

# AWS Migration Strategy

# Defining Migration To AWS

2

- 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<sup>4</sup>

@CHAITANYA R GAJULA - ALL COPYRIGHTS RESERVED

## 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

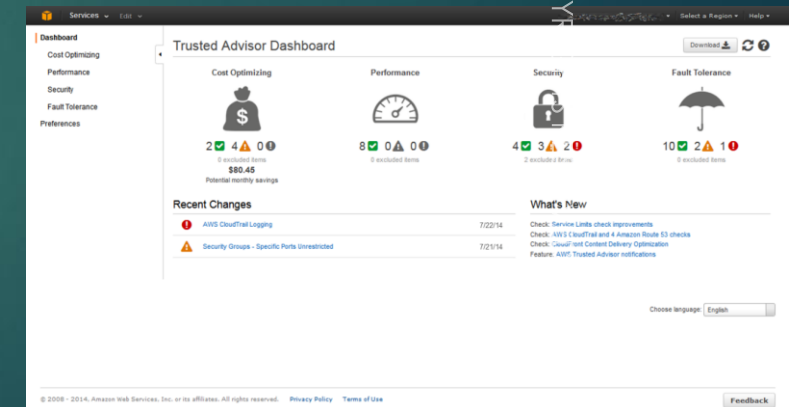
**Tiered Pricing**  
**Volume Discounts**  
**Custom Pricing**

# AWS Economics Center

5

The AWS Economics Center provides access to tools , information and resources to compare the costs of AWS Services which 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



CHAITANYA R GAJULA- ALL COPYR

# AWS Total Cost Of Ownership(TCO) Calculator

6

## 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		1 - 10000	1 - 32	1 - 256	VMware	Linux		

# AWS TCO Reports

7

## AWS Total Cost of Ownership (TCO) Calculator

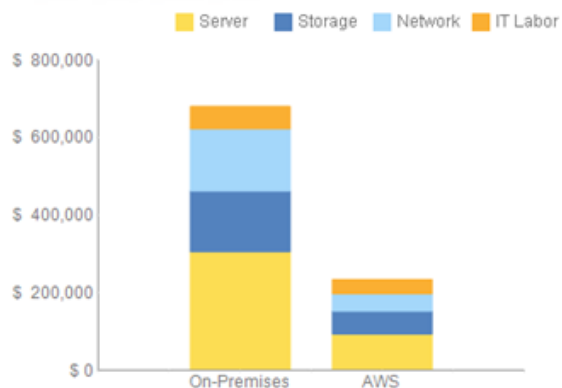
« Change Input

### 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%]

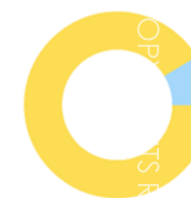
### Your AWS Cost Breakdown

#### 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

8

 **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 S3

Amazon Route 53

Amazon CloudFront

Amazon RDS

Amazon DynamoDB

Amazon ElastiCache

Amazon CloudWatch

Amazon SES

Amazon SNS


Amazon Elastic Transcoder

Amazon WorkSpaces


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.

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


Compute: Amazon EC2 Instances:

	Description	Instances	Usage	Type	Billing Option	Monthly Cost
	Add New Row					

Compute: Amazon EC2 Dedicated Hosts:

	Description	Number of Hosts	Usage	Type	Billing Option
	Add New Row				

Storage: Amazon EBS Volumes:

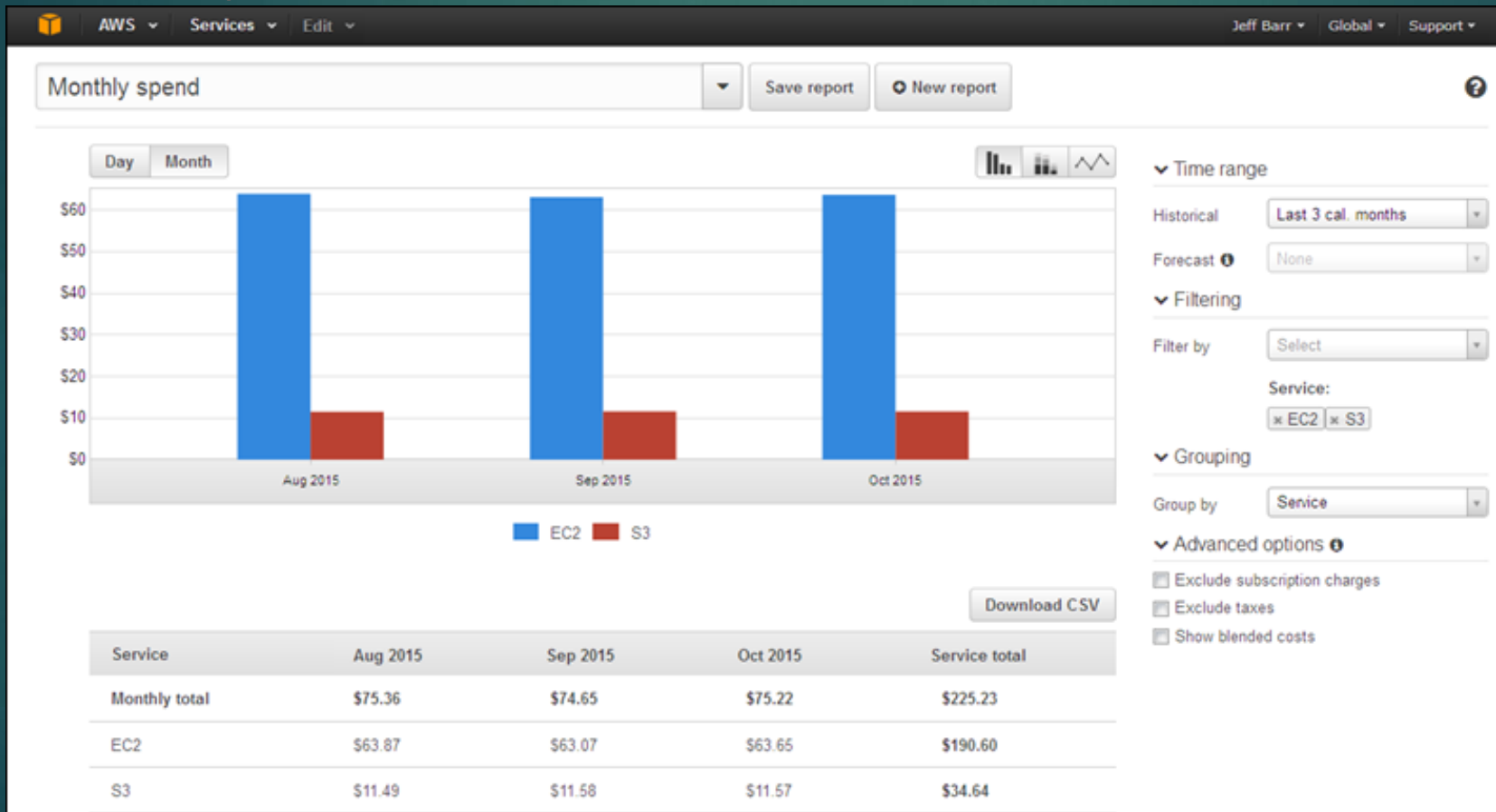
	Description	Volumes	Volume Type	Storage	IOPS	Baseline Throughput	Snapshot Storage
	Add New Row						



# AWS Cost Explorer

9

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

10

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 left sidebar contains a navigation menu with 'Dashboard' selected, and sub-items: '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:

© 2008 - 2014, Amazon Web Services, Inc. or its affiliates. All rights reserved. [Privacy Policy](#) [Terms of Use](#) [Feedback](#)

# AWS CAF and CLOUD ADOPTION PROCESS

# 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 .

 <b>BUSINESS</b>	 <b>PLATFORM</b>
 <b>PEOPLE</b>	 <b>SECURITY</b>
 <b>GOVERNANCE</b>	 <b>OPERATIONS</b>

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.

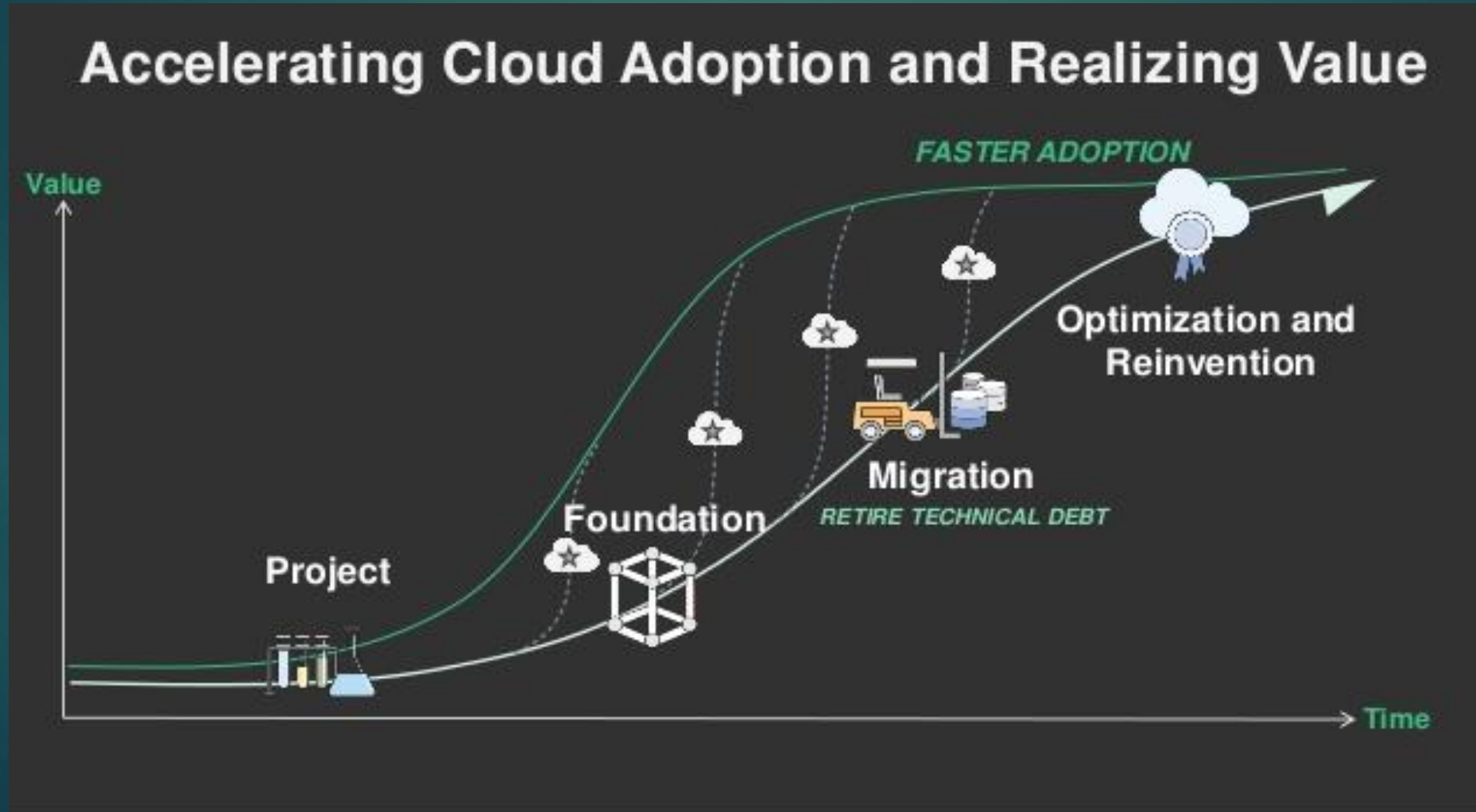


### Operations Perspective

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 Phases)

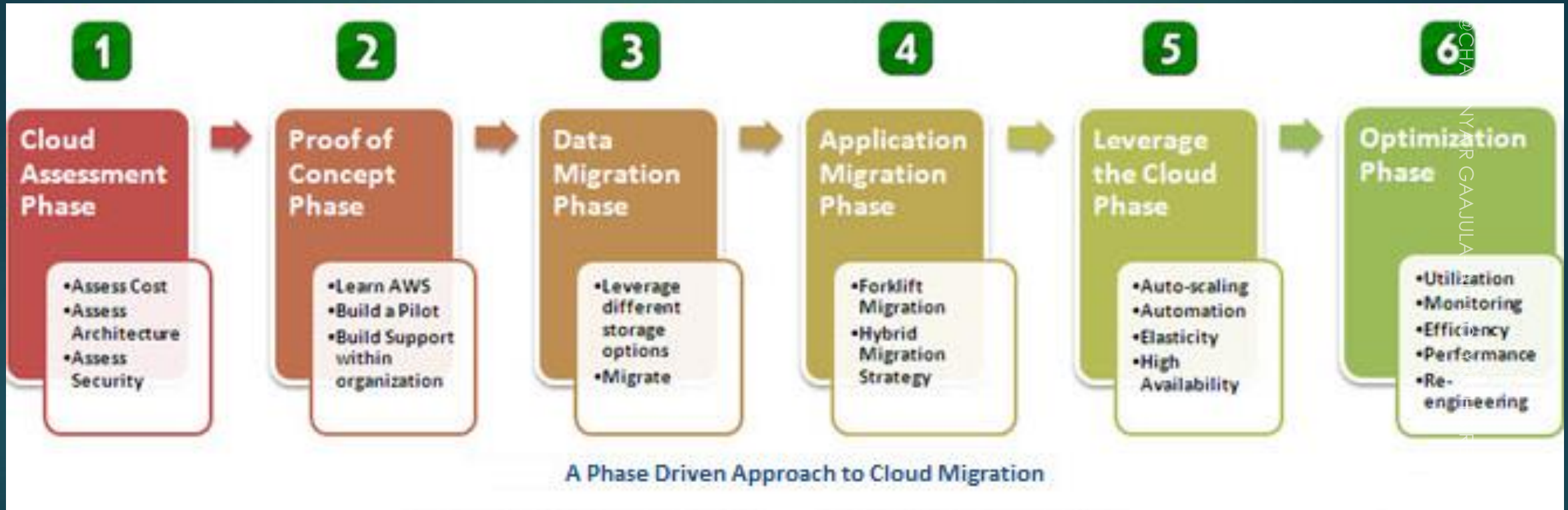
14





# AWS Cloud Adoption Process

15





# 6 Strategies

16

## The 6R's in Cloud Migrations



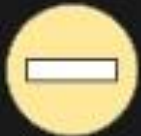
### Retain

- Customers will keep host / application in their source environment
- Minimal analysis/validation of scope and application affinity
- Dependency on integrating service management



### Replatform

- 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



### Retire

- Application and host decommission on source
- No migration to target
- Application owner approvals needed



### Refactor

- OS and/or Database porting
- Middleware and application change to cloud service offering
- Data conversion; Database transition to MySQL, Aurora, etc.



### Rehost

- 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)



### Repurchase

- Use SaaS-based offerings, application architecture changes may require Porting
- Middleware, data modernisation; application consolidation / stacking

# AWS Well-Architected Framework

# AWS Well-Architected Framework

18

- 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

© CHAITANYA R GADGULA - ALL COPYRIGHTS RESERVED

You can access AWS Well Architecture framework via this link

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

# 5 Pillars of Well-Architected Framework

19

## Pillars of Well-Architected Framework

**Security**



**Reliability**



**Performance  
Efficiency**



**Cost  
Optimization**



**Operational  
Excellence**





# 5 Pillars of Well-Architected Framework

20

@CHAITANYA R GAJULA - ALL COPYRIGHTS RESERVED

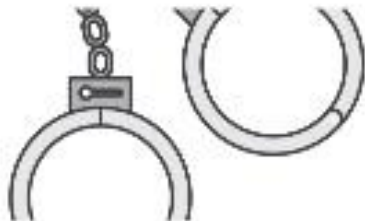
Pillar Name	Description
<b>Security</b>	The ability to protect information, systems, and assets while delivering business value through risk assessments and mitigation strategies.
<b>Reliability</b>	The ability of a system to recover from infrastructure or service failures, dynamically acquire computing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

# Principles of Security Pillar

21

## 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

22

@CHAITANYA R GAJULA - ALL COPYRIGHTS RESERVED

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

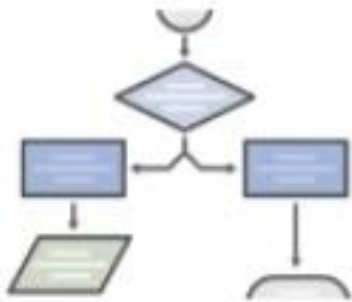


# Principles of Reliability Pillar

23

## 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

24

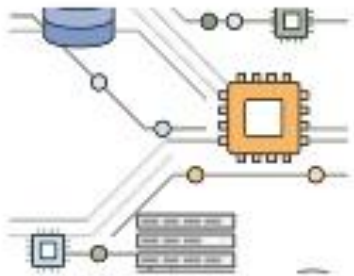
Key Services for Reliability  Amazon CloudWatch	
Areas	Key Services
Foundations	  AWS IAM Amazon VPC
Change management	  AWS CloudTrail AWS Config
Failure management	 AWS CloudFormation

# Principles of Performance Efficiency Pillar 25

@CHAITANYA R GAJULA - ALL COPYRIGHTS RESERVED

## Performance efficiency pillar

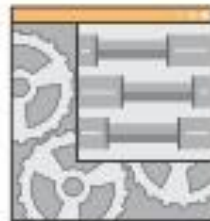
*Efficiently use of computing resources to meet requirements, and maintaining that efficiency as demand changes and technologies evolve*



Democratize  
advanced  
technologies



Go global in  
minutes



Use server-less  
architectures



Experiment more  
often

# Key Services for Performance Efficiency

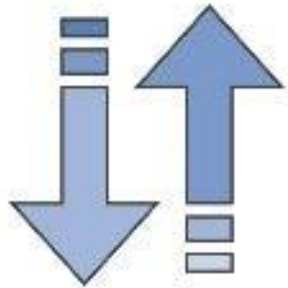
26

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

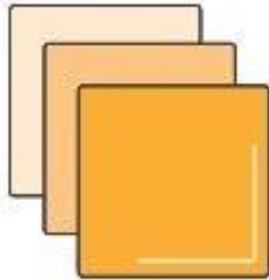
# Principles of Cost Optimization Pillar

27

## The four pillars of cost optimization



Right-sizing



Reserved  
Instances



Increase  
elasticity



Measure,  
monitor, and  
improve



# Key Services For Cost Optimization

28

@CHAITANYA R GAJULA - ALL COPYRIGHTS RESERVED

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

# Principles of Operational Excellence Pillar

29

## Operational excellence pillar

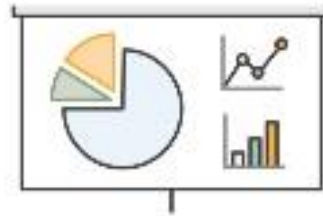
*Operational practices and procedures used to manage production workloads*



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 Excellence

30

@CHAITANYA R GAJULA - ALL COPYRIGHTS RESERVED

## Key Services for Operational Excellence



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

31

- 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