IndyAWS: Compute

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IndyAWS Meetup
Topic: Compute

About Me

AWS Certified Solutions Architect - Associate

- Working with AWS platform for 9+ years

Lead Application Developer with Soliant Consulting

- Nationwide Consulting Company
- FileMaker, Salesforce and Web Development practices
- Architected Soliant.cloud (Soliant dot cloud) AWS hosting
- Building AWS practice

Why AWS Compute

Global Infrastructure

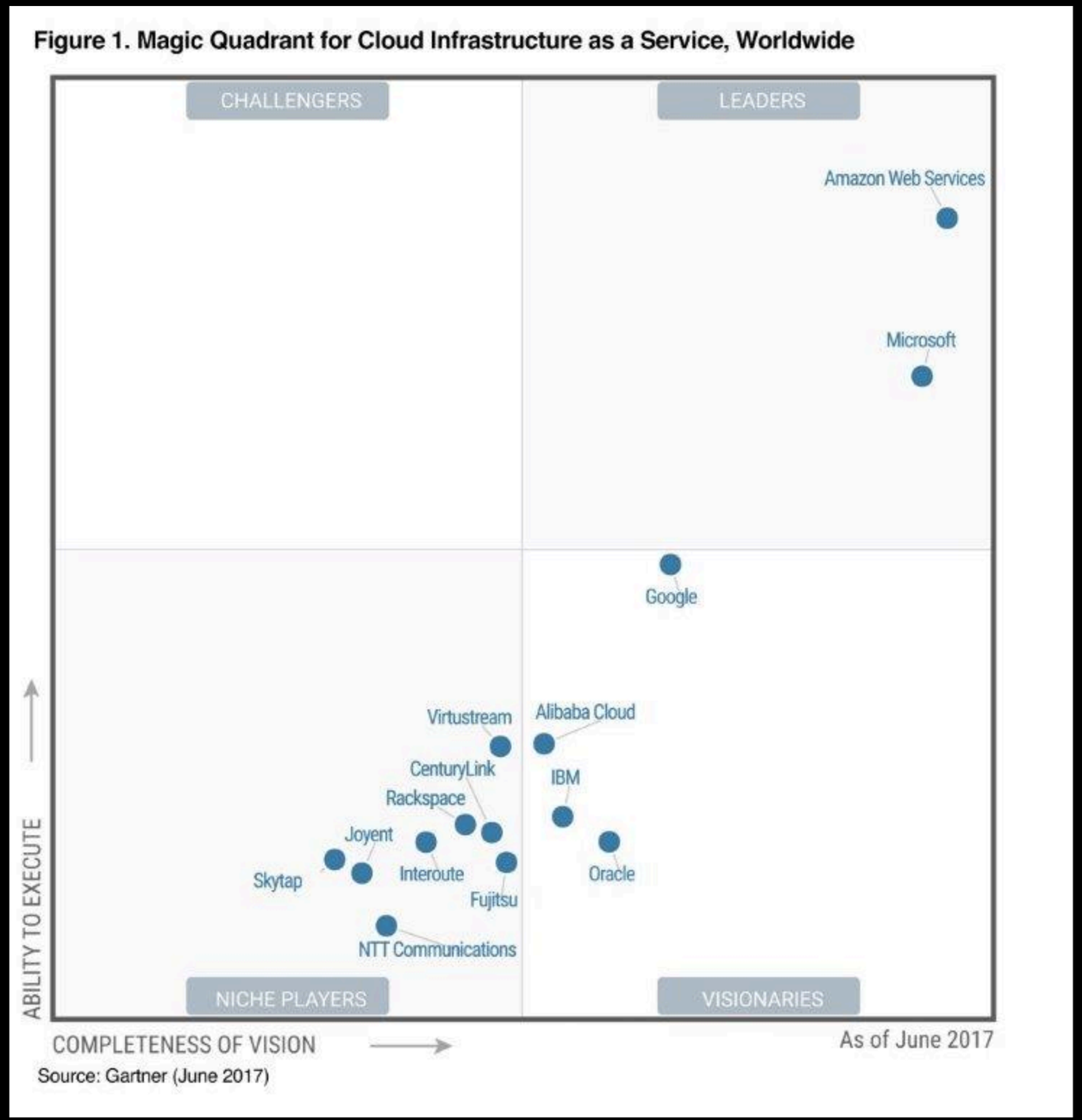
- Amazon networking
- Growing all the time

Market Leader

- Gartner IAAS Report
- 10 times capacity of the next 14 rivals

Low Up Front Costs

- Reduced IT support costs



AWS Global Network

21 Regions

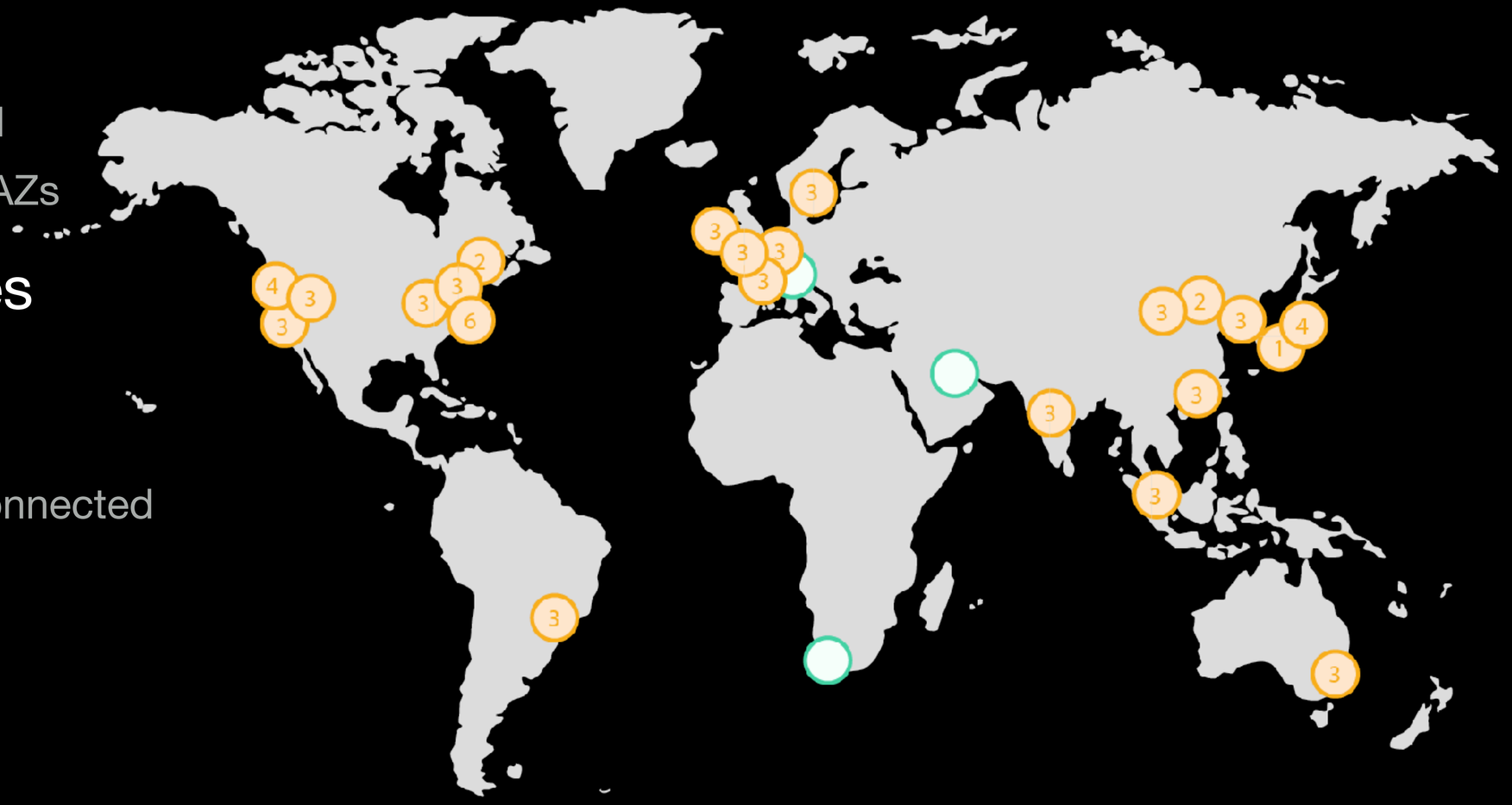
- Globally interconnected
- Comprised of multiple AZs

66 Availability Zones

- 1+ Data Centers
- Secure
- Redundant Power & Connected

Edge Locations

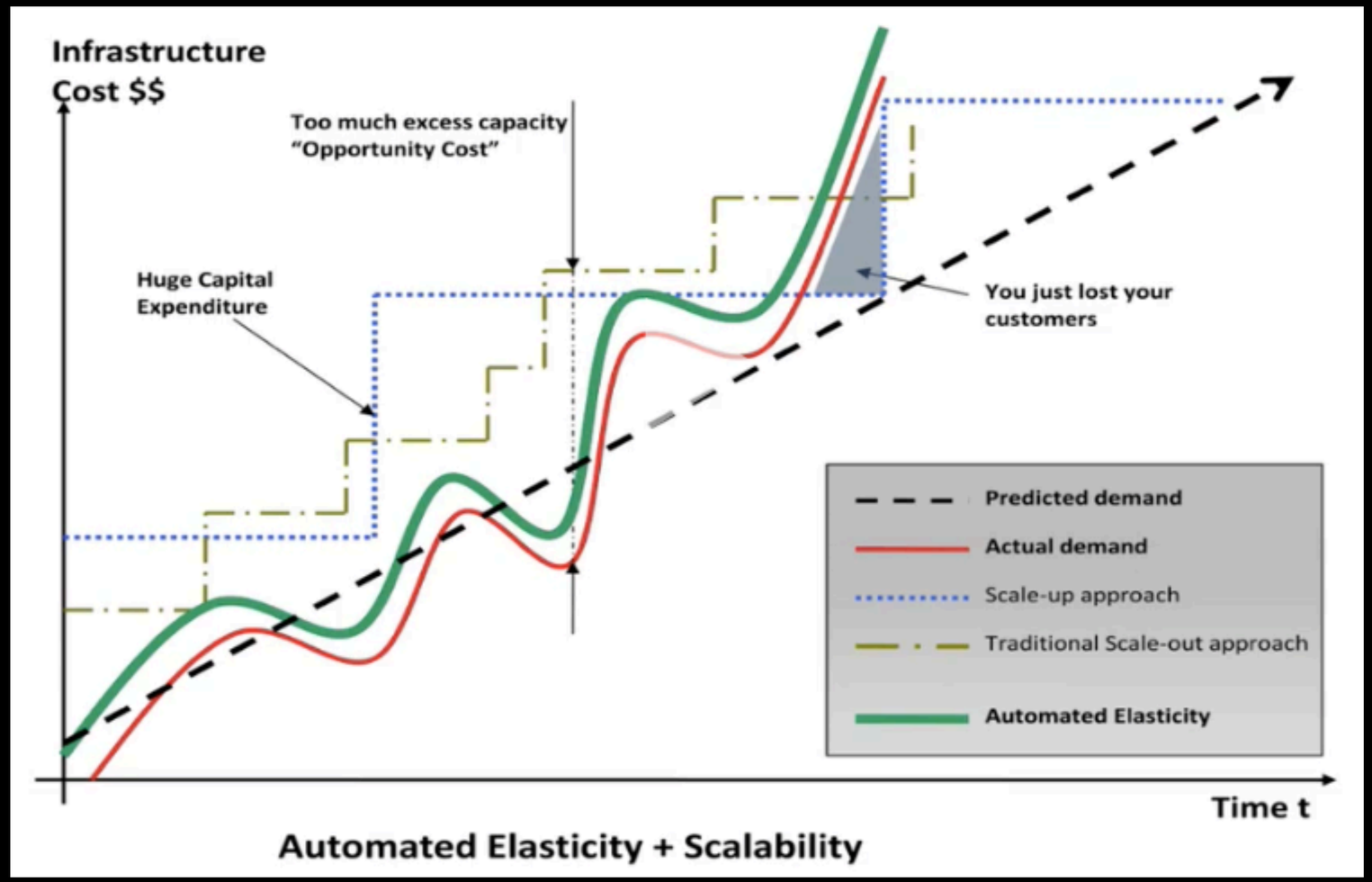
- Regional caches



Why IaaS

Compute Scalability

- Meet demand
- Manage costs
- Scale up and down



EC2 - Elastic Cloud Compute

The Backbone of AWS

- Windows and Linux Virtual Machines
- Available in different sizes and types
- Shared responsibility model

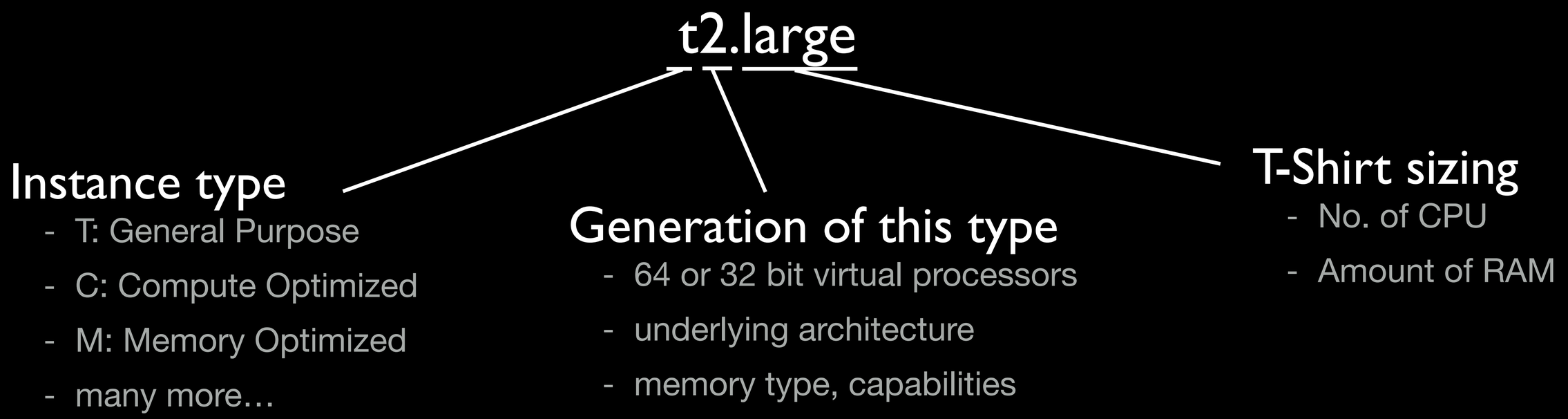
Elastic = Scalability

- EC2 instances can be scaled up or down

EC2 Instance

EC2 - Instance Types

Understanding instance types



Pricing is dependent on the type and size of an instance.

EC2 - More Compute

EC2 Auto Scaling & Elastic Load Balancing

- Define rules based on requirements and cost
- Configure with user data to automate
- Auto terminate as demand goes down

EC2 Spot Instance

- Only provision when costs are low
- Auto terminate as costs rise
- Can be managed with AWS Batch

Lightsail

EC2 Instance

VPC and EBS

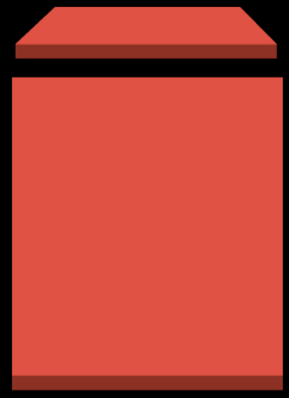
Virtual Private Cloud

- Complete control over virtual networking
- Internet Gateway for internet access
- Private range of IP Addresses and Subnets
- RFC1918 - /16 range ~ 64K addresses

Elastic Block Storage

- Suitable for OS
- SSD or HDD backed Volumes
- Note: pricing applies to stopped instances

VPC

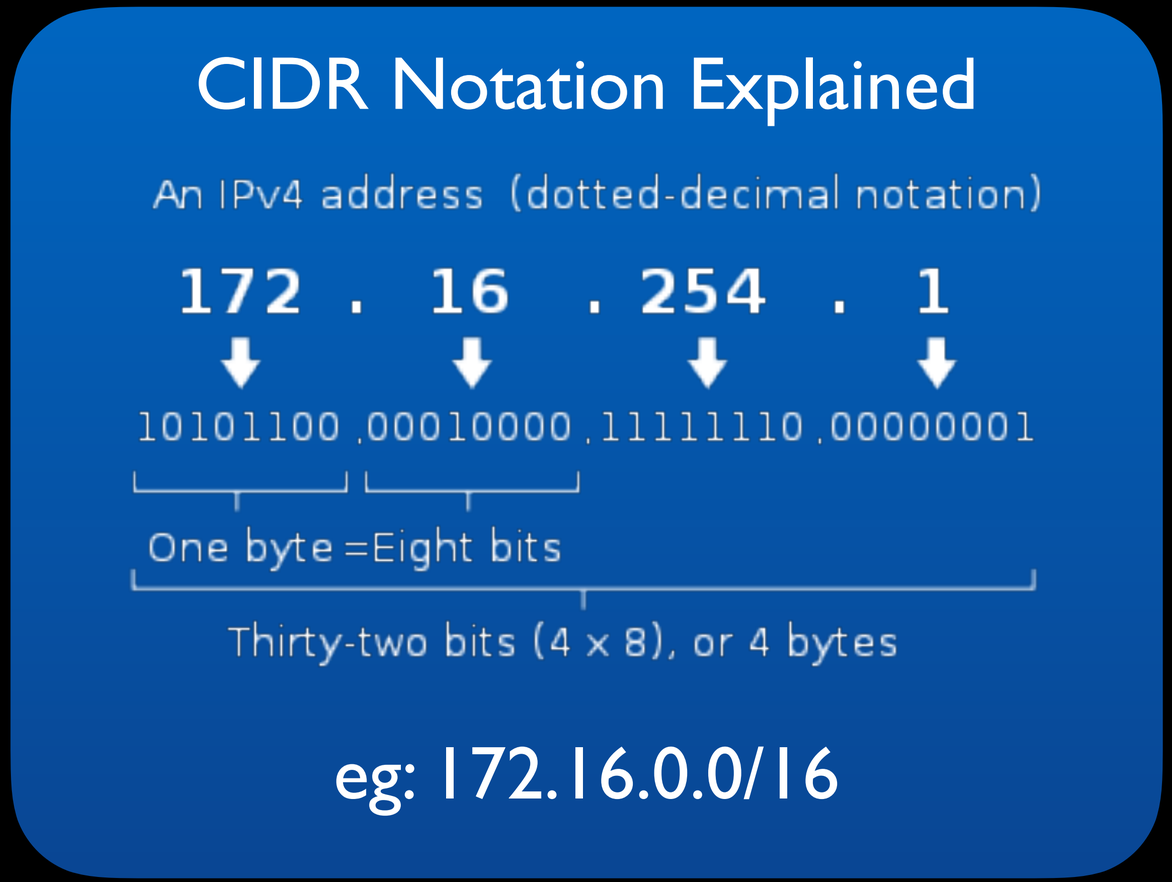


EBS

SDN - Software Defined Networking

VPC: your virtual data center

- Required for client requested VPN
- Easy to use and administer networking rules
- Changes apply immediately
- Applicable per VPC in each Region
- Manage Ports and Protocols
- IPv4 CIDR Notation



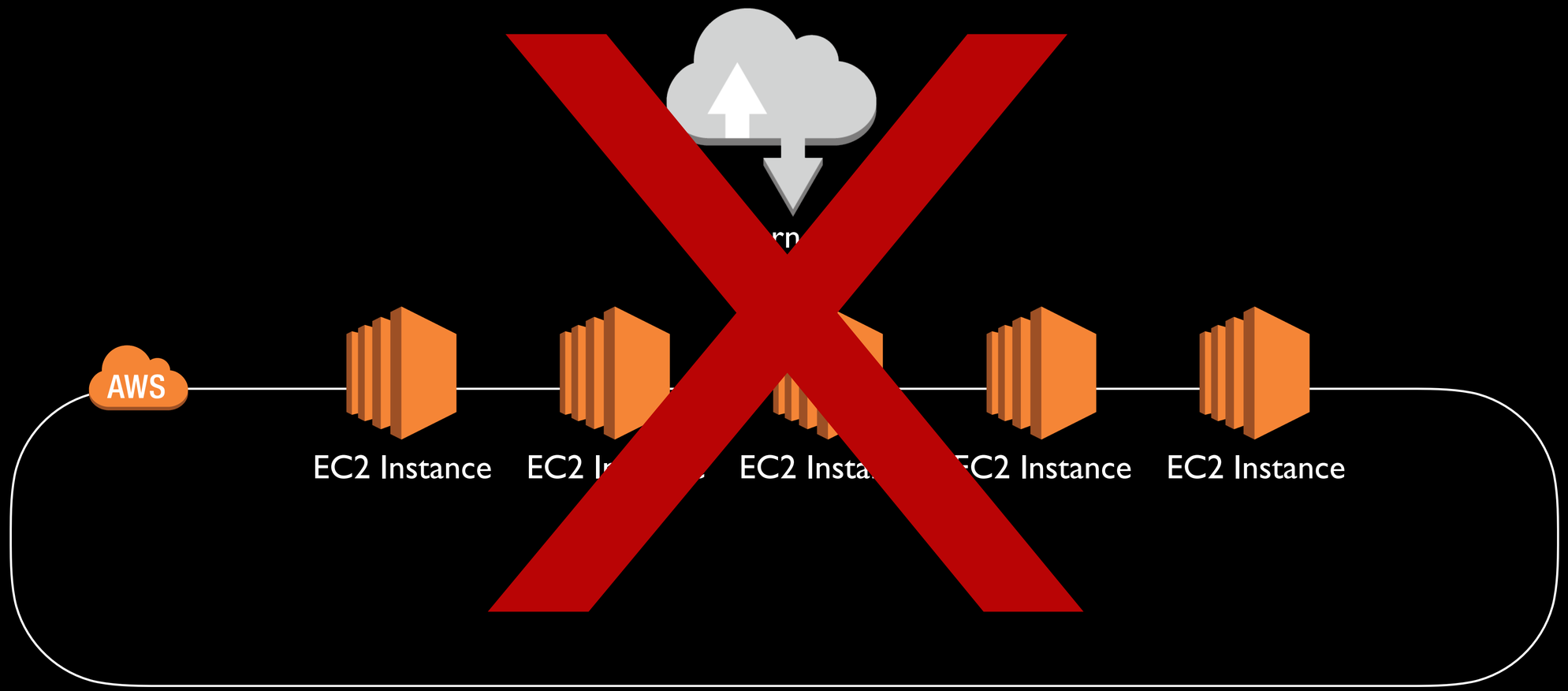
S3 - Simple Storage Service

Object Storage (vs. Block Storage)

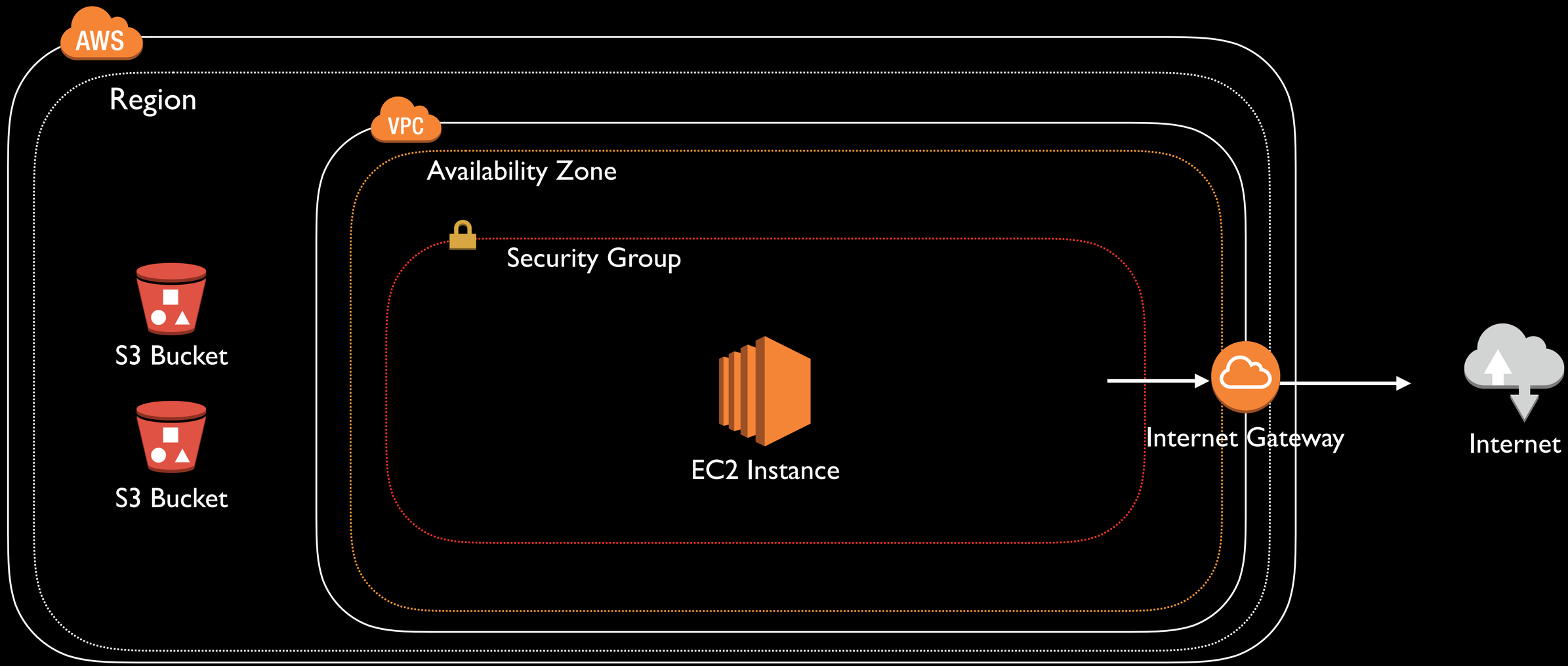
- 99.999999999% Durable
- Secure
- Different Tiers available
- Optional Versioning and Lifecycles
- Suitable for Backups and Disaster Recovery Strategies
- EBS Snapshots stored in S3

Amazon S3

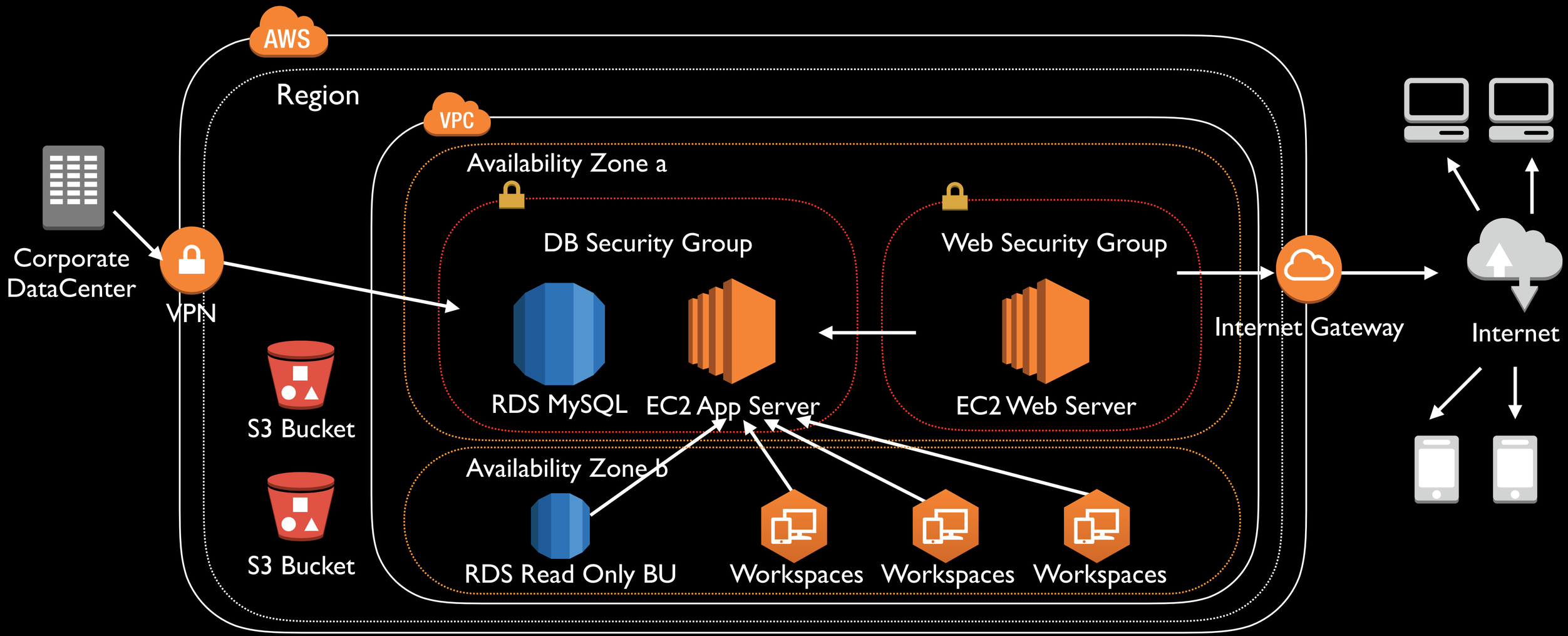
EC2 Classic Sample Scenario



EC2 in a VPC Sample Scenario 1



EC2 in a VPC Sample Scenario 2



Other Concepts

Reserved Instance

- Contracts for usage

Cost Monitoring

- Detailed billing reporting
- Use CloudWatch to create alerts

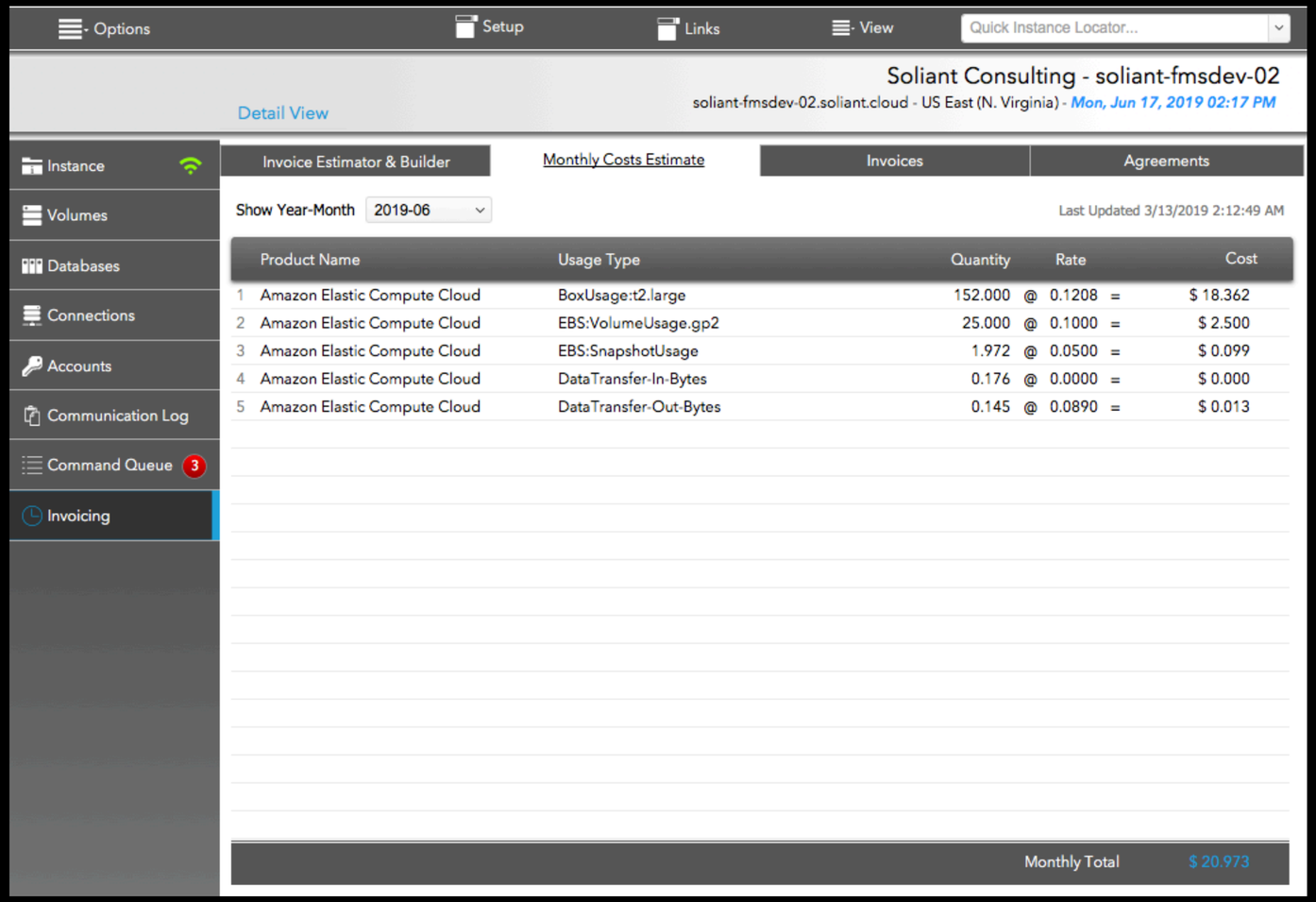
Tags

- Strategies for resource management
- Cost allocation

How we utilize Compute services

Custom AMI based Servers

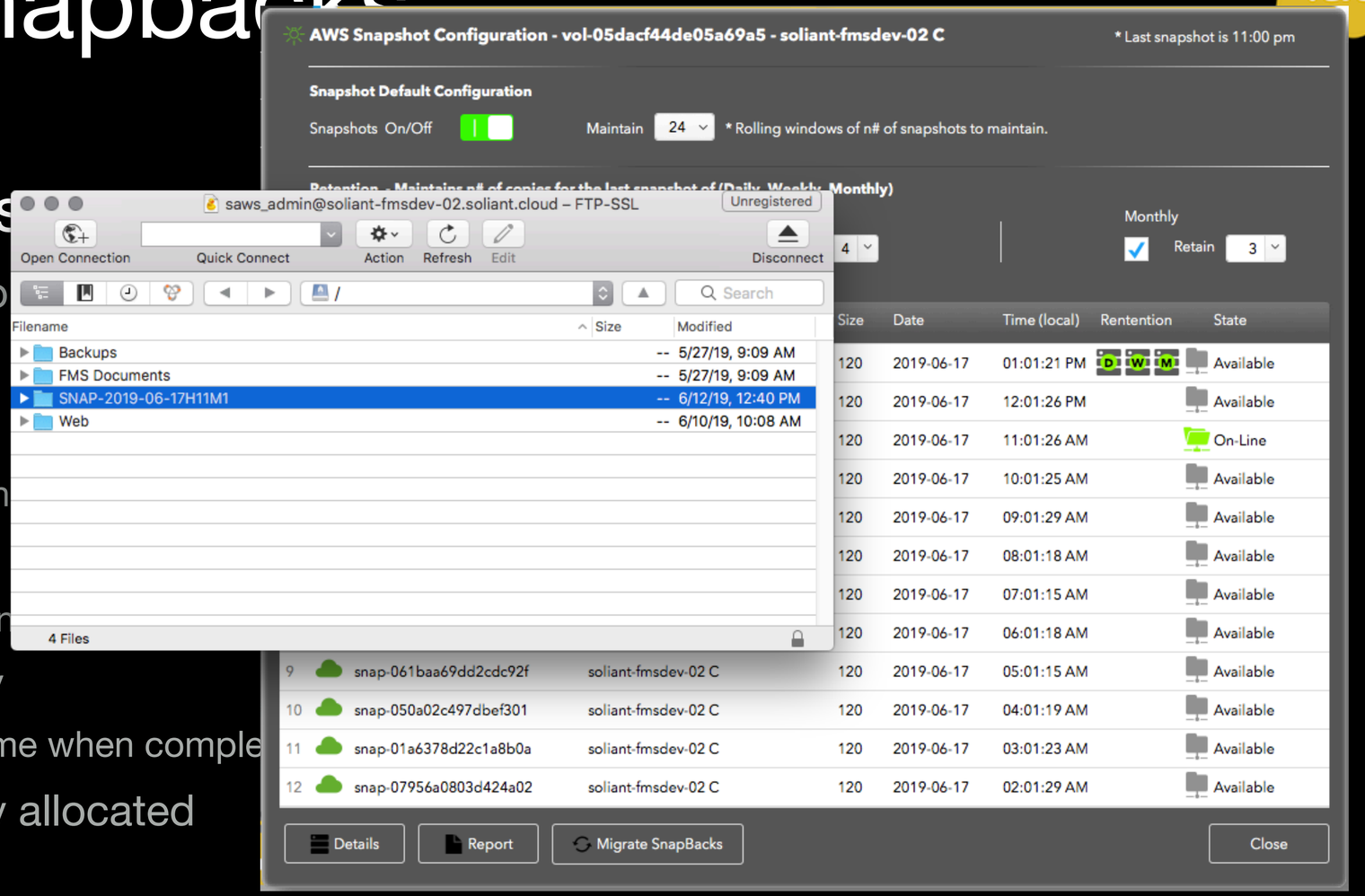
- High Availability
- Automated Monitoring
- Extend functionality of architecture
  - IE; Snapbacks
- Ease of operation for clients
- Cost effective



Example: Snapbacks

Snapshot + Backups

- Hourly, Daily, Weekly, Mo
- Customer accessible
  - Request Snapback
  - Create Volume from snapsh
  - Attach Volume to Instance
  - Bring Volume Online, assign
  - Create FTP virtual directory
  - Tear down and delete volume when comple
- All charges automatically allocated



Other AWS Services we use

Route 53 - DNS

RDS - ODBC Database as a Service

SES - Simple Email Service

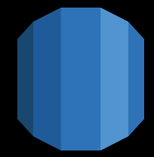
- Low cost email service

WorkSpaces

- Secure, multi-platform app for Virtual Desktop Infrastructure (VDI)

AppStream 2.0

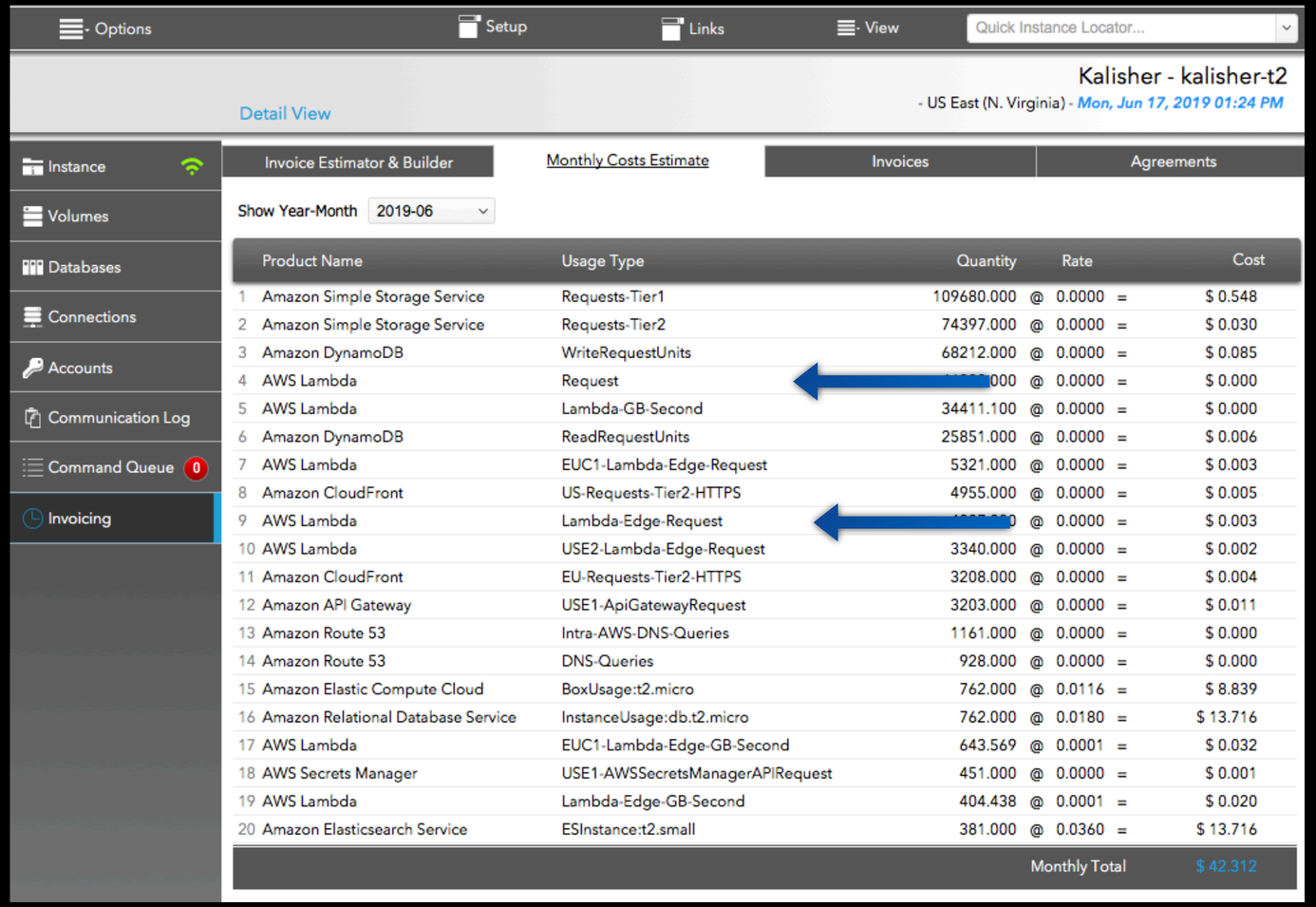
- Deliver FileMaker Apps via web browser



Organizations

Multiple Accounts

- AWS Organizations
  - Consolidated billing, transparent to clients
  - Economies of scale
  - Structure Organizational Units
  - Allow any and all services
  - Minimize Blast Radius
  - A-B testing across accounts



Lambda

Serverless Computing

- No servers to provision
- Auto scale for usage
- Availability and fault tolerant
- Event driven Compute
- More language support being added
- Billed in 100ms increments

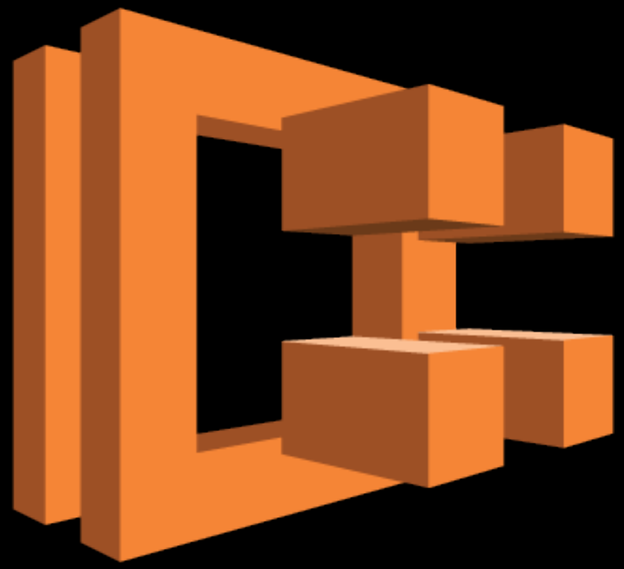
ECS - Containers

Container as an Elastic Service

- Docker
- Kubernetes and EKS

Fargate

- Managed container service



The Well Architected Framework

A set of questions to evaluate if a solution is aligned with established best practices.

Based on five pillars:

- Operational Excellence
- Security
- Reliability
- Performance Efficiency
- Cost Optimization

Questions?