

MASTERCLASS SERIES

AMAZON EC2

 **#awswebinar**



MASTERCLASS SERIES

A technical deep dive beyond the basics

Help educate you on how to get the best from AWS technologies

Show you how things work and how to get things done

Broaden your knowledge in less than an hour

AMAZON
ELASTIC COMPUTE CLOUD
(EC2)

What we'll see

Instances

Storage

Network

Monitoring & Logs

Security & Access Control

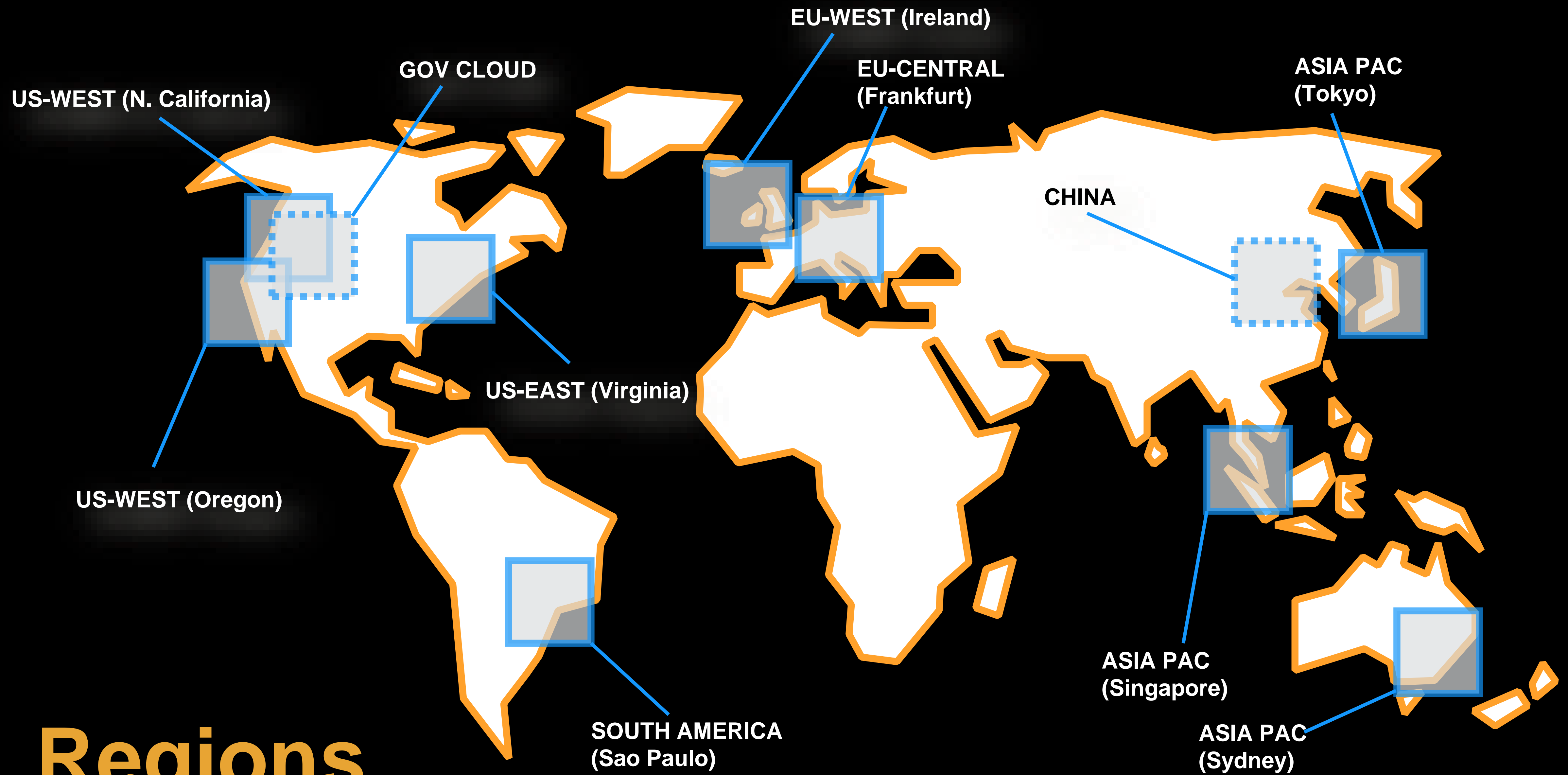
Management Tools

Deployment

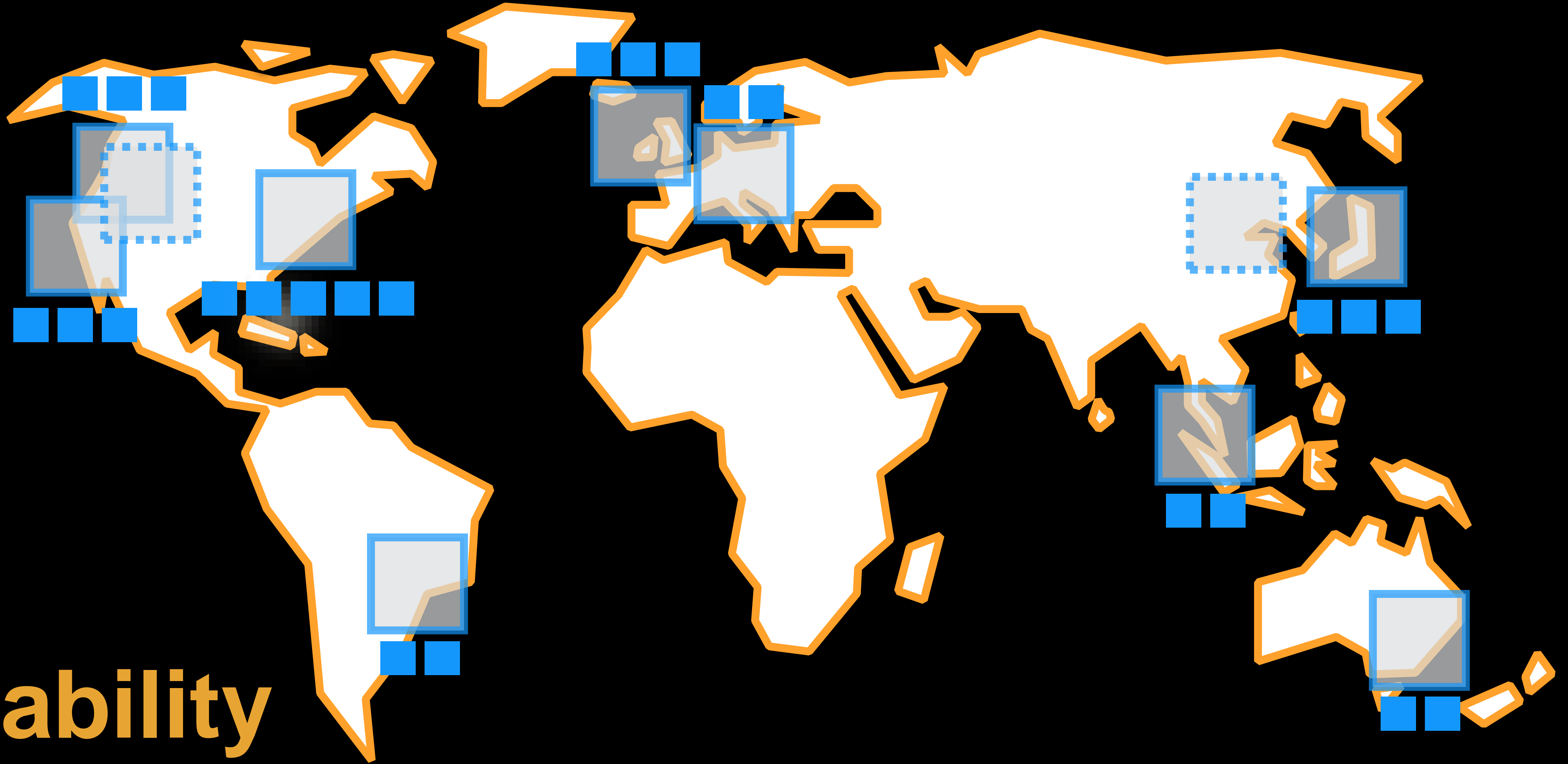
Cost Optimization

3rd Party Tools

INSTANCE



Regions



**Availability
Zones**



Amazon EC2

Instance Families

Compute-Optimized

General Purpose

Burstable Performance

Memory-Optimized

Storage-Optimized

GPU Instances



Amazon EC2

Instance Generations

C1 / CC2 / C3 / C4

M1 / M3

T1 / T2

M2 / CR1 / R3

H1 / I2 / HS1

G2



Amazon EC2

Instance Sizes

large

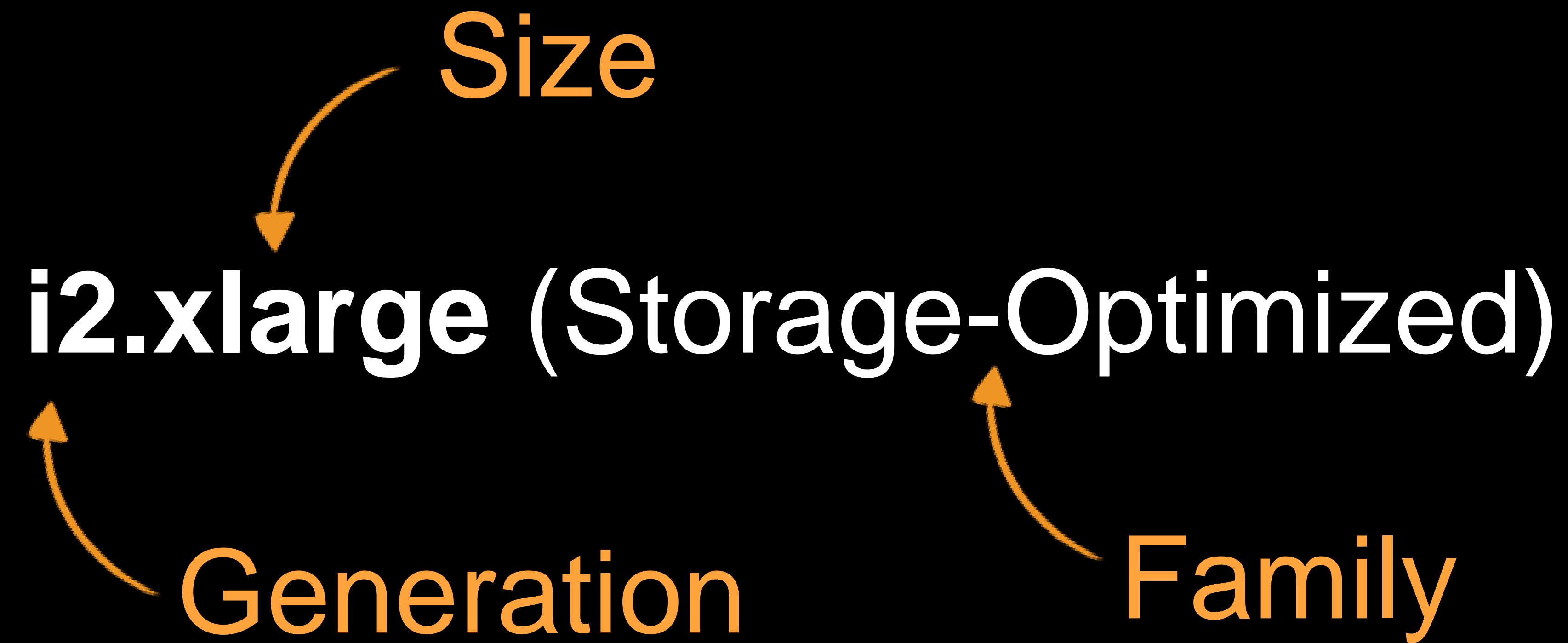
medium

micro

xlarge

xlarge

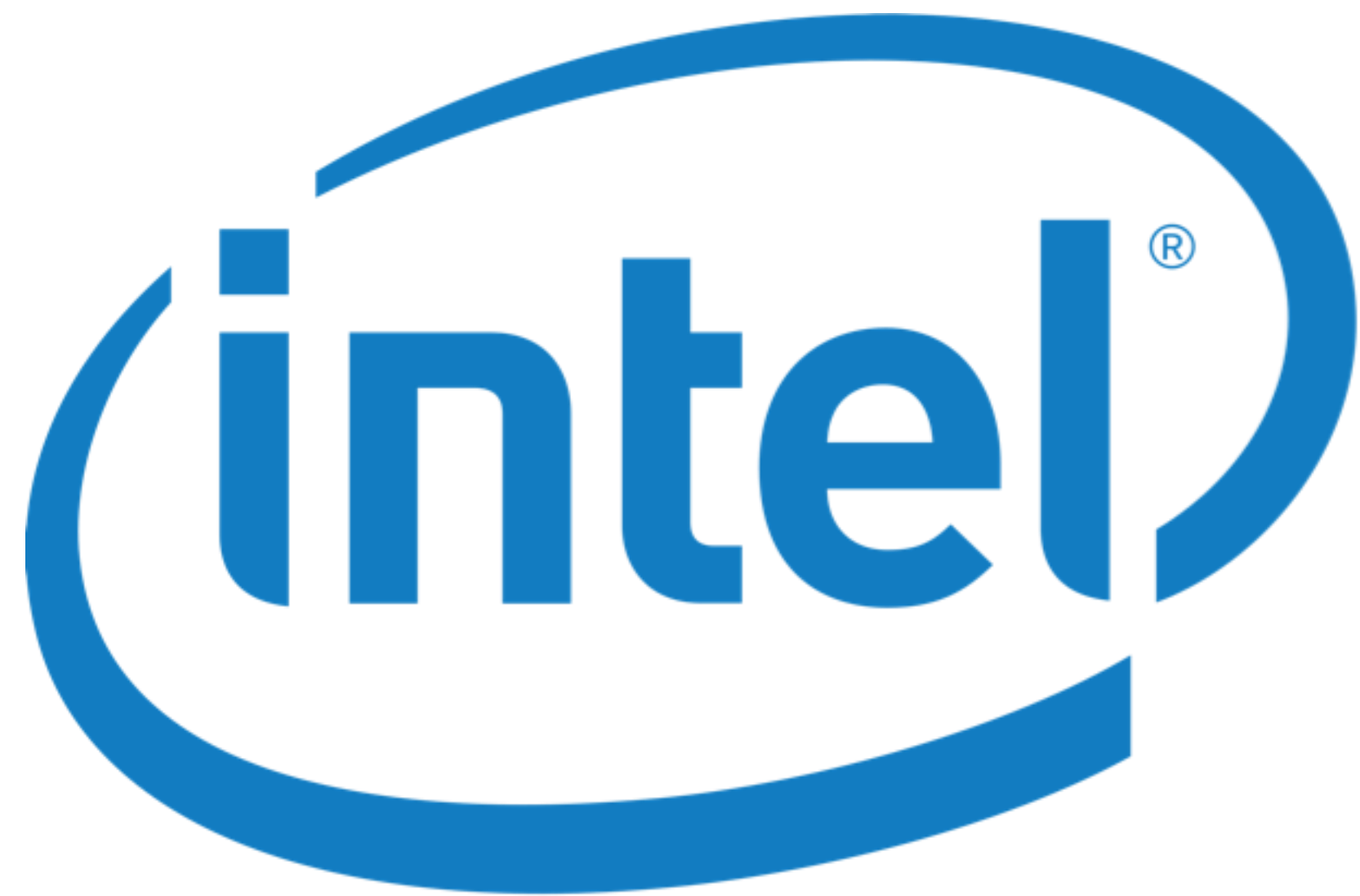
2xlarge



T2: Low Cost EC2 Instances with Burstable Performance

Instance Type	vCPUs	Mem (GiB)	Baseline Performance	CPU Credits / Hour
t2.micro	1	1.0	10%	6
t2.small	1	2.0	20%	12
t2.medium	2	4.0	40%	24

C4: Highest Compute Performance on Amazon EC2



Intel Xeon E5-2666 v3
Code name Haswell

2.9 GHz, up to 3.5 GHz
Max Turbo Frequency

Custom Processor
Optimized for EC2

C4: Highest Compute Performance on Amazon EC2

Instance Type	vCPUs	Mem (GiB)	Networking Performance	Dedicated EBS Throughput (Mbps)
c4.large	2	3.75	Moderate	500
c4.xlarge	4	7.5	Moderate	750
c4.2xlarge	8	15	High	1,000
c4.4xlarge	16	30	High	2,000
c4.8xlarge	36	60	10 Gigabit	4,000

HVM

Hardware Virtual Machine virtualization

Allows the guest VM to run
as though it is on a native
hardware platform

Enhanced Networking
(SR-IOV)

PV

Paravirtual virtualization

Guests run a modified
operating system that does
not use hardware emulation



Amazon EC2

VM Import / Export

Easily **import** virtual machine images
from your existing environment
to Amazon EC2 instances
and **export** them back
to your on-premises environment



VM Import

VMware ESX and VMware Workstation VMDK images

Citrix Xen VHD images

Microsoft Hyper-V VHD images

Windows Server

Red Hat Enterprise Linux (RHEL) - using Cloud Access

CentOS

Ubuntu

Debian



VM Export

You can export previously imported EC2 instances to

VMware ESX VMDK
VMware ESX OVA
Microsoft Hyper-V VHD
Citrix Xen VHD

file formats



Amazon EC2

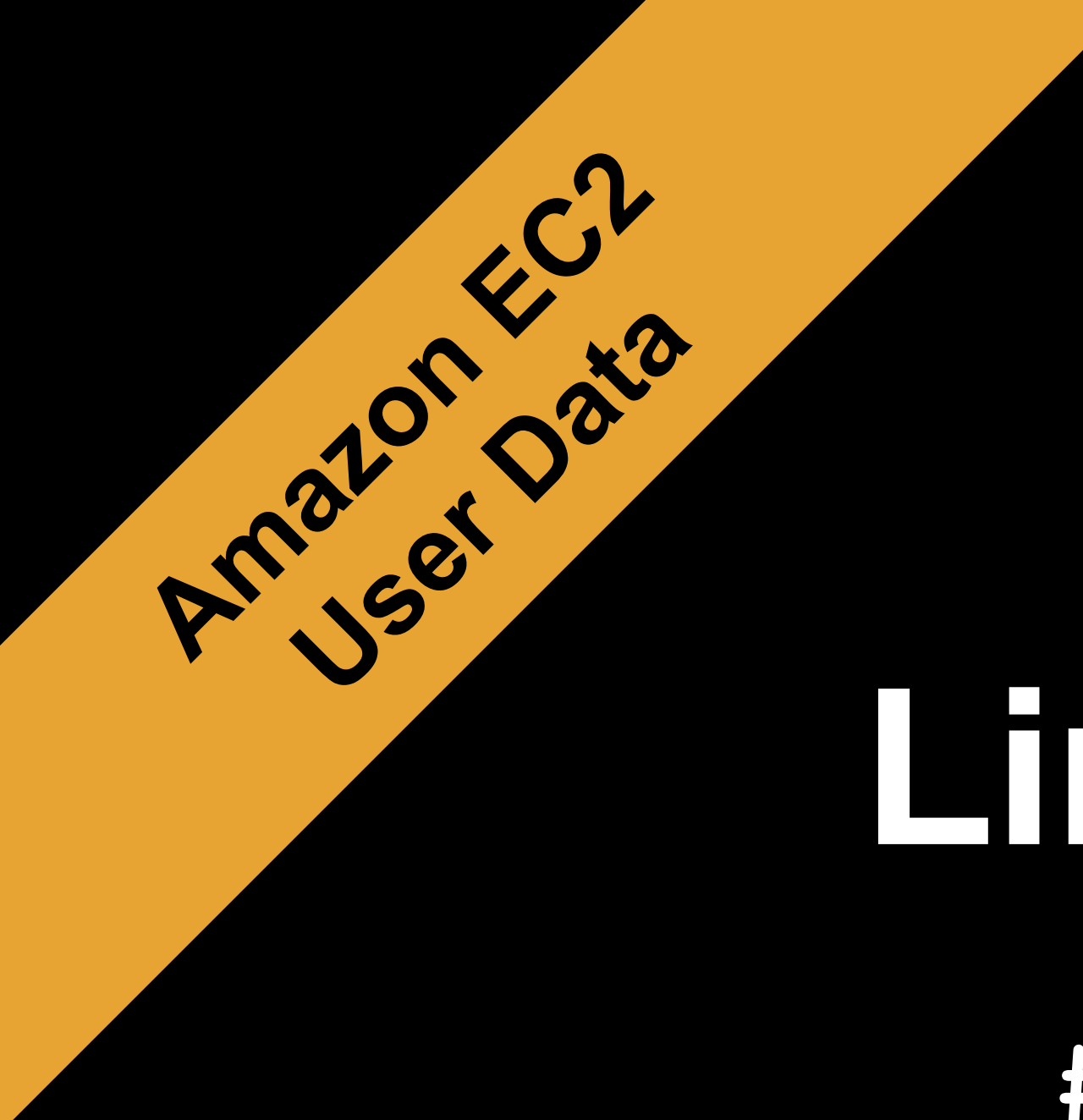
```
$ curl http://169.254.169.254/latest/meta-data/
```

```
ami-id  
ami-launch-index  
ami-manifest-path  
block-device-mapping/  
hostname  
instance-action  
instance-id  
instance-type  
kernel-id  
local-hostname  
local-ipv4  
mac  
network/  
placement/  
public-hostname  
public-ipv4  
public-keys/  
reservation-id  
security-groups  
services/
```

```
$ curl http://169.254.169.254/latest/user-data
```

...

Instance Metadata



Amazon EC2
User Data

Linux

`#!...`

`E.g.`

```
#!/bin/bash
yum update -y
```

Windows

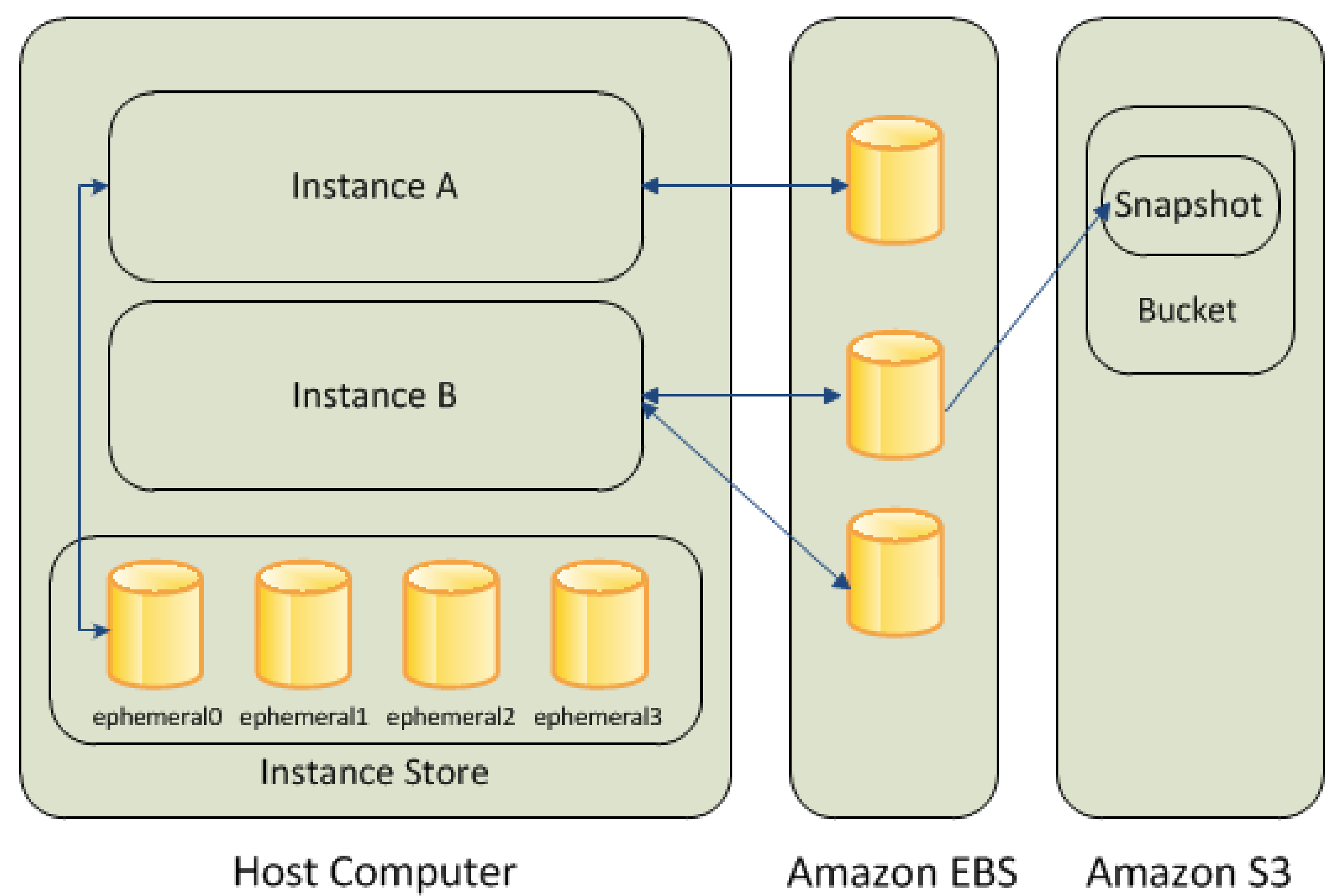
`<script>...</script>`

or

`<powershell>...</powershell>`

STORAGE

Data Storage Options



Instance Store

Physically attached
to the host computer

Type and amount differs
by instance type

Data **dependent** upon
instance lifecycle

Amazon EBS

Persistent block level
storage volumes

Magnetic
General Purpose (SSD)
Provisioned IOPS (SSD)

Data **independent** of
instance lifecycle

Instance Store

Physically attached
to the host computer

Type and amount differs
by instance type

Data **dependent** upon
instance lifecycle

Instance store data **persists** if:

- The OS in the instance is rebooted
- The instance is restarted

Instance store data is **lost** when:

- An underlying instance drive fails
- An EBS-backed instance is stopped
- The instance is terminated

EBS Volumes

EBS volumes automatically **replicated** within the **Availability Zone (AZ)** in which are created

Use EBS-optimized instances to deliver **dedicated throughput** between Amazon EC2 and Amazon EBS, with options between 500 and 4,000 Mbps, depending on the instance type

Amazon EBS

Persistent block level storage volumes

Magnetic
General Purpose (SSD)
Provisioned IOPS (SSD)

Data independent of instance lifecycle

EBS Volumes

EBS volumes **attached** to a running instance automatically detach from the instance with their data intact when that instance is terminated.

EBS volumes created and attached to an instance at **launch** are deleted when that instance is terminated. You can modify this behavior by changing the value of the flag **DeleteOnTermination**.

Amazon EBS

Persistent block level storage volumes

Magnetic
General Purpose (SSD)
Provisioned IOPS (SSD)

Data independent of instance lifecycle

EBS Snapshots

An EBS snapshot is a **point-in-time backup copy** of an EBS volume that is stored in Amazon S3

Snapshots are **incremental**, only the blocks that have changed after your most recent snapshot are saved

Amazon EBS

Persistent block level storage volumes

Magnetic
General Purpose (SSD)
Provisioned IOPS (SSD)

Data independent of instance lifecycle

EBS Snapshots

When you delete a snapshot, only the data **exclusive** to that snapshot is removed

Can be **shared** across AWS accounts or **copied** across AWS regions

Amazon EBS

Persistent block level storage volumes

Magnetic
General Purpose (SSD)
Provisioned IOPS (SSD)

Data independent of instance lifecycle

EBS Encryption

Data stored at rest on the volume, disk I/O, and snapshots created from the volume are **all** encrypted

The encryption occurs on the servers that **host** Amazon EC2 instances, providing encryption of **data-in-transit** from EC2 instances to EBS storage

Amazon EBS

Persistent block level storage volumes

Magnetic
General Purpose (SSD)
Provisioned IOPS (SSD)

Data independent of instance lifecycle

EBS Encryption

Uses **AWS Key Management Service** (AWS KMS) master keys unless you select a **Customer Master Key (CMK)**.

Creating **your own CMK** gives you the ability to create, rotate, disable, define access controls, and audit the encryption keys.

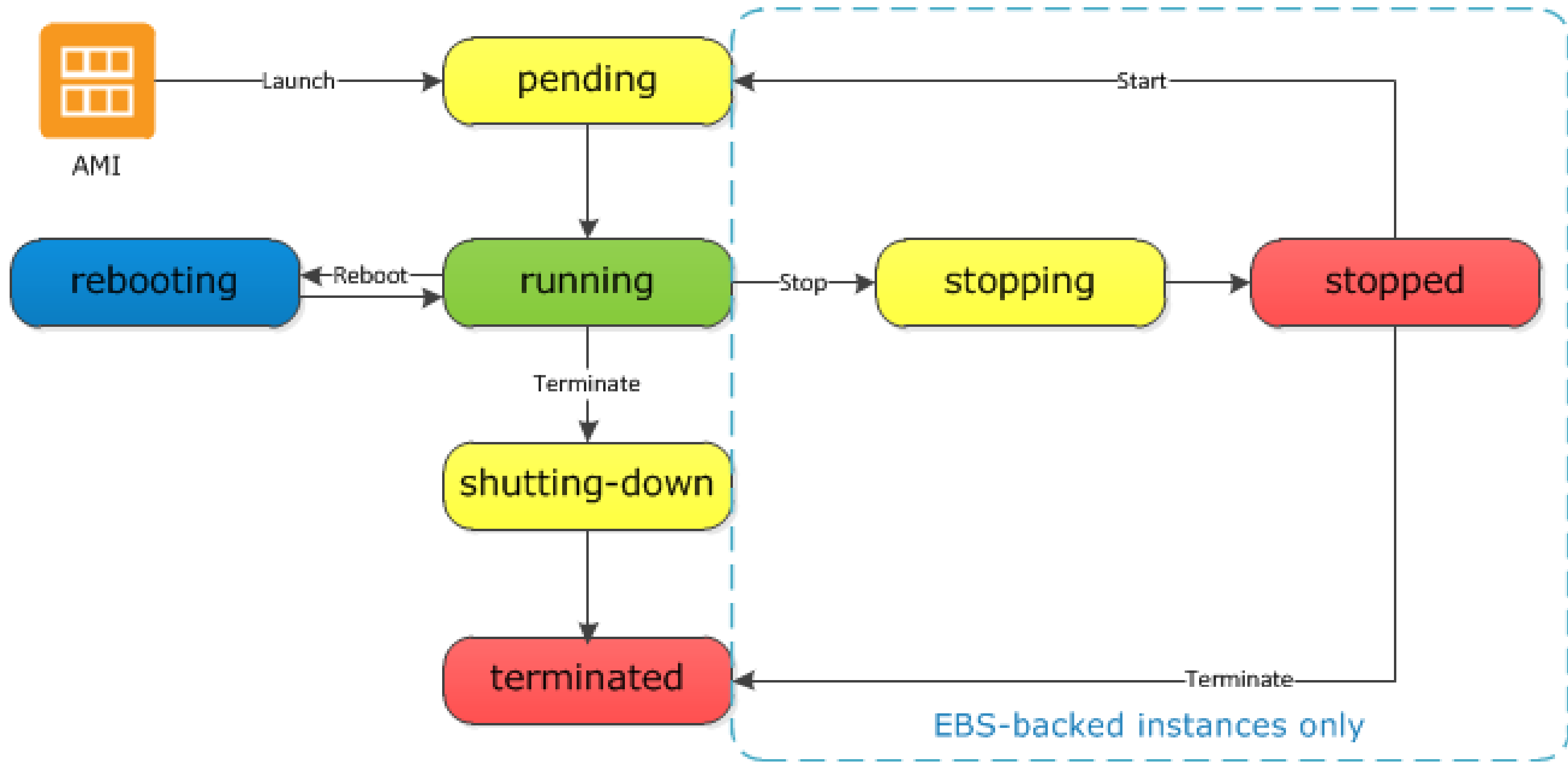
Amazon EBS

Persistent block level storage volumes

Magnetic
General Purpose (SSD)
Provisioned IOPS (SSD)

Data independent of instance lifecycle

Instance Lifecycle



New EBS Volumes: Larger & Faster

General Purpose (SSD)

Up to 16TB
10,000 IOPS (burst)
Up to 160 MBps

Provisioned IOPS (SSD)

Up to 16TB
20,000 IOPS
Up to 320 MBps

NETWORK

NETWORK

VIRTUAL PRIVATE CLOUD

Amazon VPC

Virtual Private Cloud

A virtual network in your own **logically isolated area** within the AWS cloud populated by infrastructure, platform, and application services that share common **security** and **interconnection**.



VPC Networking

Elastic Network Interface (ENI)

Subnet

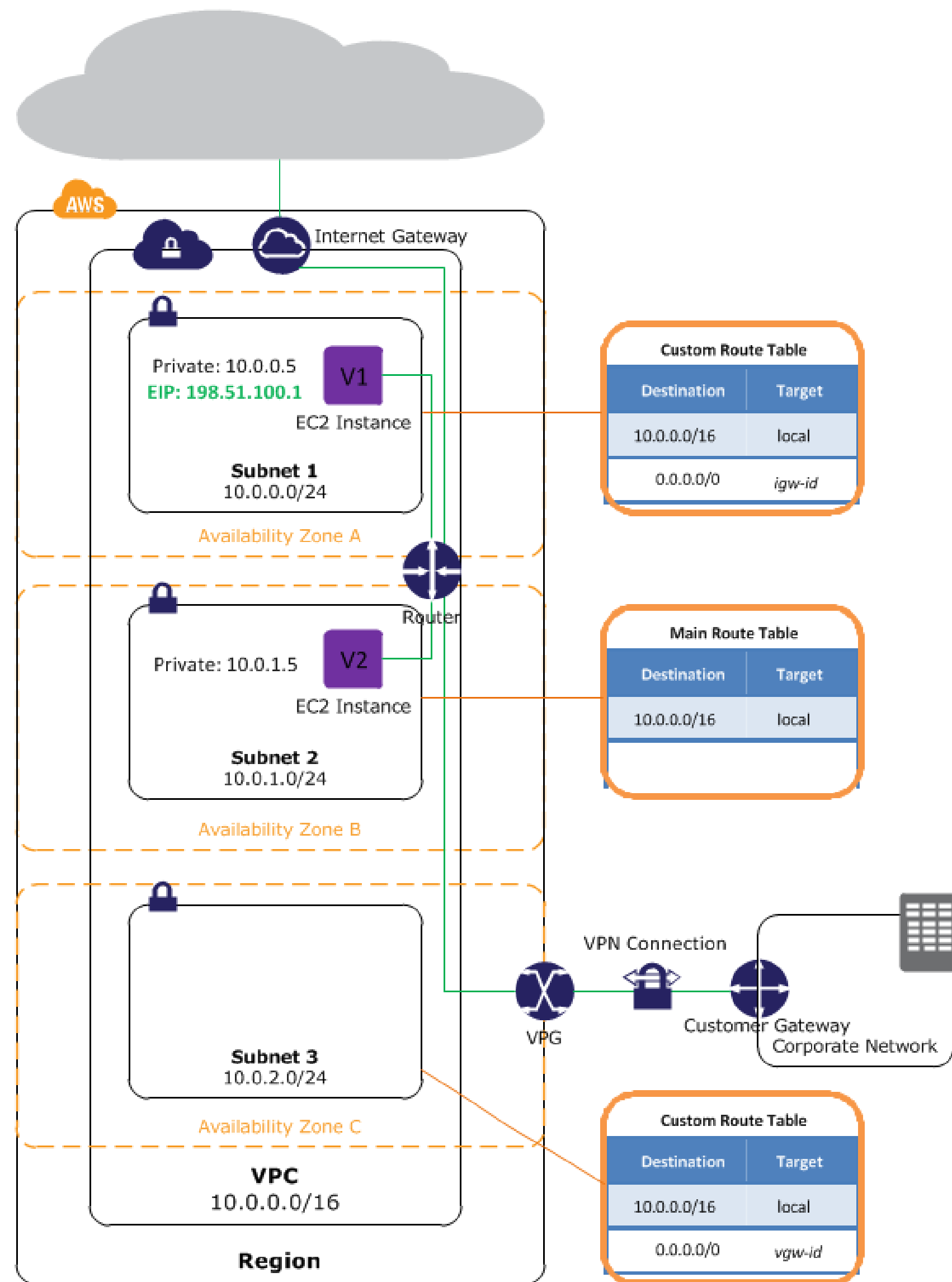
Network Access Control List (NACL)

Route Table

Internet Gateway

Virtual Private Gateway

Route 53 Private Hosted Zone



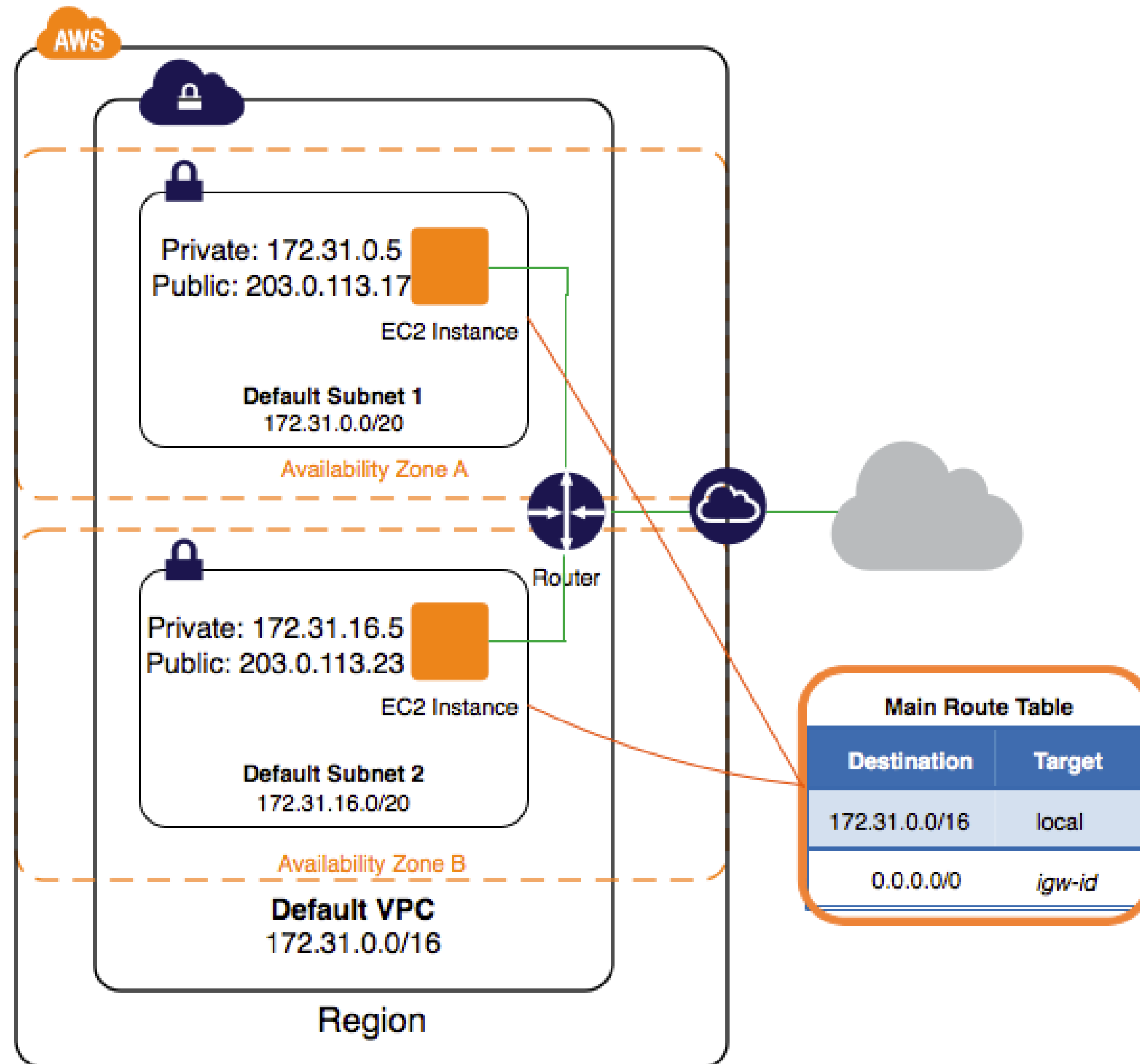
Sample VPC
with
1 Public Subnet,
2 Private Subnets,
1 of which
can route
through the VPN



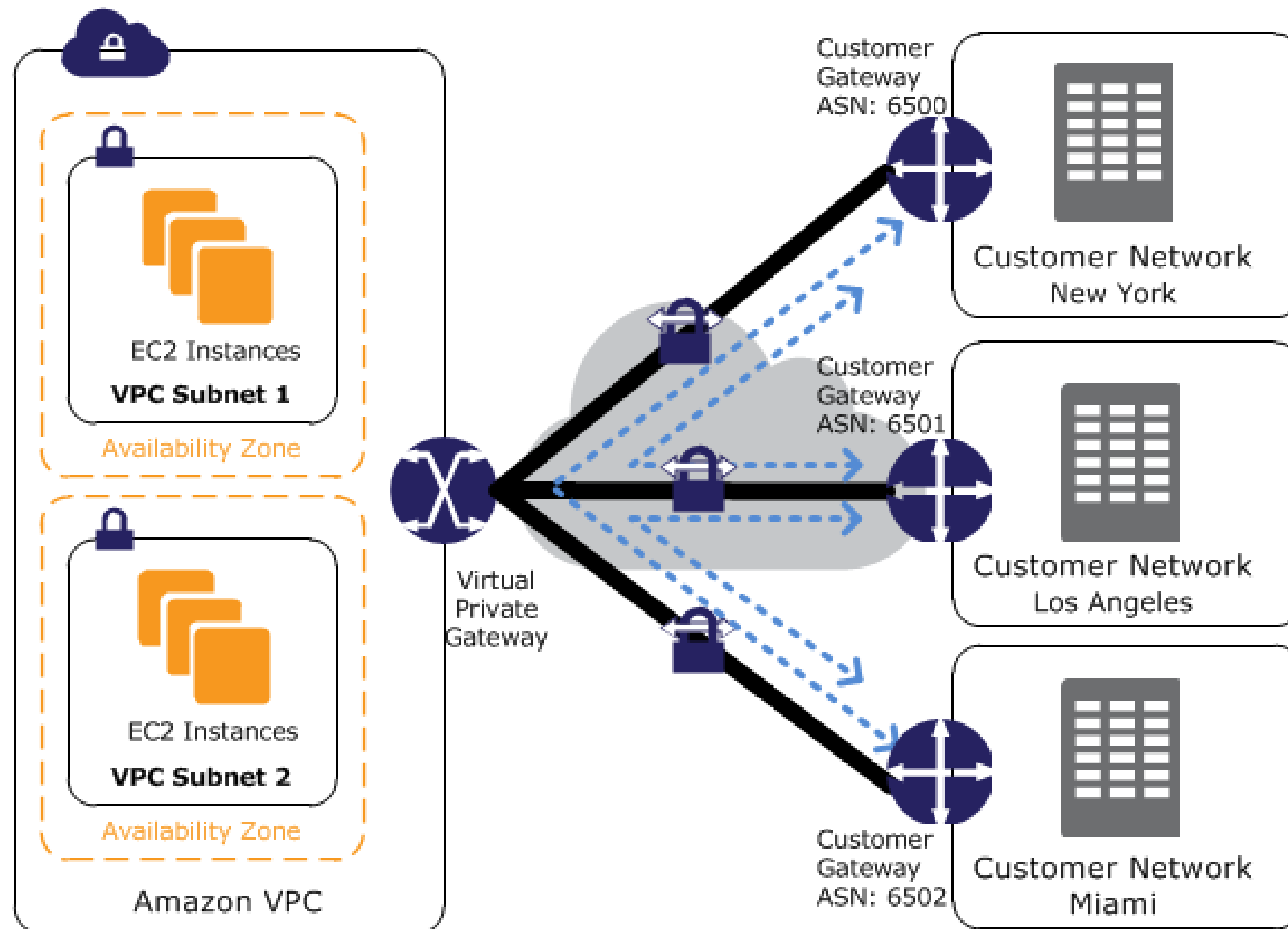
Best Practice

A VPC can span multiple AZs,
but subnet must reside
entirely within one AZ

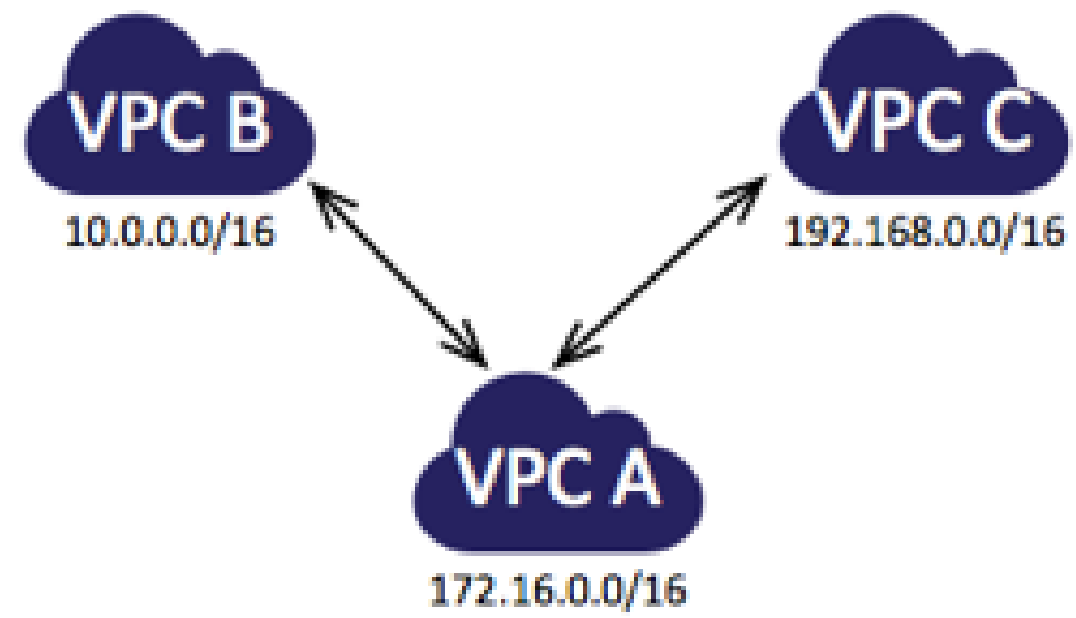
**Use at least 2 subnets
in different AZs
for each layer of your network**



Sample VPC with 2 Public Subnets

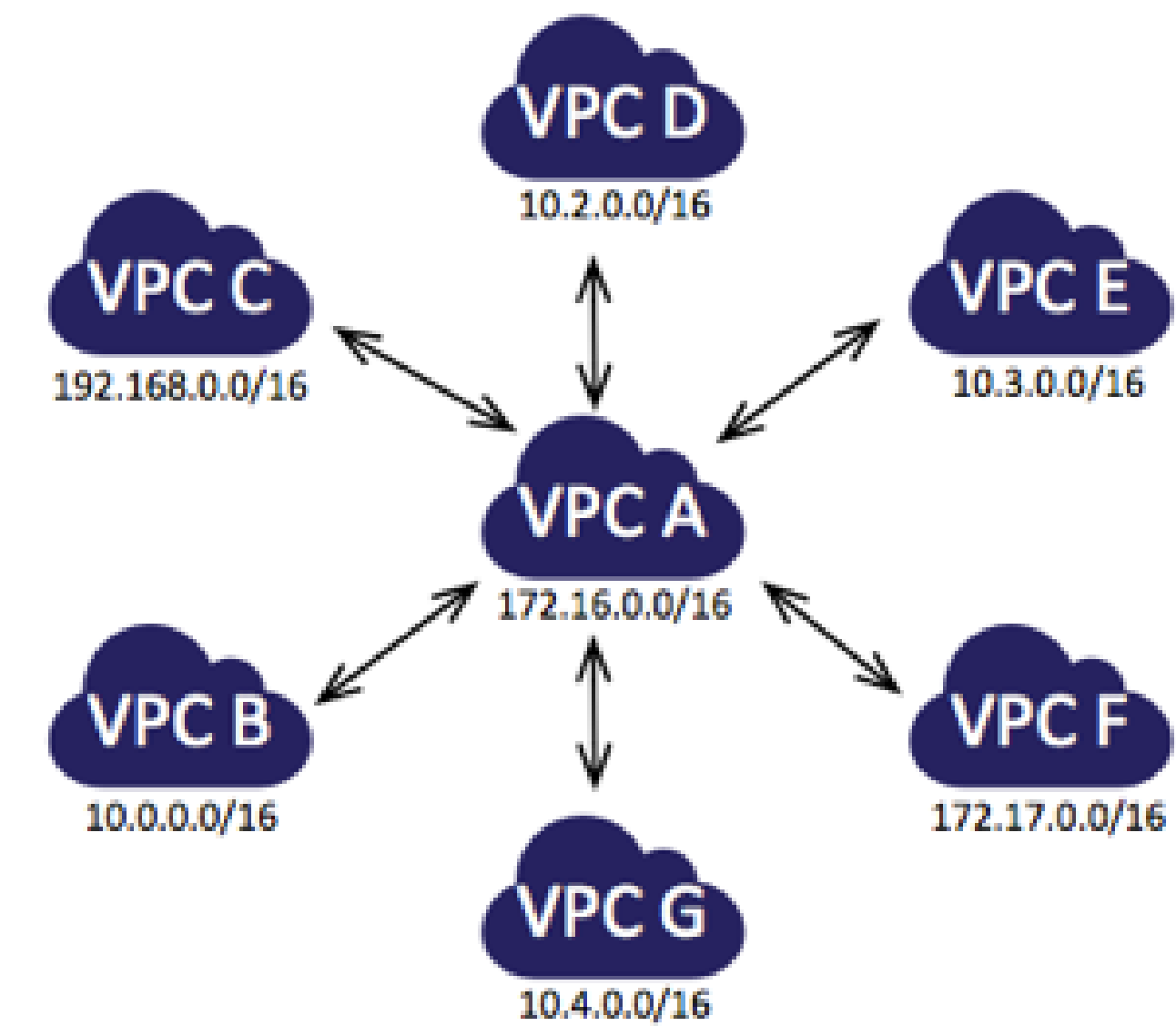
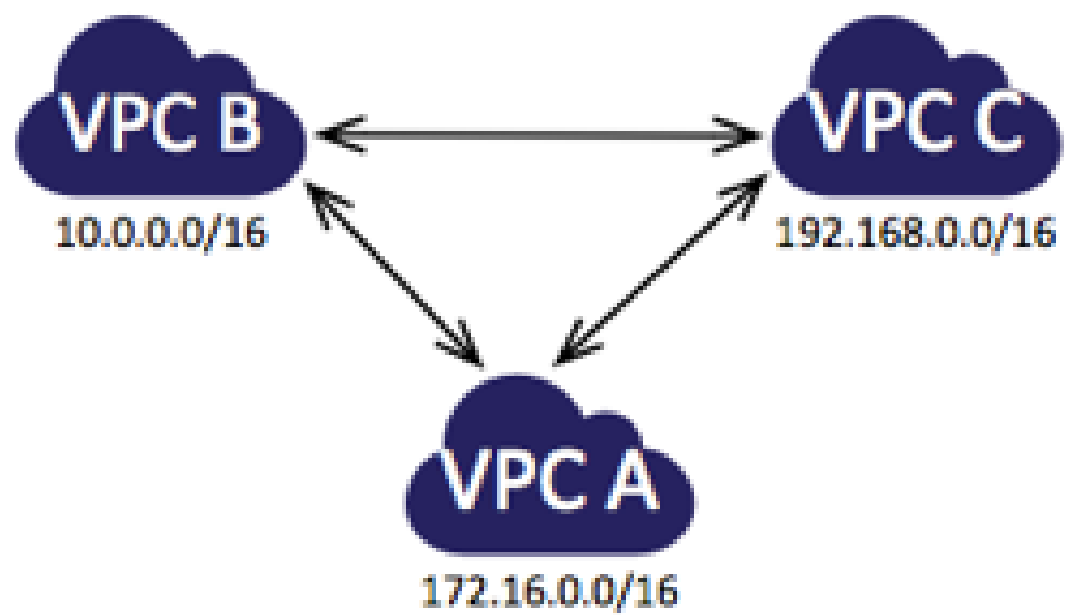


Sample VPN CloudHub



VPC Peering

A networking connection between two VPCs

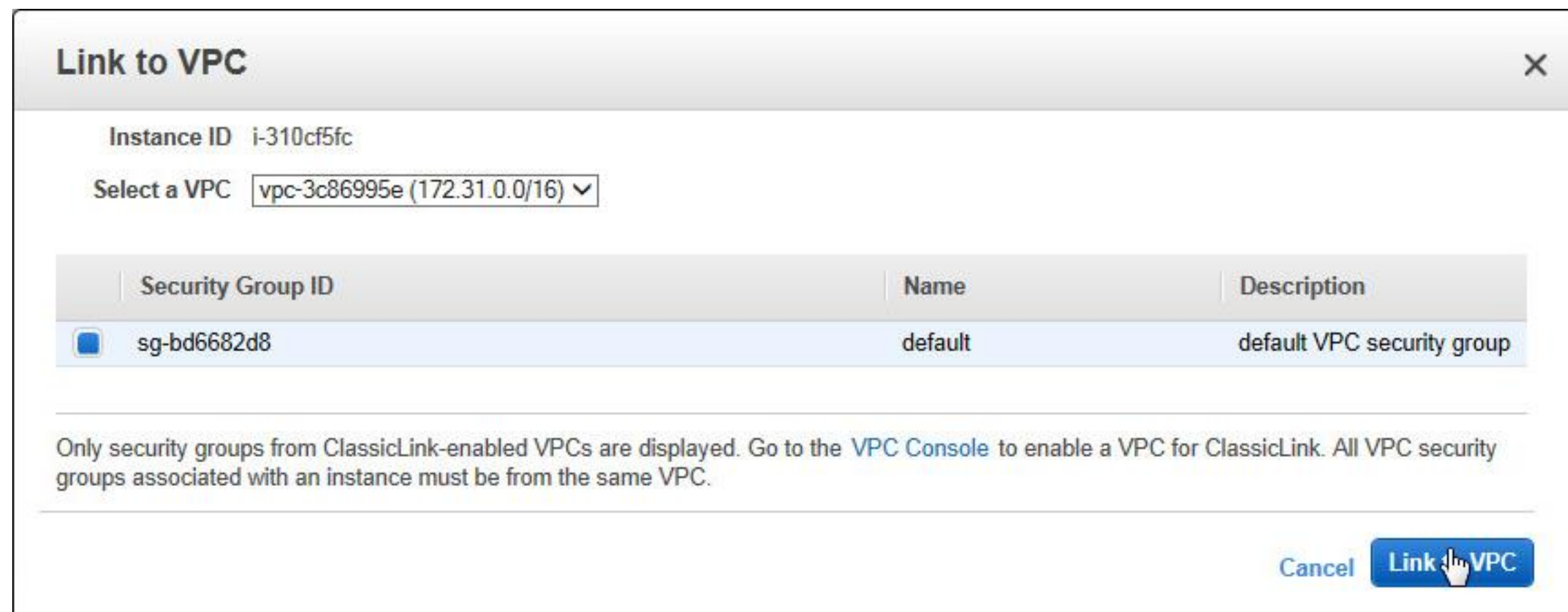
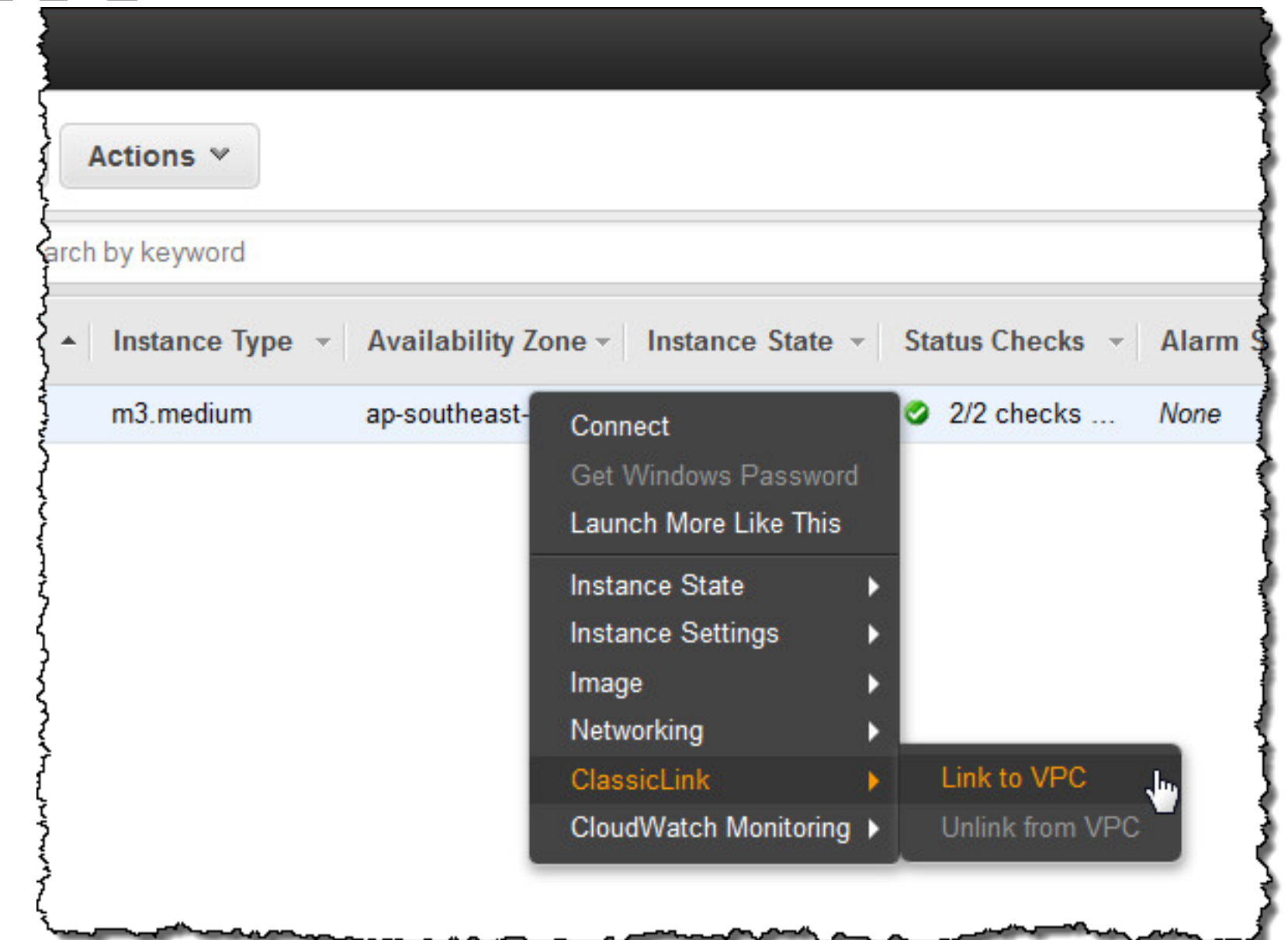
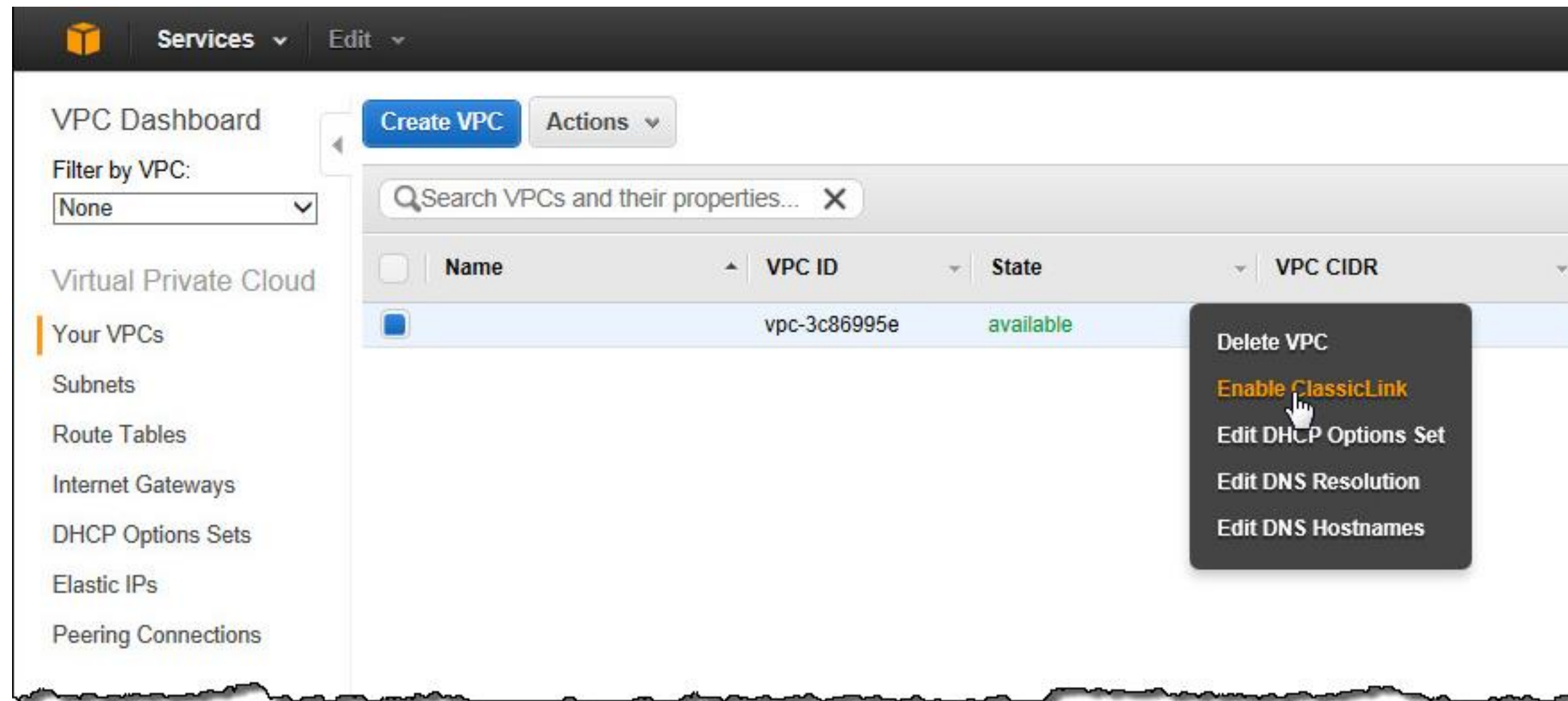


ClassicLink

Link your EC2-Classic instance to a VPC in your account, within the same region.

Associate VPC **security groups** with an EC2-Classic instance, enabling communication between your EC2-Classic instance and instances in your VPC using **private IP addresses**

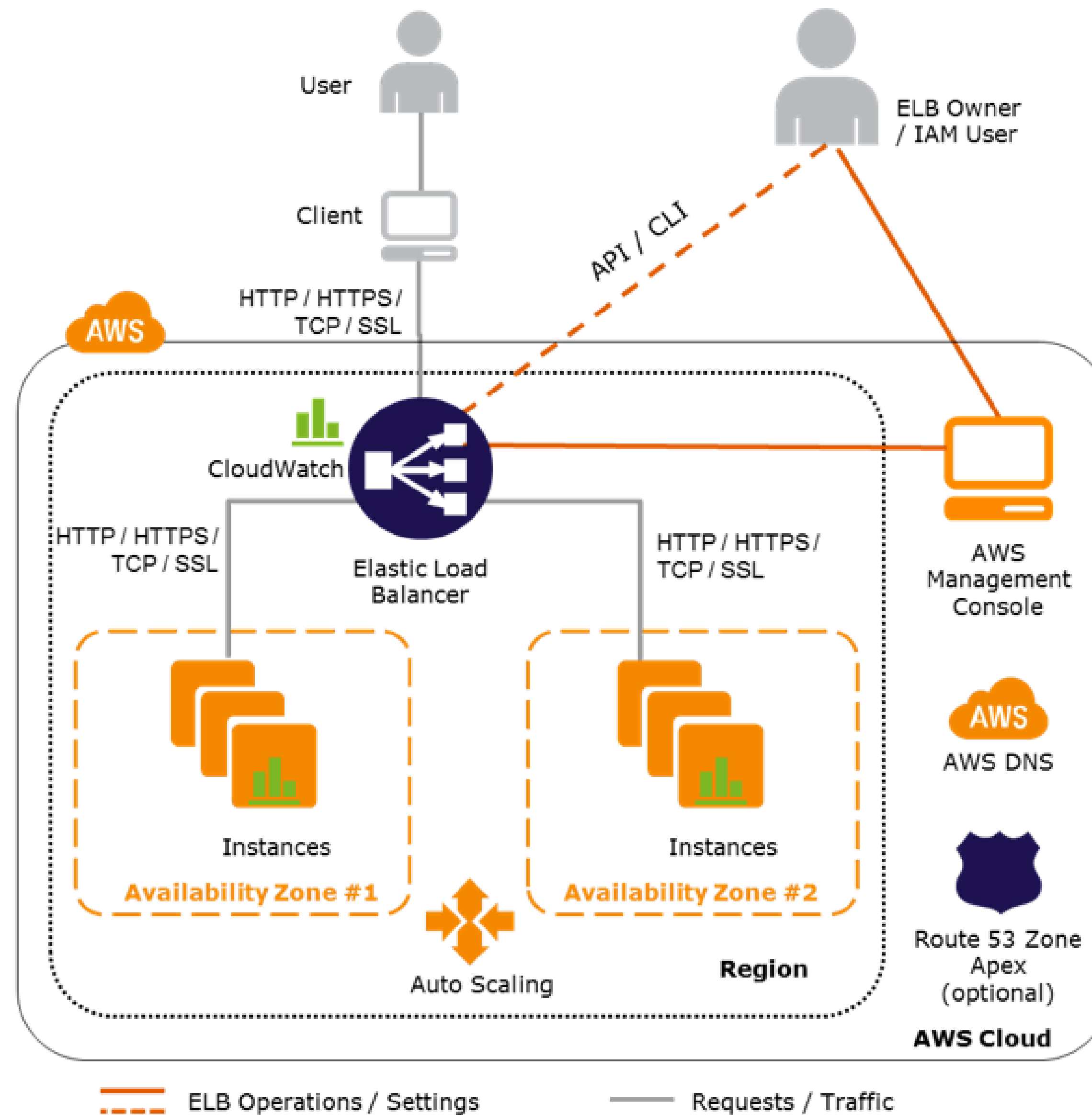
ClassicLink



NETWORK

ELASTIC LOAD BALANCING

Elastic Load Balancing



Timeout Configuration

Configure Connection Settings

×

Idle Timeout is the number of seconds a connection can be idle before the load balancer closes the connection. See [documentation](#) for more information.

Idle Timeout ⓘ seconds

Cancel

Save

Connection Draining

Configure Connection Draining

×

Connection Draining allows existing requests to complete before the load balancer shifts traffic away from a deregistered or unhealthy back-end instance. See the [documentation](#) for more information.

☒ Enable Connection Draining

Timeout ⓘ seconds

Cancel

Save

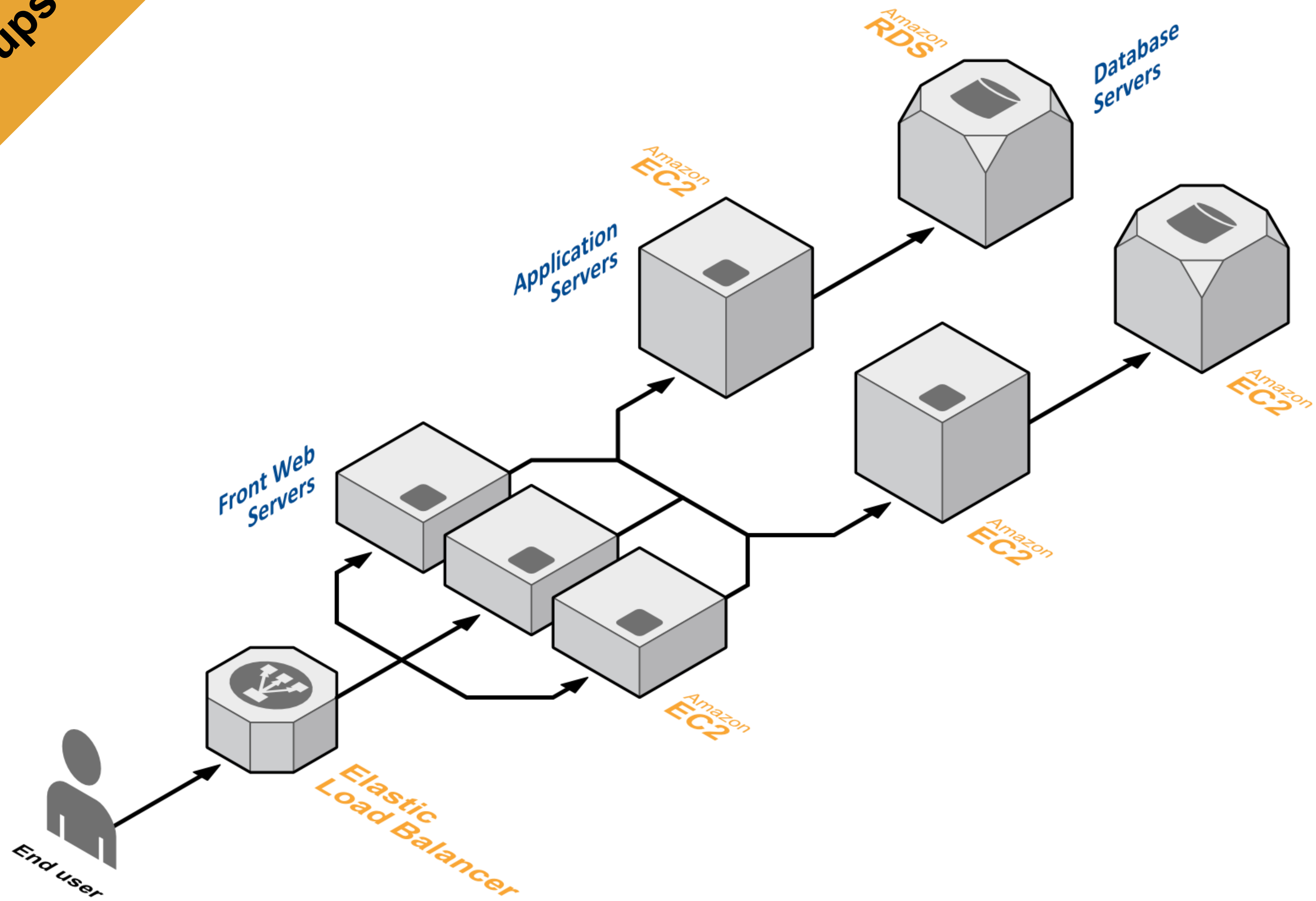
Cross-zone Load Balancing

SECURITY & ACCESS CONTROL

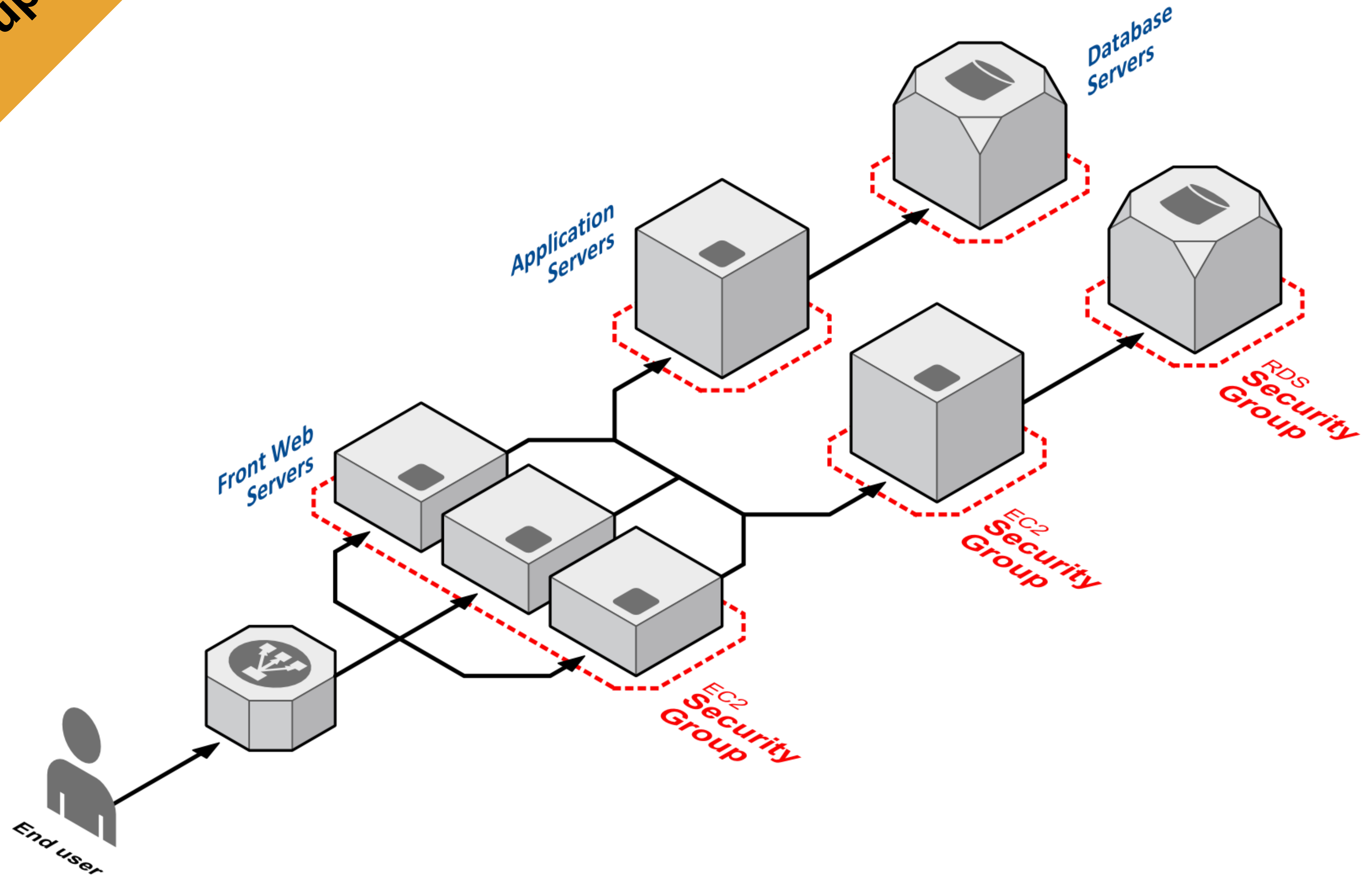
SECURITY & ACCESS CONTROL

SECURITY GROUPS & NETWORK ACLs

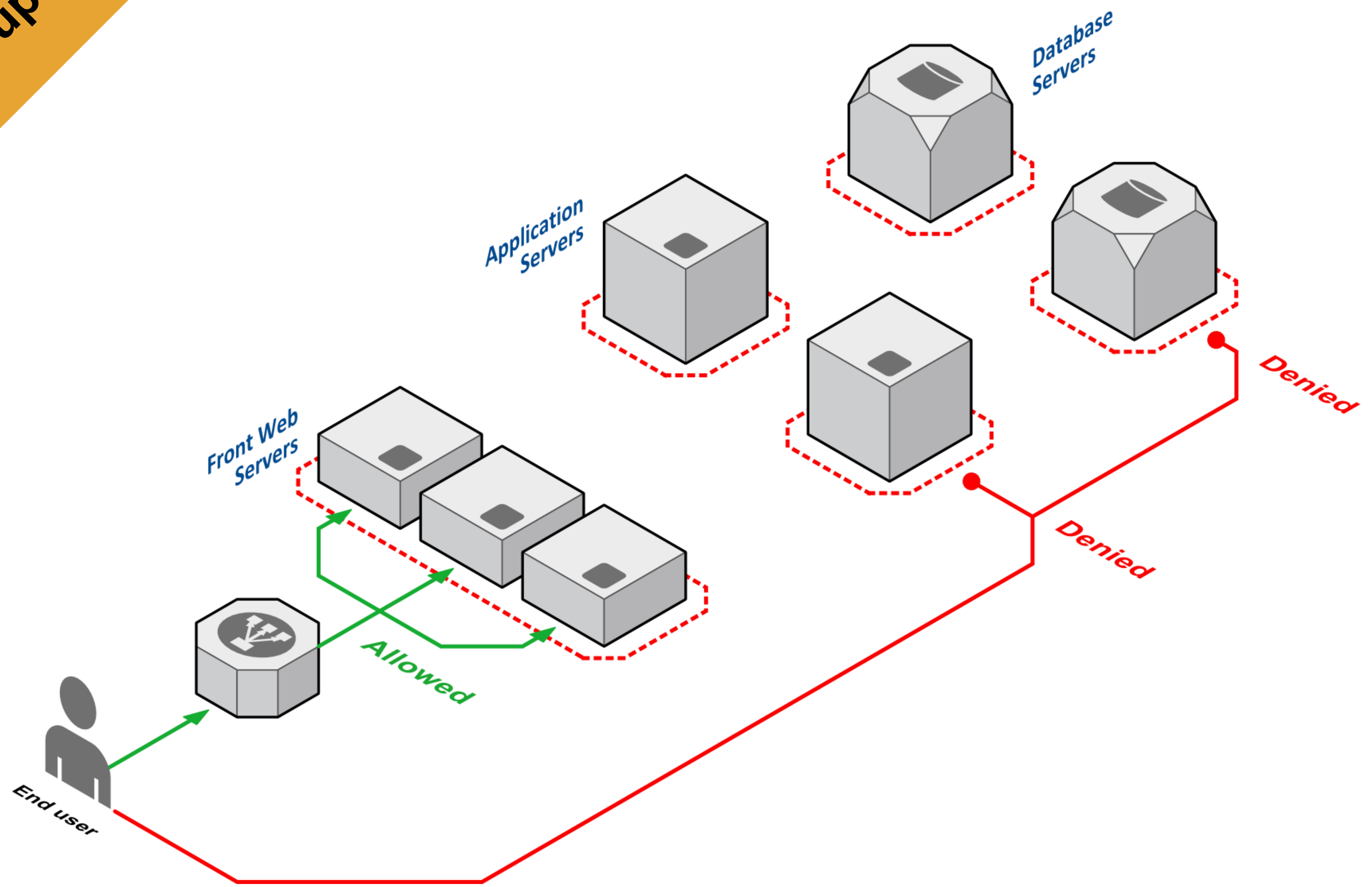
Security Groups



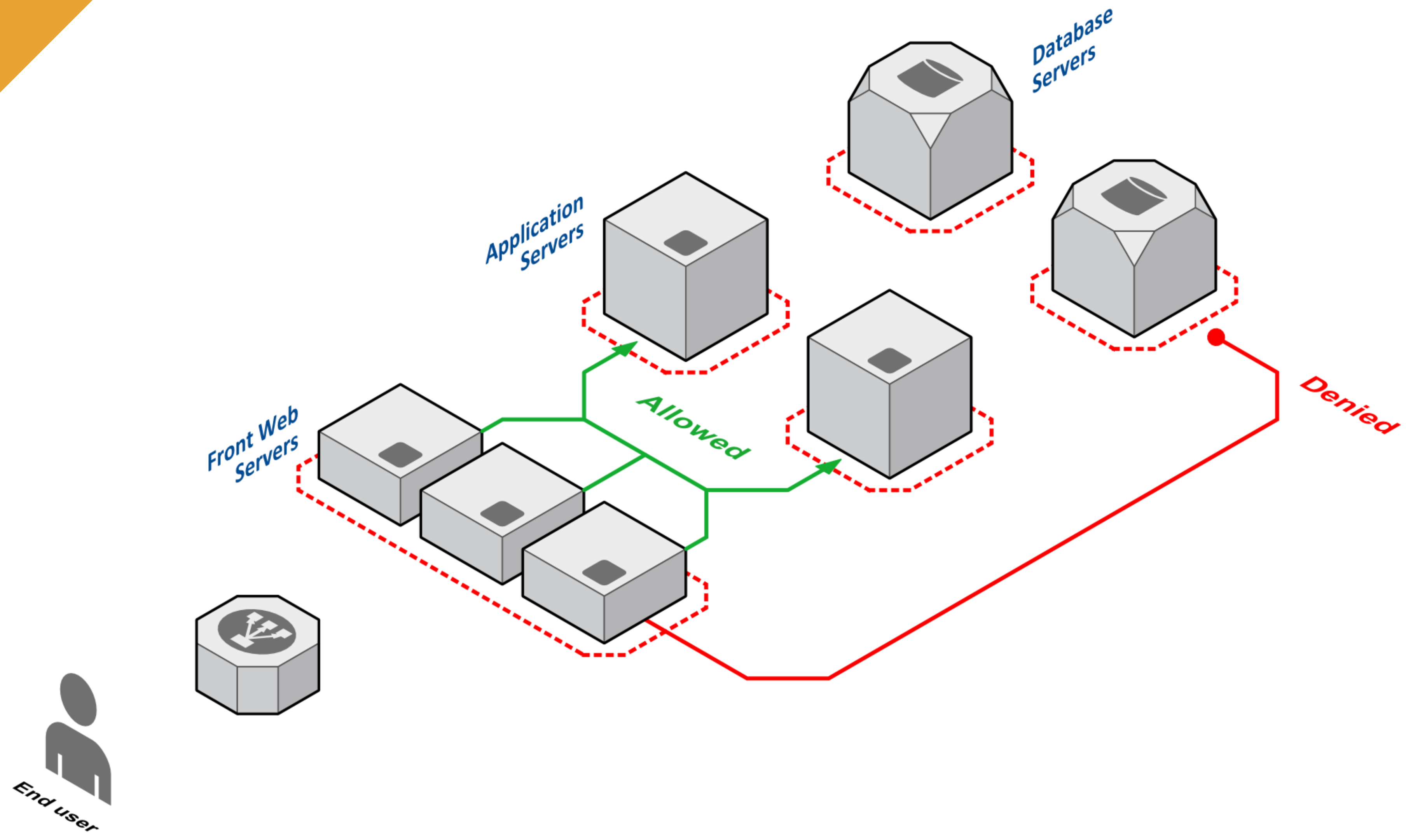
Security Groups



Security Groups



Security Groups



Security Group

A virtual firewall for your instance

STATEFUL

Responses to allowed inbound traffic are allowed to flow outbound regardless of outbound rules, and vice versa

Network ACLs

A firewall for controlling traffic in and out of a subnet

STATELESS

Responses to allowed inbound traffic are subject to the rules for outbound traffic, and vice versa

SECURITY & ACCESS CONTROL

ACCESS CREDENTIALS & KEY PAIRS

Access Credentials

**Access key and secret key used
to authenticate when accessing
AWS APIs**

Key Pairs

**Public key and private key used to
authenticate when accessing an
Amazon EC2 instance**



**Use IAM Roles to
pass access credentials to an
instance**

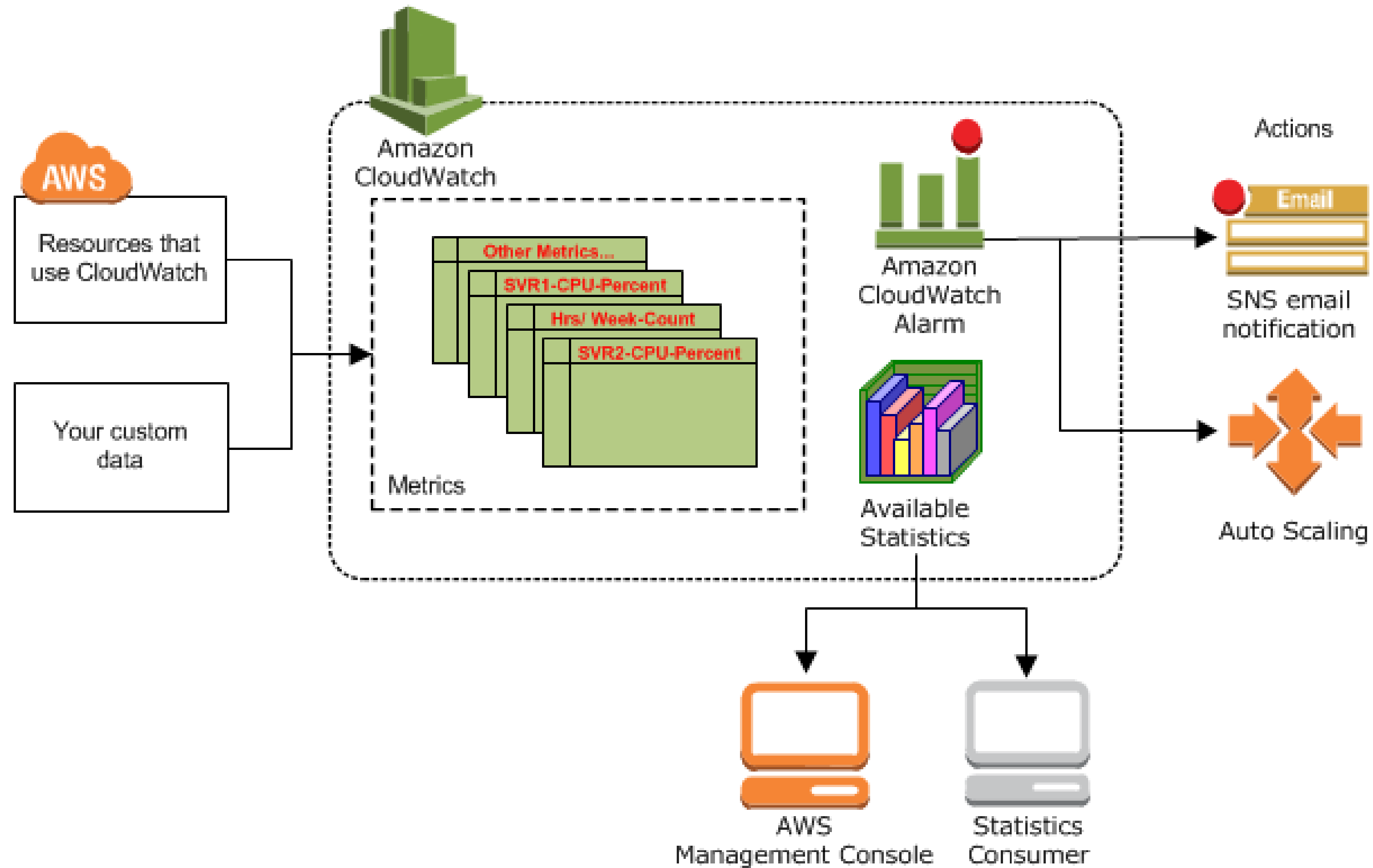


Best Practice

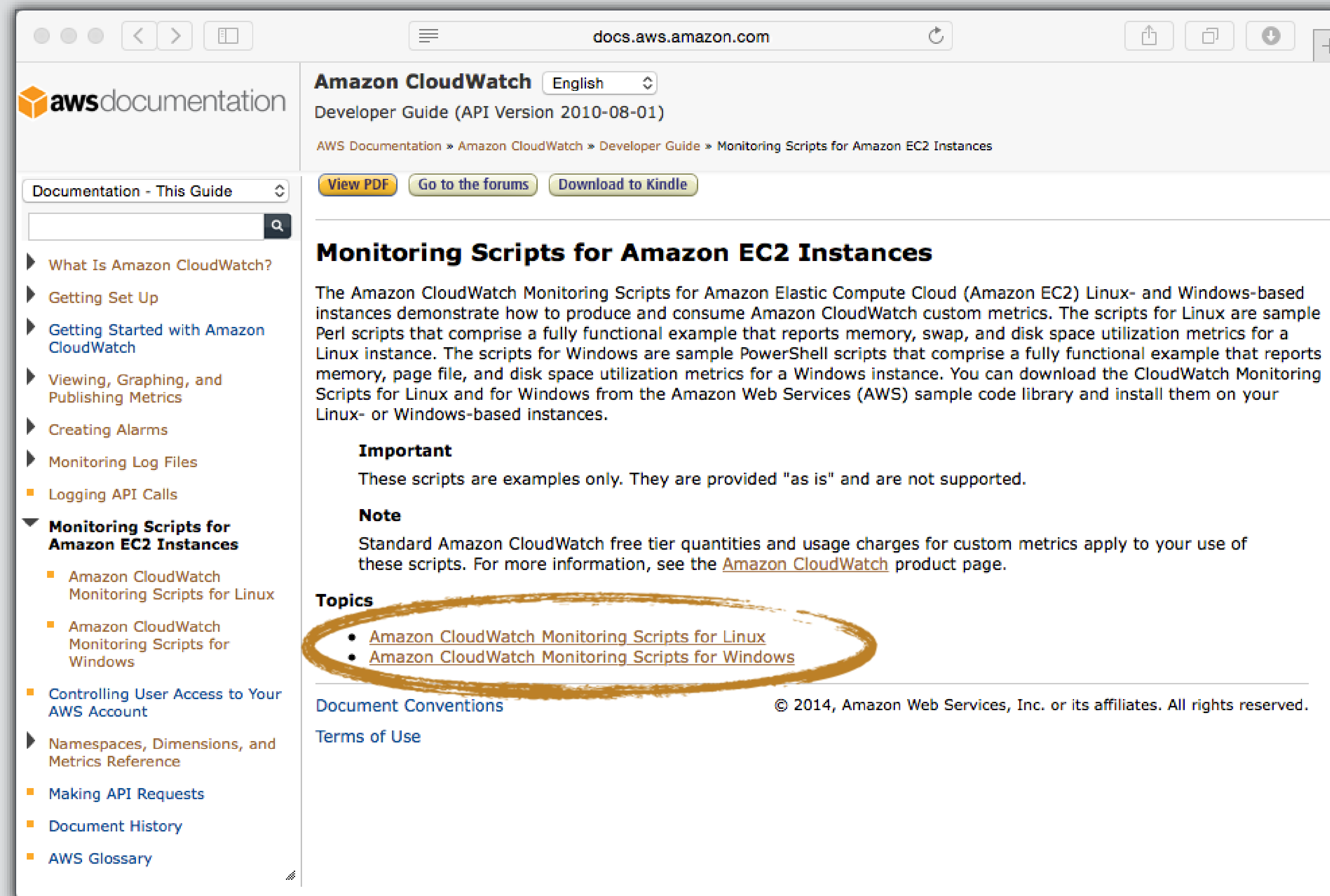
“If you need to SSH into your instance,
your deployment process is broken.”

MONITORING & LOGS

CloudWatch Metrics & Alarms



Monitoring Scripts for Amazon EC2 Instances



The screenshot shows the AWS documentation page for "Monitoring Scripts for Amazon EC2 Instances". The page is titled "Amazon CloudWatch Developer Guide (API Version 2010-08-01)" and is part of the "AWS Documentation" series. The left sidebar contains a navigation menu with sections like "What Is Amazon CloudWatch?", "Getting Set Up", "Getting Started with Amazon CloudWatch", "Viewing, Graphing, and Publishing Metrics", "Creating Alarms", "Monitoring Log Files", "Logging API Calls", "Monitoring Scripts for Amazon EC2 Instances" (which is expanded to show "Amazon CloudWatch Monitoring Scripts for Linux" and "Amazon CloudWatch Monitoring Scripts for Windows"), "Controlling User Access to Your AWS Account", "Namespaces, Dimensions, and Metrics Reference", "Making API Requests", "Document History", and "AWS Glossary". The main content area has a search bar and a "Documentation - This Guide" dropdown. Below the search bar, there are buttons for "View PDF", "Go to the forums", and "Download to Kindle". The main heading is "Monitoring Scripts for Amazon EC2 Instances". The text describes the scripts for Linux and Windows instances, which demonstrate how to produce and consume Amazon CloudWatch custom metrics. It mentions that the scripts for Linux are sample Perl scripts and the scripts for Windows are sample PowerShell scripts. It also notes that the scripts are provided "as is" and are not supported. A "Note" section states that standard Amazon CloudWatch free tier quantities and usage charges for custom metrics apply to the use of these scripts. A "Topics" section lists two links: "Amazon CloudWatch Monitoring Scripts for Linux" and "Amazon CloudWatch Monitoring Scripts for Windows", which are circled in orange. At the bottom, there are links for "Document Conventions" and "Terms of Use", and a copyright notice for 2014, Amazon Web Services, Inc. or its affiliates.

awsdocumentation

docs.aws.amazon.com

Amazon CloudWatch English

Developer Guide (API Version 2010-08-01)

AWS Documentation » Amazon CloudWatch » Developer Guide » Monitoring Scripts for Amazon EC2 Instances

View PDF Go to the forums Download to Kindle

Monitoring Scripts for Amazon EC2 Instances

The Amazon CloudWatch Monitoring Scripts for Amazon Elastic Compute Cloud (Amazon EC2) Linux- and Windows-based instances demonstrate how to produce and consume Amazon CloudWatch custom metrics. The scripts for Linux are sample Perl scripts that comprise a fully functional example that reports memory, swap, and disk space utilization metrics for a Linux instance. The scripts for Windows are sample PowerShell scripts that comprise a fully functional example that reports memory, page file, and disk space utilization metrics for a Windows instance. You can download the CloudWatch Monitoring Scripts for Linux and for Windows from the Amazon Web Services (AWS) sample code library and install them on your Linux- or Windows-based instances.

Important

These scripts are examples only. They are provided "as is" and are not supported.

Note

Standard Amazon CloudWatch free tier quantities and usage charges for custom metrics apply to your use of these scripts. For more information, see the [Amazon CloudWatch](#) product page.

Topics

- [Amazon CloudWatch Monitoring Scripts for Linux](#)
- [Amazon CloudWatch Monitoring Scripts for Windows](#)

Document Conventions Terms of Use

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CloudWatch Logs

Monitor applications and systems using log data
Store in a highly durable storage and set retention
Access your log files via Web, CLI or SDK

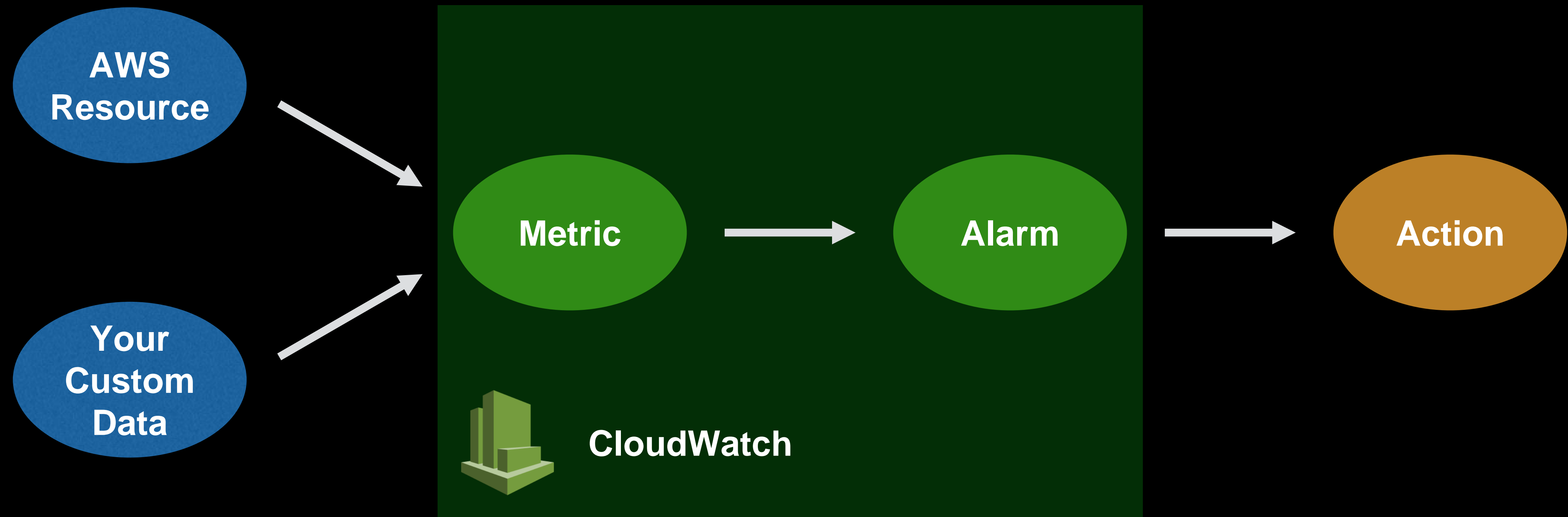
Amazon EC2 (Linux & Windows)

CloudTrail

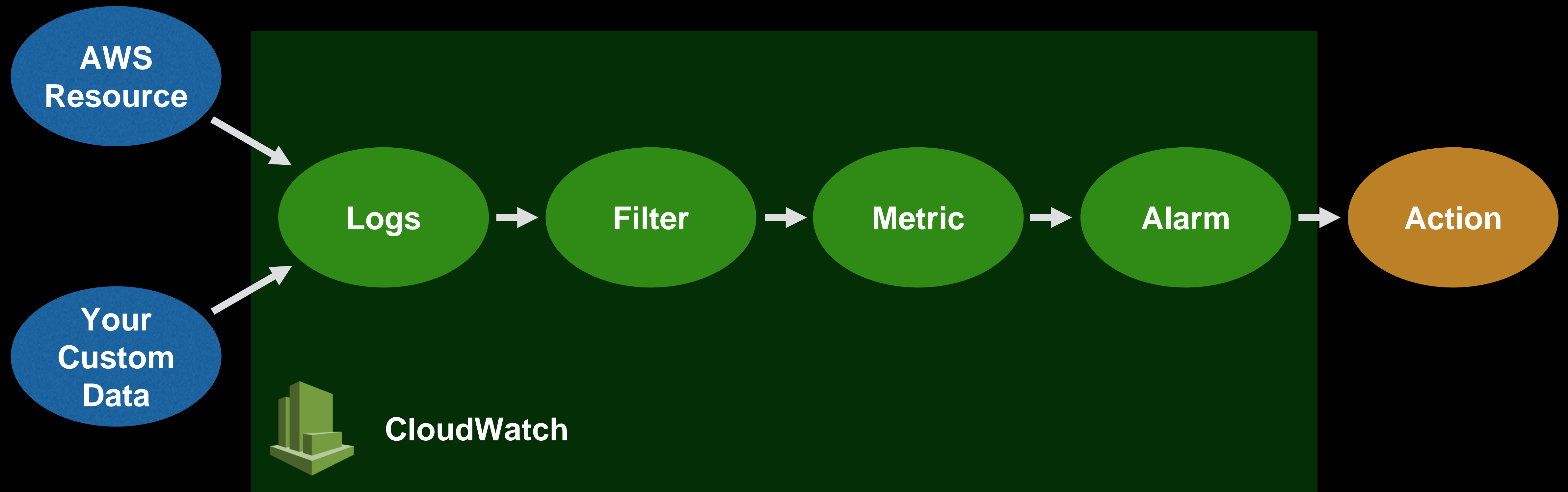
AWS Lambda

...

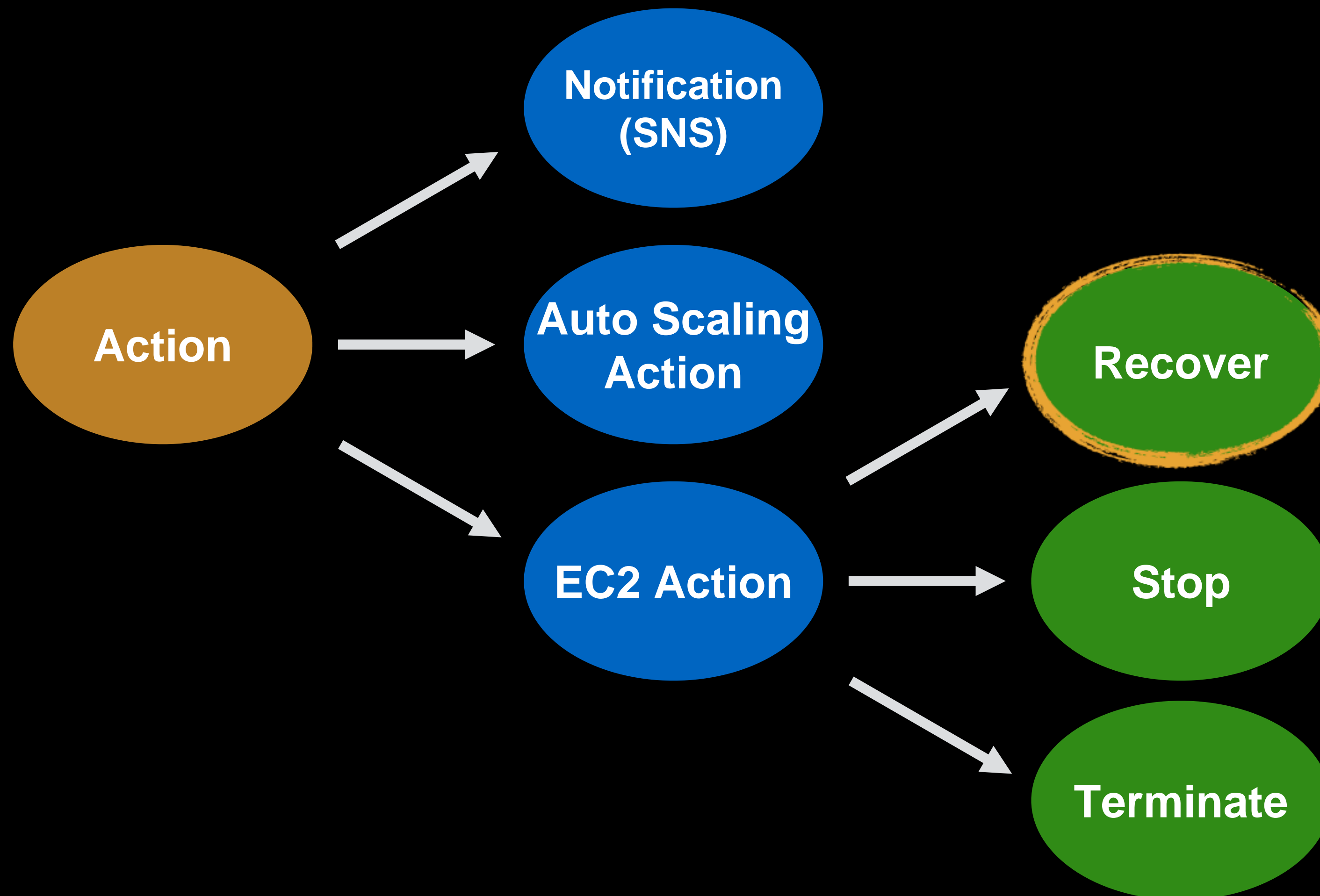
CloudWatch Metrics & Alarms



CloudWatch Logs + Filter



Alarm Actions



Amazon EC2 Auto Recovery

Use this action
together with
Status Checks
to automate
instance recovery

MANAGEMENT

Query Your EC2 Instances Using Tag and Attribute Filtering

Launch Instance

Connect

Actions

Filter by tags and attributes or search by keyword

<input type="checkbox"/>	Name	Mode	Owner	Instance ID
<input type="checkbox"/>	DevAPI	Development	Jeff	i-ba122be4
<input type="checkbox"/>	Development	Development	Anson	i-79132a27
<input type="checkbox"/>	DevWeb	Development	Jeff	i-7b132a25
<input type="checkbox"/>	ProdAPI	Production	Anson	i-b9122be7
<input type="checkbox"/>	ProdAppTier1	Production	Andy	i-7e132a20
<input type="checkbox"/>	ProdWeb1	Production	Jeff	i-86122bd8
<input type="checkbox"/>	ProdWeb2	Production	Andy	i-b8122be6
<input type="checkbox"/>	TestAPI	Testing	Kelly	i-bb122be5
<input type="checkbox"/>	TestAppTier2	Testing		i-7f132a21
<input checked="" type="checkbox"/>	TestWeb	Testing	Andrew	i-78132a26

Launch Instance

Connect

Actions

Filter by tags and attributes or search by keyword

Tag Keys

Mode

Name

Owner

Resource Attributes

AMI Launch Index

Launch Instance

Connect

Actions

tag:Owner :

(empty)

Not tagged

All values

Andrew

Andy

Anson

Jeff

Kelly

<input type="checkbox"/>	Name	Mode	Owner
<input type="checkbox"/>	DevWeb	Development	Jeff
<input type="checkbox"/>	Development	Development	Anson
<input type="checkbox"/>	DevAPI	Development	Jeff
<input type="checkbox"/>	ProdAppTier1	Production	Andy
<input type="checkbox"/>	ProdWeb1	Production	Jeff
<input type="checkbox"/>	ProdWeb2	Production	Andy

Launch Instance

Connect

Actions

search : 2a27

<input checked="" type="checkbox"/>	Name	Mode	Owner	Instance ID
<input checked="" type="checkbox"/>	Development	Development	Anson	i-79132a27

Launch Instance

Connect

Actions

Instance State : Stopped Owner : Jeff

<input type="checkbox"/>	Name	Mode	Owner
<input type="checkbox"/>	Development	Development	Anson
<input type="checkbox"/>	TestAppTier2	Testing	Kelly
<input type="checkbox"/>	TestWeb	Testing	Andrew
<input type="checkbox"/>	TestAPI	Testing	Kelly

AWS Management Console

Resource Groups and Tagging

Resource Groups

A resource group is a collection of resources that share one or more tags.

Create a Resource Group

Tag Editor

Find resources to tag

Regions*

Asia Pacific (Singapore) x Asia Pacific (Sydney) x Asia Pacific (Tokyo) x EU (Frankfurt) x EU (Ireland) x South America (Sao Paulo) x US East (Northern Virginia) x US West (Northern California) x US West (Oregon) x

Resource types*

EC2 Instances x EC2 Images x EC2 Load Balancers x EC2 Network Interfaces x EC2 Reserved Instances x EC2 Security Groups x EC2 Snapshots x EC2 Spot Requests x EC2 Volumes x

Tags

Select a tag key x

Add a tag key

marketing x

Applying tags

Updating resource 35 of 155

Multiple values

Find resources

Create a resource group

A resource group is a collection of resources that share one or more tags. Use the form below to define a new resource group.

Group name*

DataResources

Tags*

Service

Any tag value

Remove

Add a tag key

Regions*

Asia Pacific (Singapore) x Asia Pacific (Sydney) x Asia Pacific (Tokyo) x EU (Frankfurt) x EU (Ireland) x South America (Sao Paulo) x US East (Northern Virginia) x US West (Northern California) x US West (Oregon) x

Resource types

EC2 Instances x S3 Buckets x RDS DB Instances x

* Required

Preview

Save

EC2

Instances (5)

RDS

DB Instances (4)

S3

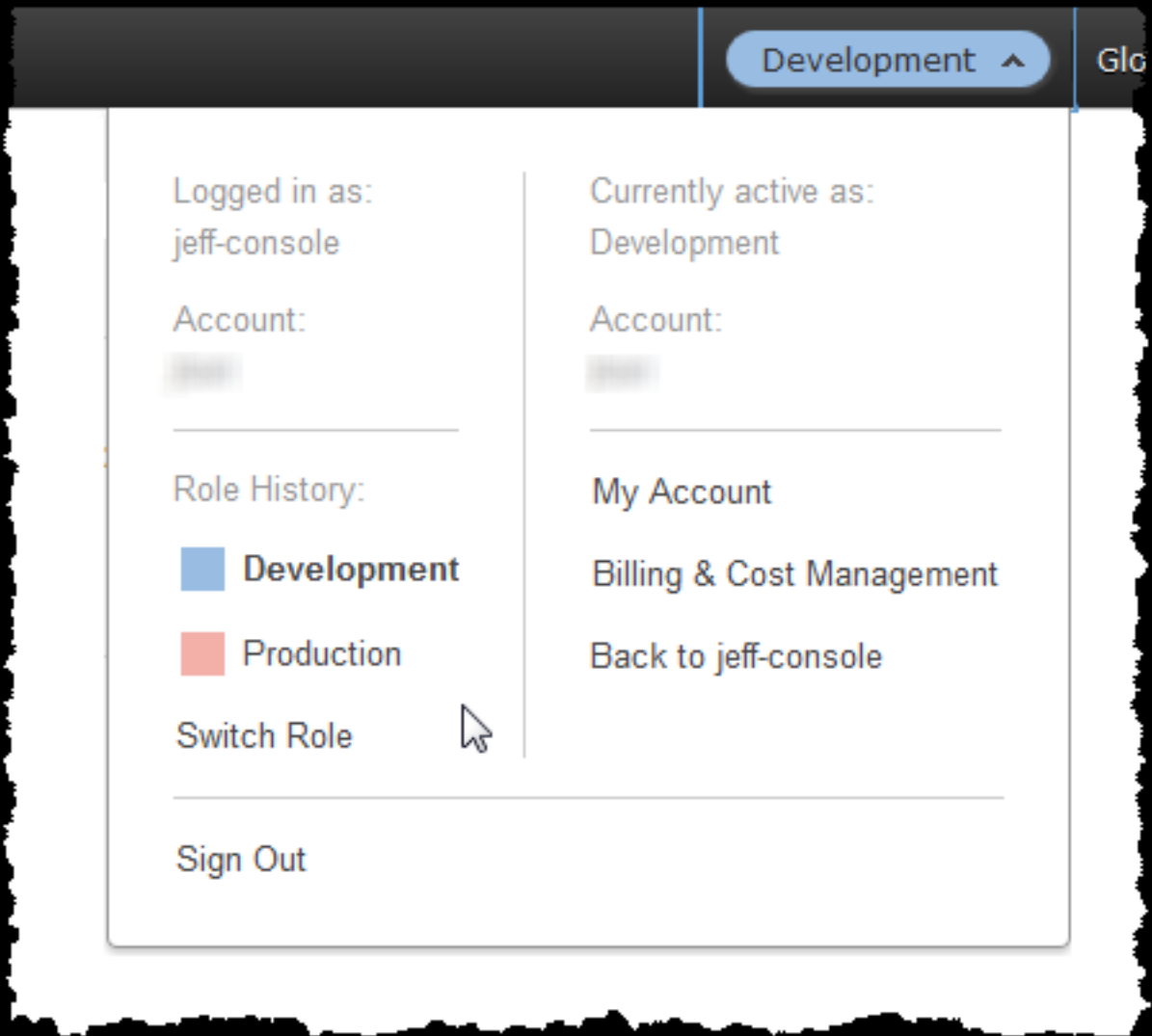
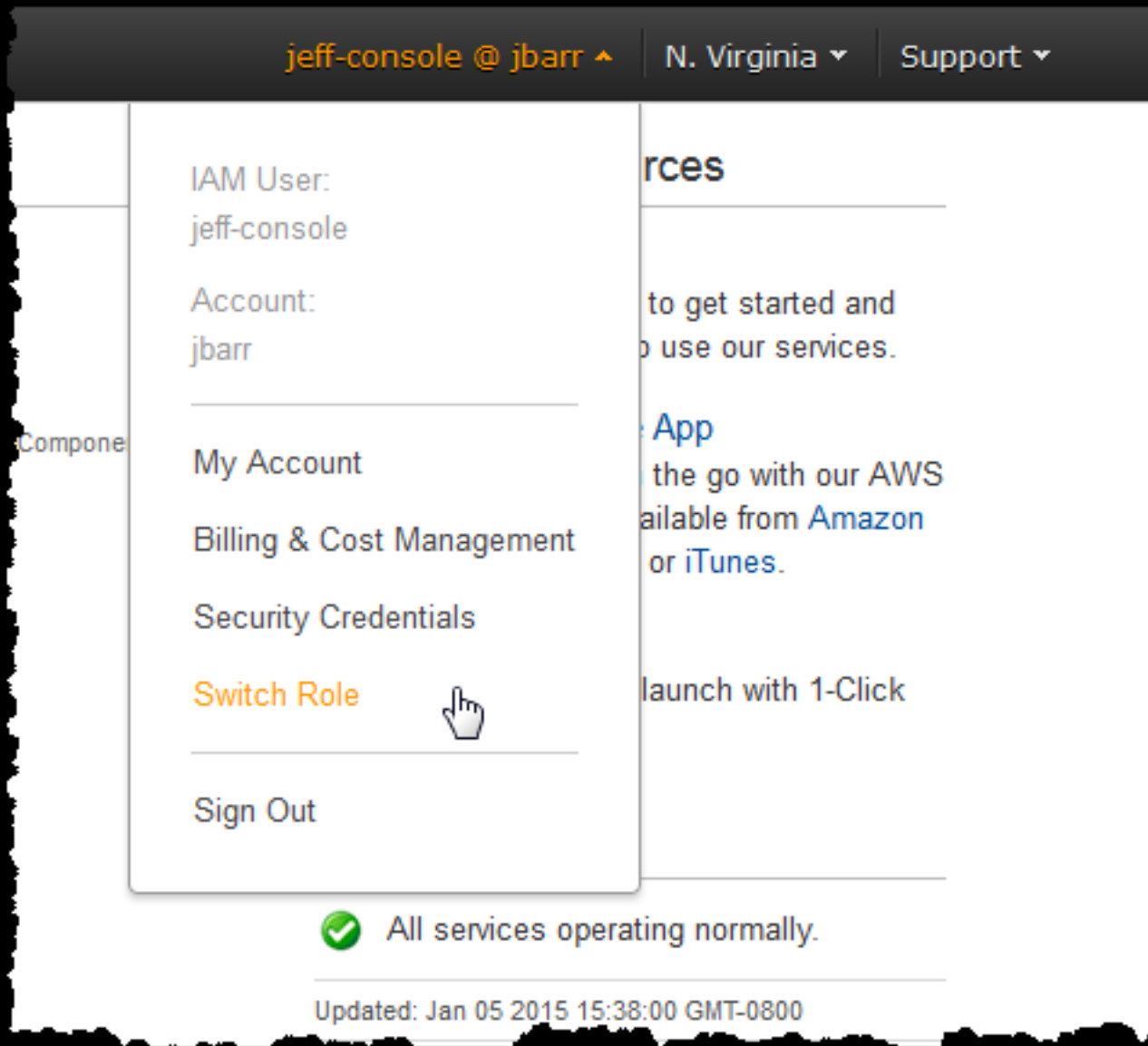
Buckets (44)

Filter




Viewing 1-5 of 5 Instances

Go	Alarms	Name	Instance ID	Region
▶	🔗	AWS Blog Authoring Host	i-29a0ef22	us-we
▶	🔗		i-eab86bff	sa-ea
▶	🔗	RoadTripBlogServer	i-7053641e	us-ea
▶	🔗		i-8c5f32a3	us-ea
▶	🔗		i-8d5f32a2	us-ea

Cross account login (IAM)



AWS Console
Mobile App

	AWS Dashboard		
US East (N. Virginia)			
Auto Scaling Groups			
20 Groups			
6 in Alarm State		>	
Beanstalk Applications			
9 Applications			
3 in Alarm State		>	
DynamoDB Tables			
15 Tables			
1 in Alarm State		>	
EC2 Instances			
22 / 26 Running			
1 in Alarm State			
1 Status Check Failure		>	
Load Balancers			
10 Load Balancers			
2 in Alarm State		>	
OpsWorks Stacks			
20 OpsWorks Stacks		>	
RDS Instances			
15 RDS Instances			
2 in Alarm State		>	
Route 53 Hosted Zones			
100+ Hosted Zones		>	



A unified tool to manage your AWS services

Windows - Mac - Linux

```
$ aws ec2 describe-instances
```

```
$ aws ec2 start-instances --instance-ids i-1348636c
```

AWS
Command Line Interface

```
$ aws ec2 describe-volumes --output table
```

DescribeVolumes							
Volumes							
AvailabilityZone	CreateTime	Size	SnapshotId	State	VolumeId	VolumeType	
us-west-2a	2013-09-17T00:55:03.000Z	30	snap-f23ec1c8	in-use	vol-e11a5288	standard	
Attachments							
AttachTime	DeleteOnTermination	Device	InstanceId	State	VolumeId		
2013-09-17T00:55:03.000Z	True	/dev/sda1	i-a071c394	attached	vol-e11a5288		
Volumes							
AvailabilityZone	CreateTime	Size	SnapshotId	State	VolumeId	VolumeType	
us-west-2a	2013-09-18T20:26:15.000Z	8	snap-708e8348	in-use	vol-2e410a47	standard	
Attachments							
AttachTime	DeleteOnTermination	Device	InstanceId	State	VolumeId		
2013-09-18T20:26:16.000Z	True	/dev/sda1	i-4b41a37c	attached	vol-2e410a47		

AWS Command Line Interface

```
$ aws ec2 describe-volumes \
  --query 'Volumes[*].[VolumeId,Attachments[0].InstanceId,AvailabilityZone,Size]' \
  --output table
```

DescribeVolumes				
vol-e11a5288	i-a071c394	us-west-2a	30	
vol-2e410a47	i-4b41a37c	us-west-2a	8	

```
$ aws ec2 describe-volumes \
  --query 'Volumes[*].{ID:VolumeId,InstanceId:Attachments[0].InstanceId,AZ:AvailabilityZone,Size:Size}' \
  --output table
```

DescribeVolumes				
AZ	ID	InstanceId	Size	
us-west-2a	vol-e11a5288	i-a071c394	30	
us-west-2a	vol-2e410a47	i-4b41a37c	8	

RESOURCES

re:Invent CLI video:

<https://www.youtube.com/watch?v=vP56l7qThNs>

AWS CLI Docs: <http://aws.amazon.com/cli/>

**AWS Tools
for Windows PowerShell**

Manage your AWS services from the Windows PowerShell scripting environment

```
PS C:\> Start-EC2Instance -InstanceIds i-10a64379
```

**AWS Tools
for Windows PowerShell**

```
foreach ($i in Get-ChildItem C:\Logs)
{
    if ($i.CreationTime -lt ($ (Get-Date) .AddDays (-7) ))
    {
        if ($i.Length -gt 0)
        {
            Write-S3Object -BucketName mylogbucket `
                           -Key Logs/$i `
                           -File $i.FullName
        }
        Remove-Item $i.FullName
    }
}
```



SDKs

Simplify using AWS services in your applications with an API tailored to your programming language or platform.

Android

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

Browser

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

iOS

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

Java

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

.NET

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

Node.js

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

PHP

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

Python

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

Ruby

- [Install »](#)
- [Documentation »](#)
- [Learn more »](#)

DEPLOYMENT

DEPLOYMENT

AMAZON MACHINE IMAGE (AMI)

Amazon maintained

Set of **Linux** and
Windows images
Kept up to date by
Amazon in each
region

Community maintained

Images published
by **other AWS**
users
Managed and
maintained by
Marketplace
partners

Your machine images

AMIs you have
created from EC2
instances
Can be kept **private**
or shared with
other accounts

Bake an AMI

Start an instance

Configure the instance

Create an AMI from your instance

Start new ones from the AMI

Bake an AMI

Start an instance
Configure the instance
Create an AMI from your instance
Start new ones from the AMI

Vs.

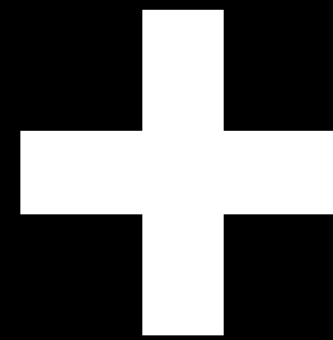
Configure dynamically

Launch an instance
Use metadata service and cloud-init to perform actions on instance when it launches

Bake an AMI

Build your base images and
setup custom initialisation
scripts

Maintain your 'golden' base



Configure dynamically

Use bootstrapping to pass
custom information in and
perform post launch tasks
like pulling code from SVN

**Bake an
AMI**

**Configure
dynamically**



Time consuming configuration
startup time

Static configurations
less change management

**Bake an
AMI**

**Configure
dynamically**



Continuous deployment
latest code

Environment specific
dev-test-prod

Instance Store-backed

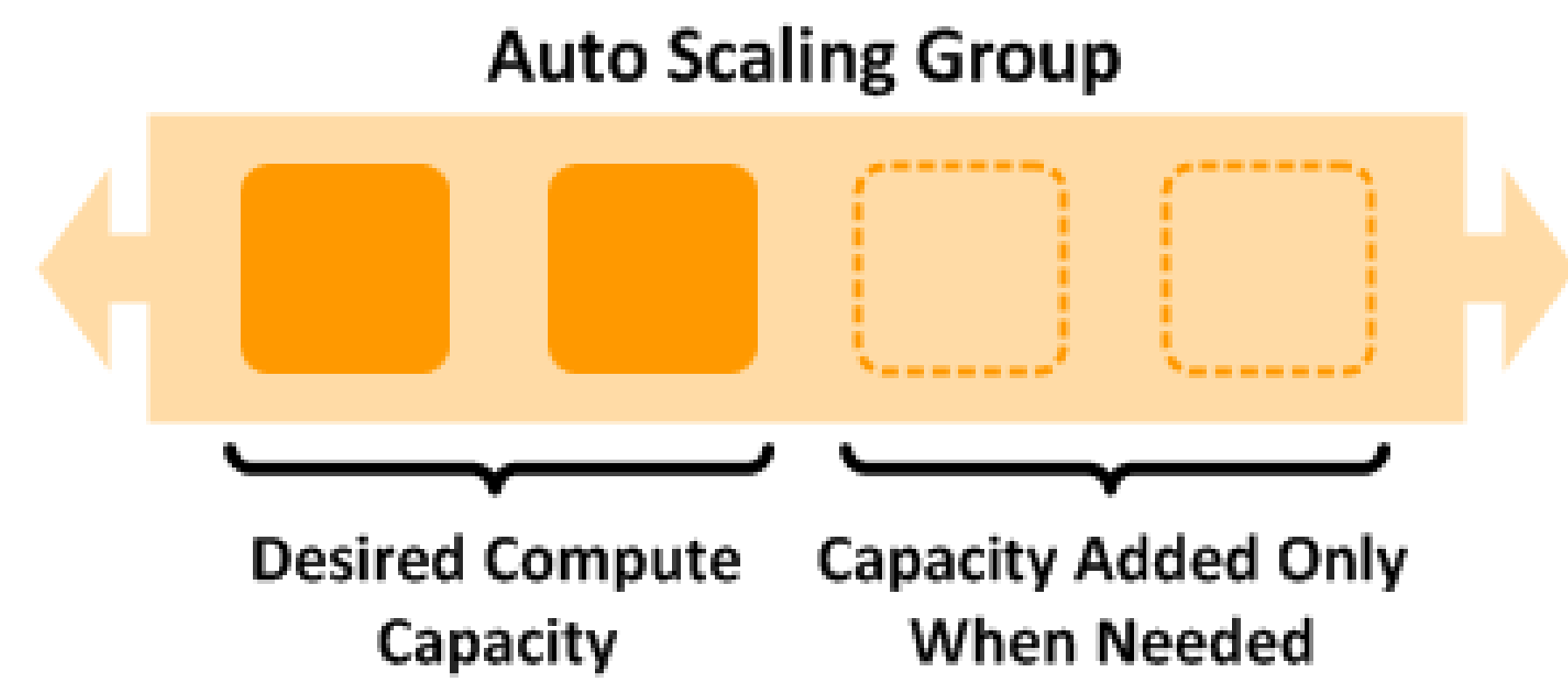
Vs.

Amazon EBS-backed

DEPLOYMENT

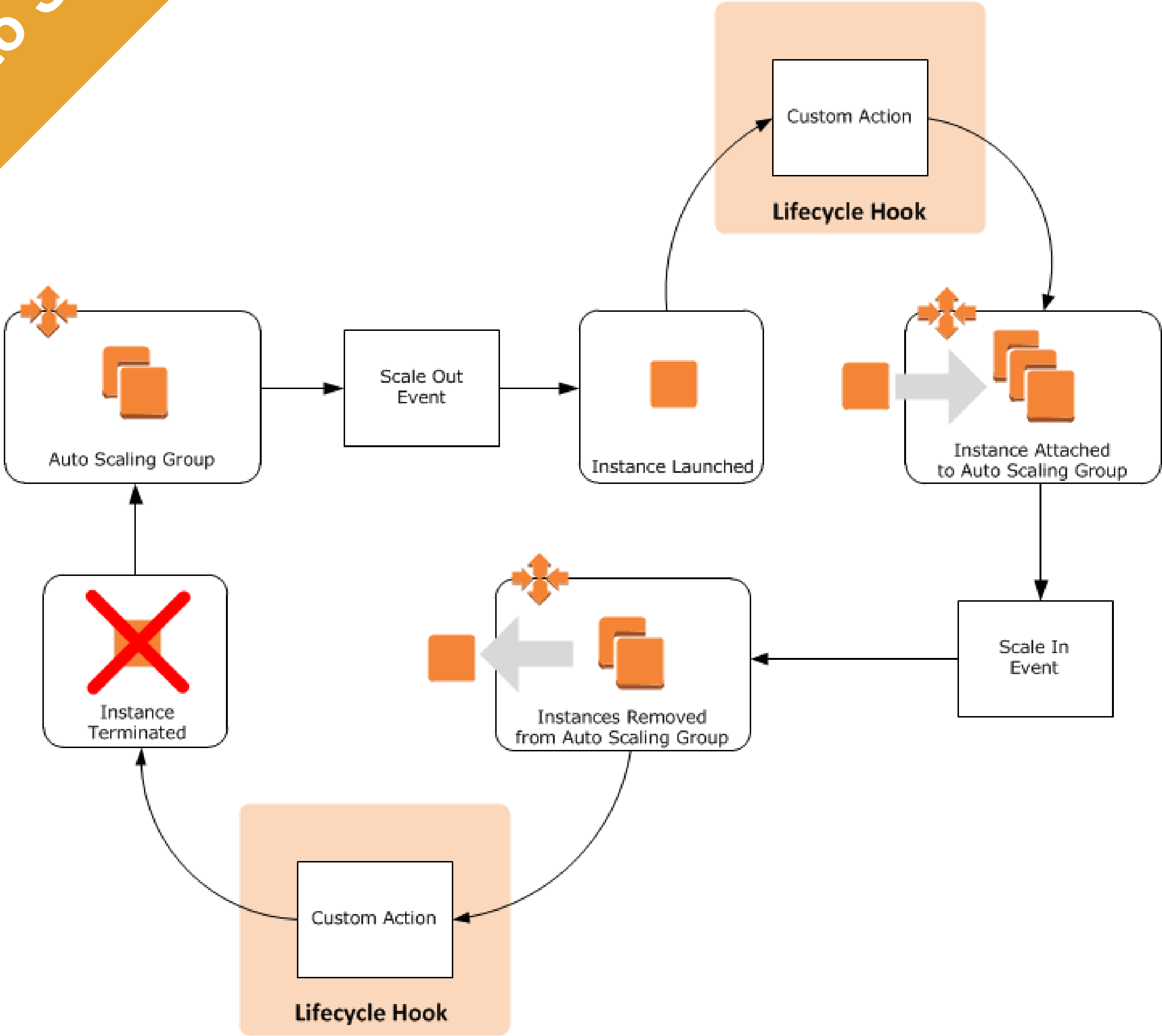
AUTO SCALING

Auto Scaling





Lifecycle Hooks



Sample Use Cases

Installing Software to Pending Instances

Filling a Cache of Servers

Retrieving Logs from Terminating Instances



Auto Scaling

Integrated with
AWS CodeDeploy

DEPLOYMENT

DOCKER CONTAINERS

Amazon Linux

**A supported and
maintained Linux
image provided by
Amazon Web Services**

AWS Elastic Beanstalk

**For deploying and
scaling web
applications and
services**

Amazon EC2 Container Service

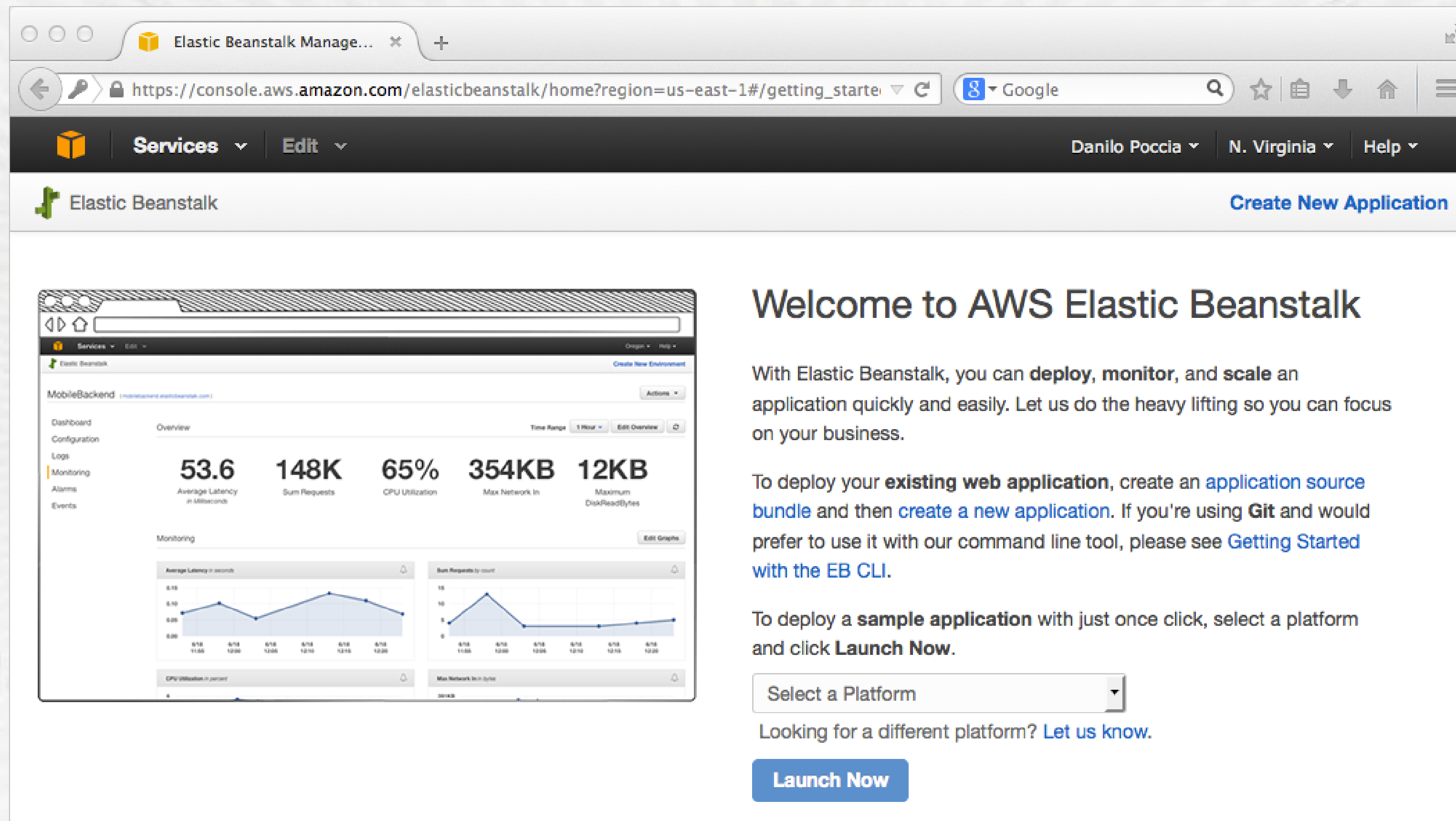
**Highly scalable, high
performance container
management service**



Amazon Linux

```
sudo yum install docker  
sudo service docker start  
sudo docker ...
```

Choose Your Platform



The screenshot shows the AWS Elastic Beanstalk console. The top navigation bar includes the AWS logo, 'Services', 'Edit', and user information 'Danilo Poccia' in 'N. Virginia' with a 'Help' link. The main header says 'Elastic Beanstalk' with a 'Create New Application' button. The main content area is titled 'Welcome to AWS Elastic Beanstalk' and explains that you can 'deploy, monitor, and scale' an application. It provides instructions for deploying existing web applications (using application source bundles and the EB CLI) and for deploying sample applications (using the 'Launch Now' button). A 'Select a Platform' dropdown menu is visible, and a link 'Let us know.' is provided for users looking for a different platform. On the left, a preview of a sample application dashboard for 'MobileBackend' is shown, displaying metrics like Average Latency (53.6), Sum Requests (148K), CPU Utilization (65%), Max Network In (354KB), and Maximum DiskReadBytes (12KB), along with monitoring graphs.

IIS

Node.js

PHP

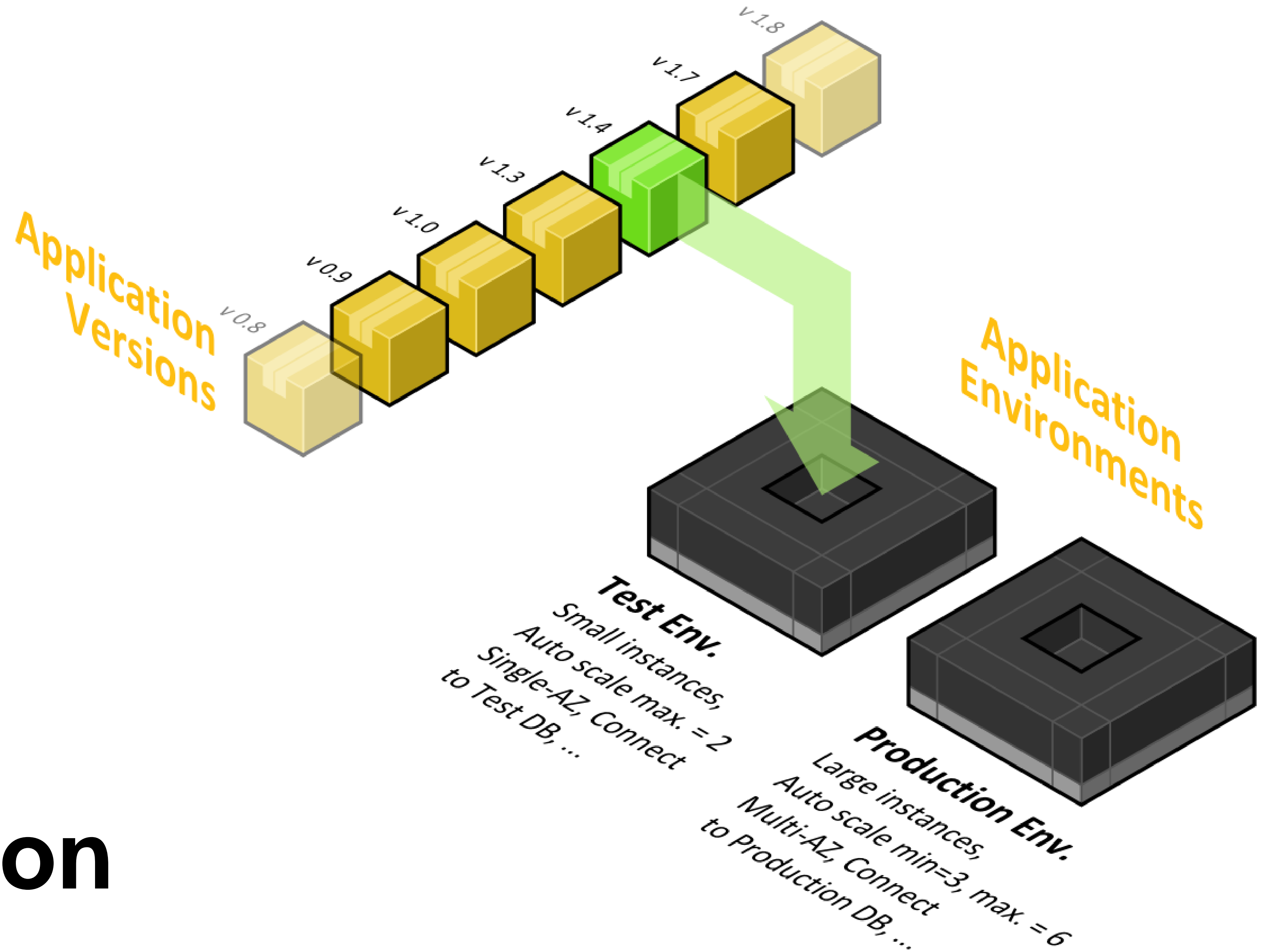
Python

Ruby

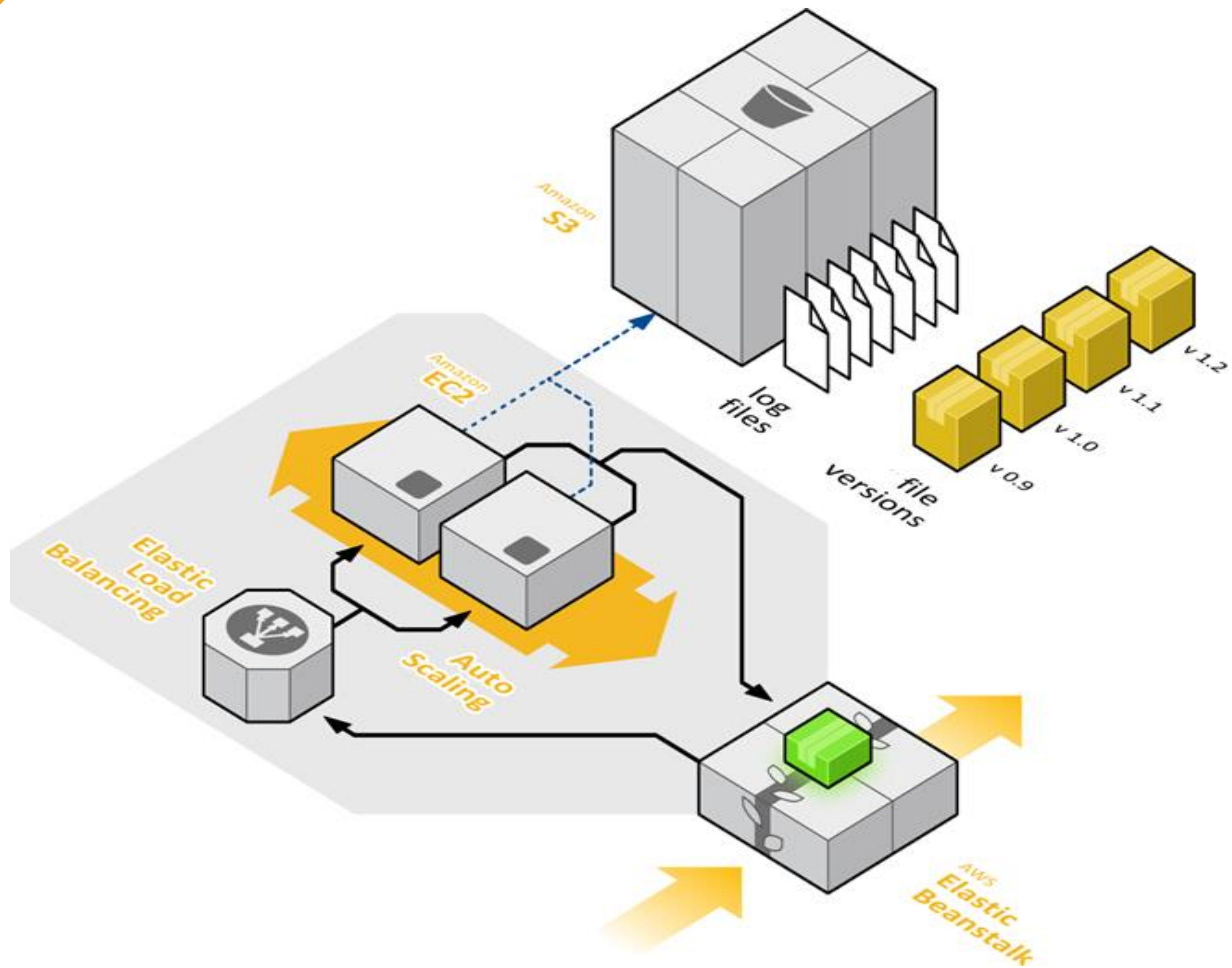
Tomcat

Docker

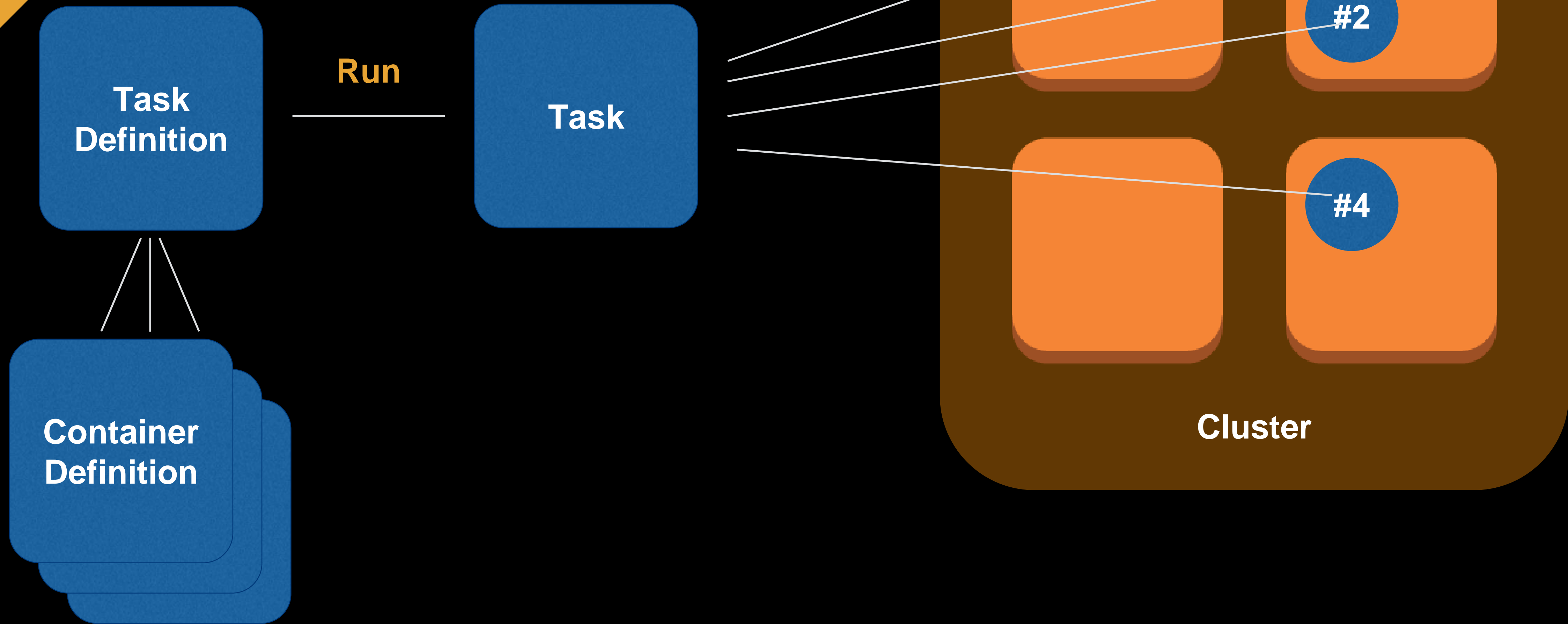
Deploy Your Backend Application



AWS Elastic Beanstalk



**Amazon EC2
Container Service**



COST OPTIMIZATION

COST OPTIMIZATION

RESERVED INSTANCE



**EC2
Reserved Instance**

**Up to 75% discount
compared to
On-Demand Instance pricing**

1 or 3 year terms

EC2
Reserved Instance

		Payment		
		Upfront	Monthly	Hourly
Reserved Instance	On Demand Instance			X
	No Upfront		X	
	Partial Upfront	X	X	
	All Upfront	X		

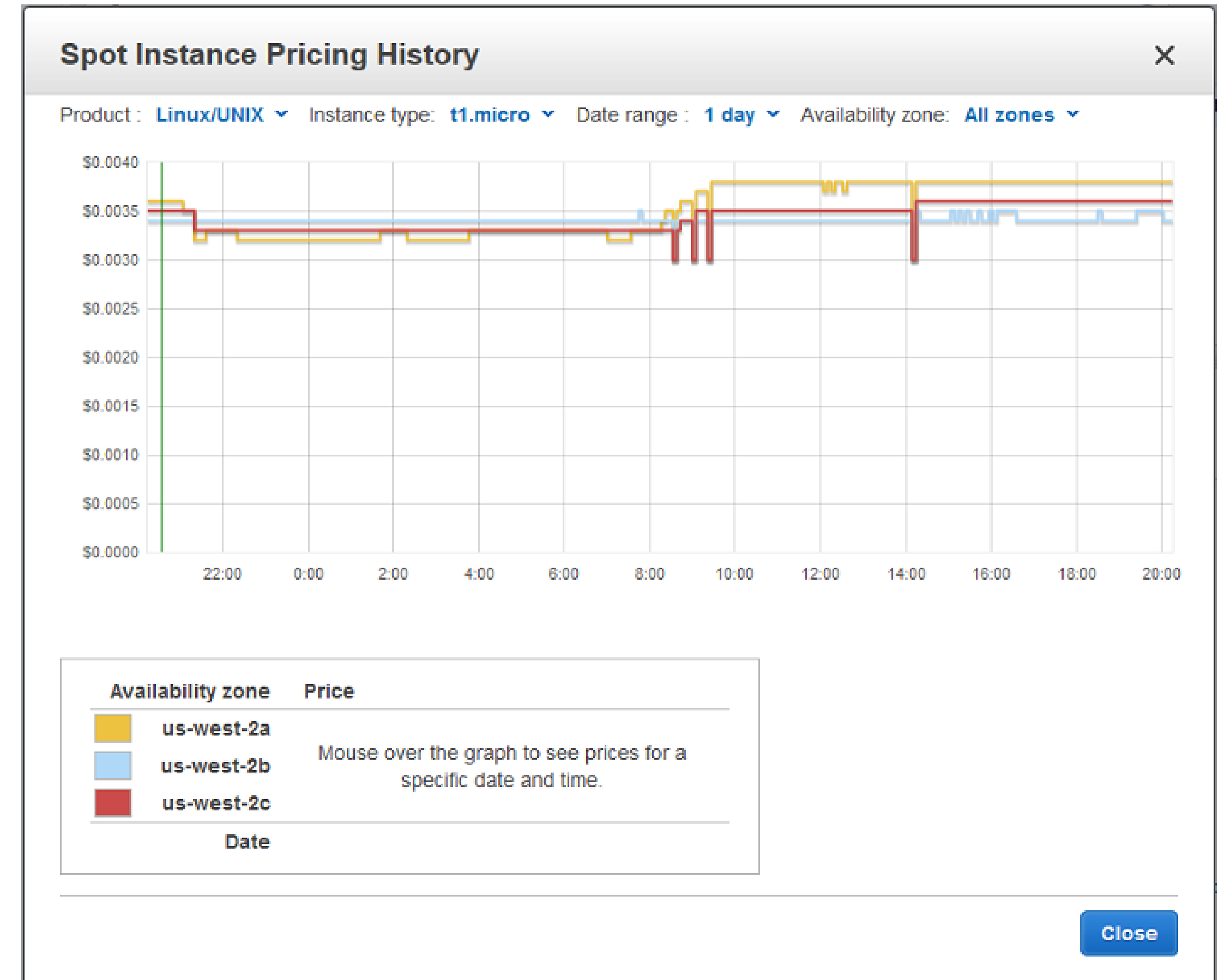
COST OPTIMIZATION

SPOT INSTANCE

EC2
Spot Instance

Bid on unused EC2 capacity

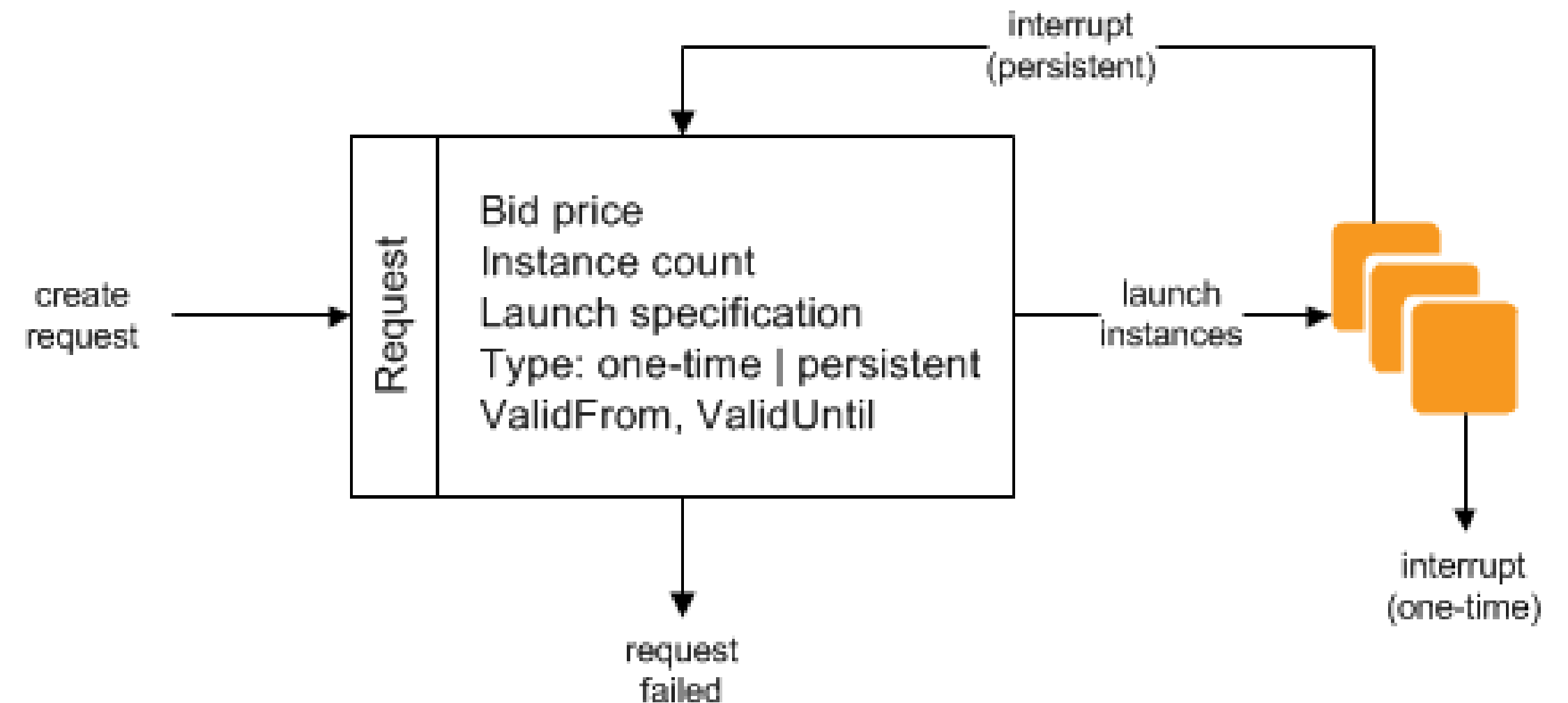
**Spot Price based
on supply/demand,
determined
automatically**



**EC2
Spot Instance**

Bid on unused EC2 capacity

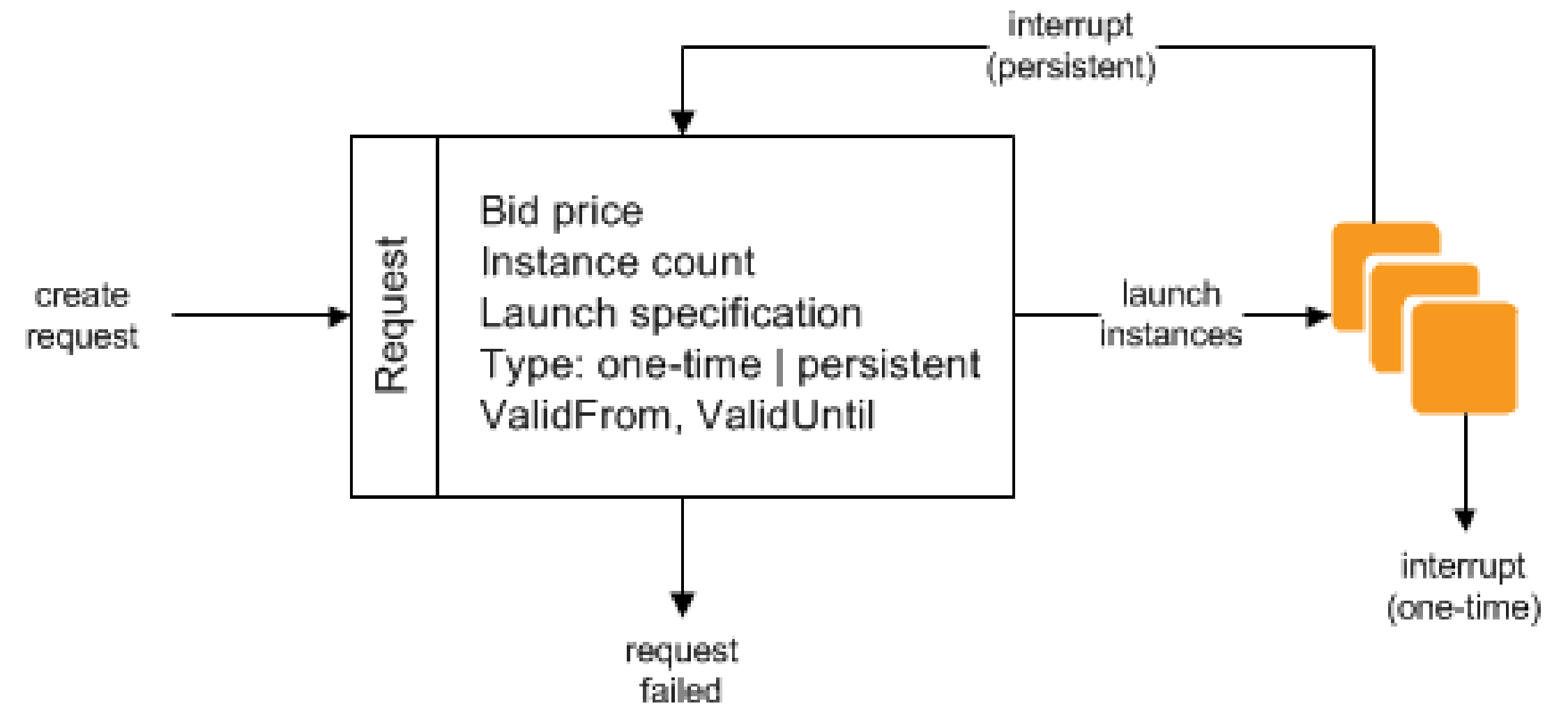
**Spot Price based
on supply/demand,
determined
automatically**



EC2
Spot Instance

Bid on unused EC2 capacity

**Spot Price based
on supply/demand,
determined
automatically**



**Spot Instance
Termination Notice
two-minute warning**

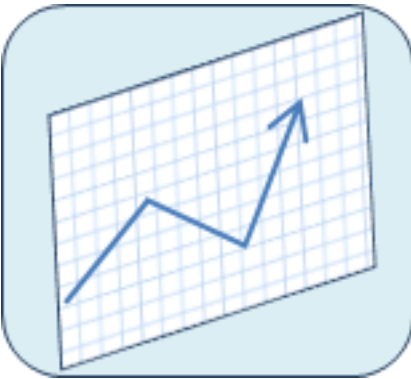
Spot Instance Use Cases



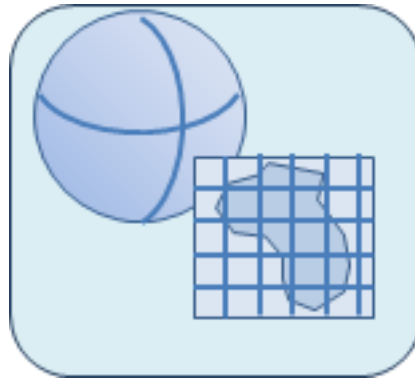
Analytics



Big Data



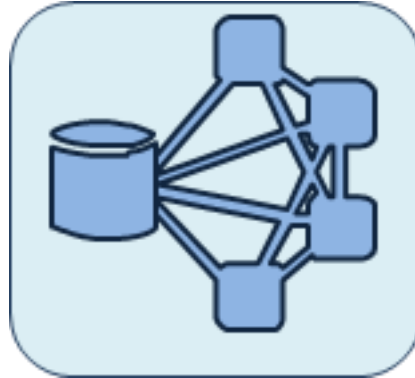
**Financial Modeling
and Analysis**



**Geospatial
Analysis**



**Image and Media
Encoding**



**Scientific
Computing**



Testing



Web Crawling

3RD PARTY TOOLS

AWS Management Portal for vCenter

Manage your **AWS** resources using VMware vCenter

A vCenter plug-in
within your existing vCenter environment

Once installed, it enables you to
migrate VMware VMs to Amazon EC2
and **manage** AWS resources from within vCenter

AWS Management Portal for vCenter

Center 5.1 U2 - vSphere Client

File Edit View Inventory Administration Plug-ins Help

Home Inventory AWS Management Portal vCenter 5.1 U2

Search Inventory

776925325461 : QUICKSILVER-AD\derek Logout

VPC Dashboard Admin Users

Amazon Web Services

US East (N. Virginia)

Dev/Test

Default Environment

tmp-i-one

US West (Oregon)

US West (N. California)

Dev/Test

Prod

Default Environment

EU (Ireland)

Asia Pacific (Singapore)

Asia Pacific (Tokyo)

Asia Pacific (Sydney)

South America (Sao Paulo)

Getting Started

Instances

Permissions

What is a Default Environment

The default environment contains all EC2 instances not launched through AWS Management Portal for vCenter. Administrators can manage these instances within management portal in the same way as other instances launched using the portal.

Basic Tasks

Add Permission...

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Feedback

Tasks Alarms QUICKSILVER-AD\derek

AWS Add-ins for Microsoft System Center

Use the familiar **System Center** interface to view and manage your **Amazon EC2 for Microsoft Windows Server** resources within the **AWS Cloud**, as well as **Windows Servers** installed on-premises.

AWS Management Pack for Microsoft
System Center Operations Manager (**SCOM**)

AWS Systems Manager for Microsoft
System Center Virtual Machine Manager (**SCVMM**)

AWS Systems Manager
for Microsoft SCVMM

Home

Folder

Create Service

Create Virtual Machine

Create Cloud

Create Host Group

Create VM Network

Assign Cloud

Overview

VMs

Services

VM Networks

AWS EC2

PowerShell

Jobs

PRO

VMs and Services

Tenants

Clouds

VM Networks

Storage

All Hosts

VMs and Services

Fabric

Library

Jobs

Settings

AWS EC2 Display

amazon

web services

Notifications (1)

Go to AWS Console

Settings

US West (Oregon)

Instance Id	Name	Availability Zone	State	Status Checks	Operating System
i-0c333b01	Suse	us-west-2b	Stopped		Linux
i-372bd03d	DEMO: RDGW1	us-west-2a	Running	2 of 2 passed	Windows
i-9335ce19	DEMO: DC1	us-west-2a	Running	2 of 2 passed	Windows
i-abdbd3a6	Testing Box	us-west-2b	Running		Windows
i-39333b34	2008 01	us-west-2b	Running		Windows
i-17323a1a	2003	us-west-2b	Stopped		Windows
i-8b08ec81	Broken Box	us-west-2a	Running		Windows
i-91575f92	Amazon Linux Instance [PV]	us-west-2b	Stopped		Linux
i-18313915		us-west-2b	Running		Windows
i-e86860e5	Ubuntu Instance	us-west-2b	Stopped		Linux
i-d0a145da	Windows Server 2012 R2 Base Instance	us-west-2a	Stopped		Windows
i-7434cf7e	DEMO: NAT1	us-west-2a	Running	2 of 2 passed	Linux

Power On (Start)

Shut Down (Stop)

Reset (Reboot)

Delete (Terminate)

Retrieve Windows Password

Connect via RDP

Virtual Machine Information

Networking

Security

Instance Id: i-abdbd3a6

Name: Testing Box

State: Running

Launch Time: 10/2/2014 9:27:19 PM +00:00 (19 days ago)

Type: t1.micro

Tenancy: default

Image Id: ami-d38dce3

Operating System: Windows

Public Dns Name: ec2-54-69-98-222.us-west-2.compute.amazonaws.com

Public Ip Address: 54.69.98.222

Private Dns Name: ip-172-31-29-160.us-west-2.compute.internal

Private Ip Address: 172.31.29.160

Vpc Id: vpc-317f8454

Subnet Id: subnet-3cd1344b

Network Interfaces: eni-ec98a99b

Import Virtual Machine

amazon

web services

To import a virtual machine into Amazon EC2, complete the fields, and then click Import.

Virtual Machine

Name: Hyper-V Windows VM

Id: 3B5CB349-854F-4E1F-A403-8C691784A6B4

Host: hyper-v.ec2windows.local

Hardware: Processors: 4 Memory: 2048 MB

Amazon EC2 Options

Region: US East (Virginia)

Architecture: 64-bit 32-bit

Family: General purpose Show previous generations

Instance type: t2.micro vCPUs: 1 Memory: 1 GB

Network (VPC): vpc-ac339bc9 (vpc-one) (172.30.0.0/16)

Subnet: subnet-f2428a85 (subnet-three) (172.30.1.0/24) (us-east-1c)

Import Cancel

SUMMARY

What we just saw

Instances

Storage

Network

Monitoring & Logs

Security & Access Control

Management Tools

Deployment

Cost Optimization

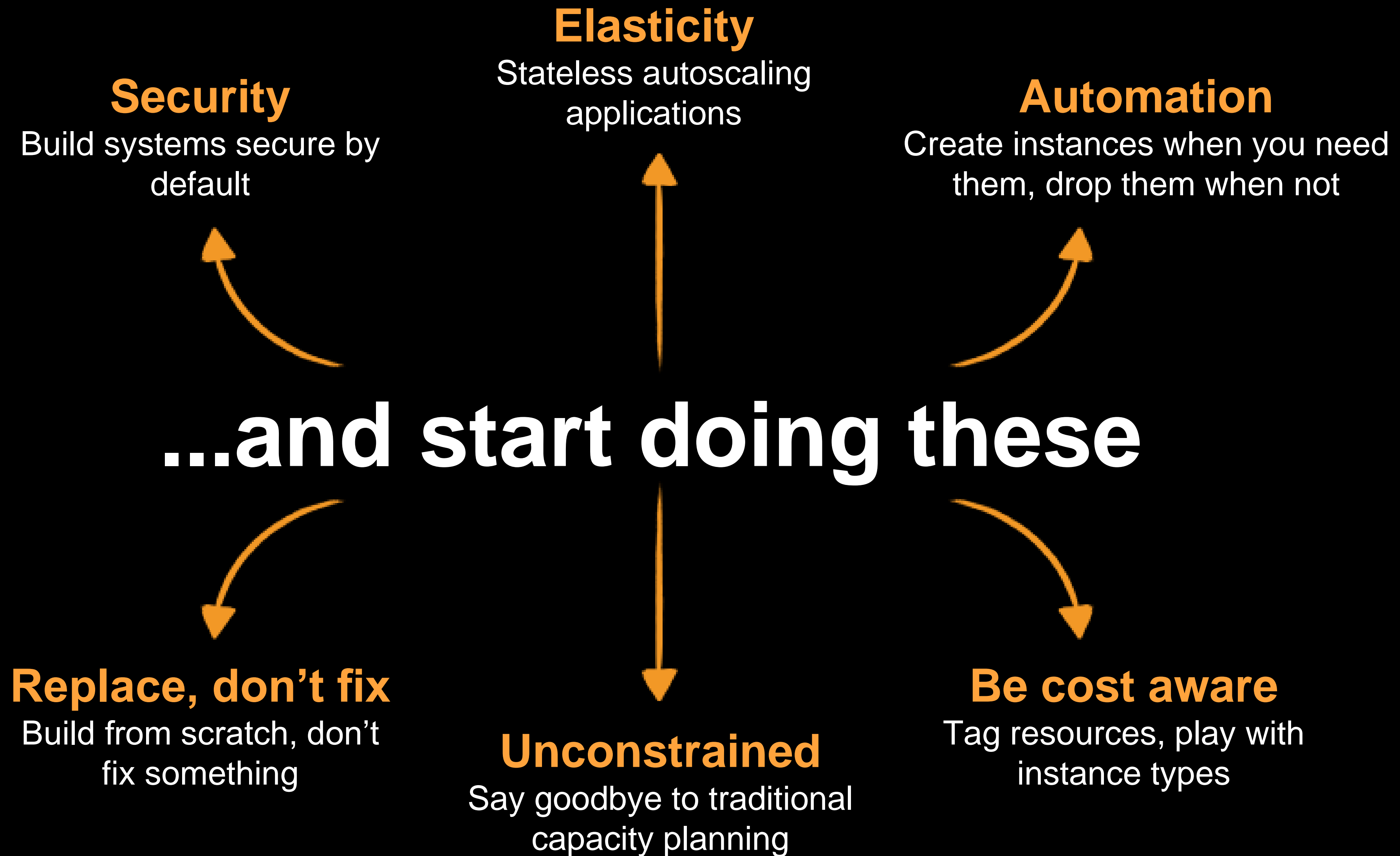
3rd Party Tools

Stop doing these...

Provisioning and fixing servers

Treating compute as physical things

Thinking of compute as a finite commitment





 **#awswebinar**