



# Welcome to AWS Training and Certification

AWS Cloud Practitioner Exam  
**Foundations**

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Guide for the AWS Certified Cloud Practitioner.

Should not be taken as the sole source of study to perform the exam AWS CCP.

Consider supporting material to further your studies.

# AWS Certified Cloud Practitioner (CLF-C01)

## About Exam



- 90 minutes
- US\$ 100,00
- Immediate Result
- Score : 100 a 1000. Minimum 700 PASS.
- Expect something like 55 ~ 60 questions.

Multiple-responses:

**What are AWS services? :**

- ☒ IAM
- ☒ CloudFront
- ☐ AWS Games
- ☐ ForCloud
- ☐ Discovery Tiers

Multiple-Choice:

**CloudFront Service Infrastructure:**

- ☒ EdgeLocations
- ☐ Data Centers
- ☐ AWS Transceivers
- ☐ Cloud Content
- ☐ External DNS

# AWS Certified Cloud Practitioner (CLF-C01)

## About Exam



- Main content:

The table below lists the main content domains and their weightings.	
Domain	% of Examination
Domain 1: Cloud Concepts	28%
Domain 2: Security	24%
Domain 3: Technology	36%
Domain 4: Billing and Pricing	12%
<b>TOTAL</b>	<b>100%</b>

<https://aws.amazon.com/certification/certified-cloud-practitioner/>

# AWS Certified Cloud Practitioner (CLF-C01)

## More Study Content



Resources for study :

- **AWS Training** ([aws.amazon.com/training](https://aws.amazon.com/training))

[AWS Business Professional \(Digital\)](#)

[AWS TCO and Cloud Economics \(Digital\)](#)

[AWS Cloud Practitioner Essentials \(Digital\)](#)

### **Whitepapers da AWS**

[Overview of Amazon Web Services](#)

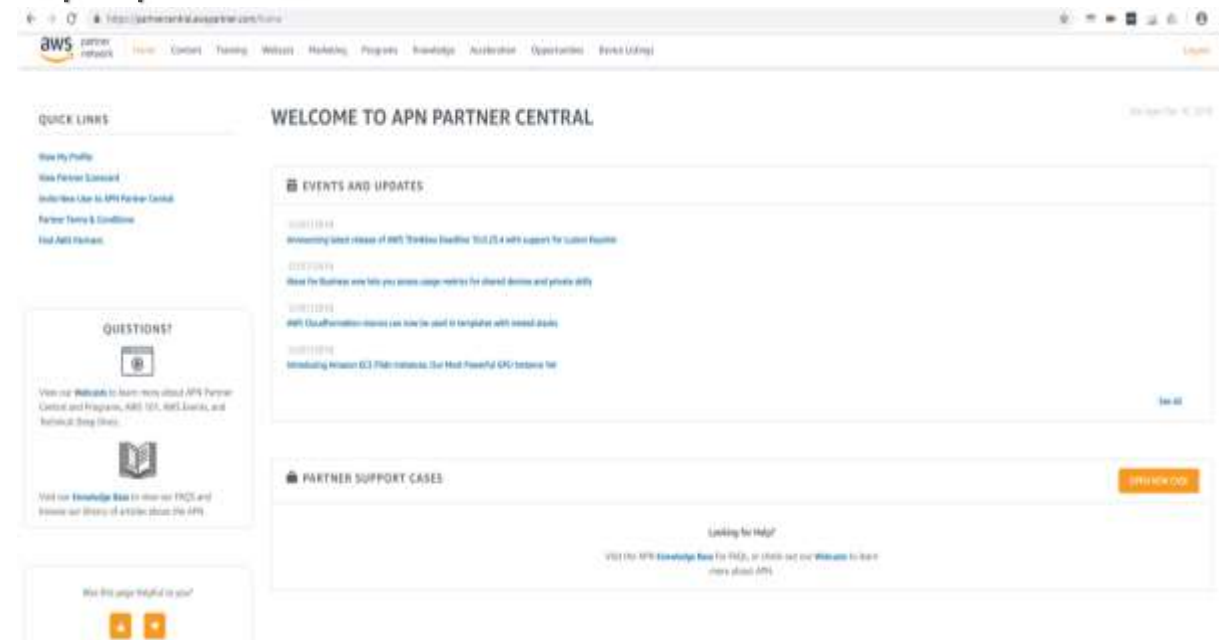
[Architecting for the Cloud: AWS Best Practices](#)

[How AWS Pricing Works](#)

[Cost Management in the AWS Cloud](#)

[AWS support plan comparision](#)

apn-portal.com



# AWS Certified Cloud Practitioner (CLF-C01)

## To-Do



- ✓ Review this material.
- ✓ Enter in AWS site and read about the main services <https://aws.amazon.com>
- ✓ Understand Cloud AWS value proposition. Principles and advantages.
- ✓ Security in the cloud: AUP, SRP, Compliance, IAM, MFA.
- ✓ Global AWS Infrastructure, multi-AZ architectures, services scope.
- ✓ Models of pricing and organizational structure.



## AWS Cloud & Core Services

- 📦 Module 1: Understanding AWS Cloud
- 📦 Module 2: AWS Cloud Infrastructure & Services
- 📦 Module 3 : Core Services
- 📦 Module 4: Security and Compliance
- 📦 Module 5: Management & Operation
- 📦 Module 6: Pricing Solutions and TCO on AWS



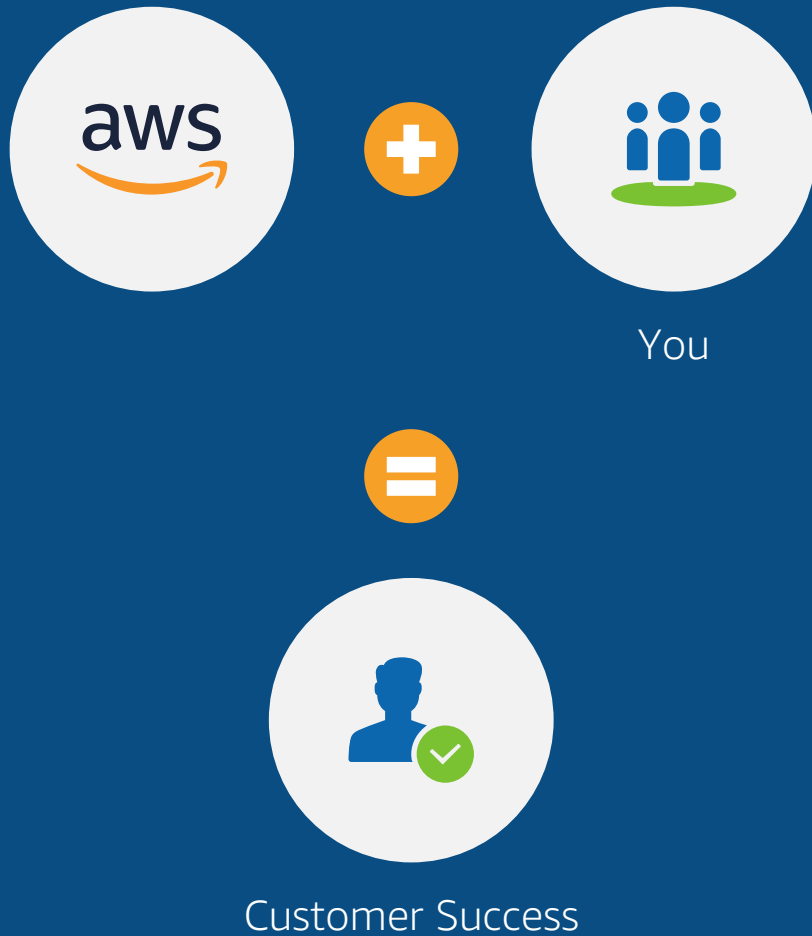
## Q&A Session

- 📦 Module 7 : Conclusion









# Module 1:

# Understanding AWS Cloud





## AWS Leadership Principles

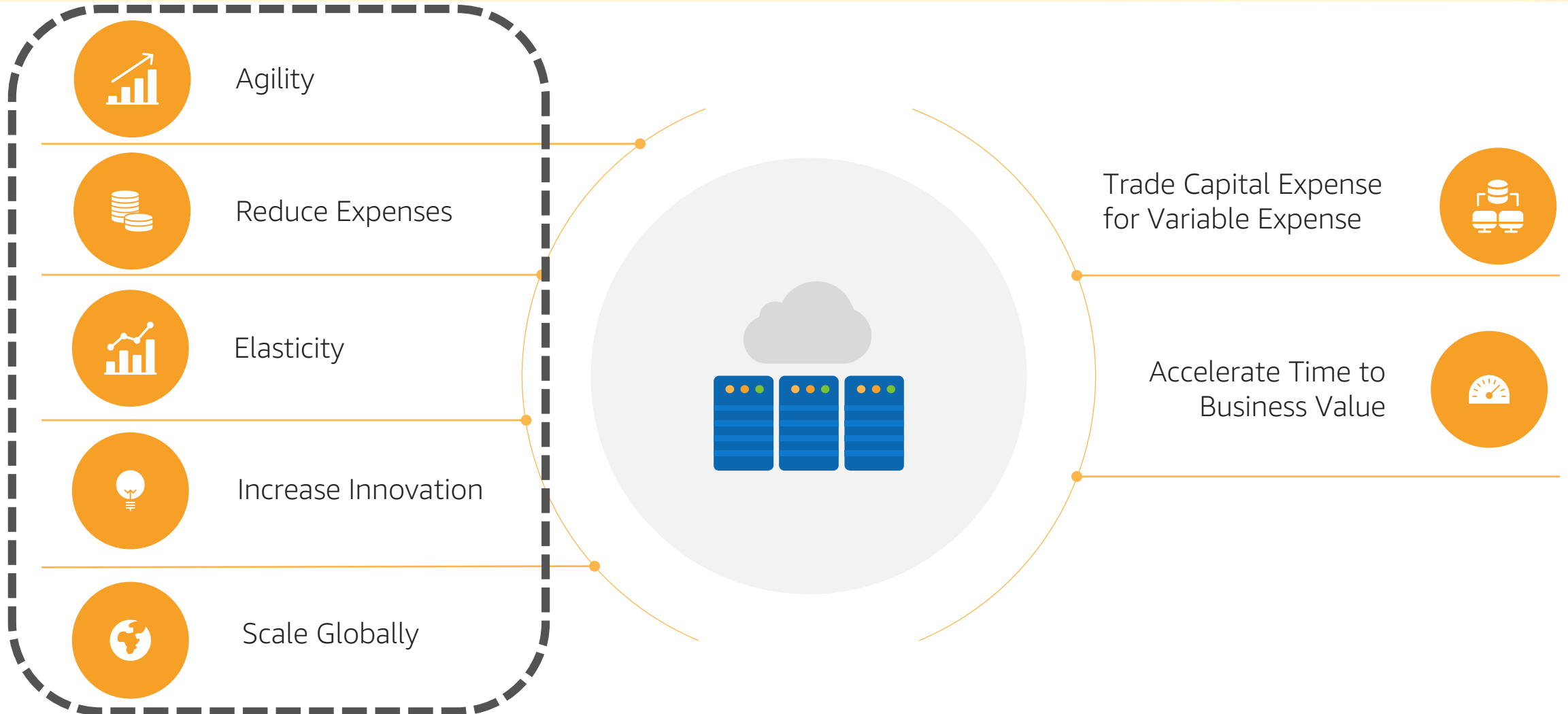
-  Customer Obsession
-  Learn and Be Curious
-  Earn Trust
-  Dive Deep
-  Invent and Simplify
-  Think Big
-  Bias For Action
-  Drive Results

---

**We Do Things in Peculiar Ways**

---

# Advantages of Moving to AWS Cloud



# Patterns We're Seeing with AWS Customers



# AWS Customers

Millions of **Active** customers in 190 countries



# Module 2:

# AWS Cloud Infrastructure & Services

# What Sets AWS Apart?

## Enterprise Leadership



Building and managing the cloud since 2006

## Service Breadth and Depth



Over 160 services

## Pace of Innovation



2238 features in 3 years

## Global Presence



60 Availability Zones in 20 geographic regions around the world

## Amazon Culture



72 proactive price reductions

## Security



#1 Priority

## Largest Partner Ecosystem



AWS Marketplace and APN

## Hybrid Cloud



Broadest set of hybrid capabilities of any cloud provider

# AWS Highly Available Global Infrastructure



**20**  
Geographic  
Regions

**60**  
Availability  
Zones

**160**  
Edge  
Locations



## Região e número de zonas de disponibilidade

### Leste dos EUA

Norte da Virgínia (6),  
Ohio (3)

### Oeste dos EUA

Norte da Califórnia (3),  
Oregon (3)

### Ásia-Pacífico

Mumbai (2),  
Seul (2),  
Singapura (3),  
Sydney (3),  
Tóquio (4),  
Osaka-Local (1)<sup>1</sup>

### Canadá

Central (2)

### China

Pequim (2),  
Ningxia (3)

### Europa

Frankfurt (3),  
Irlanda (3),  
Londres (3),  
Paris (3),  
Estocolmo (3)

### América do Sul

São Paulo (3)

### GovCloud (EUA)

Leste dos EUA (3),  
Oeste dos EUA (3)



## Nova região (em breve)

Bahrein

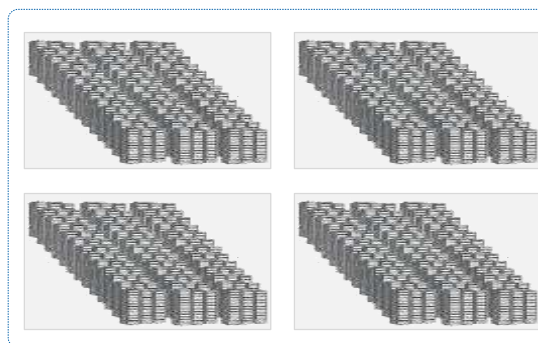
Cidade do Cabo

Hong Kong (RAE)

Milão

## Region

### AWS Availability Zone (AZ)



Independent failure zone

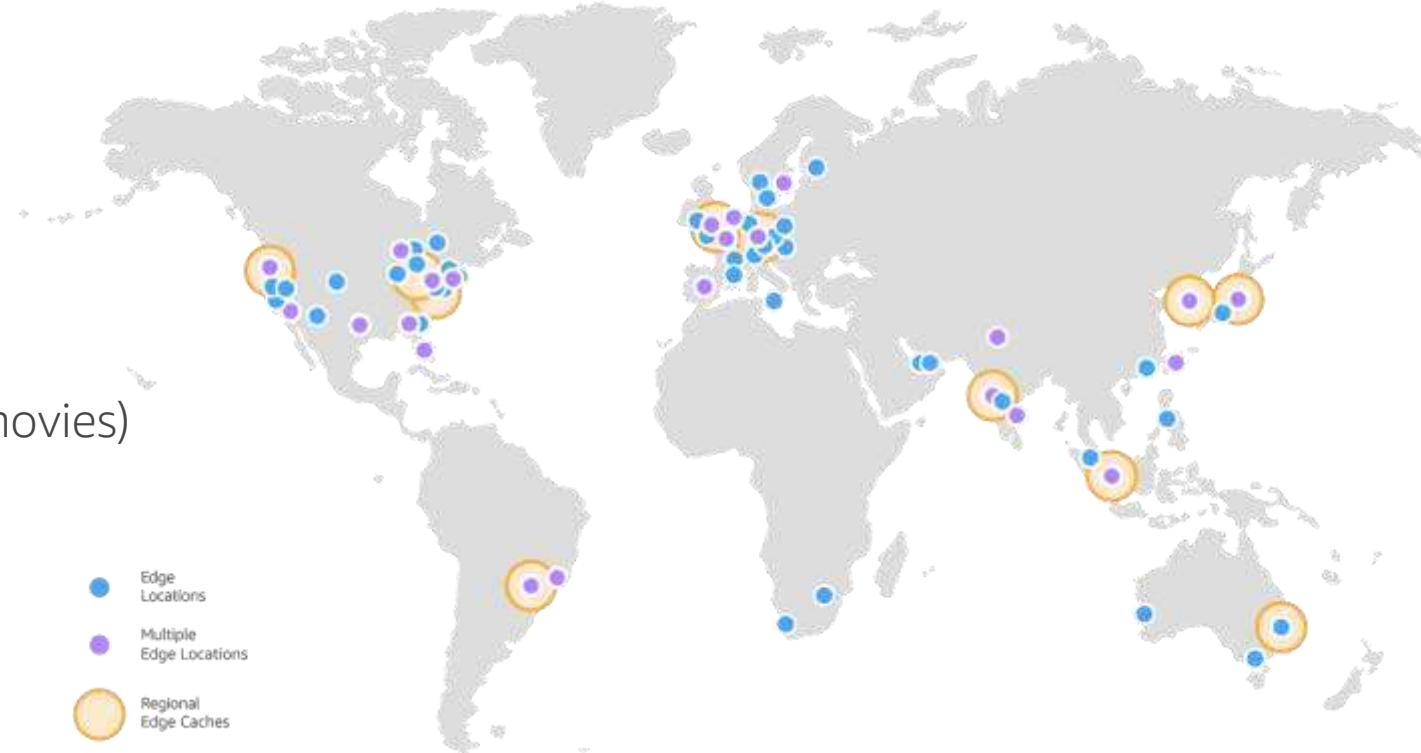
Interconnected using  
high-speed private links

AZ

AZ

## Content Delivery Network (CDN)

- ✓ Content close to users = less latency
- ✓ Static content (web pages, texts, images, movies)

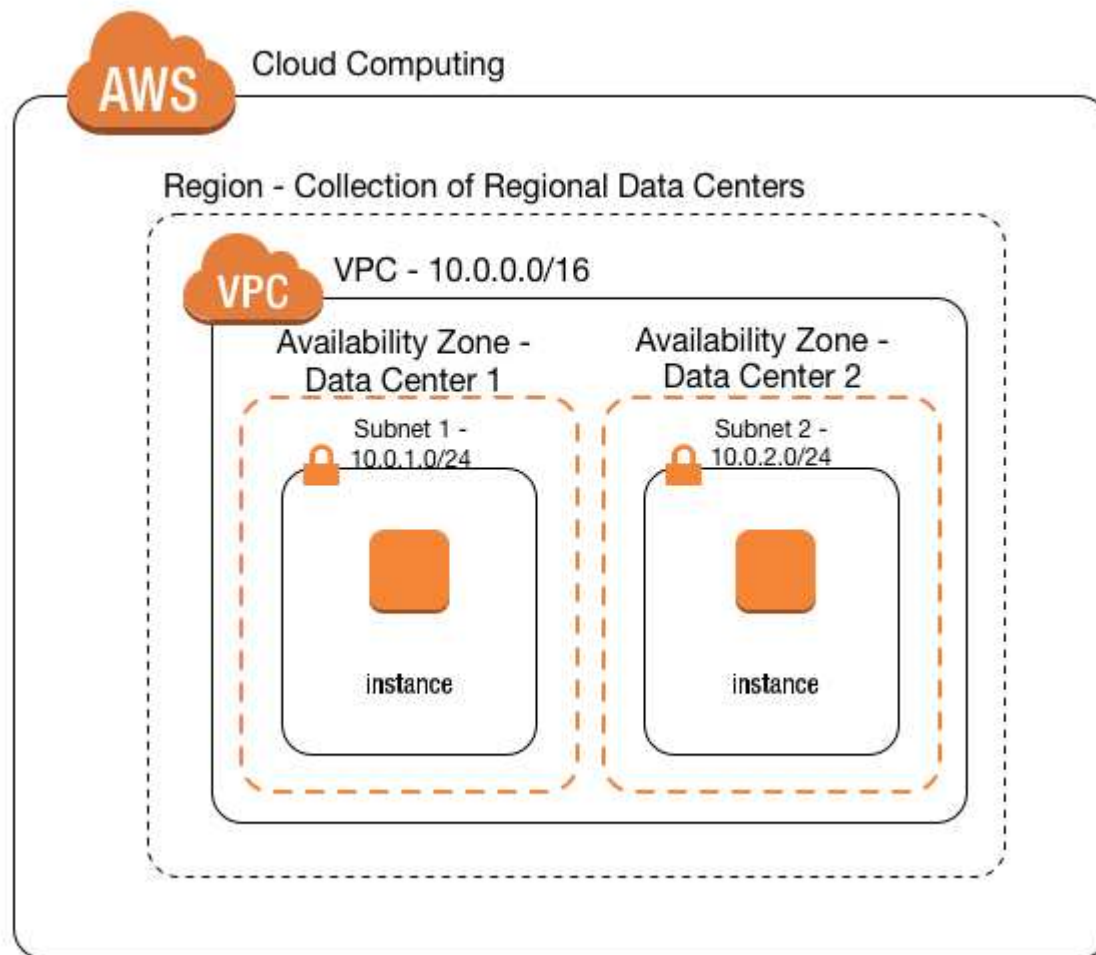


Edge Location = Point of presence where the content cache is performed.

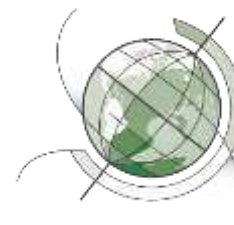


# AWS Cloud Hierarchy

Global Services > Regional > VPC > AZ > Host



✓ Know the service scope:



Route 53 – DNS  
CloudFront

Região

Buckets S3  
AMI Images

AZ

Instances EC2/RDS  
Volumes EBS  
Containers

Host

Host applications  
Anti-virus, Licenses

# AWS Platform Services: Over 120 Services

Over 120 Services

## Advanced Services



Analytics



Artificial Intelligence



Mobile



Internet of Things



Game Development



AWS Marketplace

## Business Process Services



Developer Tools



Management Tools



Business Productivity



Application Services



Desktop and App Streaming



Technical and Business Support

## Foundational Services



Compute



Storage



Databases



Networking and Content Delivery



Hybrid Cloud Architecture



Messaging

# Services Availability per Region

## Region Table

Last updated: November 29, 2018

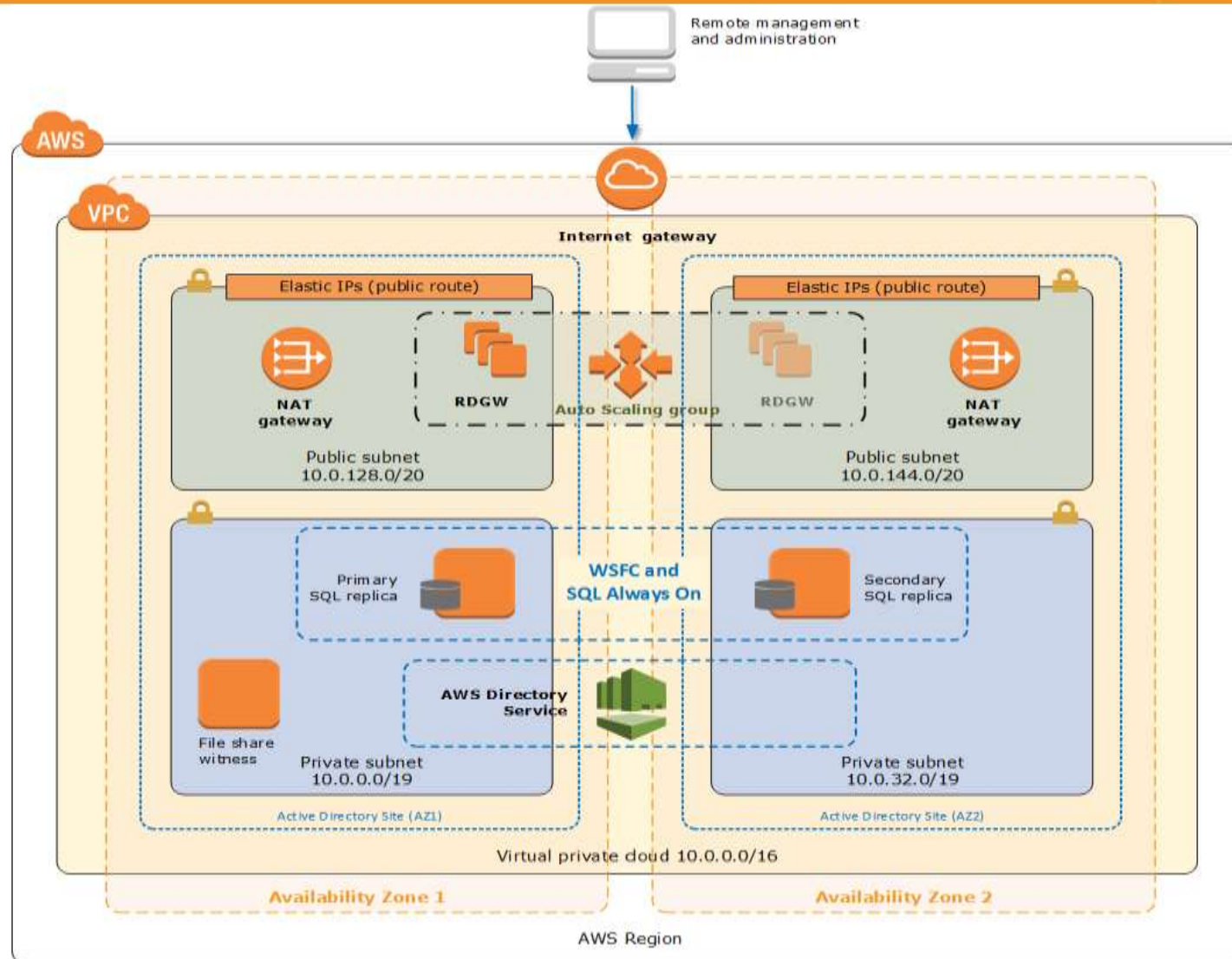
<https://aws.amazon.com/about-aws/global-infrastructure/regional-product-services/>

Services Offered:	Americas		Europe / Middle East / Africa		Asia Pacific			
	Northern Virginia	Ohio	Oregon	Northern California	Montreal	São Paulo	GovCloud (US-West)	GovCloud (US-East)
Alexa for Business	✓							
Amazon API Gateway	✓	✓	✓	✓	✓	✓	✓	✓
Amazon AppStream 2.0	✓		✓					
Amazon Athena	✓	✓	✓					
Amazon Aurora - MySQL-compatible	✓	✓	✓	✓	✓		✓	✓
Amazon Aurora - PostgreSQL-compatible	✓	✓	✓	✓	✓		✓	✓
Amazon Chime	✓							
Amazon Cloud Directory	✓	✓	✓					
Amazon CloudSearch	✓		✓	✓		✓		
Amazon CloudWatch	✓	✓	✓	✓	✓	✓	✓	✓
Amazon CloudWatch Events	✓	✓	✓	✓	✓	✓	✓	✓
Amazon CloudWatch Logs	✓	✓	✓	✓	✓	✓	✓	✓
Amazon Cognito	✓	✓	✓					
Amazon Comprehend	✓	✓	✓					

- ✓ Take into account the availability of services in each region.
- ✓ Service values vary by region.

# AWS Architectures – SQL Server

Remember the scope of services

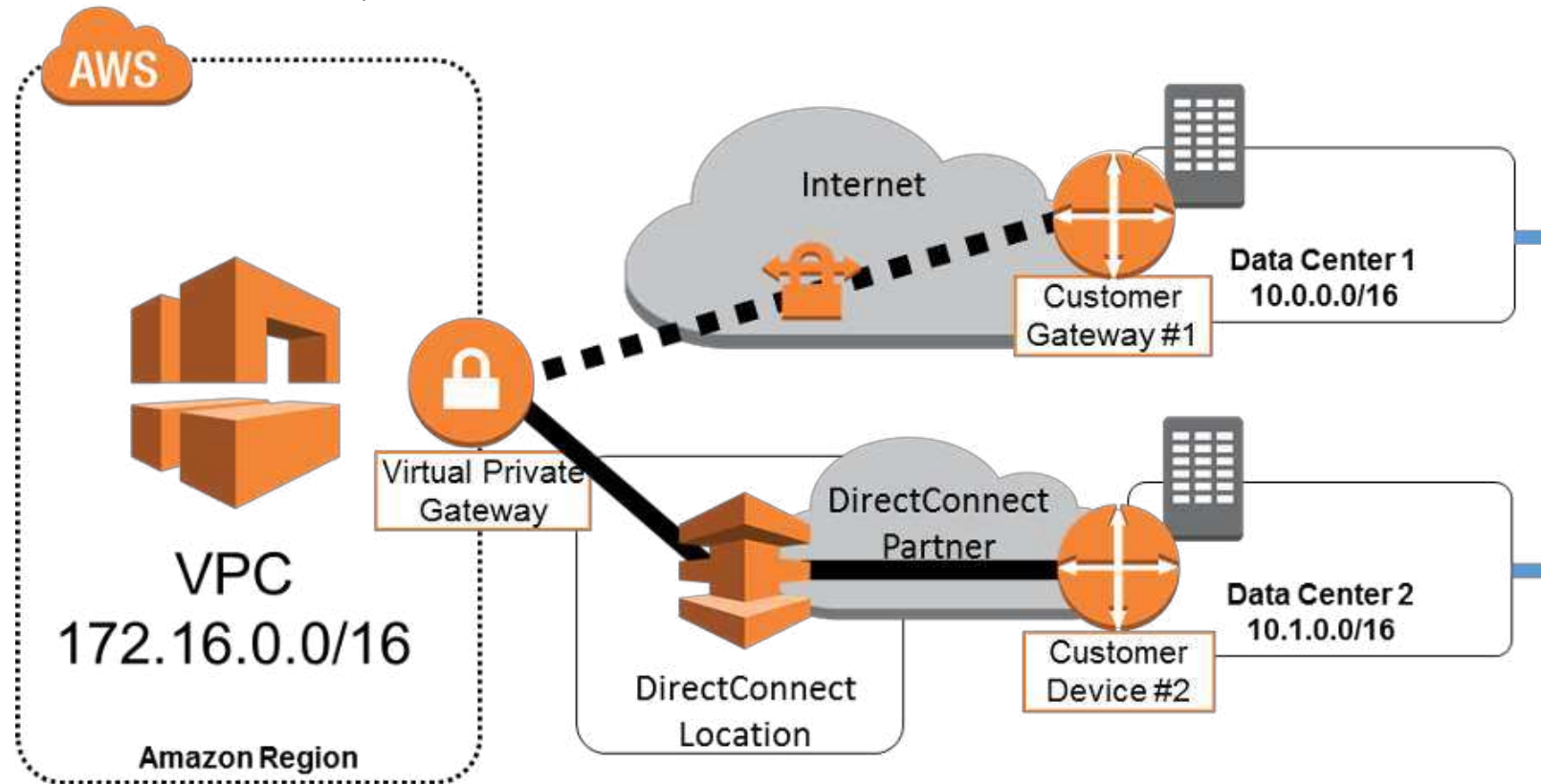


# Hybrid Architectures

Hybrid architectures can be implemented in several ways:

- ✓ VPN
- ✓ Direct Connect
- ✓ *Vmware on AWS\* (depends on the solutions above)*

*What matters is to establish a transparent connection between client DC and AWS.*



# AWS Hybrid Architecture Support

01.

Almost **every AWS customer with on-premises infrastructure is running a hybrid architecture.**

02.

**AWS offers seamless integration** with existing on-premises data centers - customers can leverage existing investments

03.

Easily run on VMWare workloads on AWS **with seamless deployment and management**

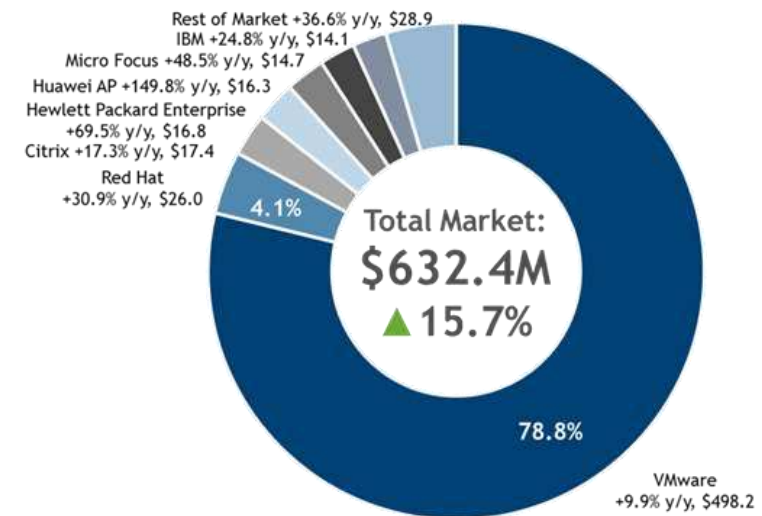
04.

AWS offers the only **VMWare-delivered, sold and supported** service available on a leading public cloud

\* IDC Worldwide Cloud System Software 2015 Share Snapshot

79%

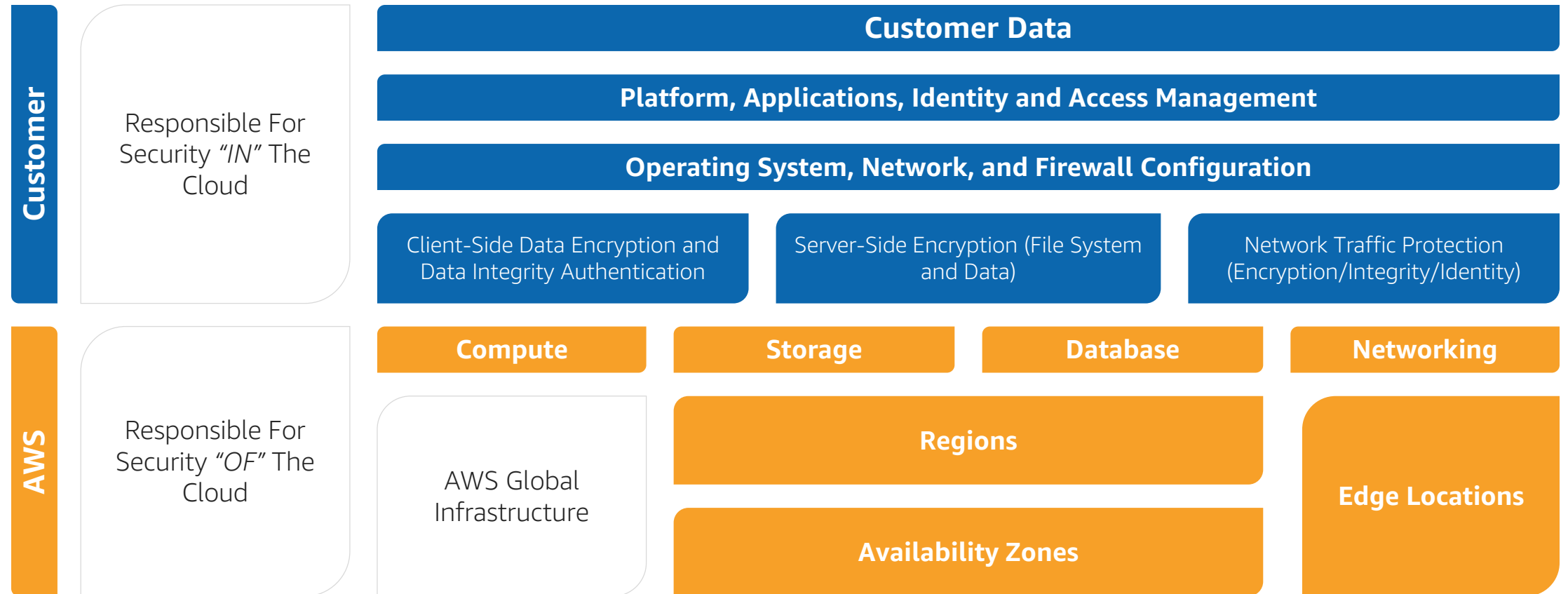
of existing Enterprise workloads run on VMware\*



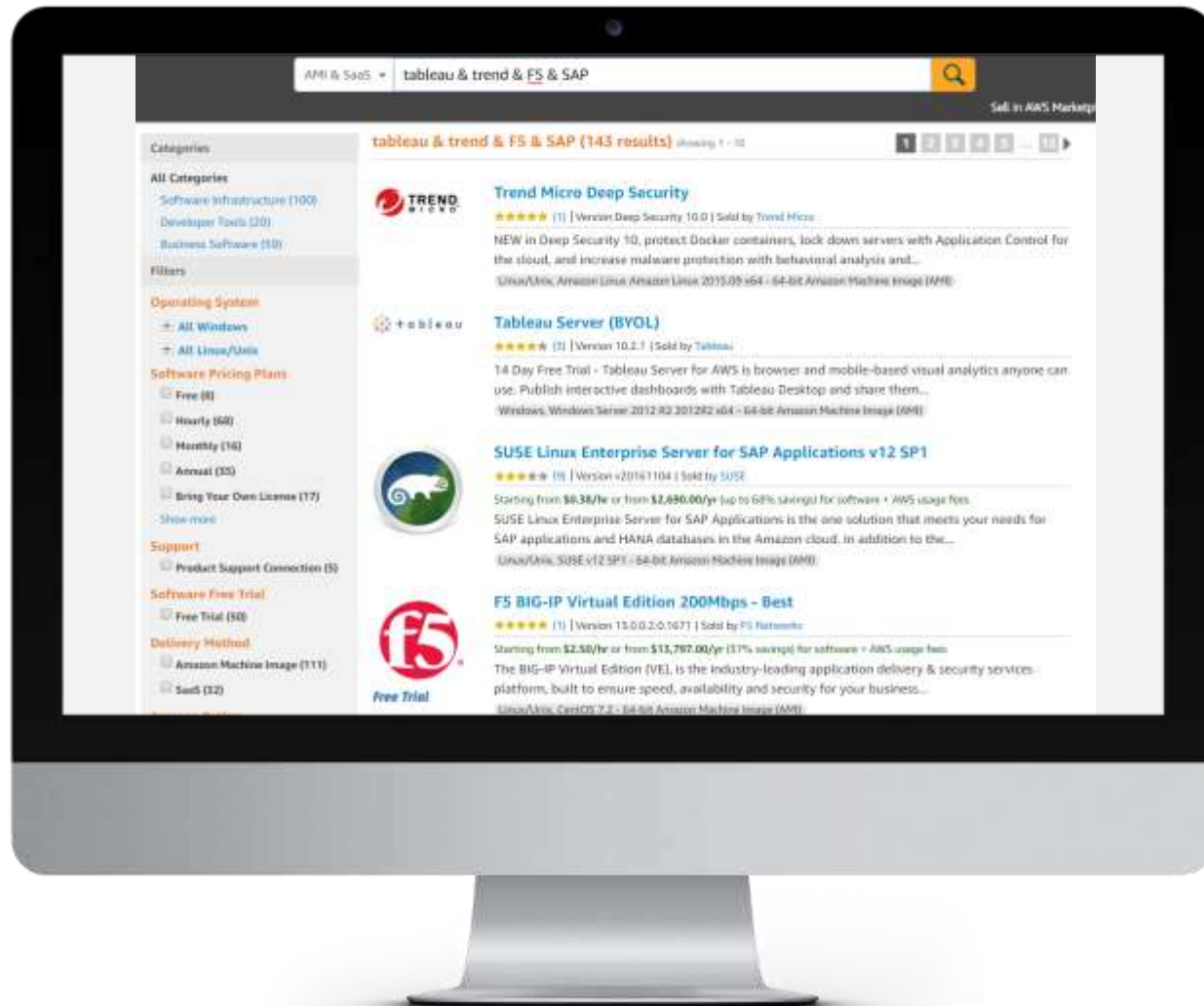


# Shared Responsibility Model

<https://aws.amazon.com/pt/compliance/shared-responsibility-model/>



# AWS Marketplace Overview



AWS Marketplace is an online store that supports:

01

Over **1,280** participating ISVs

02

**135,000+** active customers

03

**4,200+** software listings

04

Over **481M** hours of software per month



# Module 3 : Core Services

# AWS Core Services

## Compute



Amazon EC2



Auto Scaling



AWS Lambda

## Storage



Amazon S3



Amazon EBS



Amazon Glacier

## Networking



Elastic Load Balancing\*



Amazon Route 53



Amazon VPC\*



AWS Direct Connect



VPN connection

## Databases



Amazon RDS



Amazon Aurora



Amazon DynamoDB

## Security



IAM



AWS WAF



AWS KMS



AWS Shield



Amazon CloudWatch



AWS CloudFormation



AWS CloudTrail



AWS Config



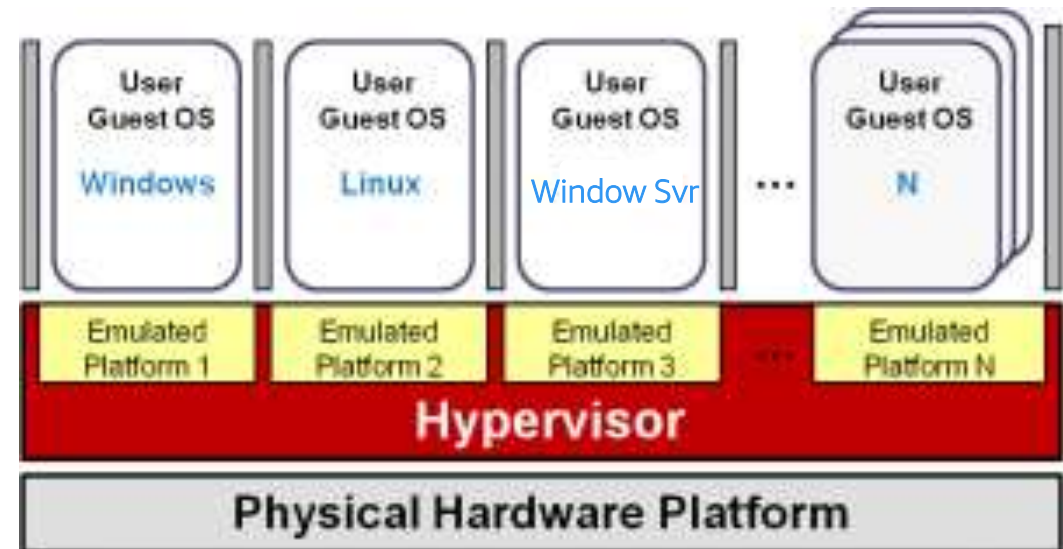
Amazon EC2 Systems Manager

## Management

- Virtual machine instance.
- Linux and Microsoft Windows AMI's.
  - Amazon Machine Image: is the image of the Operating System that will be loaded in the instance.
- Client has full control of the Operating System and its applications as admin.

Multiple types and sizes of instances.  
Remote access via SSH or Remote Desktop.

<https://aws.amazon.com/ec2/>



# Amazon EC2 - Instance Types

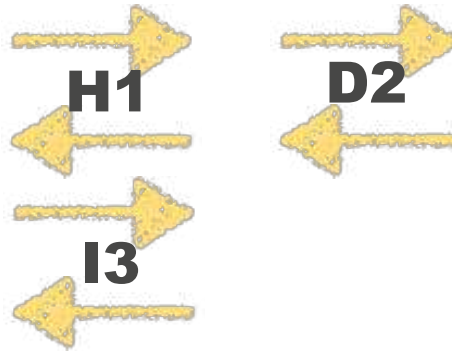
General purpose



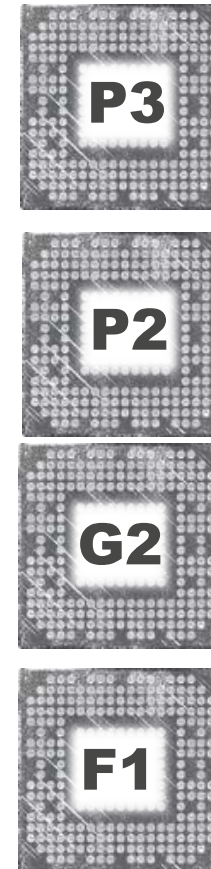
Compute optimized



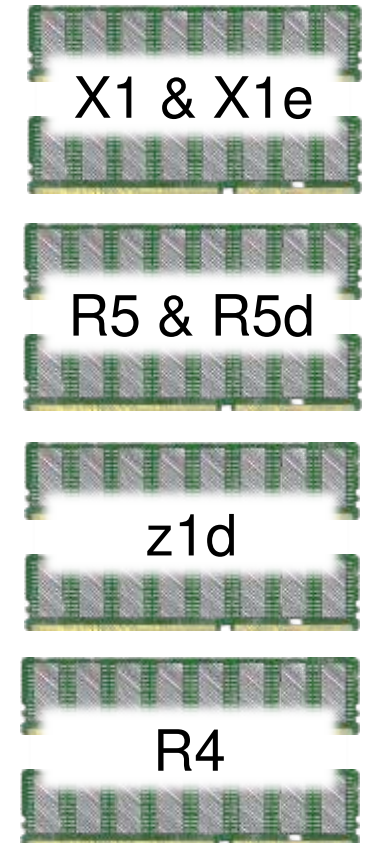
Storage and I/O optimized



GPU enabled



Memory optimized



# Amazon EC2 - Purchasing Options

## On-Demand

Pay for compute capacity **by the second** with no long-term commitments

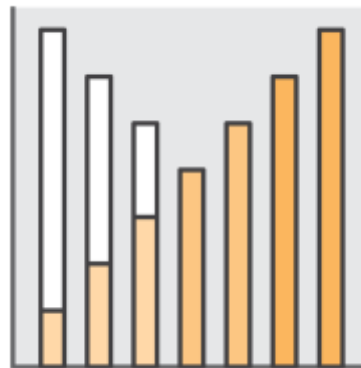
Spiky workloads, to define needs



## Reserved

Make a 1 or 3 Year commitment and receive a **significant discount** off On-Demand prices

Committed, steady-state usage



## Spot

Spare EC2 capacity at **savings of up to 90%** off On-Demand prices

Fault-tolerant, dev/test, time-flexible, stateless workloads



# Billing Comparison

## Select Billing Option

N.Virginia, 30thJan2019.

Instance Type: m5.xlarge  
Operating System: Linux  
Usage: 100 % Utilized/Month

Per Instance Prices & Projected Costs (all in USD)

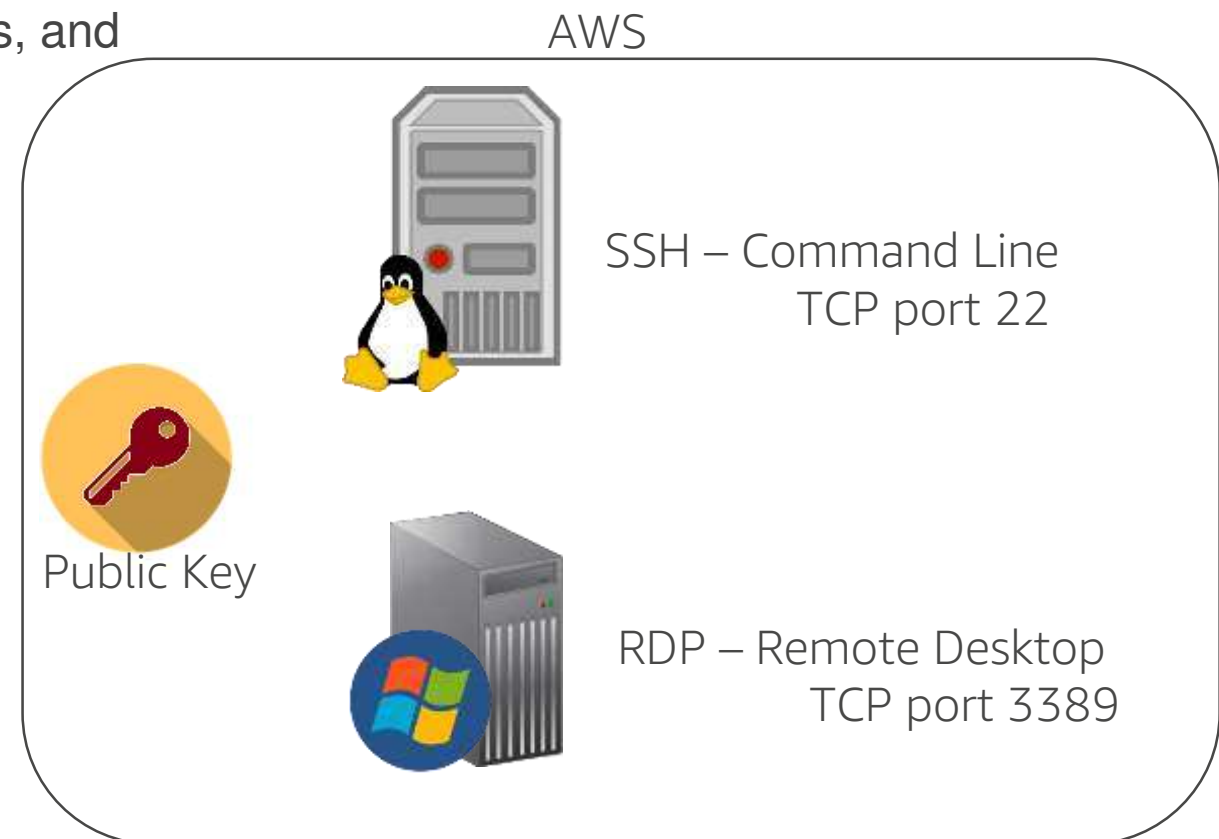
Select	Name	Upfront Price	Effective Hourly Cost	Effective Monthly Cost	1 Year Cost	3 Year Cost
<input checked="" type="radio"/>	On-Demand (No Contract)	---	0.192	140.55	1686.60	5059.80
Reserved	<input type="radio"/> 1 Yr No Upfront Reserved	0.00	0.123	89.79	1077.48	3232.44
	<input type="radio"/> 1 Yr Partial Upfront Reserved	512.00	0.116	85.01	1020.08	3060.24
	<input type="radio"/> 1 Yr All Upfront Reserved	1003.00	0.114	83.59	1003.00	3009.00
	<input type="radio"/> 3 Yr No Upfront Reserved	0.00	0.085	62.05	---	2233.80
	<input type="radio"/> 3 Yr Partial Upfront Reserved	1030.00	0.078	57.09	---	2054.92
	<input type="radio"/> 3 Yr All Upfront Reserved	1937.00	0.074	53.81	---	1937.00
Convertible	<input type="radio"/> 1 Yr No Upfront Convertible	0.00	0.141	102.93	1235.16	3705.48
	<input type="radio"/> 1 Yr Partial Upfront Convertible	588.00	0.134	97.91	1174.92	3524.76
	<input type="radio"/> 1 Yr All Upfront Convertible	1153.00	0.132	96.09	1153.00	3459.00
	<input type="radio"/> 3 Yr No Upfront Convertible	0.00	0.097	70.81	---	2549.16
	<input type="radio"/> 3 Yr Partial Upfront Convertible	1185.00	0.090	65.77	---	2367.60
	<input type="radio"/> 3 Yr All Upfront Convertible	2322.00	0.088	64.50	---	2322.00



# Amazon EC2 –Remote Access

At the moment of creation of the instance it is defined which key-pair will be used to access the instance.

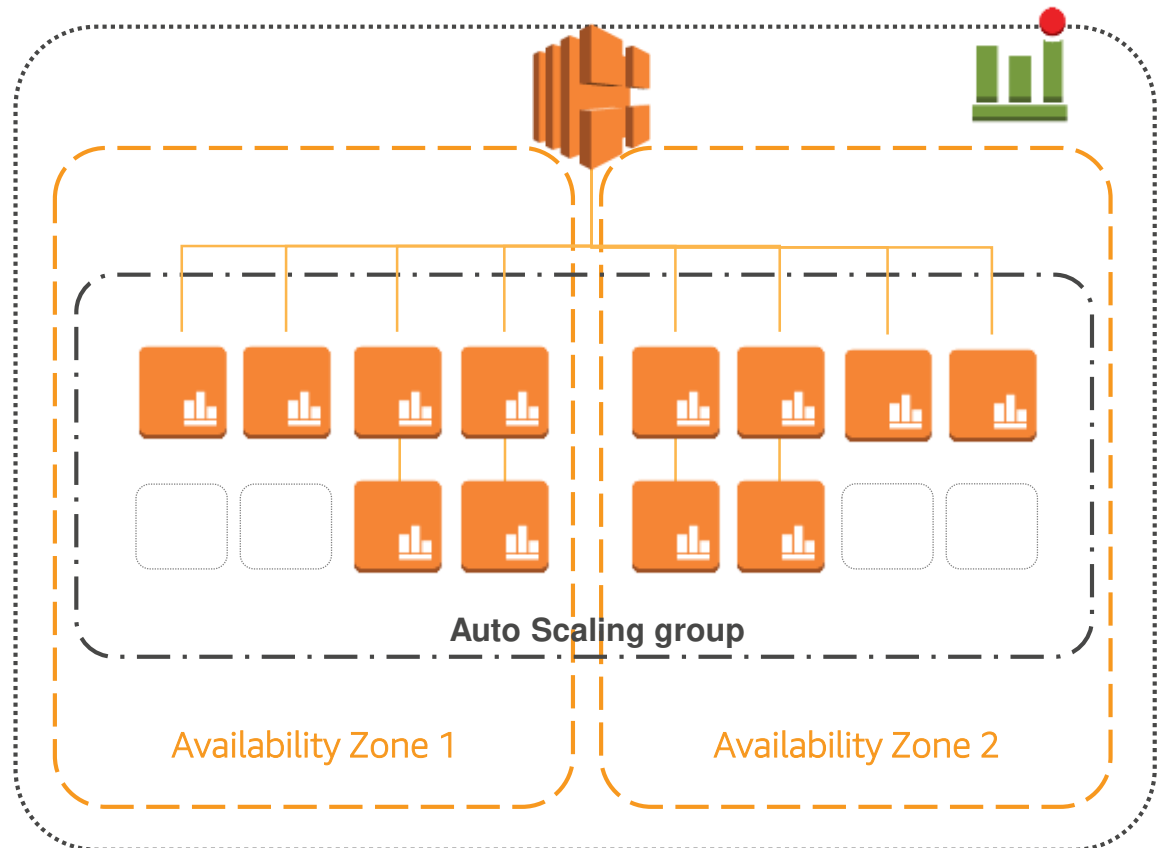
“A key pair consists of a **public key** that AWS stores, and a **private key file** that you store.”



# EC2 Auto Scaling

- Horizontal growth of instances
  - Provision and Deprovision
- Ensures High Availability
- Reduced costs. Supply = Consumption
- Minimum = 2, Maximum = 12
- Growth policies
  - CPU, Memory, Volumes, etc..

CPU utilization triggers the alarm: capacity is doubled until CPU utilization drops below 60% or max capacity is reached.





# AWS Lambda: Serverless Compute

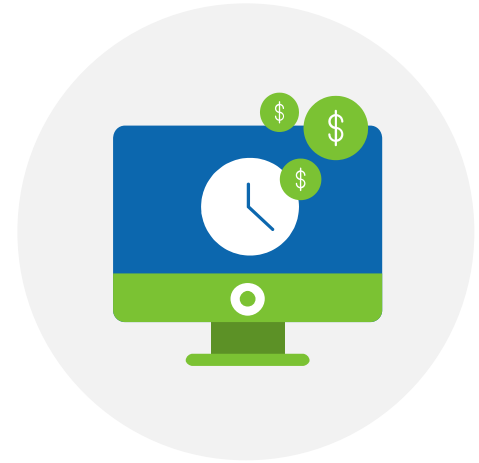
- Transform applications into EC2 instances into serverless applications.



No servers to manage



Pay only for compute time used



Pay only for compute time used

**AWS Lambda Video**



[https://www.youtube.com/watch?v=eOBq\\_\\_h4OJ4](https://www.youtube.com/watch?v=eOBq__h4OJ4) **(3:01)**

# AWS Core Services

## Compute



Amazon EC2



Auto Scaling



AWS Lambda

## Storage



Amazon S3



Amazon Glacier



Amazon EBS

## Networking



Elastic Load Balancing\*



Amazon Route 53



Amazon VPC\*



AWS Direct Connect



VPN connection

## Databases



Amazon RDS



Amazon DynamoDB



Amazon Aurora

## Security



IAM



AWS WAF



AWS KMS



AWS Shield



Amazon CloudWatch



AWS CloudFormation



AWS CloudTrail



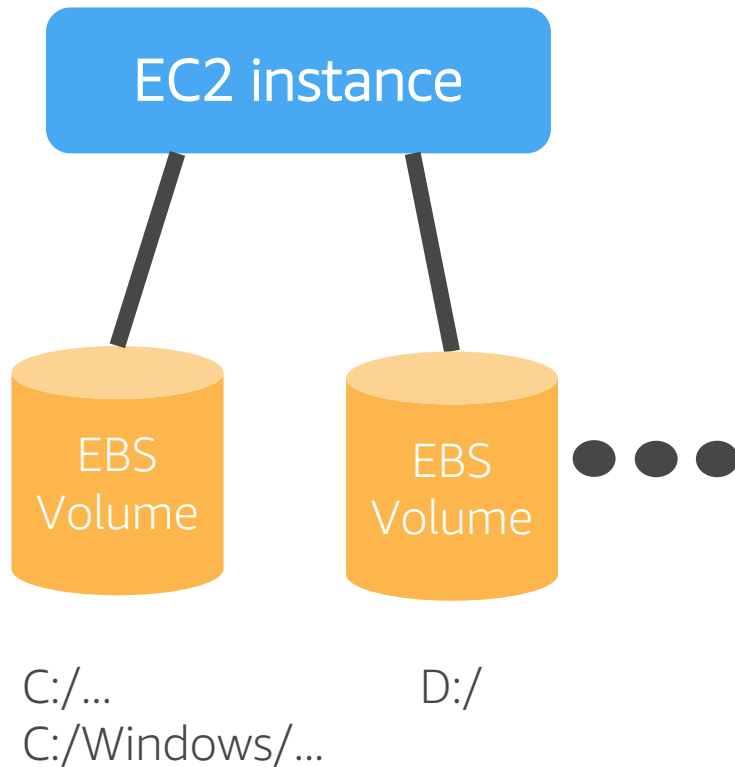
AWS Config



Amazon EC2 Systems Manager

## Management

# Amazon EBS – Elastic Block Storage



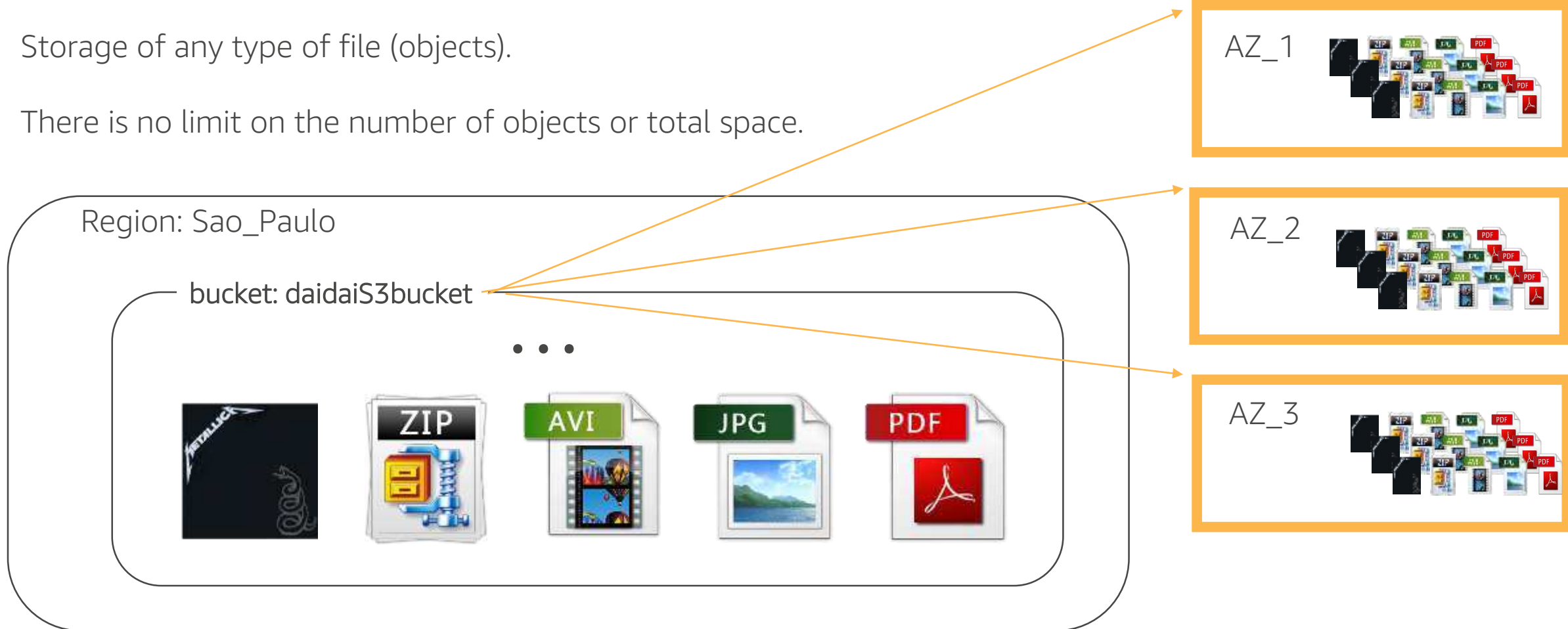
- ✓ Volumes associated with EC2 instances.
- ✓ Persistent Data
  - ✓ You can shut down, restart, terminate the instance.
  - ✓ Decouple the instance volume.
- ✓ Volumes of 1GB a 16TB.
- ✓ SSD or HDD.
- ✓ Support encryption.

# Amazon S3 – Simple Storage Service

99.999999999% durability and 99.99% availability of objects over a given year

Storage of any type of file (objects).

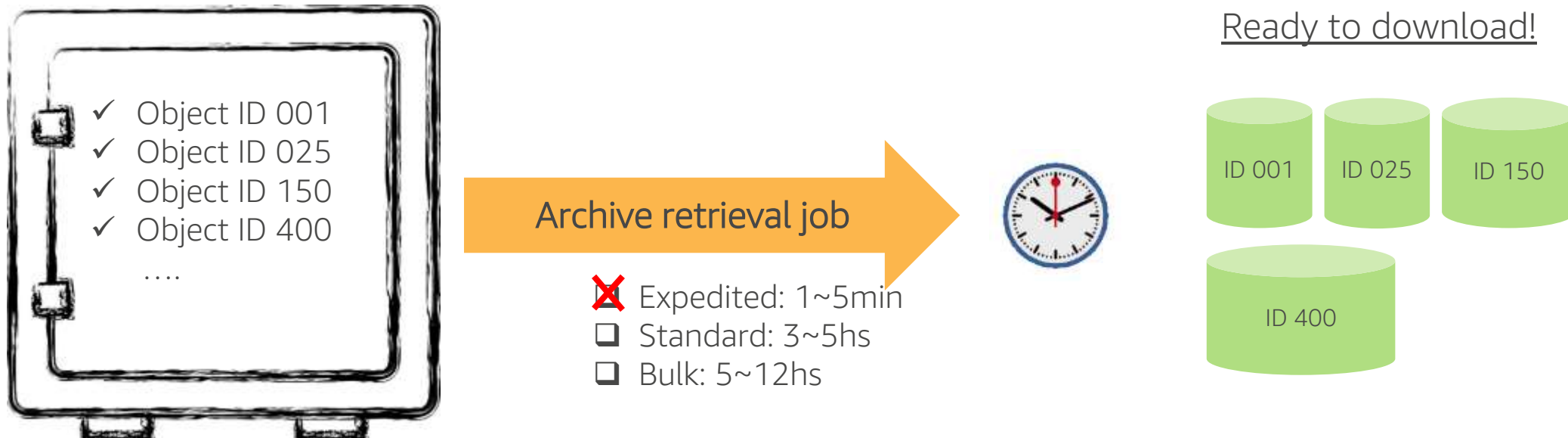
There is no limit on the number of objects or total space.



# Amazon S3 Glacier

99.9999999999% durability of objects over a given year

- ✓ Long term archiving, backup
- ✓ Low cost.
- ✓ Data are extracted by executing retrieval jobs.



# AWS Core Services

## Compute



Amazon EC2



Auto Scaling



AWS Lambda

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Amazon S3



Amazon Glacier



Amazon EBS

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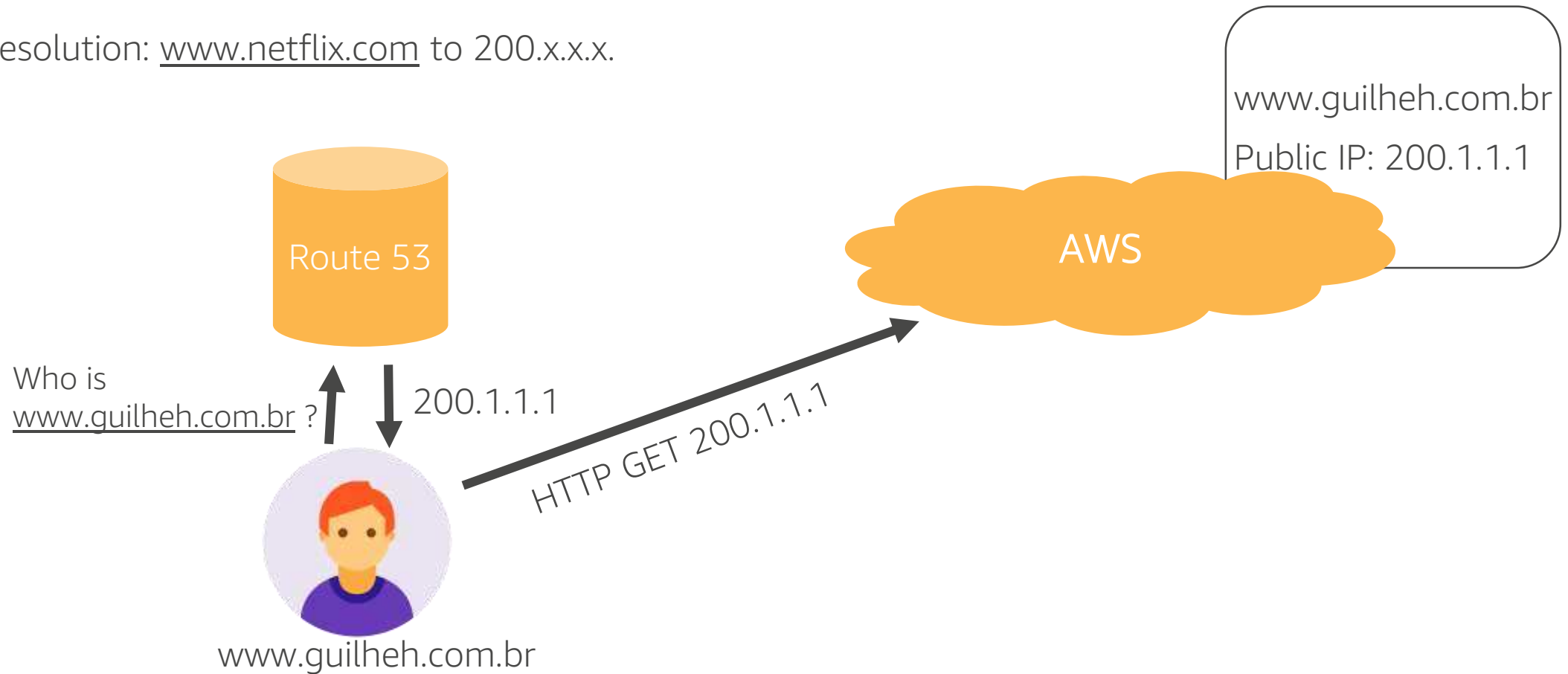


Amazon EC2 Systems Manager

## Management

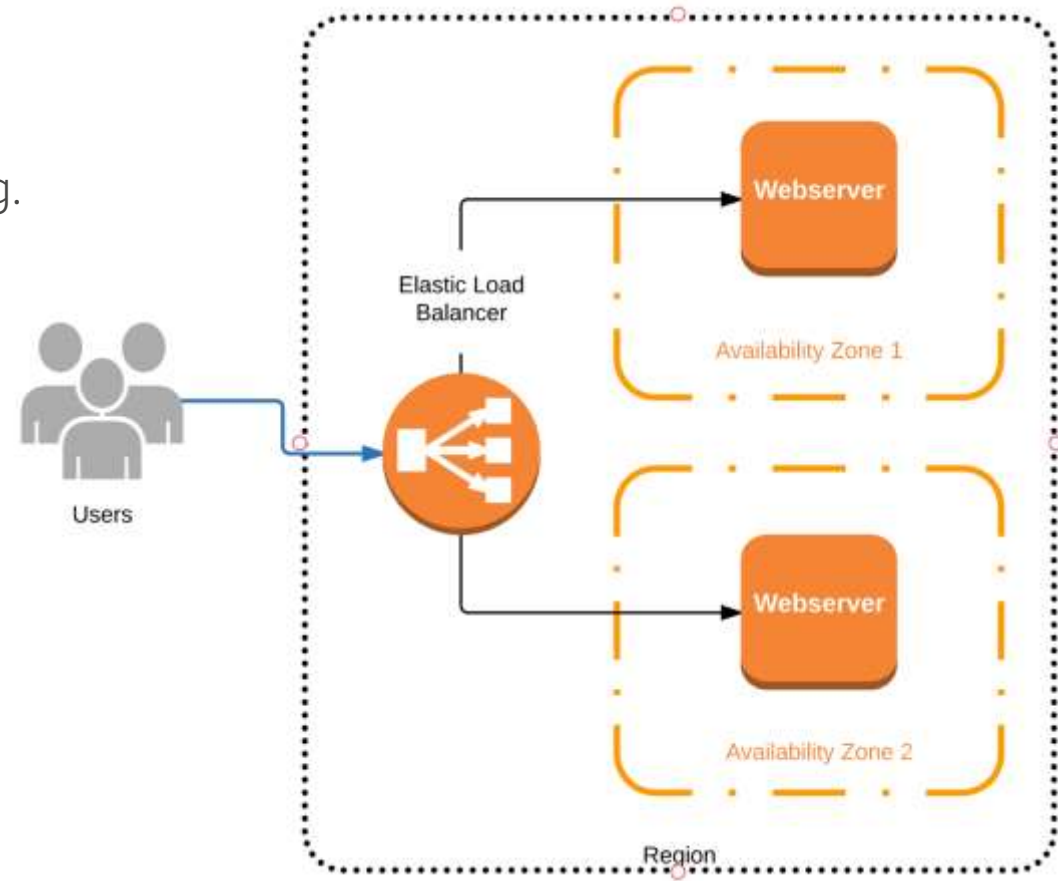
# Amazon Route 53

- ✓ DNS Service
- ✓ Name resolution: www.netflix.com to 200.x.x.x.



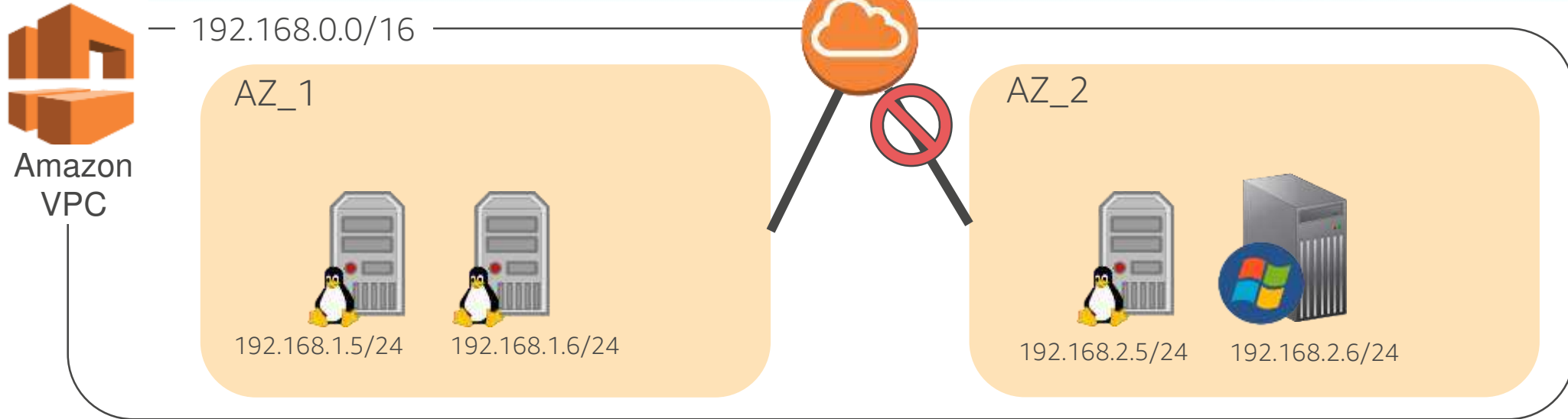
# Amazon Elastic Load Balancer

- ✓ Balancing connections for different servers.
- ✓ Ensures high service availability.
- ✓ Usually used in conjunction with EC2 Auto Scaling.





# VPC – Virtual Private Cloud



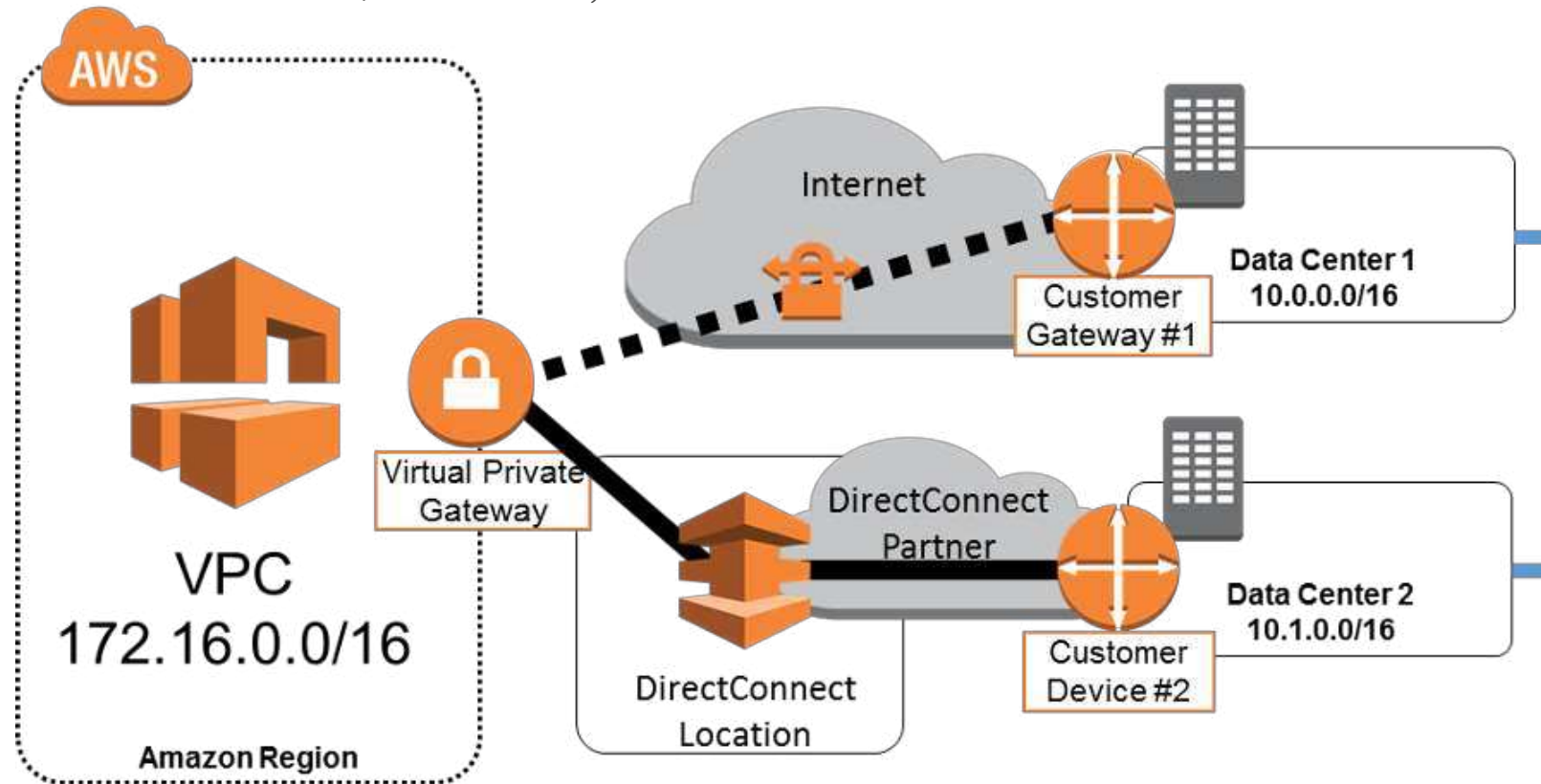
- ✓ Provision a logically isolated section of the AWS cloud
- ✓ Control your virtual networking environment
  - ✓ Networking
  - ✓ Security
- ✓ Connect to your on-premises network via VPN or Direct Connect
- ✓ Control if and how your instances access the Internet

# Hybrid Architectures

Arquiteturas híbridas podem ser executadas de diversas formas:

- ✓ VPN
- ✓ Direct Connect
- ✓ Vmware on AWS\* (depende das soluções acima)

*O que importa é estabelecer uma conexão transparente entre DC do cliente e AWS.*



# AWS Core Services

## Compute



Amazon EC2



Auto Scaling



AWS Lambda

## Storage



Amazon S3



Amazon Glacier



Amazon EBS

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Elastic Load Balancing\*



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Amazon CloudWatch



AWS CloudFormation



AWS CloudTrail



AWS Config



Amazon EC2 Systems Manager

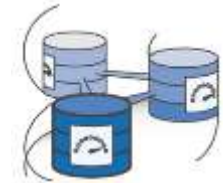
## Management

# Amazon RDS – Relational Database Service



Amazon  
RDS

- Relational Databases
- Self Managed Service
- Automation of routines
- Secure, scalable, simple to use
- Low cost, pay per use



Amazon  
Aurora



ORACLE®

Important points:

- ✓ Easiness for the client to maintain a relational database.
- ✓ Very used in the process of developing new applications.
- ✓ Automatic update, backup, synchronization and redundancy routines.

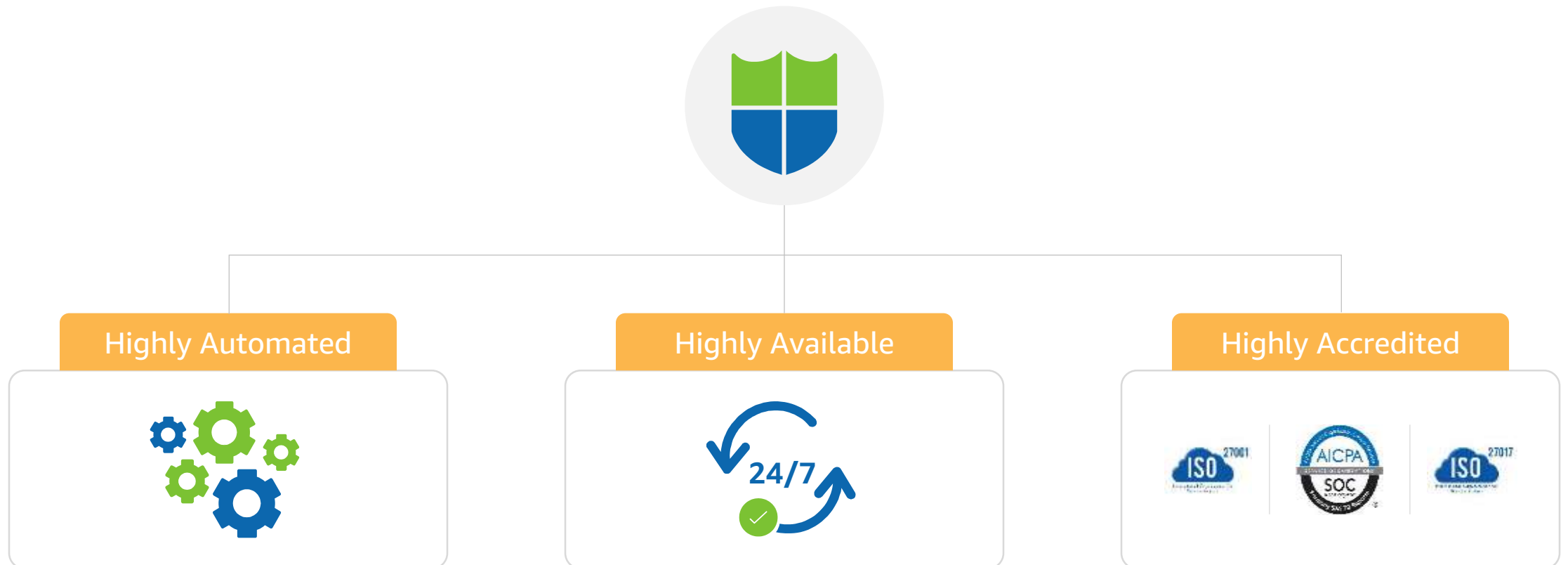
Domain 2 : Security – 24% of Examination

# Module 4:

# Security and Compliance

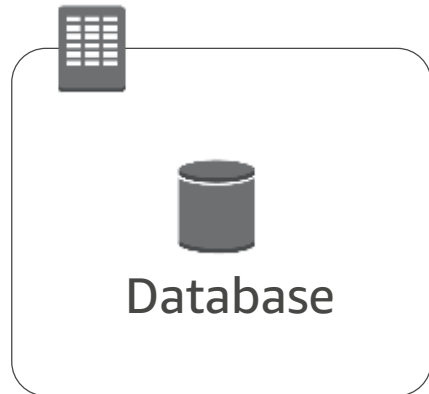
# Security Is Our #1 Priority

## Compliance and Security at Scale on a Single Platform



# Self Served and Managed Services

## Self-Managed



Corporate data center

## Amazon EC2 Service



AWS Data Center(s)

## Fully Managed Service

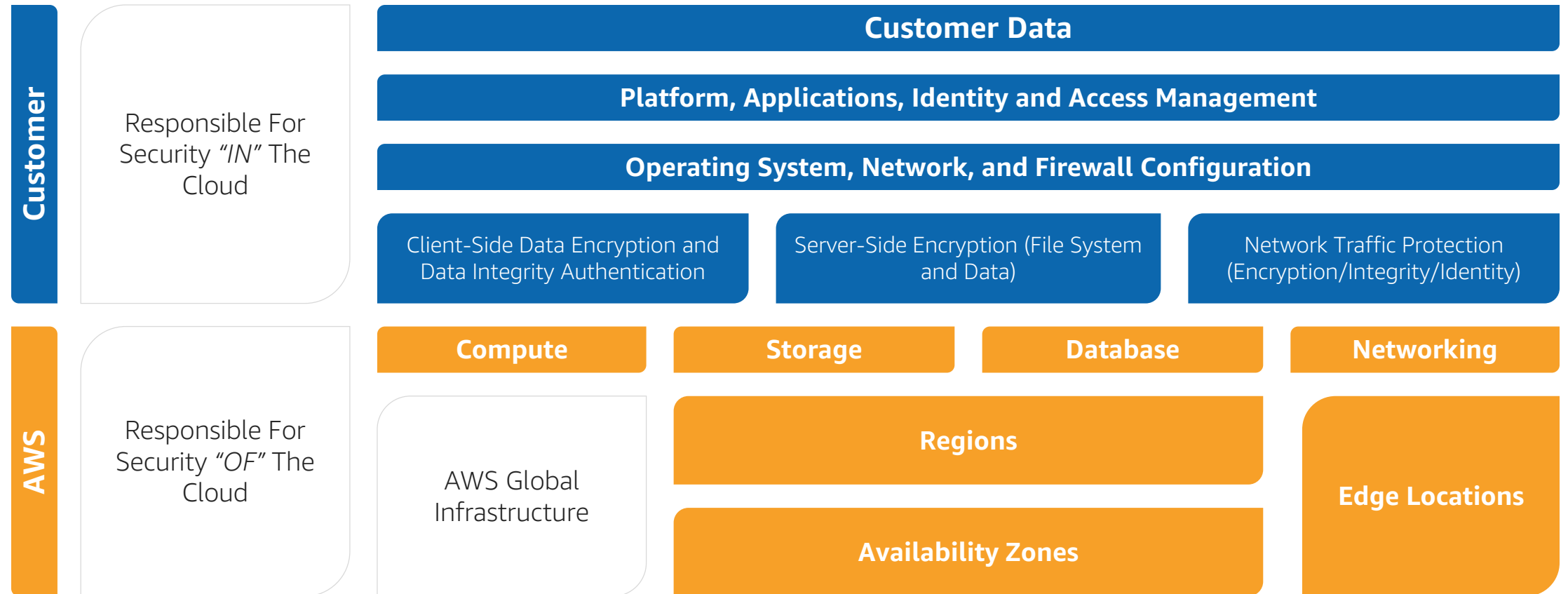


AWS Data Center(s)

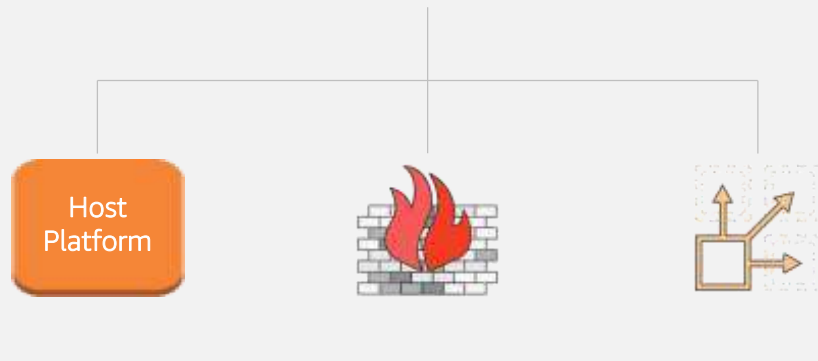


# Shared Responsibility Model

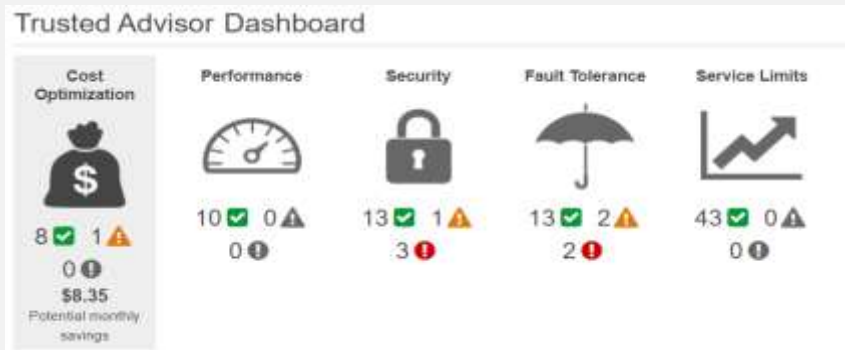
<https://aws.amazon.com/pt/compliance/shared-responsibility-model/>



## AWS Service-Specific Security



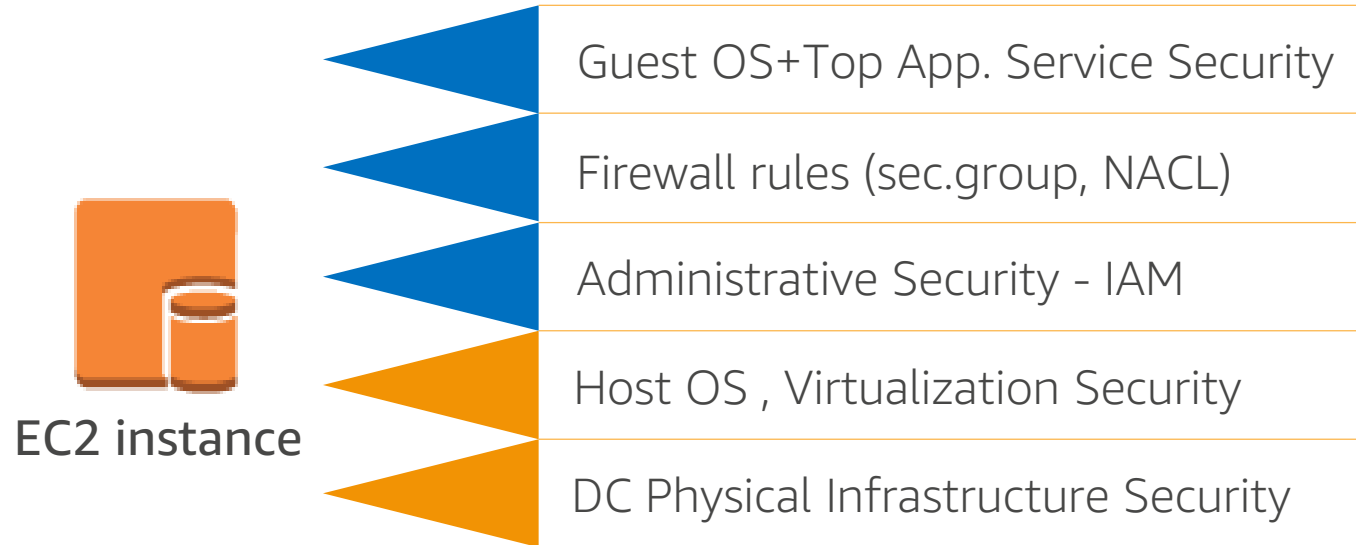
## AWS Trusted Advisor



## AWS Platform Security

Security Focus	Security Services and Features
Infrastructure Security	<ul style="list-style-type: none"><li>Amazon VPC</li><li>AWS WAF</li><li>Encryption in-transit with TLS with all services</li><li>Connectivity options to enable private or dedicated connections from your office or on-premises environment</li></ul>
Identity and Access Control	<ul style="list-style-type: none"><li>AWS Identity and Access Management (IAM)</li><li>AWS Multi-Factor Authentication</li><li>AWS Directory Service</li></ul>
Monitoring and Logging	<ul style="list-style-type: none"><li>AWS Trusted Advisor</li><li>AWS CloudTrail</li><li>Amazon CloudWatch</li><li>Amazon Macie</li></ul>
Inventory and Configuration	<ul style="list-style-type: none"><li>Amazon Inspector</li><li>AWS Config</li><li>AWS CloudFormation</li></ul>
DDoS Mitigation	<ul style="list-style-type: none"><li>AWS Shield - Auto Scaling</li><li>Amazon CloudFront</li><li>Amazon Route 53</li></ul>
Data Encryption	<ul style="list-style-type: none"><li>Encryption with all AWS storage and database services</li><li>Flexible Key Management options</li><li>AWS KMS</li><li>AWS CloudHSM</li></ul>

# Service Specific Security



AWS builds security into every layer of the AWS infrastructure and also into each of the services available on the infrastructure.



RDS



Application Load  
Balancer



Amazon  
S3



Amazon  
DynamoDB

...

# Platform Security Services

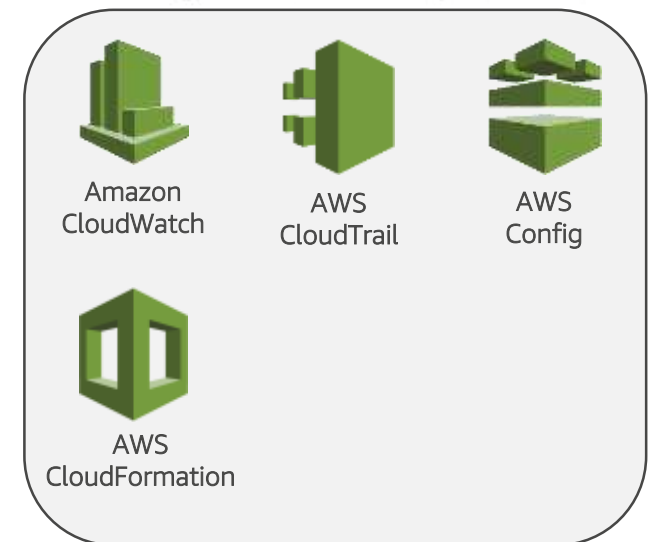
AWS also builds security-specific services directly into the platform.

Need to know services for the exam:

## Security & Compliance



## Management & Operation





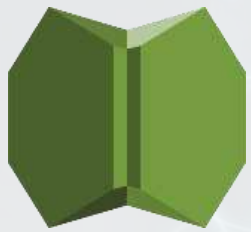
- ✓ Prime security service!
- ✓ Defines administrative profiles.
- ✓ Who can do what on the AWS console or by the additional management tools.
- ✓ You can enable Multi Factor Authentication (MFA) to login.
- ✓ Provides interaction permission between services.

Grupo Admin	
✓ Gu	Grupo Suporte
✓ Cib	
✓ Da	
Admini	
SupportUser	

## SupportUser

```
"Action": [  
  "support:*",  
  "acm:DescribeCertificate",  
  "acm:GetCertificate",  
  "acm:List*",  
  "apigateway:GET",  
  "appstream:Get*",  
  "autoscaling:Describe*",  
  "aws-marketplace:ViewSubscriptions",  
  "cloudformation:Describe*",  
  ...  
]
```

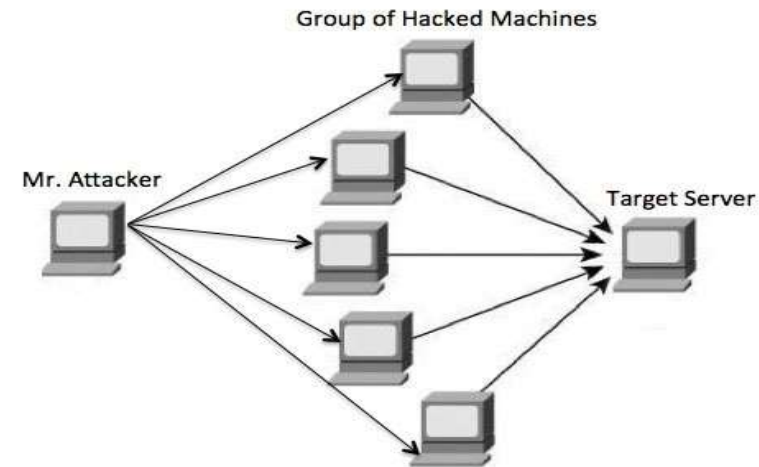




## Shield

Provides DDoS protection service that safeguards your customers' web applications running on AWS.

DDoS : Distributed Denial of Service.  
Botnets, massive attacks



Always-on  
Detection



Defend against  
common attacks



No Cost  
for  
Standard<sup>81</sup>

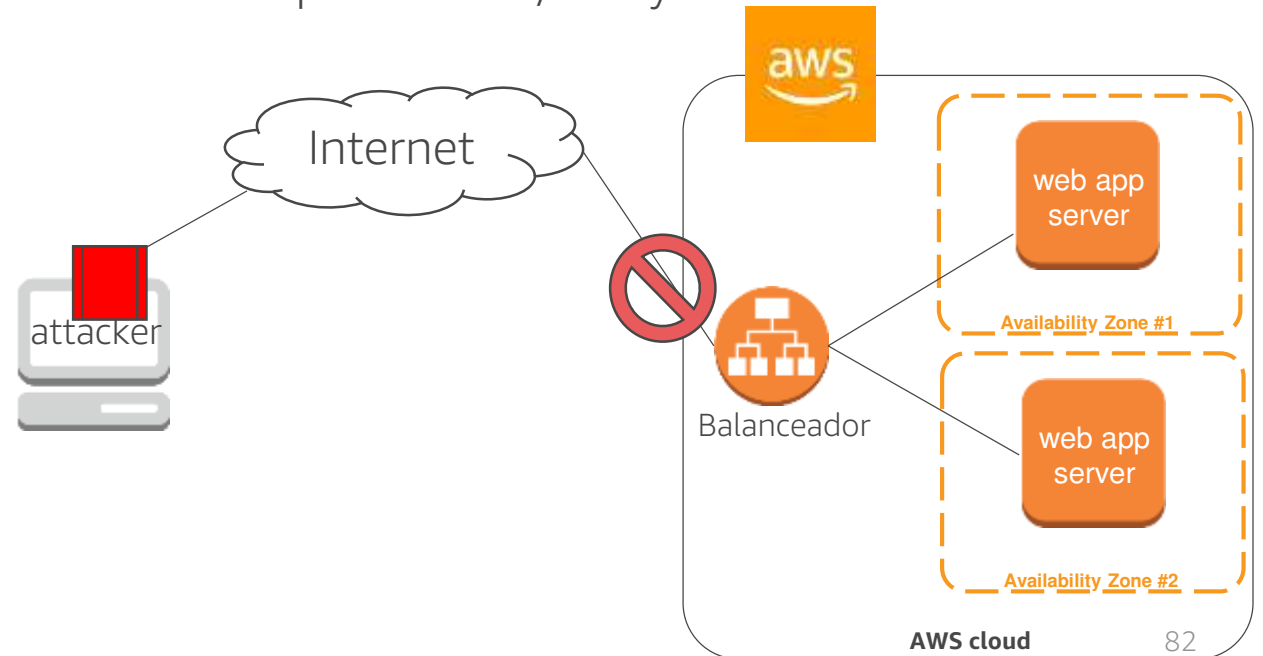
# AWS Web Application Firewall



## WAF

AWS WAF helps protect your web applications from common web exploits that could affect application availability, compromise security, or consume excessive resources.

- ✓ Protection for websites such as e-commerce, blogs, sites with forms, sites with registers (DB's).
- ✓ Works over CloudFront or Application Load Balancer.
- ✓ You create permission / deny access rules.





# On-Demand Access to Compliance Reports

## AWS Artifact



## Download Compliance Reports on Demand



On-demand access to print AWS security and compliance reports.



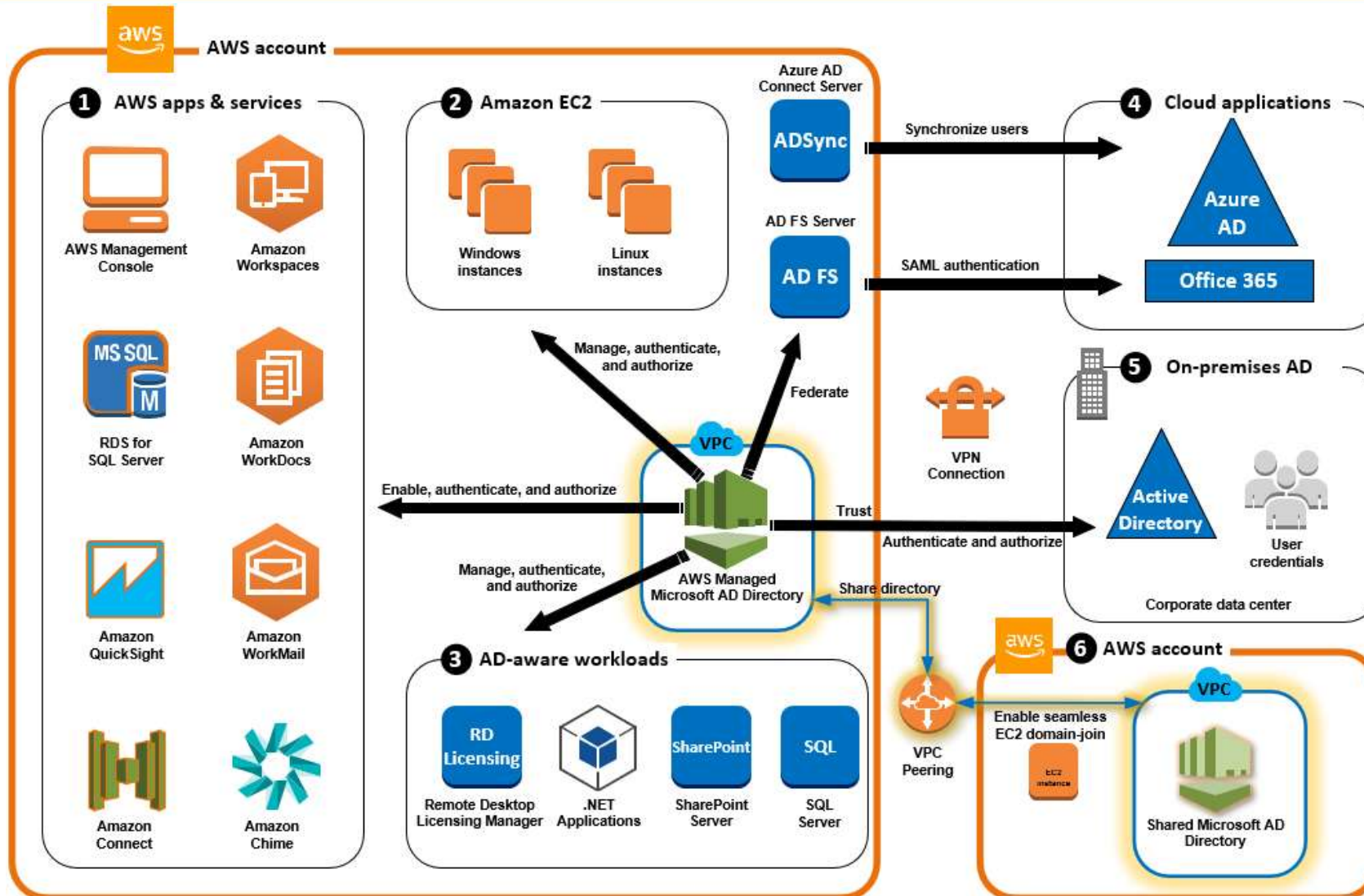
# AWS Assurance Programs: 58 Certifications

 Certifications / Attestations	 Laws, Regulations, and Privacy	 Alignments / Frameworks
C5 [Germany]	CISPE	CIS
Cyber Essentials Plus [UK]	EU Model Clauses	CJIS
DoD SRG	FERPA	CSA
FedRAMP	GLBA	ENS [Spain]
FIPS	HIPAA	EU-US Privacy Shield
IRAP [Australia]	HITECH	FISC
ISO 9001	IRS 1075	FISMA
ISO 27001	ITAR	G-Cloud [UK]
ISO 27017	My Number Act [Japan]	GxP (FDA CFR 21 Part 11)
ISO 27018	U.K. DPA - 1988	ICREA
MLPS Level 3 [China]	VPAT / Section 508	IT Grundschutz [Germany]

<https://aws.amazon.com/compliance/>

# AWS Directory Service

Security, identity and compliance - User management



- 1: Sign In to AWS Applications and Services with AD Credentials
- 2: Manage Amazon EC2 Instances
- 3: Provide Directory Services to Your AD-Aware Workloads
- 4: SSO to Office 365 and Other Cloud Applications
- 5: Extend Your On-Premises AD to the AWS Cloud
- 6: Share Your Directory to Seamlessly Join Amazon EC2 Instances to a Domain Across AWS Accounts

# Module 5: Management & Operation

Part of Domain 3 : Technology

## Management & Operation



Amazon  
CloudWatch



AWS  
CloudTrail

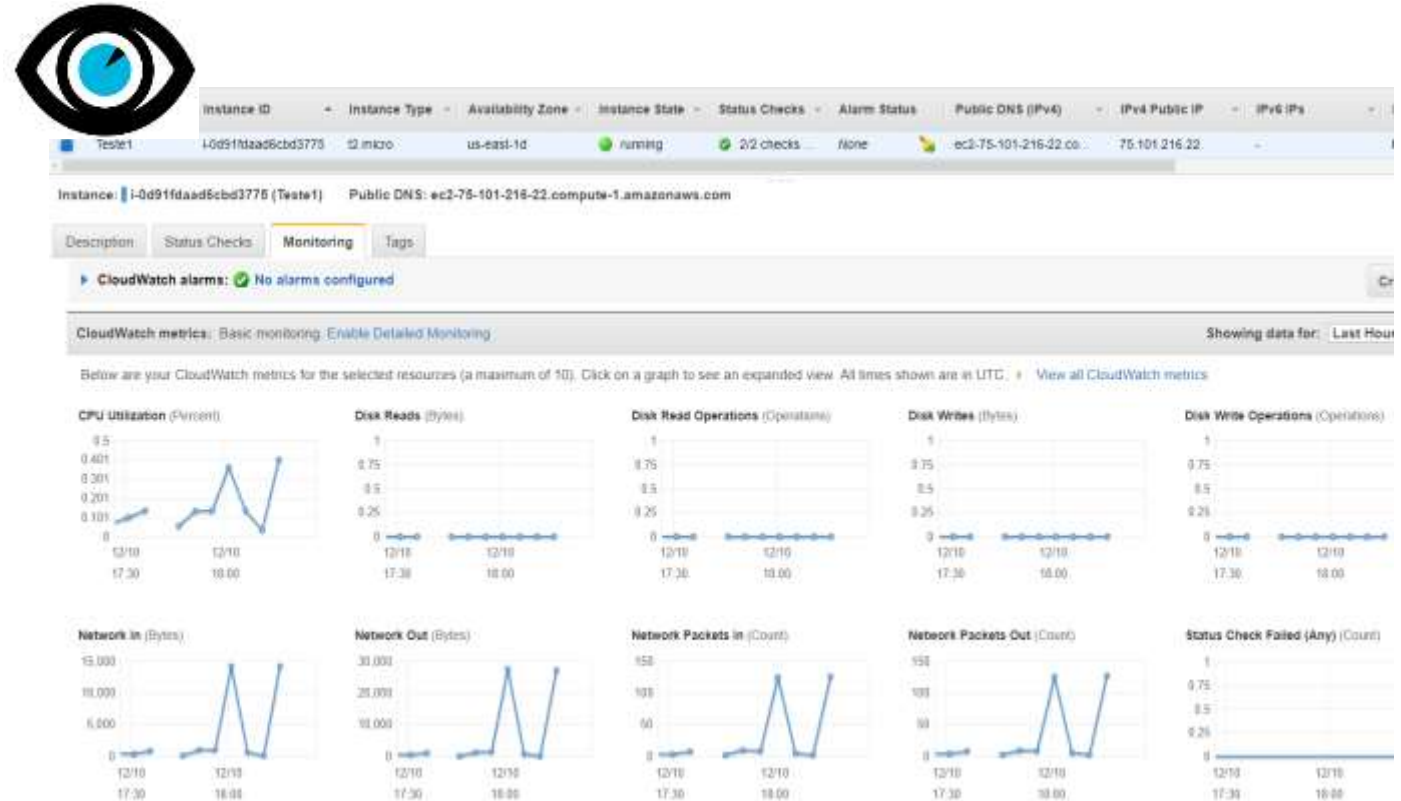


AWS  
Config



AWS  
CloudFormation

- ✓ Provides operational visibility.
- ✓ Monitoring and Alarm Service.
- ✓ Dashboard of consumptions reading.
- ✓ Can be used for Cost Management.
- ✓ Integrated with various AWS services.



## Define Metric

1.

Who

**Metric Name:** NetworkOut  
**InstanceId:** i-0d91fdaad6cbd3775  
**InstanceName:** Teste1



Instância EC2

- EBS
- S3
- RDS
- ...

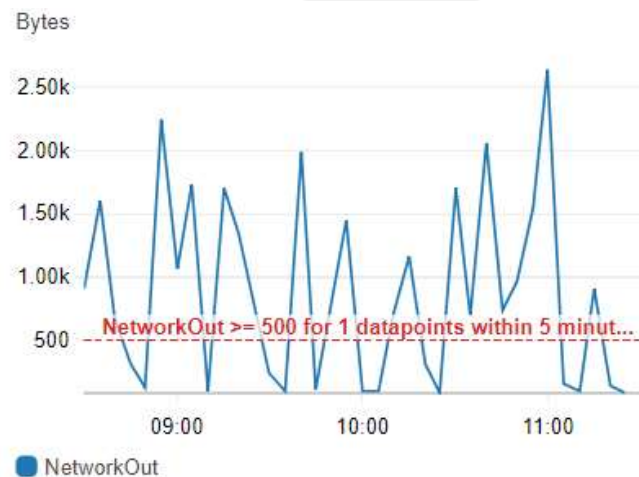
## Define Triggers

2.

When

**Whenever:** NetworkOut

is:



## Define Notifications

3.

Warn/Perform...

1. SNS Notification

2. Autoscaling Action

( 3. EC2 Action )\*

*\*only if Metric=EC2*

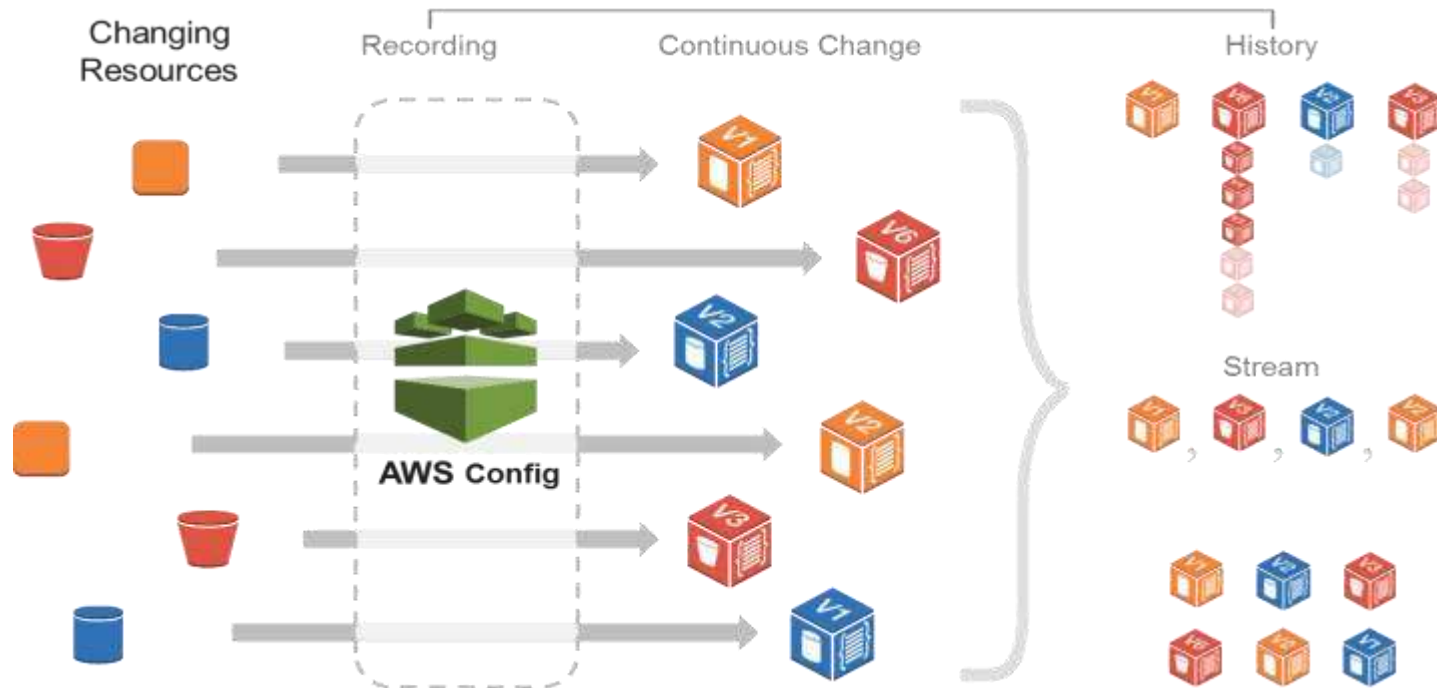
- ✓ CloudTrail provides the event history of AWS account activity.
- ✓ Permits governance, compliance, audit.
- ✓ Logs API calls.
- ✓ Security analysis.
- ✓ Tracking of resource changes.
- ✓ Problems solution.



	Event time	User name	Event name
▶	2018-12-11, 09:18:14 AM	guilheh	LookupEvents
▶	2018-12-11, 09:18:12 AM	guilheh	LookupEvents
▼	2018-12-11, 09:18:08 AM	guilheh	GetTrailStatus
<div><div><b>AWS access key</b> ASIARH23VDGQ7AAGFEHN</div><div><b>AWS region</b> us-east-1</div><div><b>Error code</b></div><div><b>Event ID</b> a3e0b8ef-5d3f-47a4-93d8-c9a2cfc53757</div><div><b>Event name</b> GetTrailStatus</div><div><b>Event source</b> cloudtrail.amazonaws.com</div></div> <div><div><b>Event time</b> 2018-12-11, 09:18</div><div><b>Read only</b> true</div><div><b>Request ID</b> 3427bca8-7e4a-4</div><div><b>Source IP address</b> 179.153.59.157</div><div><b>User name</b> guilheh</div></div>			



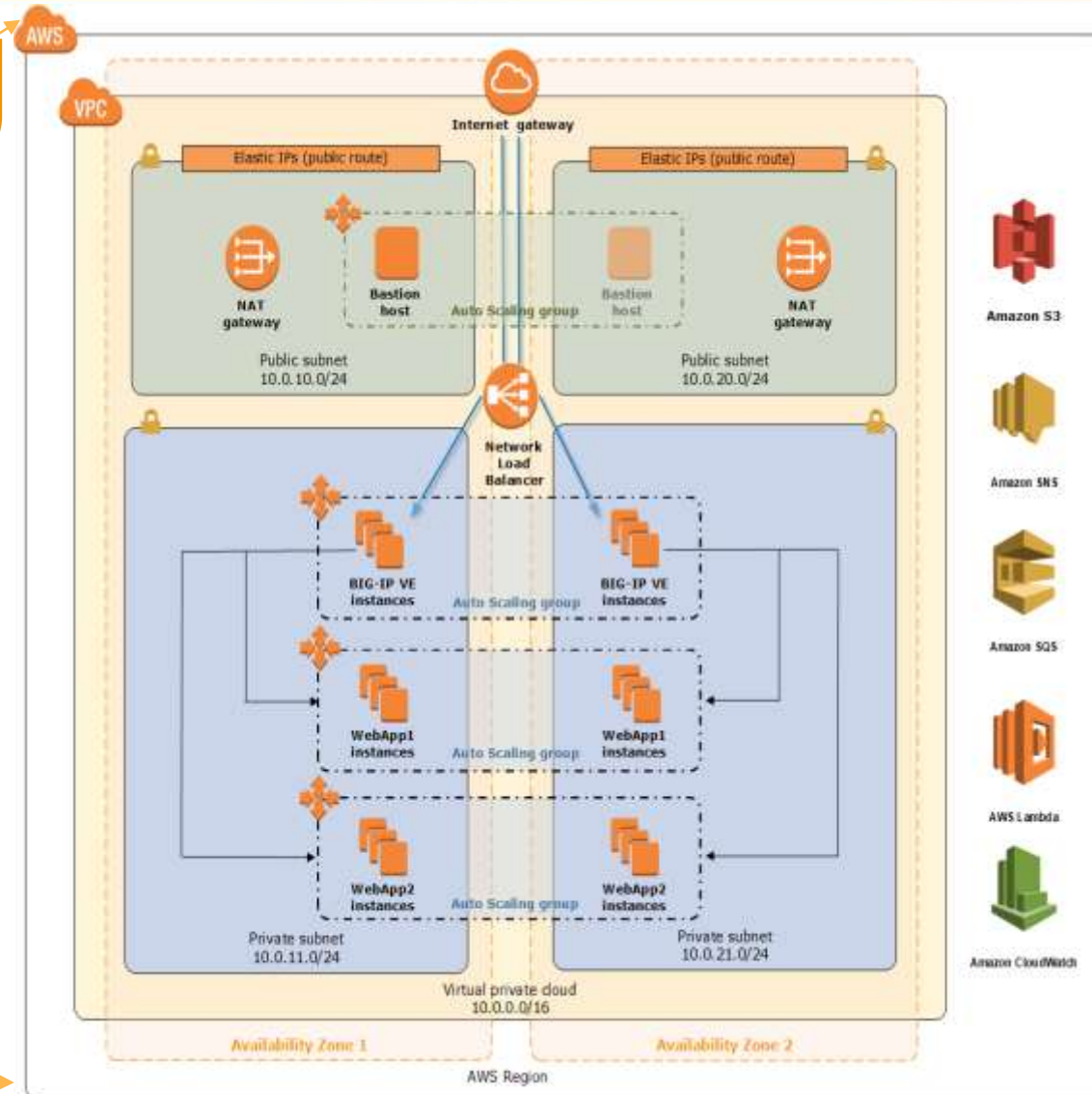
- ✓ Monitor and record change logs in your AWS resource settings.
- ✓ Resources Inventory.
- ✓ 'Out of standard' changes triggers SNS notifications.



## Infrastructure as code

- ✓ Repetitive provisioning, safe, known.
- ✓ Application/usage of best practices.
- ✓ Ease, speed.

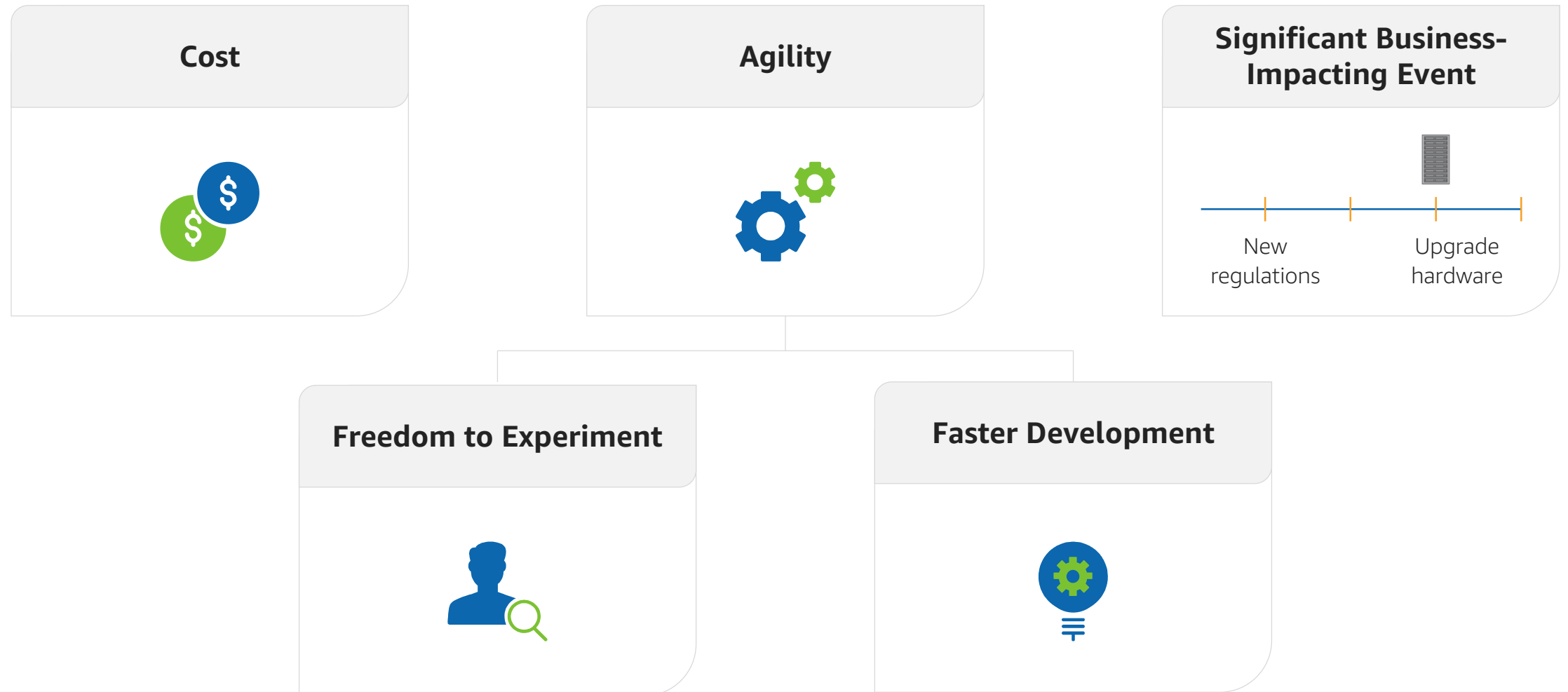
```
...  
...  
"DBName": {  
  "Default": "MyDatabase",  
  "Description": "MySQL database name",  
  "Type": "String",  
  "MinLength": "1",  
  "MaxLength": "64",  
  ....
```



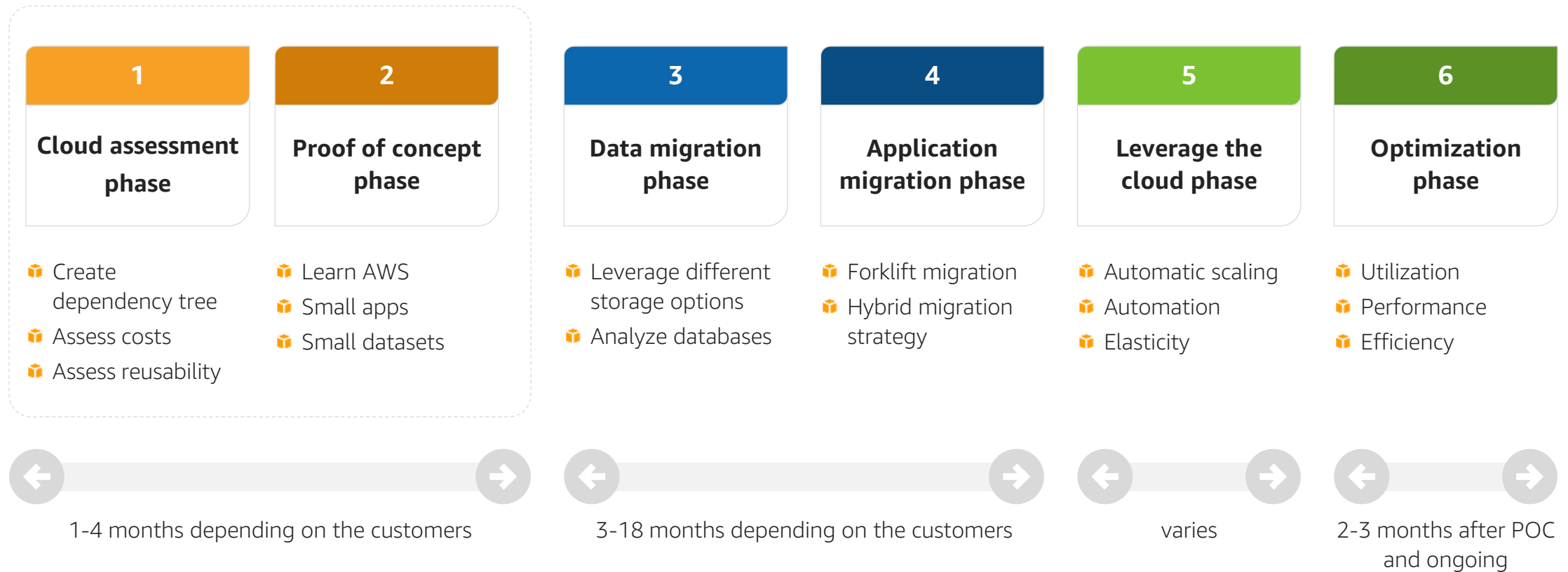


# Module 6: Migration


























# Business Drivers for Cloud Adoption



# Cloud Migration: A Phase-Driven Strategy



# Key Tools to Consider

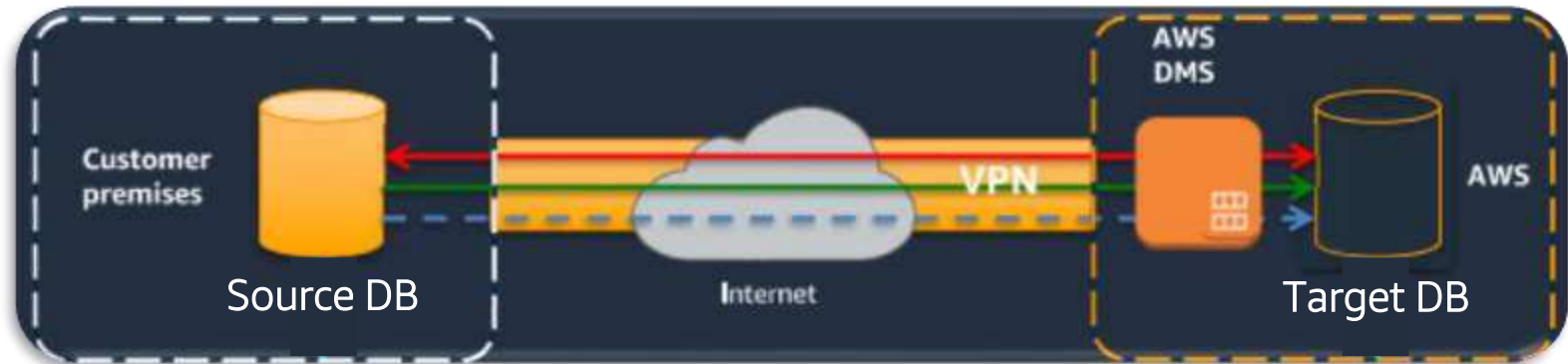
Plan		Build		Run	
Strategy	Analysis	Design	Transition	Operations	Improvement
<b>Discovery Tools</b>	<b>Resource Planning</b>	<b>Migration/Integration Tools</b>		<b>Service Management</b>	<b>Monitoring</b>
 <ul style="list-style-type: none"> <li>AWS Application Discovery Service</li> </ul>	<ul style="list-style-type: none"> <li>TCO Calculator</li> </ul>	<ul style="list-style-type: none"> <li>AWS Server Migration Service</li> <li>AWS Database Migration Service</li> <li>AWS Snowball</li> </ul>		<ul style="list-style-type: none"> <li>AWS CloudFormation</li> <li>AWS OpsWorks</li> </ul>	<ul style="list-style-type: none"> <li>Amazon CloudWatch</li> <li>AWS CloudTrail</li> <li>AWS Config</li> </ul>
    	   	      		    	  

# Tools for Migrations

## ❑ Server Migration Service



## ❑ Database Migration Service



## ❑ Snowball



- Offline transfer
- Size: 50TB, 80TB, 100TB.
- Time to transfer in low bandwidth uplinks.

# The Six R's of Application Migration

Pattern Label	Pattern Name	Pattern Percentage	
R1	Retain	10%	
R2	Retire (Decommission)	5%	
R3	Re-Host (Lift and Shift)	40%	} <b>70%</b>
R4	Re-Platform (Lift and Replace)	30%	
R5	Re-Factor (Rewriting and Decoupling Applications)	10%	
R6	Re-Purchase (Replace/Drop and Shop)	5%	

# Module 6:

# Pricing Solutions and TCO on AWS

# AWS Pricing Philosophy



01

Pay Only for  
What You Use



02

Low Cost



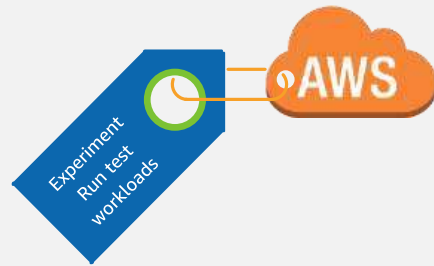
03

No Up-Front  
Capital Expense

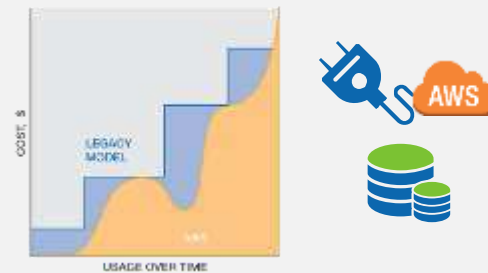


# AWS Pricing Categories

## AWS Free Tier



## Pay as You Go

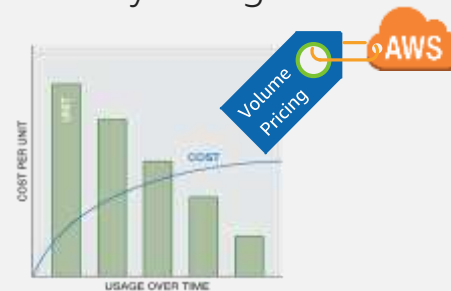


## Pay Less When You Reserve



## Additional AWS Pricing Benefits

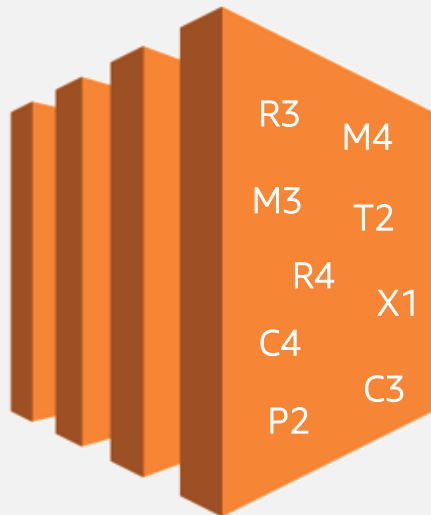
## Pay Even Less per Unit by Using More



## Pay Even Less as AWS Grows and Lowers Prices



# Amazon EC2 Instance Types



**General Purpose**

**Compute Optimized**
















**Memory Optimized**

**Accelerated Computing**

**Storage Optimized**













# On-Demand and Reserved

 Instance Type	 Benefits	 When to Position	 Workloads
 On-Demand	<ul style="list-style-type: none"><li> Billing by the second (new as of 10/2/17)</li><li> Modify compute capacity</li></ul>	<ul style="list-style-type: none"><li> Customer seeking to avoid long contracts and upfront payments</li></ul>	<ul style="list-style-type: none"><li> Short-Term/Fluctuates</li><li> Desired to Run to Completion</li><li> Dev/Test</li></ul>
 Reserved	<ul style="list-style-type: none"><li> 50%-70% less than On-Demand instances</li></ul>	<ul style="list-style-type: none"><li> Customer able to commit to 1year ~ 3 year term</li></ul>	<ul style="list-style-type: none"><li> Steady-state applications</li></ul>







# Spot Instances

 Instance Type	 Benefits	 When to Position	 Workloads
Spot Fleet	 Discounts compared to on-demand pricing	 When workloads can continue after interruptions; for diversification across multiple instance types and AZs	 Batch processing, Hadoop workflow, HPC grid
Spot Block	 Run continuously for a set duration at lower pricing	 When workloads cannot be interrupted for a set duration	 Encoding, rendering, modeling, analysis, or continuous integration

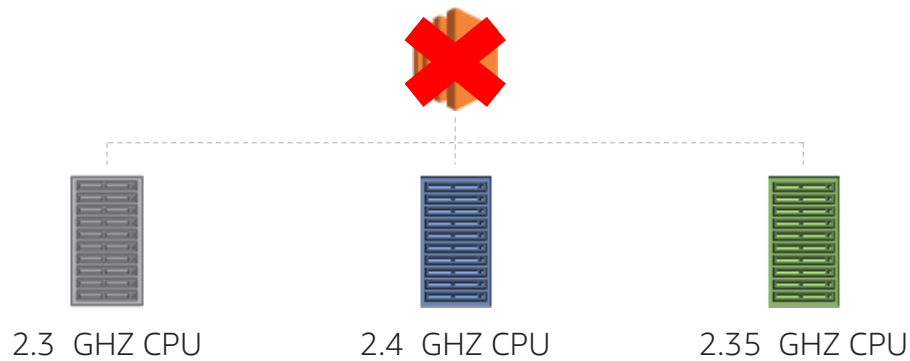
**Spot Bid Advisor**  
Helps determine best bid price

# Dedicated Instances and Dedicated Hosts

 Instance Type	 Benefits	 When to Position	 Workloads
Dedicated Instance	<ul style="list-style-type: none"><li>Instances run on hardware dedicated to you only</li></ul>	<ul style="list-style-type: none"><li>For workloads that require dedicated hardware to meet unique security and compliance needs</li></ul>	<ul style="list-style-type: none"><li>Data isolation required</li></ul>
<ul style="list-style-type: none"><li>Customer must pay an hourly instance fee</li></ul>		<ul style="list-style-type: none"><li>Customer must pay a dedicated per region fee</li></ul>	
Dedicated Host	<ul style="list-style-type: none"><li>Instances run on hardware dedicated to you only</li><li>License portability</li><li>Fine grain control of hardware</li></ul>	<ul style="list-style-type: none"><li>For existing server-bound software licenses that are bound to VMs, sockets, or physical cores</li></ul>	<ul style="list-style-type: none"><li>Data isolation required</li><li>License dependent applications or services</li></ul>

# Dedicated Instance vs. Dedicated Host

## Dedicated Instance



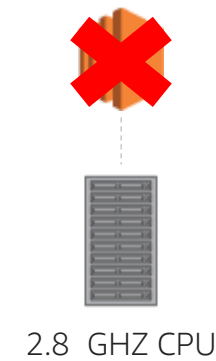
## Dedicated Instance

Can reinitiate on any hardware in data center

Hardware still dedicated to your AWS account

Physical hardware your EC2 Instance runs on may not be the same

## Dedicated Host



## Dedicated Host

EC2 Instance remains on same dedicated hardware permanently

# Estimating Cost Savings: Simple Monthly Calculator

The screenshot shows the AWS Simple Monthly Calculator interface. At the top, it says 'FREE USAGE TIER: New Customers get free usage tier for first 12 months'. Below this, the 'Services' tab is active, showing 'Estimate of your Monthly Bill (\$ 0.00)'. The 'Choose region:' dropdown is set to 'US-East / US Standard (Virginia)'. A note states 'Inbound Data Transfer is Free and Outbound Data Transfer is \$0.09/GB'. The 'Amazon EC2' service is selected in the left sidebar. The main content area for EC2 includes a description: '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 simpler and more efficient. Amazon Elastic Block Store (EBS) provides persistent storage to Amazon EC2 instances.' Below this, there are three sections for adding resources:

- Compute: Amazon EC2 Instances:** A table with columns: Description, Instances, Usage, Type, Billing Option, and Monthly Cost. There is an 'Add New Row' button.
- Compute: Amazon EC2 Dedicated Hosts:** A table with columns: Description, Number of Hosts, Usage, Type, and Billing Option. There is an 'Add New Row' button.
- Storage: Amazon EBS Volumes:** A table with columns: Description, Volumes, Volume Type, Storage, IOPS, Baseline Throughput, and Snapshot Storage. There is an 'Add New Row' button.

## Video:

<https://www.youtube.com/watch?v=54TVCueOoAc>

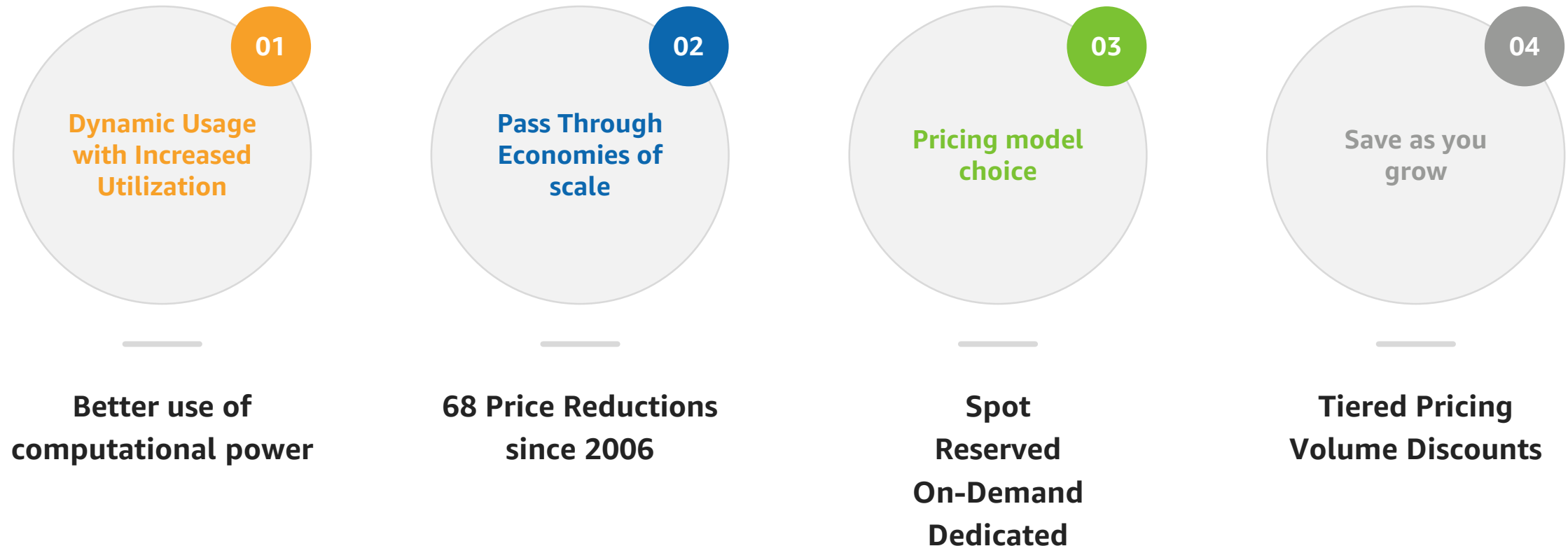
## In Class Demonstration:

<http://bit.ly/2t3535R>

# Total Cost of Ownership



# How Do Customers Lower Their TCO With AWS?



# Costs Involved in Data Center Maintenance

01	Server costs	<b>Hardware:</b> server, rack, chassis PDUs, TOR switches (+maintenance)	<b>Software:</b> OS, virtualization, licenses (+maintenance)	Facilities cost		
				Space	Power	Cooling
02	Storage costs	<b>Hardware:</b> storage disks, SAN/FC switches	<b>Storage:</b> admin costs	Facilities cost		
				Space	Power	Cooling
03	Network costs	<b>Network hardware:</b> LAN, switches, load balancer, bandwidth costs	<b>Network:</b> admin costs	Facilities cost		
				Space	Power	Cooling
04	IT labor costs	Server admin				

# TCO Calculators



Estimate Savings

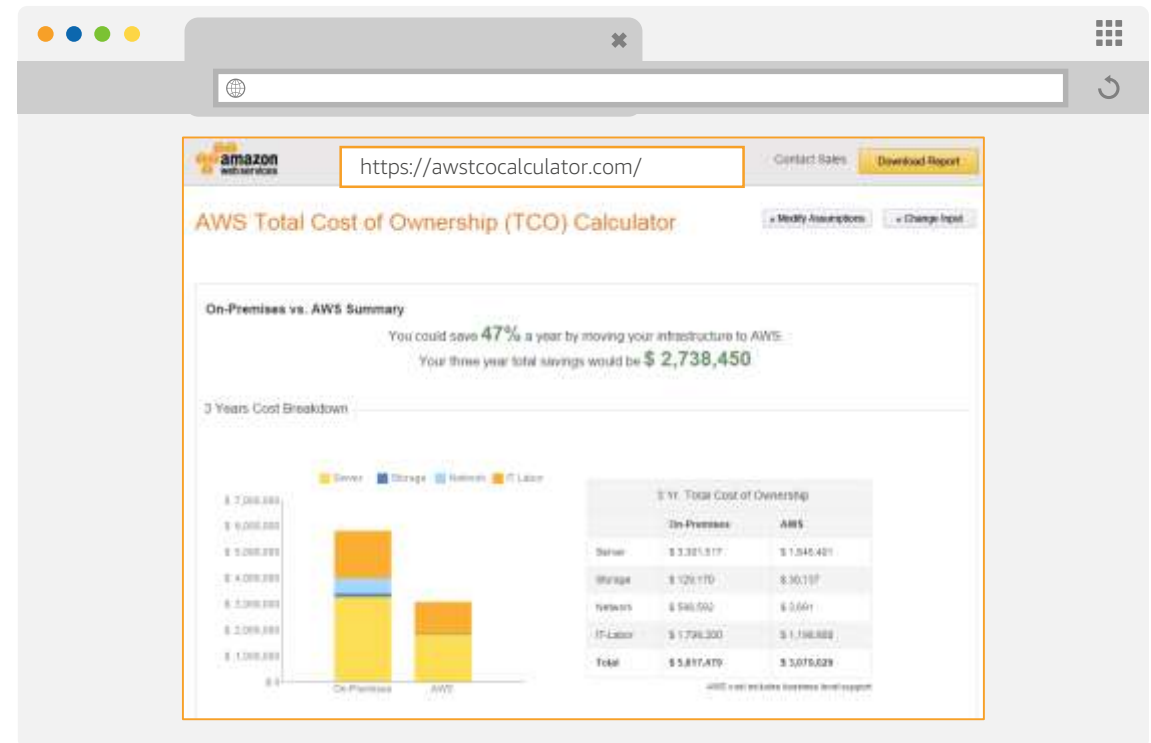
Reports



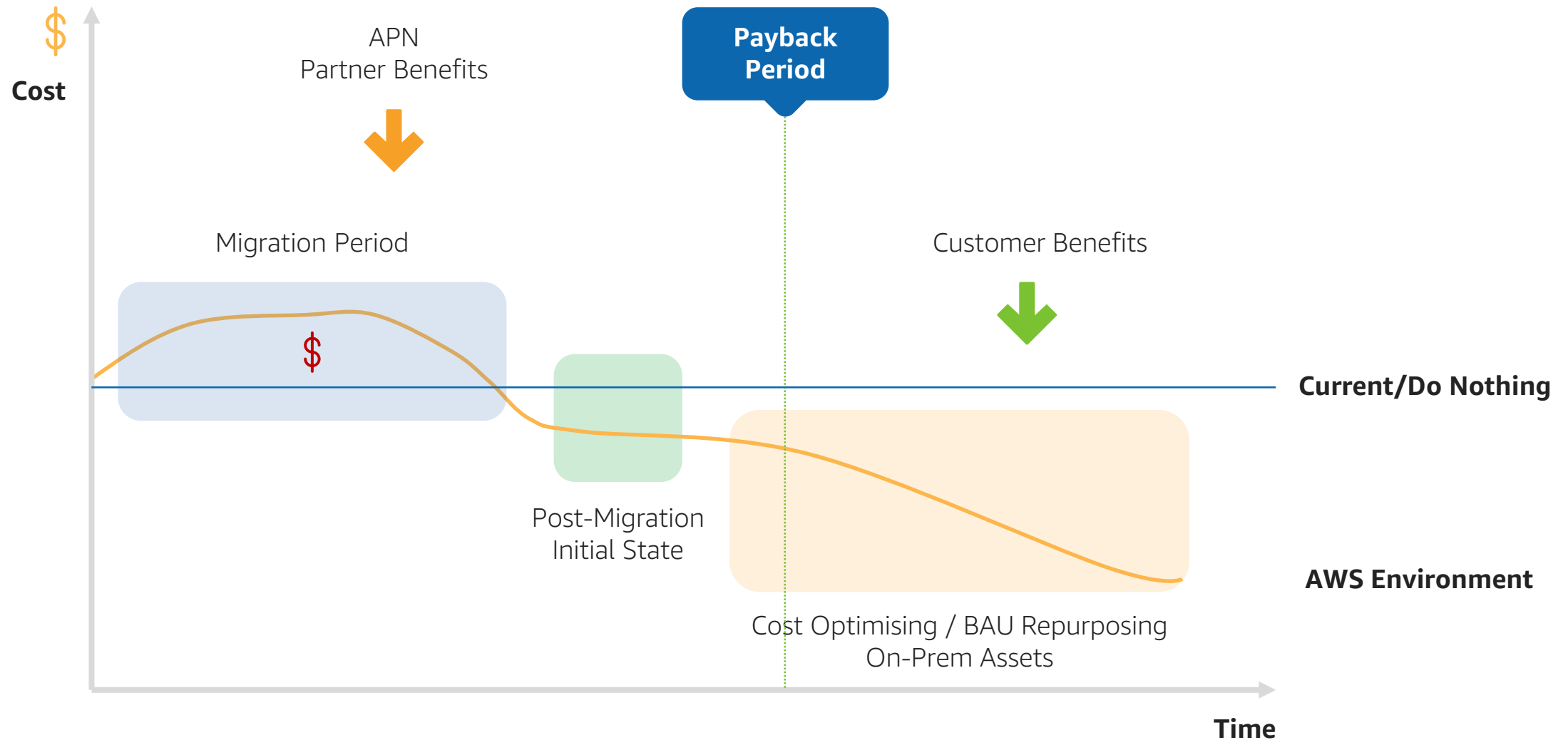
AWS TCO Calculator: Application cost on-premises vs. AWS



AWS Backup and Archive TCO Calculator: Backup and archive costs on-premises vs. AWS



# Your TCO Reduction Opportunity with the Customer



Hey, everybody! Get ready for our..

Pop Quiz!



# Sample Questions Test

Lets exercise with some sample questions.

Understand the type of question, complexity, variety:

-> *Do I need to study more?*

**Be careful about:**

**1 – Time remaining.**

**2 – Objectivity. Exclude unlikely answers.**

**3 – Interpretation. You will probably know the answer.**

# Module 7 : Conclusion



# APN Resources

## APN Program Guide



Benefits and Requirements



Training and Certification



APN Portal



Marketing



APN Partner Programs

Monthly Partner-Facing Webinars



APN Personnel Resources



APN Blog, Newsletter, Twitter



<https://partnercentral.awspartner.com>

# Partner Training – Digital Learning Platform



**Workshops and Bootcamps**

**AWS Digital Learning Platform**

<https://www.aws.training/>



**Videos, Labs, and Classes**

## Specialty Courses for APN Partners With Business and Technical Tracks

### Accreditations



### Business Track

- 📁 **AWS Business Professional**
- 📁 **AWS TCO and Cloud Economics**
- 📁 **AWS Foundations**
- 📁 Big Data and Analytics on AWS
- 📁 Windows on AWS
- 📁 Migration to AWS
- 📁 SAP on AWS
- 📁 Amazon Connect
- 📁 Introduction to Cloud Adoption Framework

### Technical Track

- 📁 **AWS Technical Professional**
- 📁 **AWS TCO and Cloud Economics**
- 📁 Well-Architected Framework
- 📁 Windows on AWS
- 📁 Migration to AWS
- 📁 SAP on AWS
- 📁 Amazon Connect
- 📁 Professional Services BootCamp

<https://partnercentral.awspartner.com>

## aws CERTIFIED



<https://youtu.be/WqUQNp1hAH8>

Daiana Salviato  
salviato@amazon.com

**THANK  
YOU!**