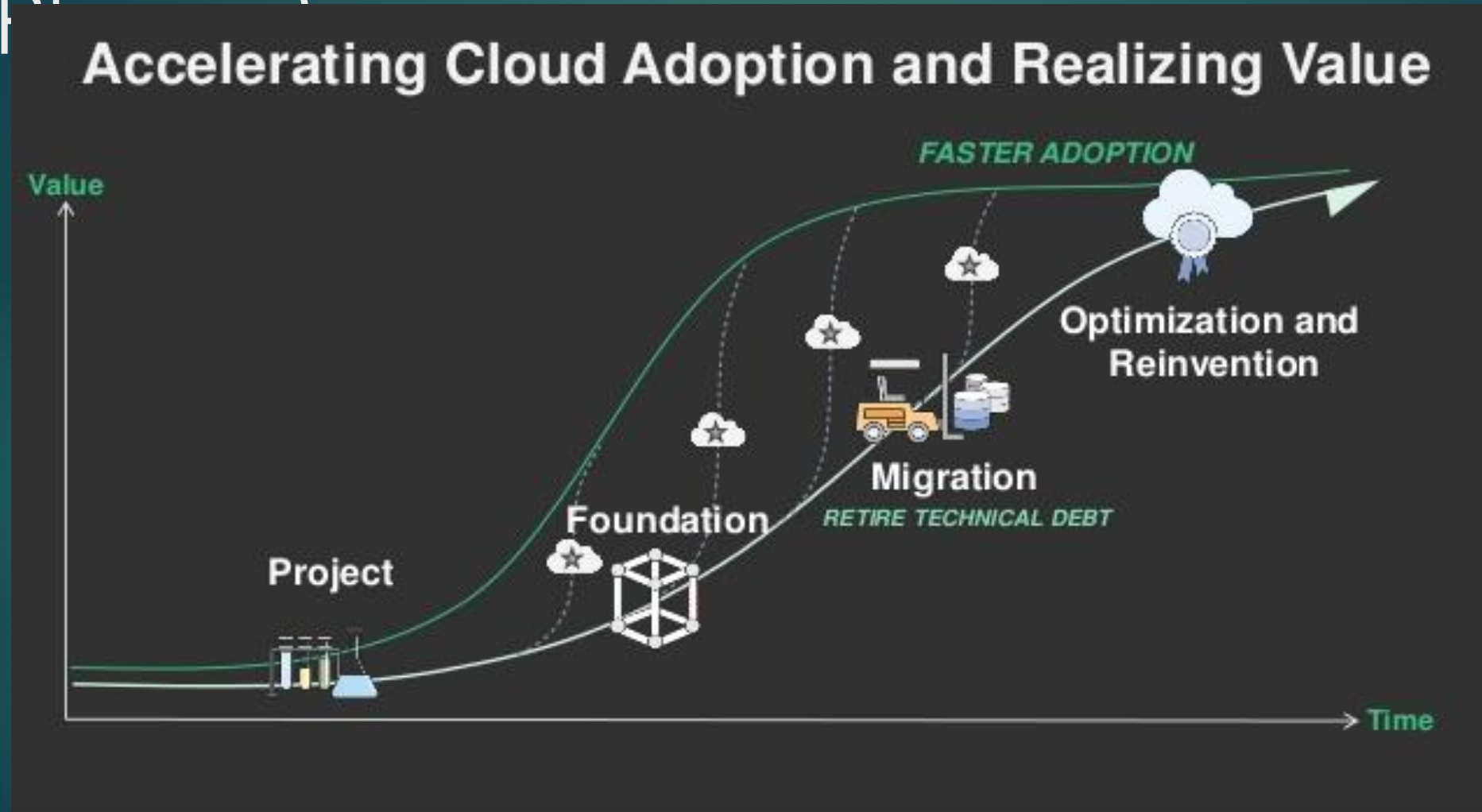


Operations Perspective

Represents the ongoing management of the functioning IT environment of AWS. Provides process, guidance and tools for optimum operational service management of the AWS environment.

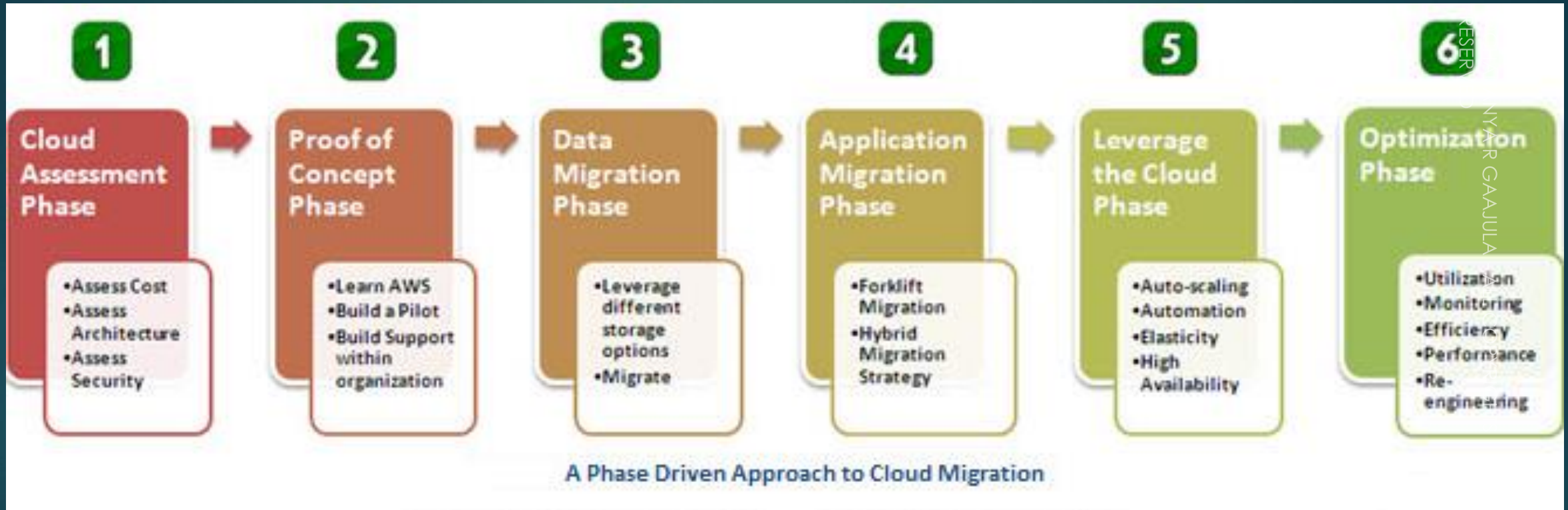
AWS Cloud Adoption Journey (4

14



AWS Cloud Adoption Process

15









6 Strategies for Migrating

16

A

The 6R's in Cloud Migrations

 <ul style="list-style-type: none">• Customers will keep host / application in their source environment• Minimal analysis/validation of scope and application affinity• Dependency on integrating service management <p>Retain</p>	 <ul style="list-style-type: none">• Up-Version of the OS and/or Database onto the target cloud• Some level of application changes• Application reinstallation on the target• Database to AWS RDS <p>Replatform</p>
 <ul style="list-style-type: none">• Application and host decommission on source• No migration to target• Application owner approvals needed <p>Retire</p>	 <ul style="list-style-type: none">• OS and/or Database porting• Middleware and application change to cloud service offering• Data conversion; Database transition to MySQL, Aurora, etc. <p>Refactor</p>
 <ul style="list-style-type: none">• Like for Like application migration to target cloud• Minimal effort to make the application work on the target cloud infrastructure (Minimal application layout change)• Storage migration will be needed (without conversion) <p>Rehost</p>	 <ul style="list-style-type: none">• Use SaaS-based offerings, application architecture changes may require Porting• Middleware, data modernisation; application consolidation / stacking <p>Repurchase</p>

AWS Well-Architected Framework

17

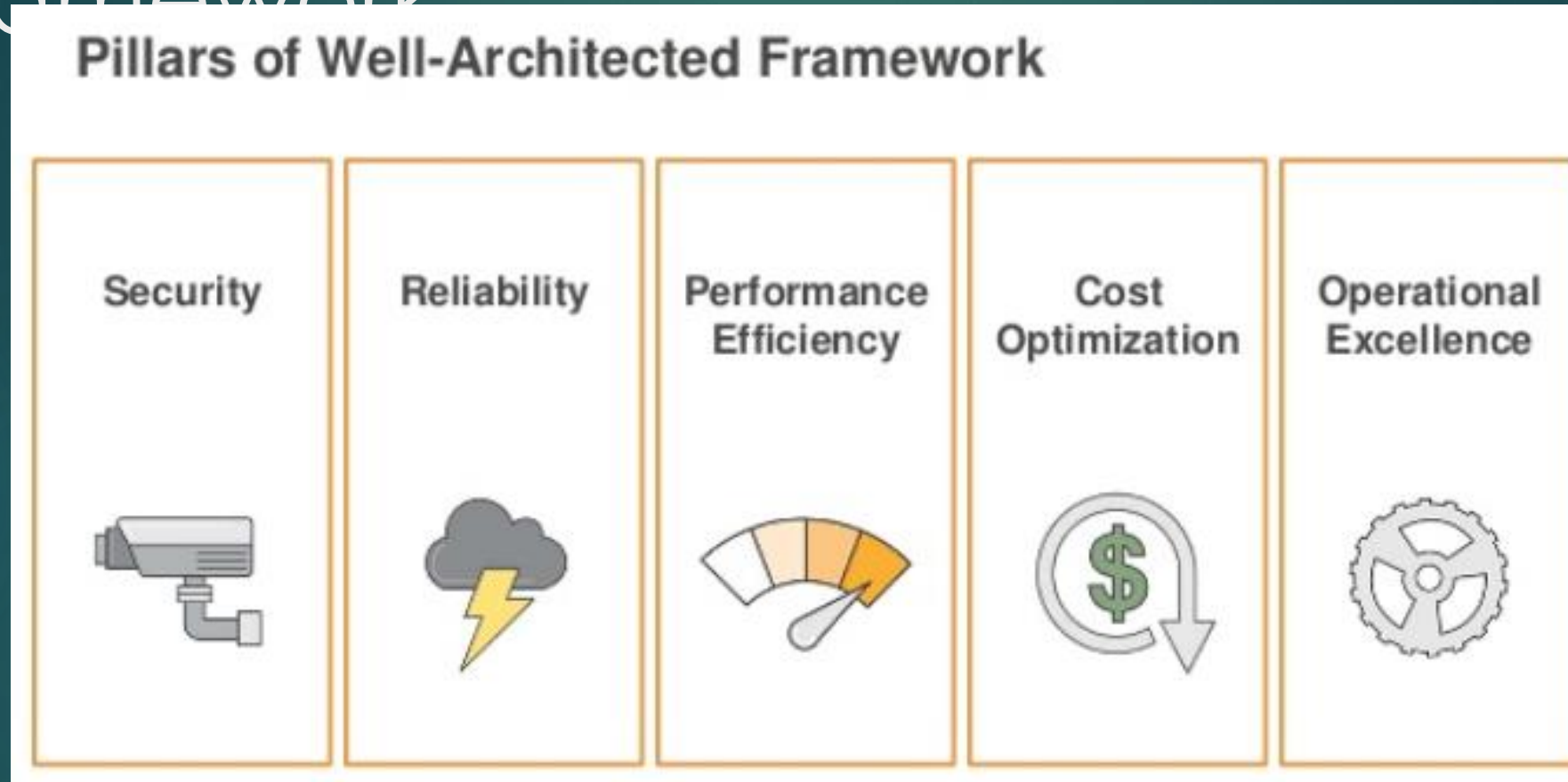
- AWS Well-Architected framework helps cloud architects to build the most secure , high-performing, resilient, and efficient infrastructure possible for their applications.
- Framework helps Customers and partners a consistent approach to evaluate architectures.
- Provides guidance to customer to help implement designs which allows scalability.
- Well-Architected Framework provides the below benefits
 - ❖ Build and deploy faster
 - ❖ Lower / Mitigate Risks
 - ❖ Make Informed Decisions
 - ❖ Learn AWS Best Practices

You can access AWS Well Architecture framework via this link

<https://aws.amazon.com/whitepapers/#framework-and-methodologies>

5 Pillars of Well-Architected Framework

18



5 Pillars of Well-Architected

19

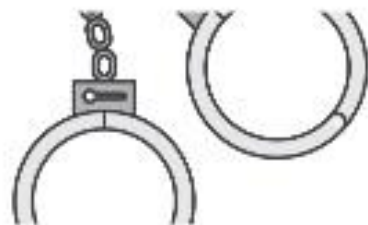
Pillar Name	Description
Security	The ability to protect information, systems, and assets while delivering business value through risk assessments and mitigation strategies.
Reliability	The ability of a system to recover from infrastructure or service failures, dynamically acquire computing resources to meet demand, and mitigate disruptions such as misconfigurations or transient network issues.
Performance Efficiency	The ability to use computing resources efficiently to meet system requirements, and to maintain that efficiency as demand changes and technologies evolve.
Cost Optimization	The ability to avoid or eliminate unneeded cost or suboptimal resources.
Operational Excellence	The ability to run and monitor systems to deliver business value and to continually improve supporting processes and procedures.

Principles of Security Pillar

20

Security pillar

Protect information, systems, and assets while delivering business value through risk assessments and mitigation strategies



Security at all layers



Enable traceability



Implement a principle of least privilege



Focus on securing system
















Automate security best practices

Key Services for Security

21

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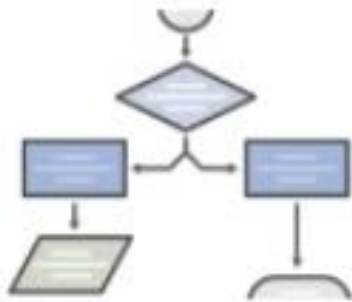
Key Services for Security  AWS IAM	
Areas	Key Services
Identity and Access Management	 AWS IAM  MFA Token
Detective Controls	 AWS CloudTrail  AWS Config  Amazon CloudWatch
Infrastructure Protection	 Amazon VPC
Data Protection	 Elastic Load Balancing  Amazon EBS  Amazon S3  Amazon RDS  AWS Key Management Service
Incident Response	 AWS IAM  AWS CloudFormation

Principles of Reliability Pillar

22

Reliability pillar

Ability of a system to recover from infrastructure or service disruptions, dynamically acquire computing resources to meet demand, and mitigate disruptions such as misconfigurations or transient network issues



Test recovery
procedures



Automatically
recover from failure



Scale horizontally to
increase availability



Stop guessing
capacity

Key Services for Reliability

23

Key Services for Reliability  Amazon CloudWatch	
Areas	Key Services
Foundations	  AWS IAM Amazon VPC
Change management	  AWS CloudTrail AWS Config
Failure management	 AWS CloudFormation

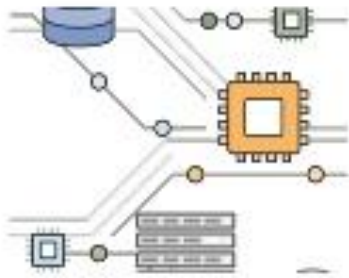
Principles of Performance

24

Efficiency Pillar

Performance efficiency pillar

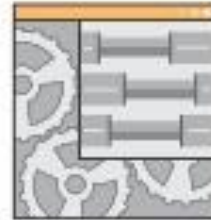
Efficiently use of computing resources to meet requirements, and maintaining that efficiency as demand changes and technologies evolve



Democratize
advanced
technologies



Go global in
minutes



Use server-less
architectures



Experiment more
often

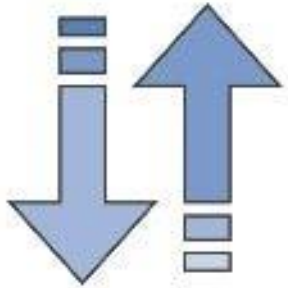
Key Services for Performance Efficiency

Key Services for Performance Efficiency	
	 Amazon CloudWatch
Areas	Key Services
Selection	 Amazon EBS  Auto Scaling  Amazon S3  Amazon Glacier  Amazon RDS  Amazon DynamoDB
Review	 AWS CloudFormation  AWS Blog
Monitoring	 Amazon CloudWatch  AWS Lambda
Trade-Off	 Amazon CloudFront  Amazon ElastiCache  AWS Snowball

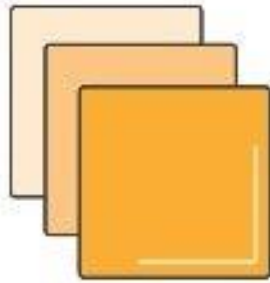
Principles of Cost Optimization

26

The four pillars of cost optimization



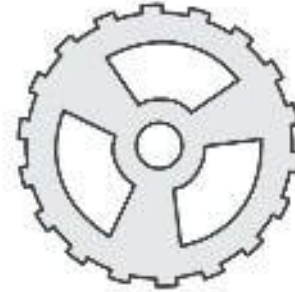
Right-sizing



Reserved
Instances



Increase
elasticity



Measure,
monitor, and
improve

Key Services For Cost Optimization

27

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Key Services for Cost Optimization	
 Cost Allocation Tags	
Areas	Key Services
Cost-effective resources	<div> Reserved Instances</div> <div> AWS Trusted Advisor</div>
Matched supply and demand	<div> Auto Scaling</div>
Expenditure awareness	<div> Amazon CloudWatch</div> <div> Amazon SNS</div>
Optimizing over time	<div> AWS Blog & What's New</div>

Principles of Operational Excellence Pillar

28

Operational excellence pillar

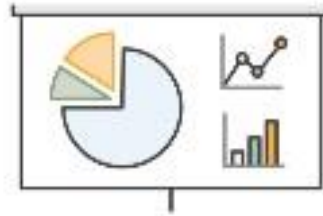
Operational practices and procedures used to manage production workloads



Perform operations with code



Test for responses to unexpected events



Align operations processes to business objectives



Learn from operational events and failures



Make regular, small, incremental changes



Keep operations procedures current

Key Services for Operational

29

Ex

Key Services for Operational Excellence



AWS
CloudFormation

Areas	Key Services				
Preparation	AWS Developer Tools	 AWS CloudFormation	 AWS Config		Lambda RunCommand AWS Batch
Operations	AWS Developer Tools	 AWS CloudFormation	 AWS Config	 AWS CloudTrail	 Amazon CloudWatch Lambda RunCommand AWS Batch
Responses	AWS Developer Tools	 AWS CloudFormation	 AWS Config	 AWS CloudTrail	 Amazon CloudWatch Lambda RunCommand AWS Batch

AWS Migration Strategy – Summary

30

- We need to use Migration Strategies for Migrating from On-Premises to AWS
- Understood your journey and Migration Process to AWS Cloud
- Identified 6R Migration Patterns for each application which needs to be migrated
- Various Principles & Key Services of using AWS Well-Architected framework on your AWS target environment

THANK YOU