AWSOME DAY
ONLINE CONFERENCE

Module 2:
Getting started with the cloud

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Amazon Web Services

cobusbernard
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aws

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Getting started with AWS services

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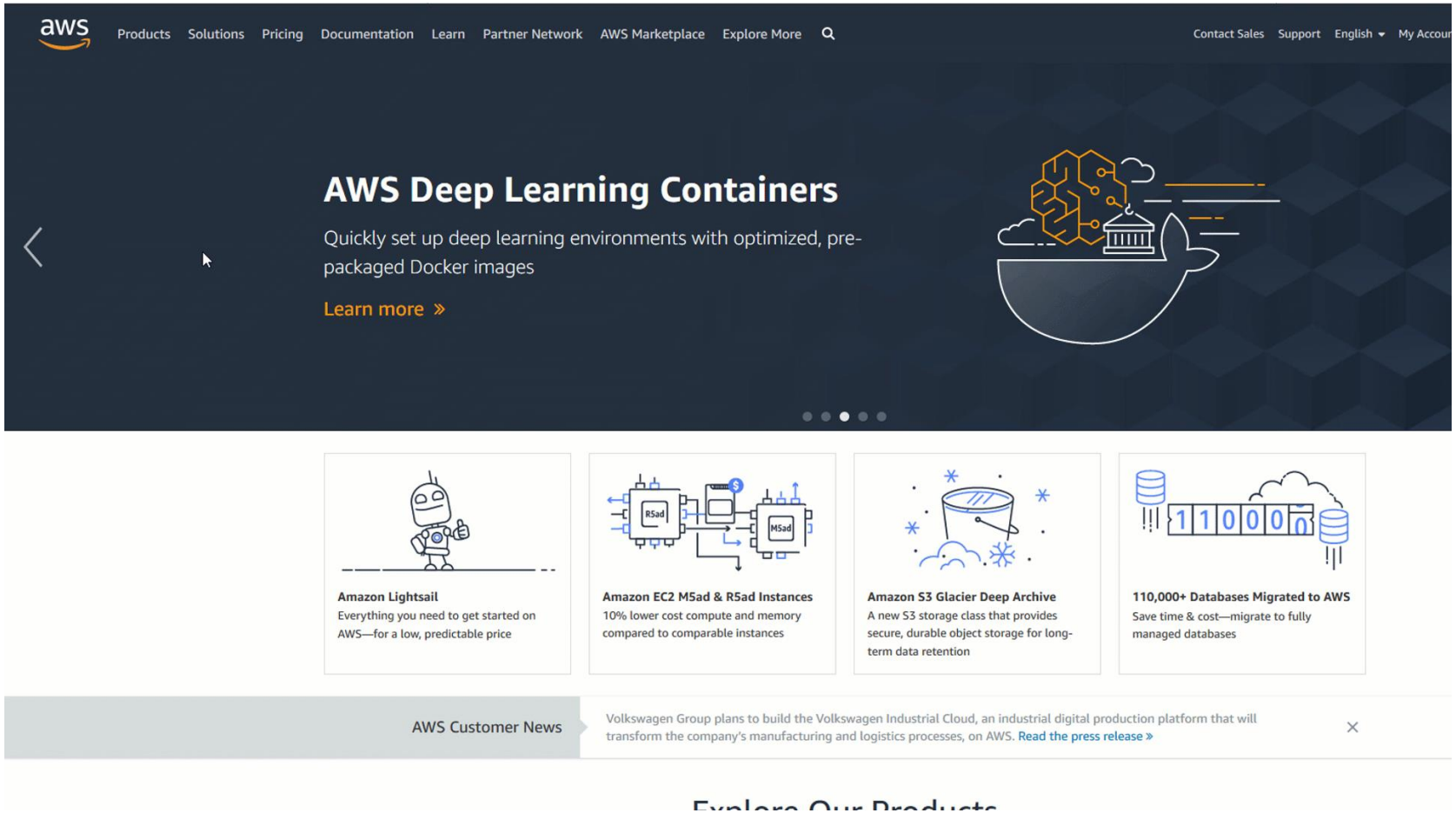
AWS products



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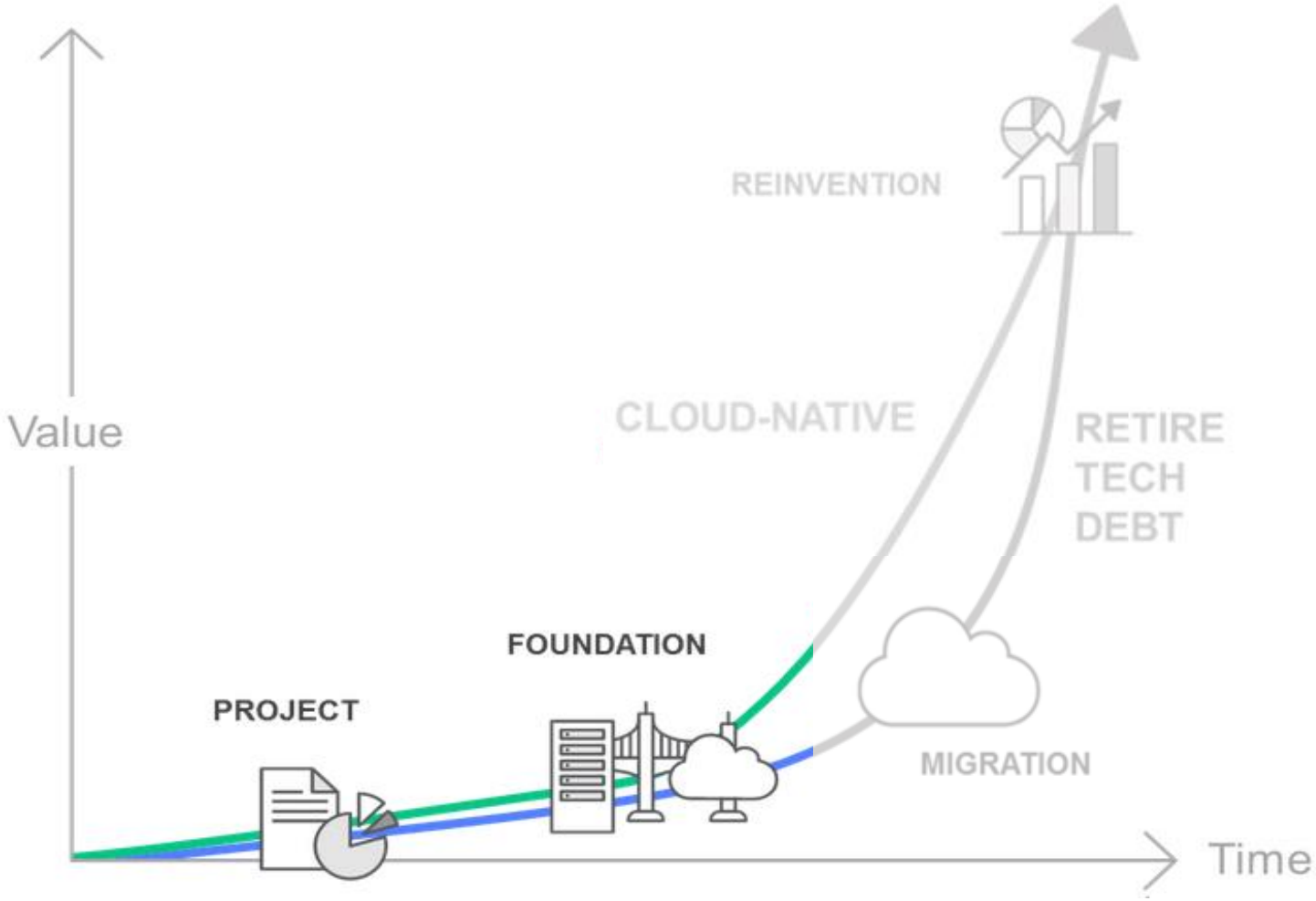
Cloud journey



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Build your infrastructure

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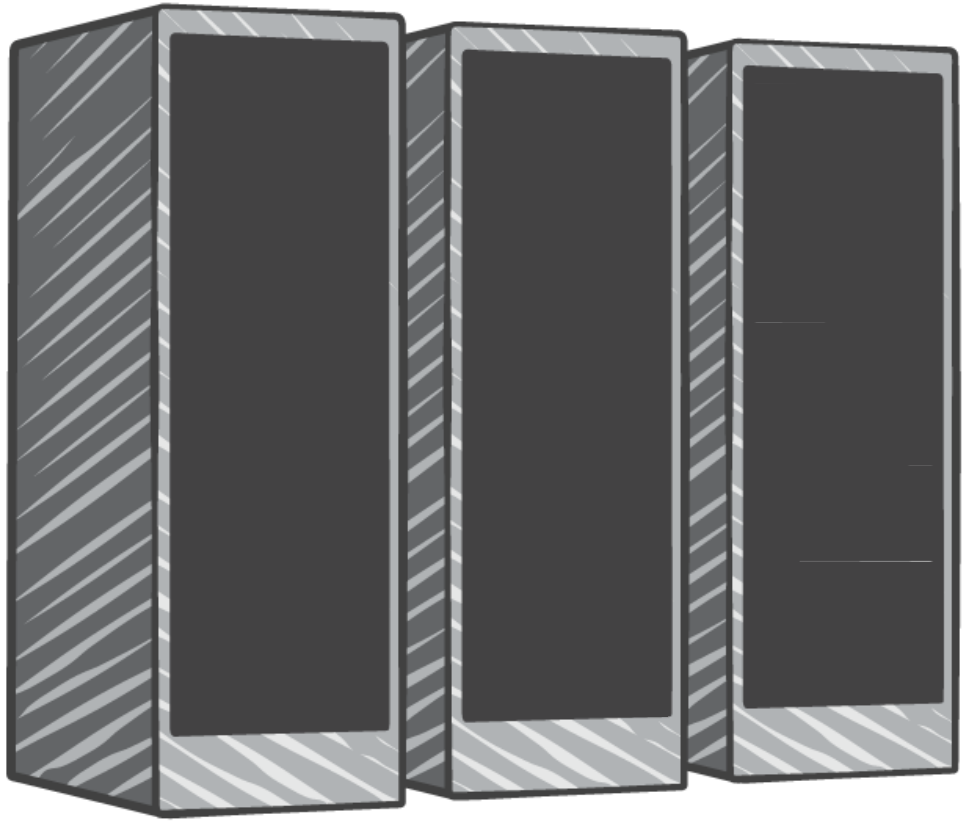
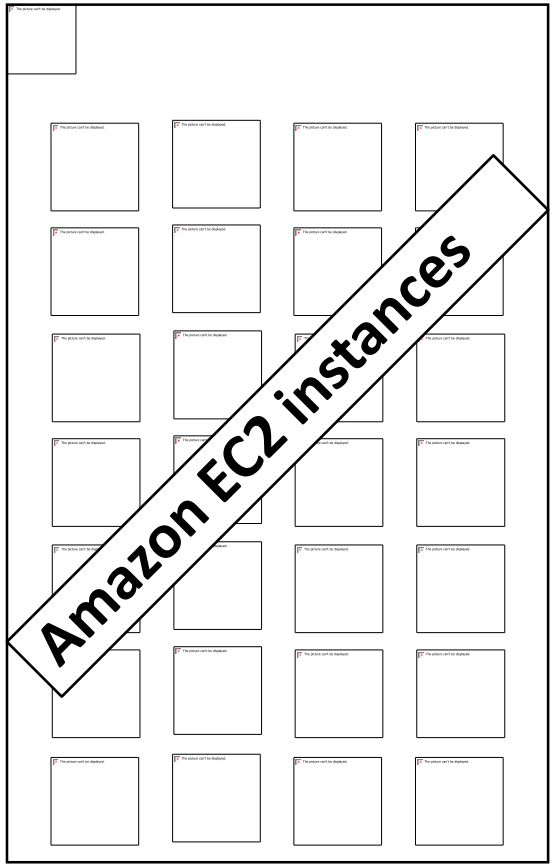
What is Amazon EC2?



On-premises servers

- ✓ **Application server**
- ✓ **Web server**
- ✓ **Database server**
- ✓ **Game server**
- ✓ **Mail server**
- ✓ **Media server**
- ✓ **Catalog server**
- ✓ **File server**
- ✓ **Computing server**
- ✓ **Proxy server**



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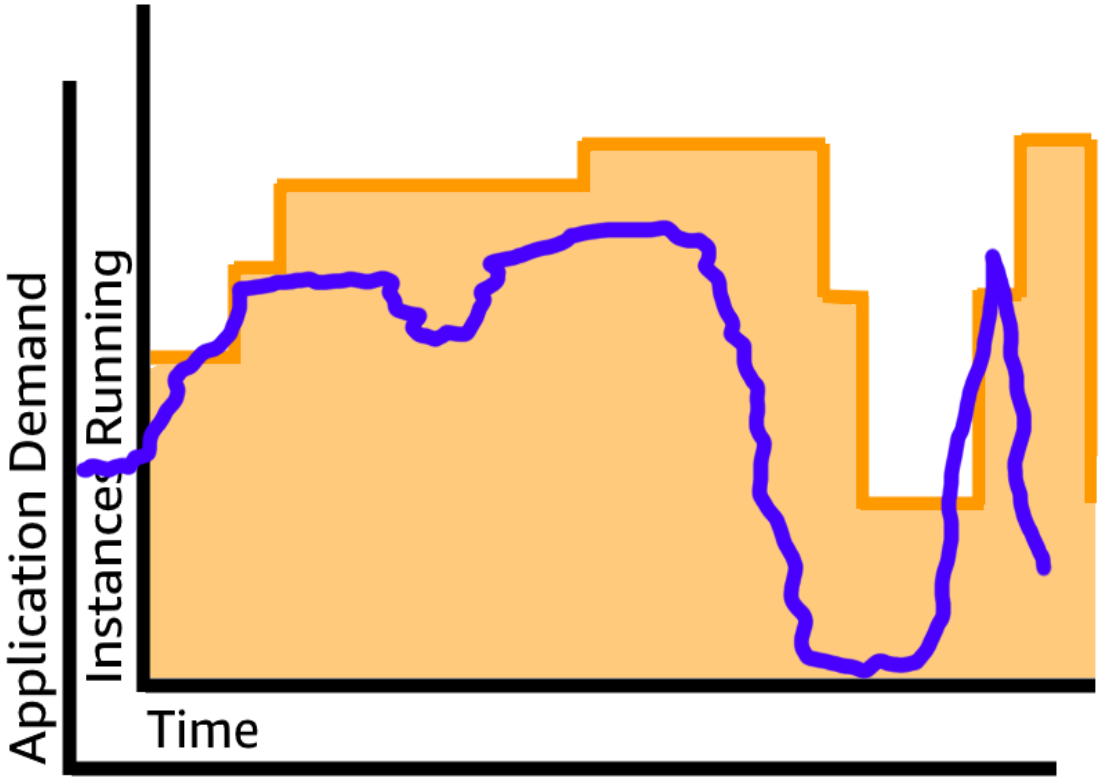
Benefits of Amazon EC2

- Elasticity



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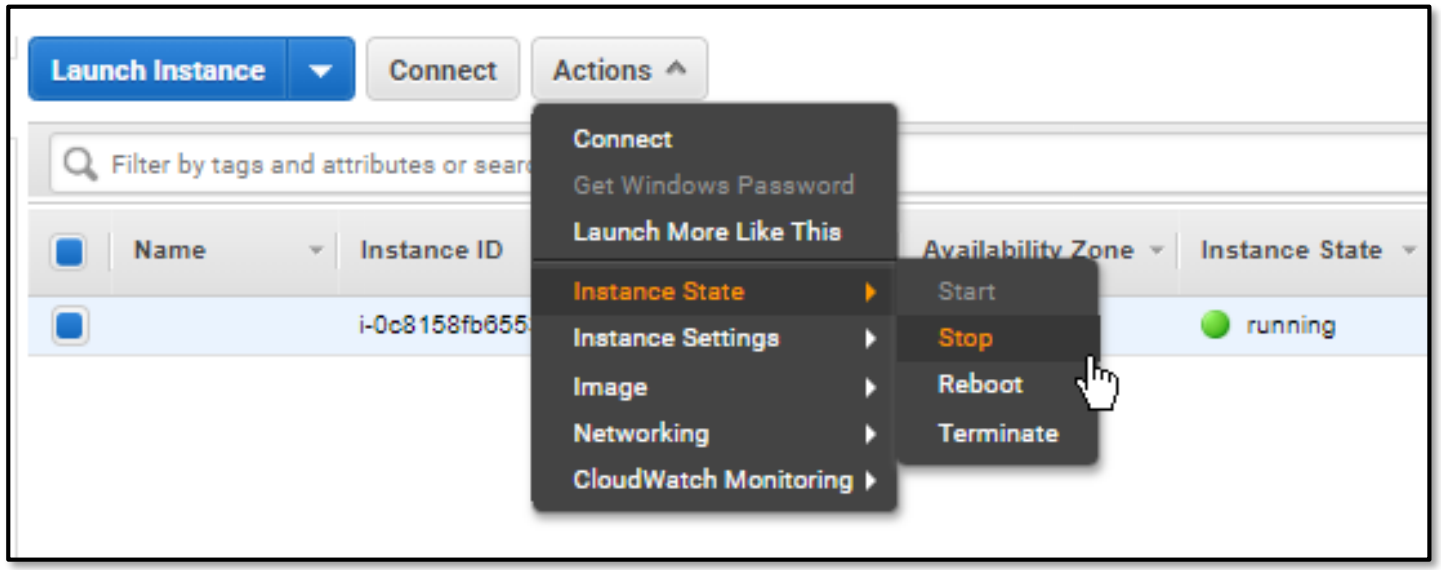
Benefits of Amazon EC2

- Elasticity
- Control



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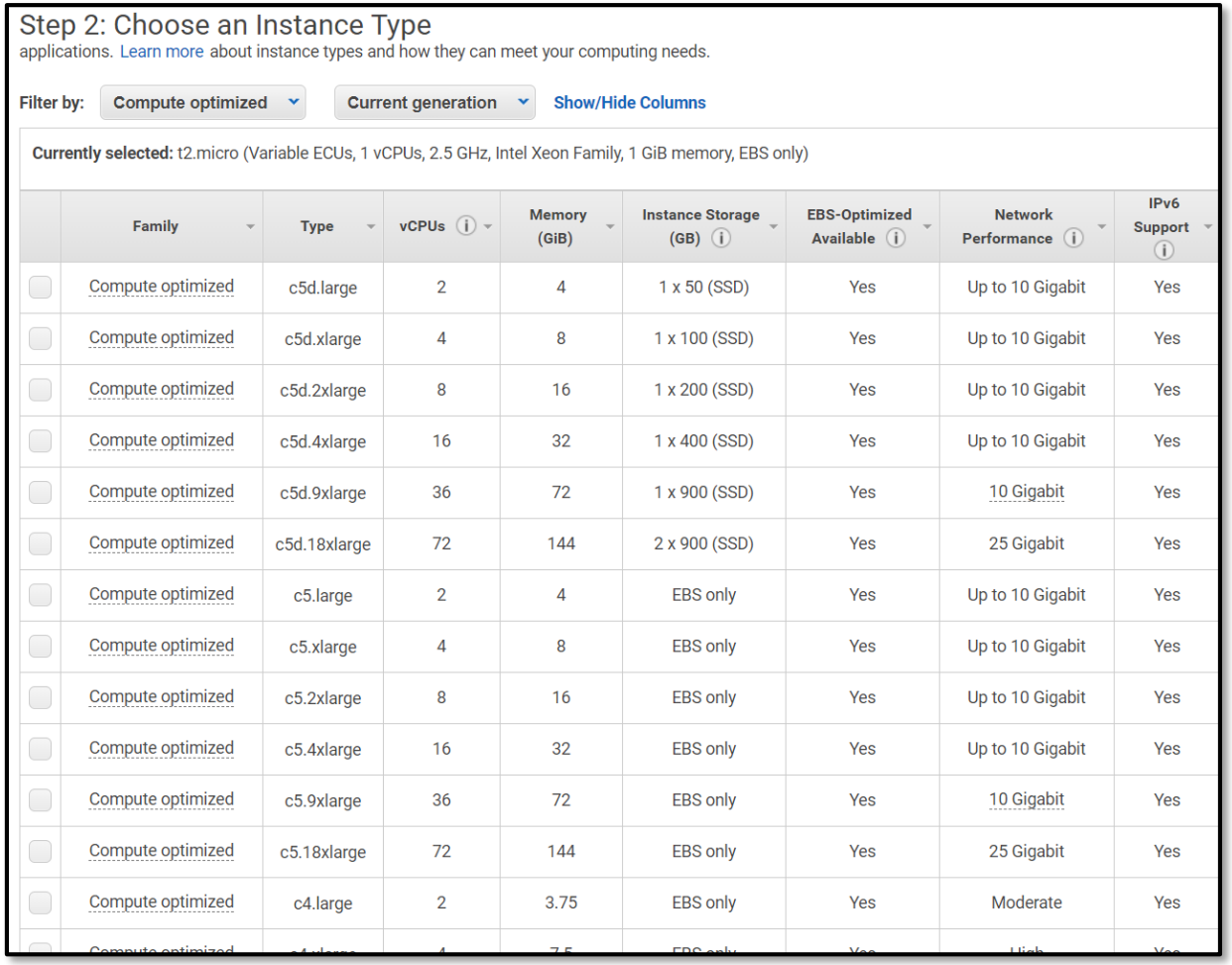
Benefits of Amazon EC2

- Elasticity
- Control
- Flexibility



Step 2: Choose an Instance Type

applications. Learn more about instance types and how they can meet your computing needs.

Filter by: Compute optimized | Current generation | Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
	Compute optimized	c5d.large	2	4	1 x 50 (SSD)	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5d.xlarge	4	8	1 x 100 (SSD)	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5d.2xlarge	8	16	1 x 200 (SSD)	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5d.4xlarge	16	32	1 x 400 (SSD)	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5d.9xlarge	36	72	1 x 900 (SSD)	Yes	10 Gigabit	Yes
	Compute optimized	c5d.18xlarge	72	144	2 x 900 (SSD)	Yes	25 Gigabit	Yes
	Compute optimized	c5.large	2	4	EBS only	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5.xlarge	4	8	EBS only	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5.2xlarge	8	16	EBS only	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5.4xlarge	16	32	EBS only	Yes	Up to 10 Gigabit	Yes
	Compute optimized	c5.9xlarge	36	72	EBS only	Yes	10 Gigabit	Yes
	Compute optimized	c5.18xlarge	72	144	EBS only	Yes	25 Gigabit	Yes
	Compute optimized	c4.large	2	3.75	EBS only	Yes	Moderate	Yes

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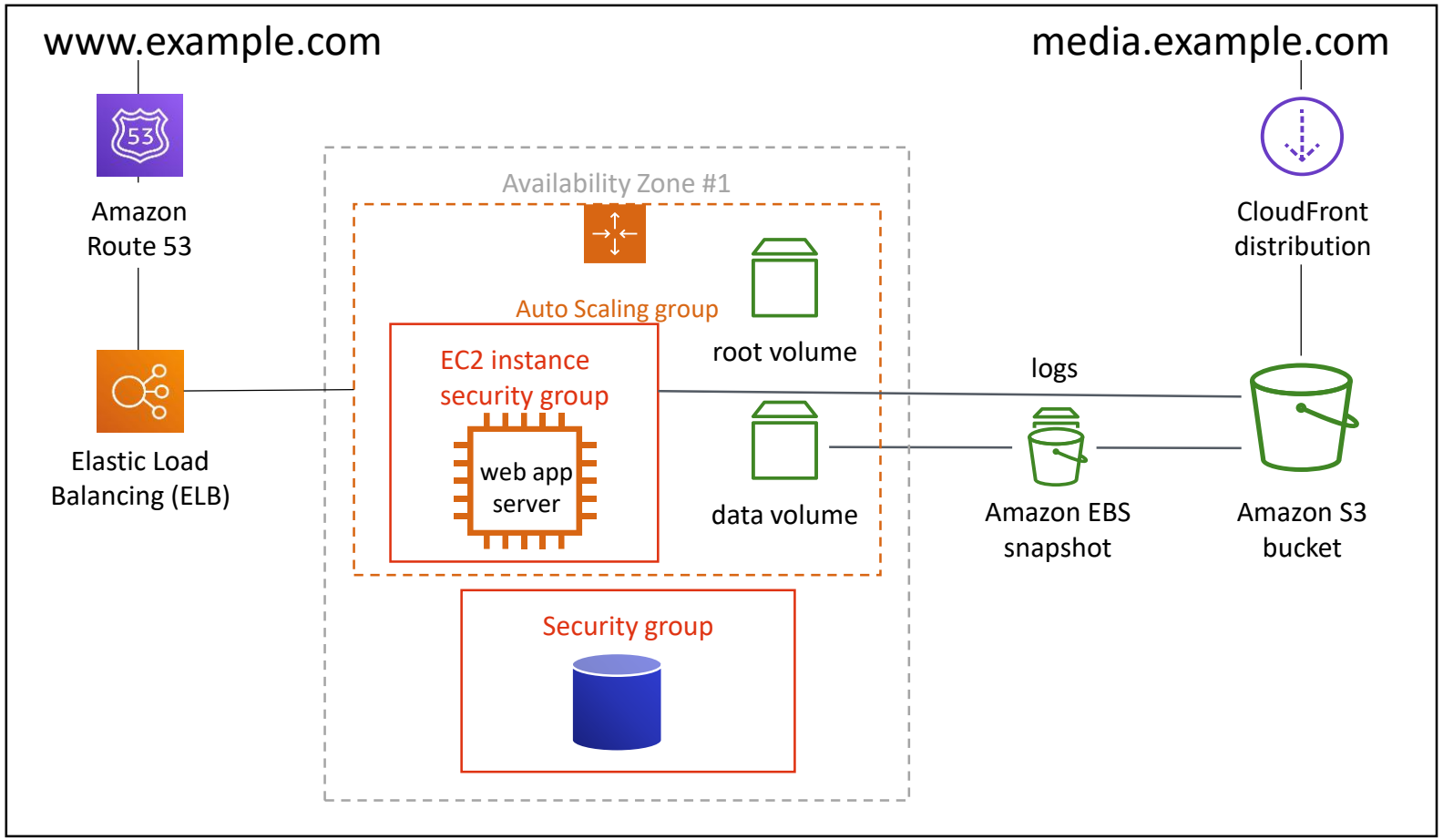
Benefits of Amazon EC2

- Elasticity
- Control
- Flexibility
- Integrated



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Benefits of Amazon EC2

- Elasticity
- Control
- Flexibility
- Integrated
- Reliable

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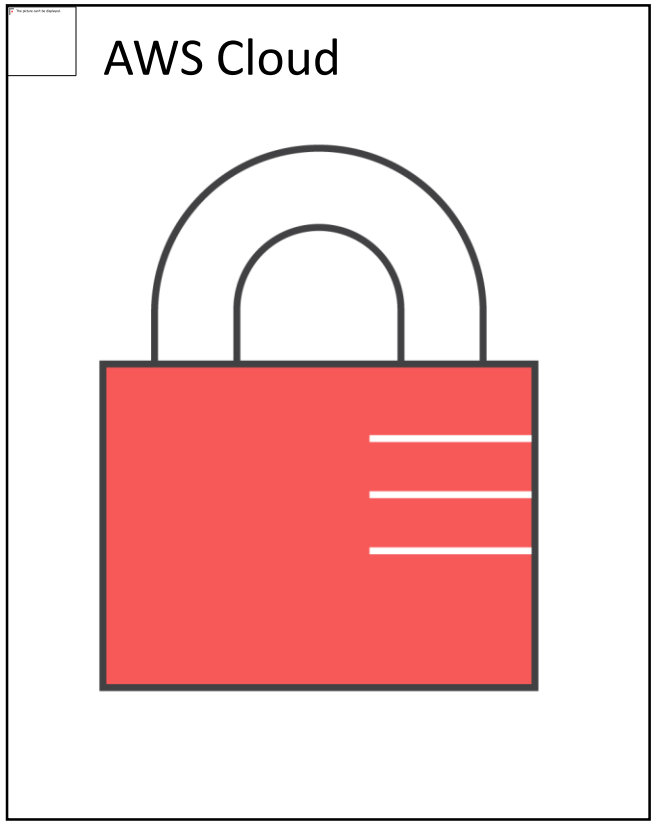
Benefits of Amazon EC2

- Elasticity
- Control
- Flexibility
- Integrated
- Reliable
- Secure



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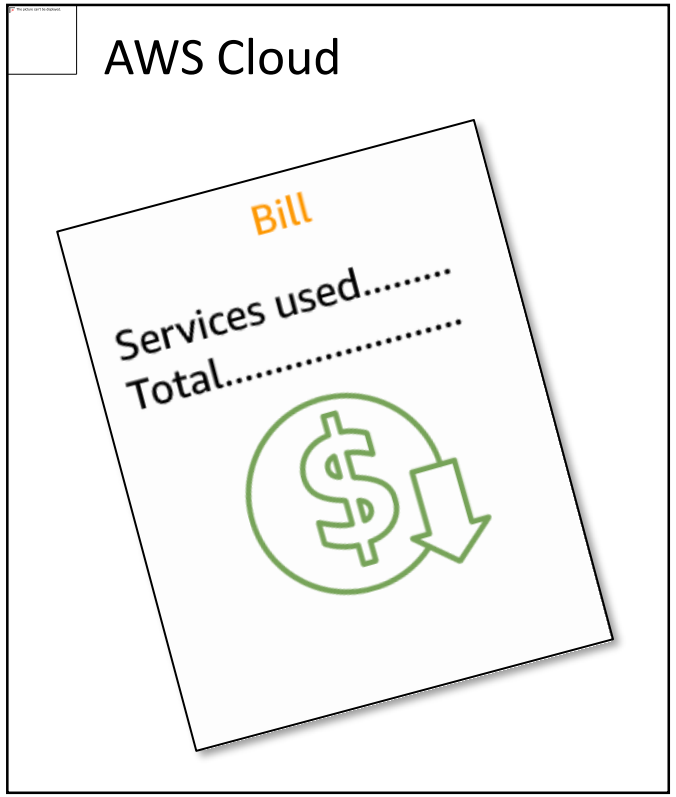
Benefits of Amazon EC2

- Elasticity
- Control
- Flexibility
- Integrated
- Reliable
- Secure
- Inexpensive



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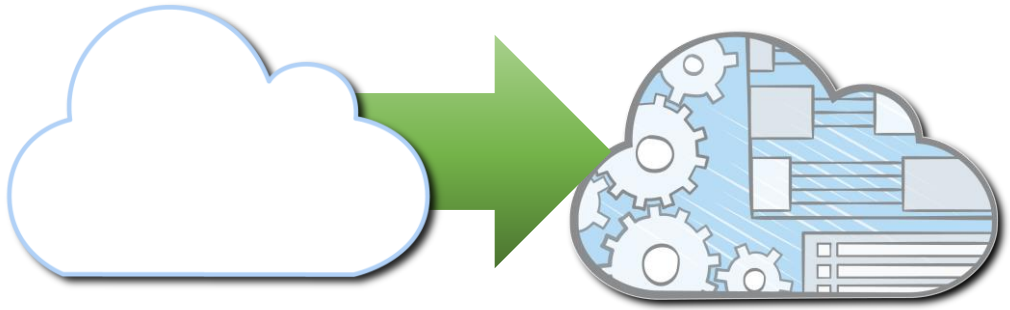
Benefits of Amazon EC2

- Elasticity
- Control
- Flexibility
- Integrated
- Reliable
- Secure
- Inexpensive
- Easy



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Choosing the right Amazon EC2 instances

- EC2 Instance types are optimized for different use cases, workloads & come in multiple sizes. This allows you to optimally scale resources to your workload requirements.
- AWS utilizes Intel® Xeon® processors for EC2 Instances providing customers with high performance and value.
- Consider the following when choosing your instances: core count, memory size, storage size & type, network performance, I/O requirements & CPU technologies.
- Hurry Up & Go Idle - A larger compute instance can save you time and money, therefore paying more per hour for a shorter amount of time can be less expensive.

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EC2 instances powered by Intel Technologies

EC2 instance type	Compute optimized		General purpose			Memory optimized			Storage optimized		
	C5	C4	M5	M4	T2	X1	X1e	R4	H1	I3	D2
Intel processor	Xeon Platinum 8175M	Xeon E5 2666 v3	Xeon Platinum 8175M	Xeon E5 2686 v4 2676 v3	Xeon Family	Xeon E7 8880 v3	Xeon E7 8880 v3	Xeon E5 2686 v4	Xeon E5 2686 v4	Xeon E5 2686 v4	Xeon E5 2676 v3
Intel processor technology	Skylake	Haswell	Skylake	Broadwell Haswell	Yes	Haswell	Haswell	Broadwell	Broadwell	Broadwell	Haswell
Intel AVX	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intel AVX2	Yes	Yes	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes
Intel AVX-512	Yes	-	Yes	-	-	-	-	-	-	-	-
Intel turbo boost	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Storage	EBS-only	EBS-only	EBS-only	EBS-only	EBS-only	SSD EBS-Opt	SSD EBS-Opt	-	HDD	SSD	HDD

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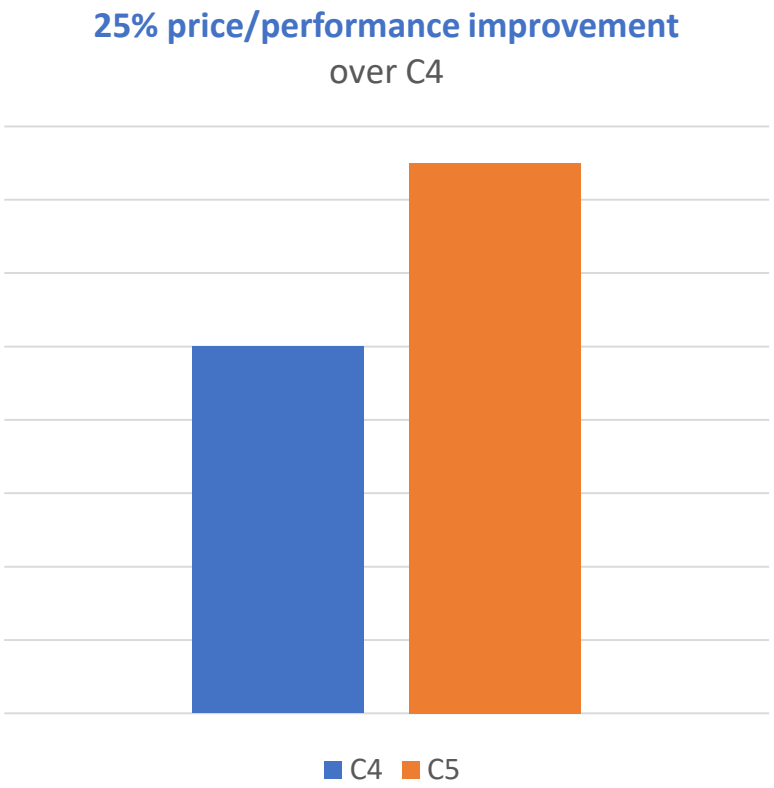
C5: Compute-optimized instances



- Based on 3.0 GHz Intel Xeon Scalable Processors (Skylake)
- Up to 72 vCPUs and 144 GiB of memory (**2:1 Memory:vCPU ratio**)
- 25 Gbps NW bandwidth
- Support for Intel AVX-512

"We saw significant performance improvement on Amazon EC2 C5, with up to a 140% performance improvement in industry standard CPU benchmarks over C4."

"We are eager to migrate onto the AVX-512 enabled c5.18xlarge instance size… . We expect to decrease the processing time of some of our key workloads by more than 30%."

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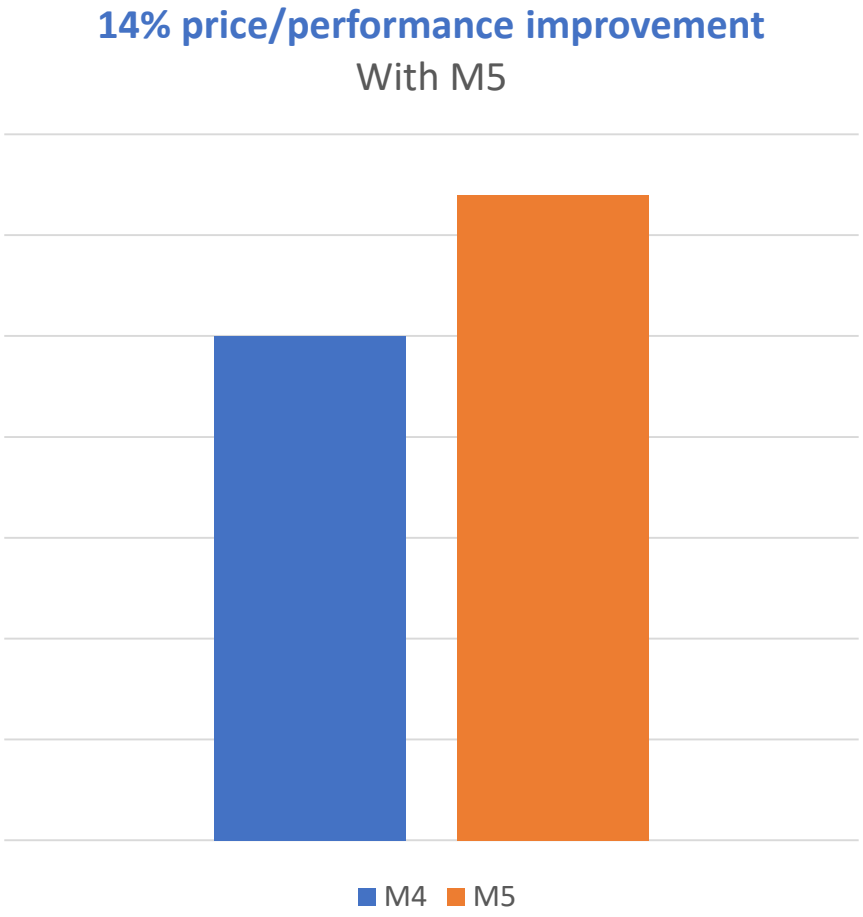
M5: Next-gen general purpose instances



- Powered by 2.5 GHz Intel Xeon Scalable Processors (Skylake)
- New larger instance size—m5.24xlarge with
  96 vCPUs and 384 GiB of memory
  (**4:1 Memory:vCPU ratio**)
- Improved network and EBS performance on smaller instance sizes
- Support for Intel AVX-512 offering up to twice the performance for vector and floating point workloads

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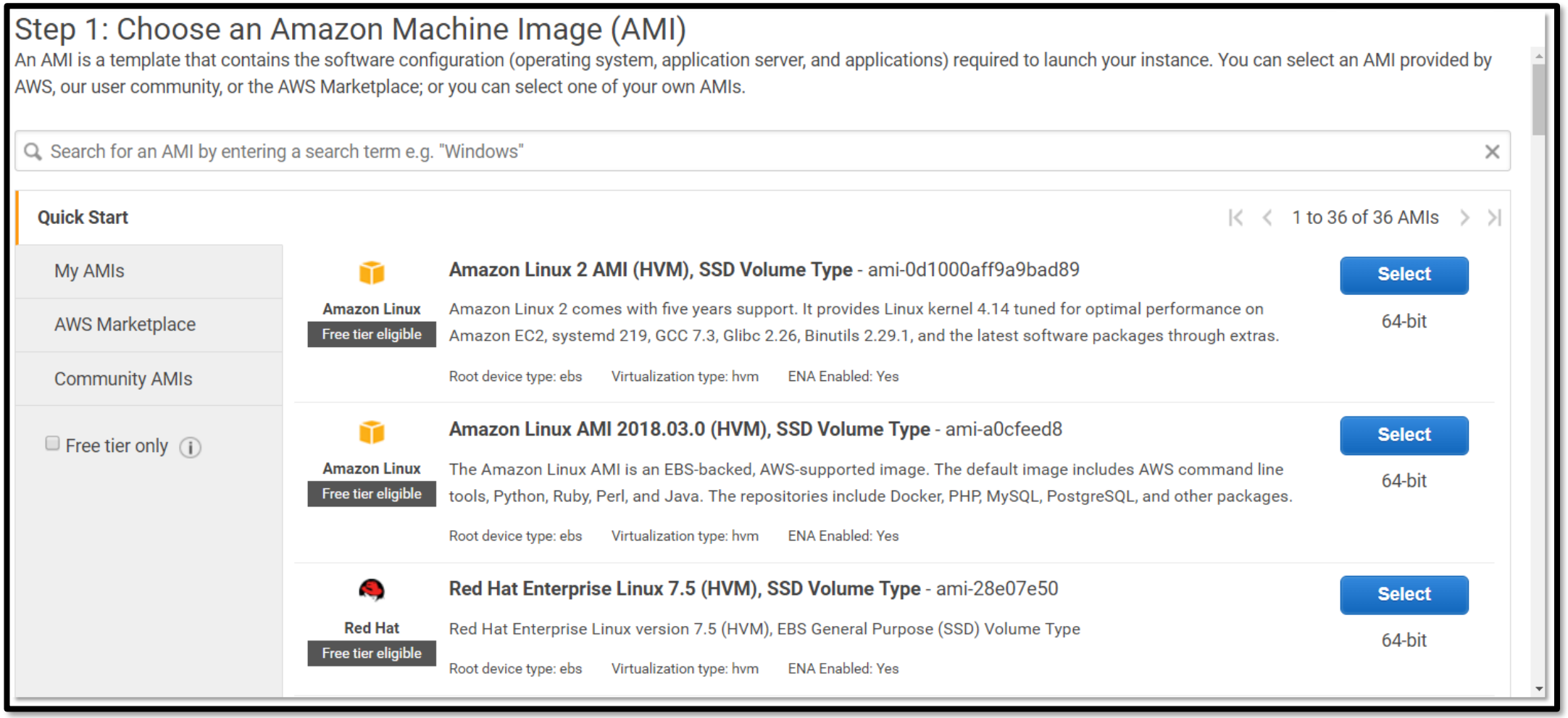
What's your platform?



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Store your data

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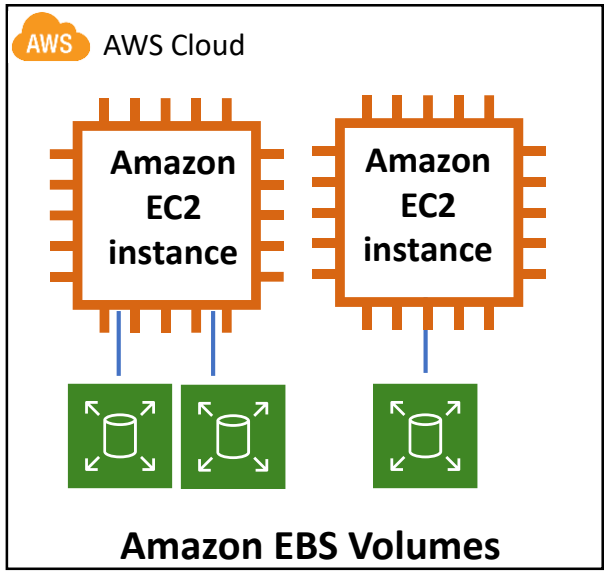
Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances



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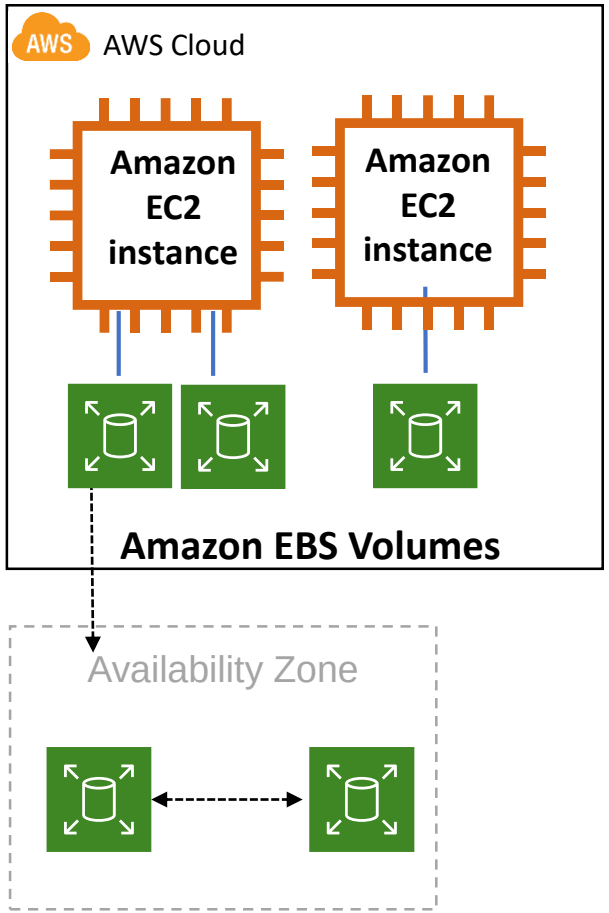
Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances
- Protected through replication



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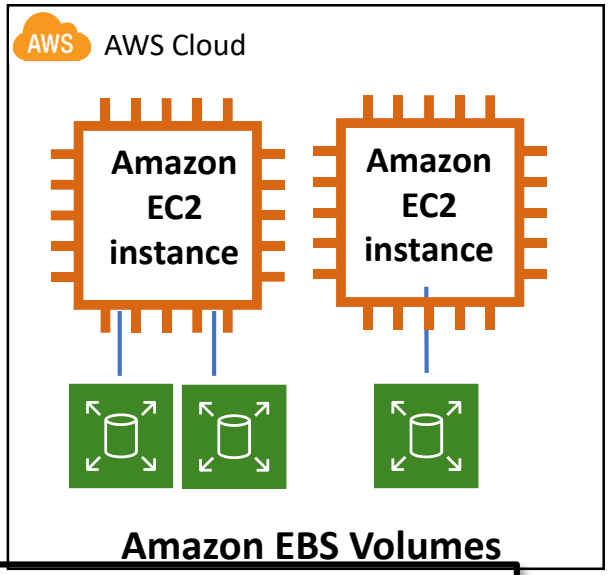
Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances
- Protected through replication
- Different drive types



Solid State Drives (SSD)

Provisioned IOPS SSD (io1) Volumes

General Purpose SSD (gp2) Volumes

Hard Disk Drives (HDD)

Throughput Optimized HDD (st1) Volumes

Cold HDD (sc1) Volumes

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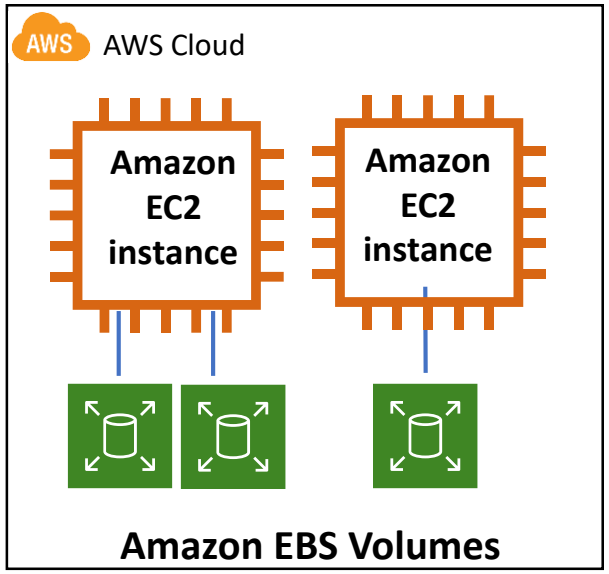
Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances
- Protected through replication
- Different drive types
- Scale up or down in minutes



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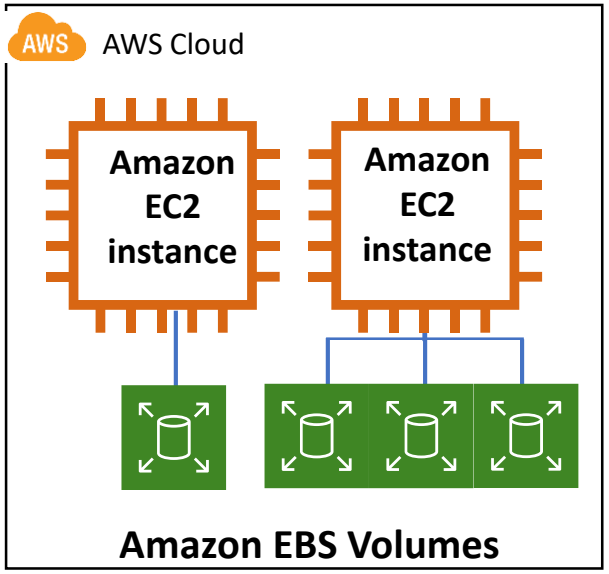
Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances
- Protected through replication
- Different drive types
- Scale up or down in minutes
- Pay for only what you provision



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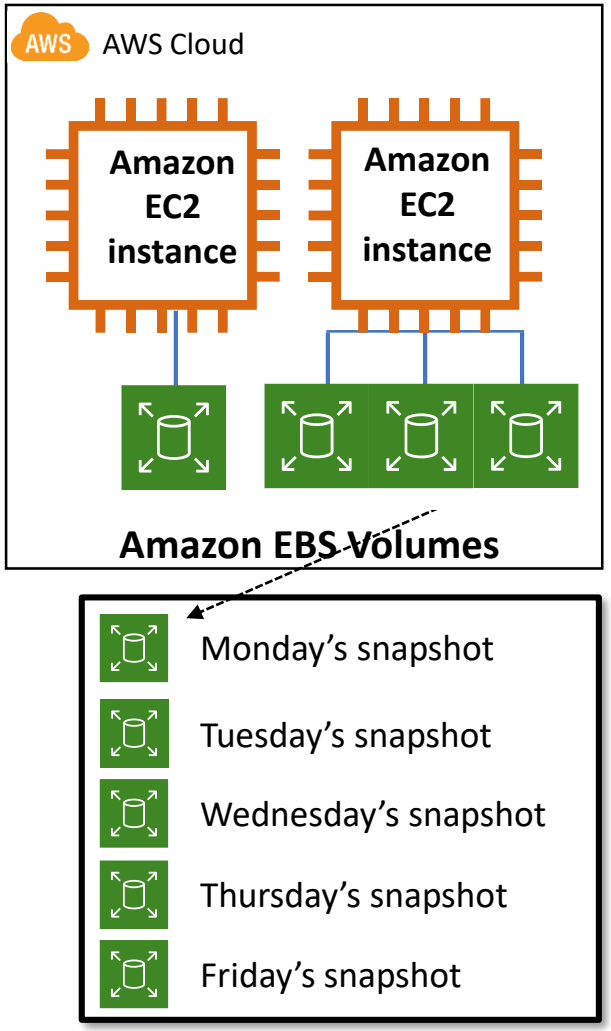
Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances
- Protected through replication
- Different drive types
- Scale up or down in minutes
- Pay for only what you provision
- Snapshot functionality



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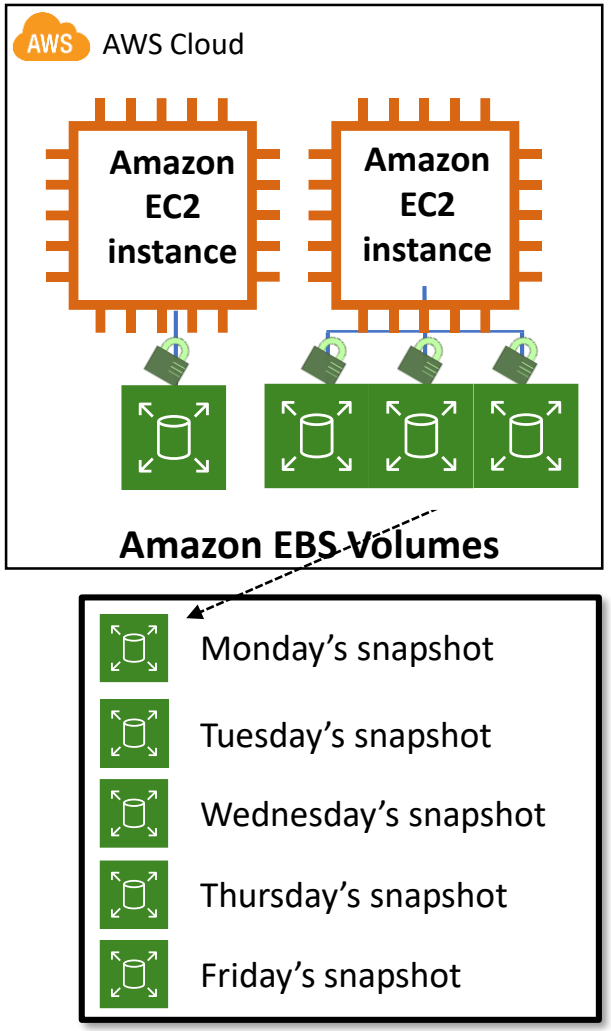
Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances
- Protected through replication
- Different drive types
- Scale up or down in minutes
- Pay for only what you provision
- Snapshot functionality
- Encryption available



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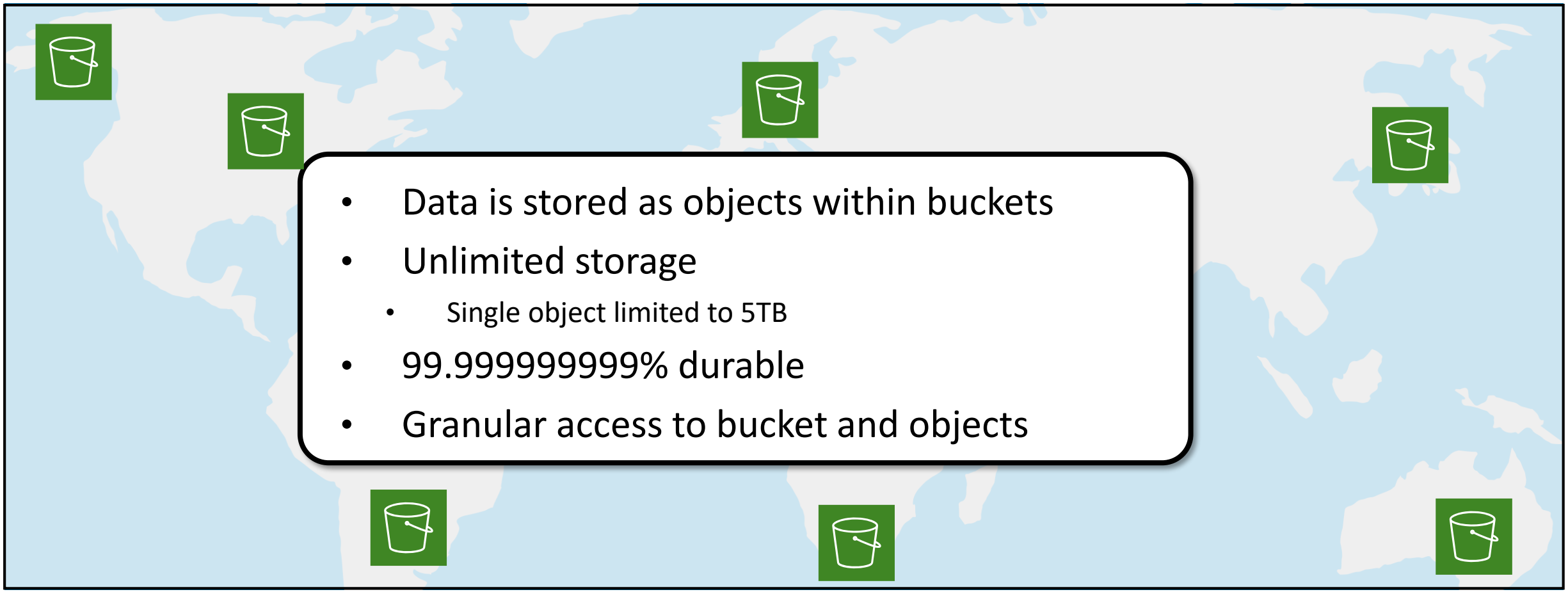
What is Amazon S3?



- Data is stored as objects within buckets
- Unlimited storage
  - Single object limited to 5TB
- 99.999999999% durable
- Granular access to bucket and objects

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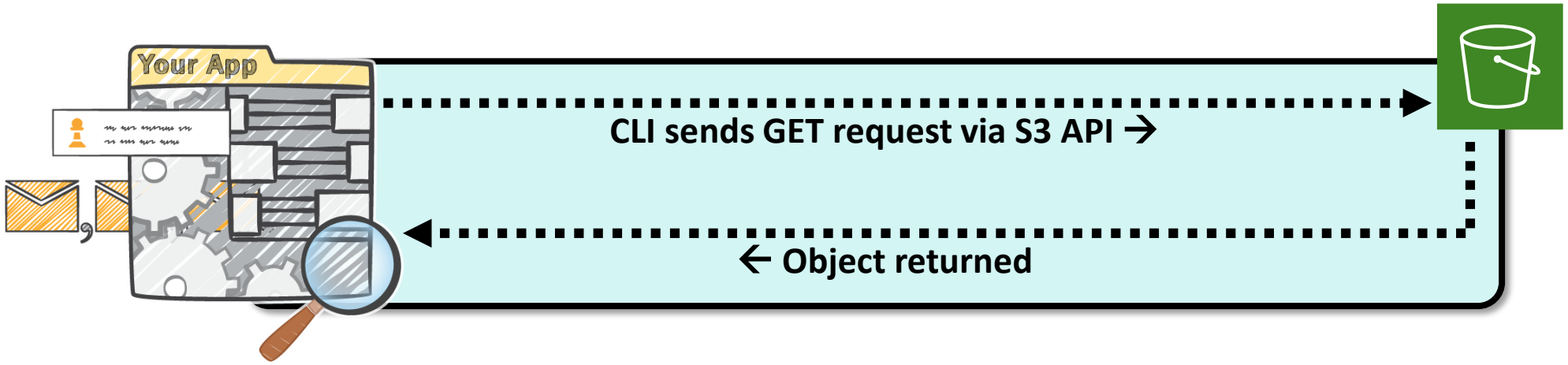
Amazon S3 core functionality

- Fast, durable, highly available key-based access to objects
- Object storage built to store and retrieve data
- Not a file system



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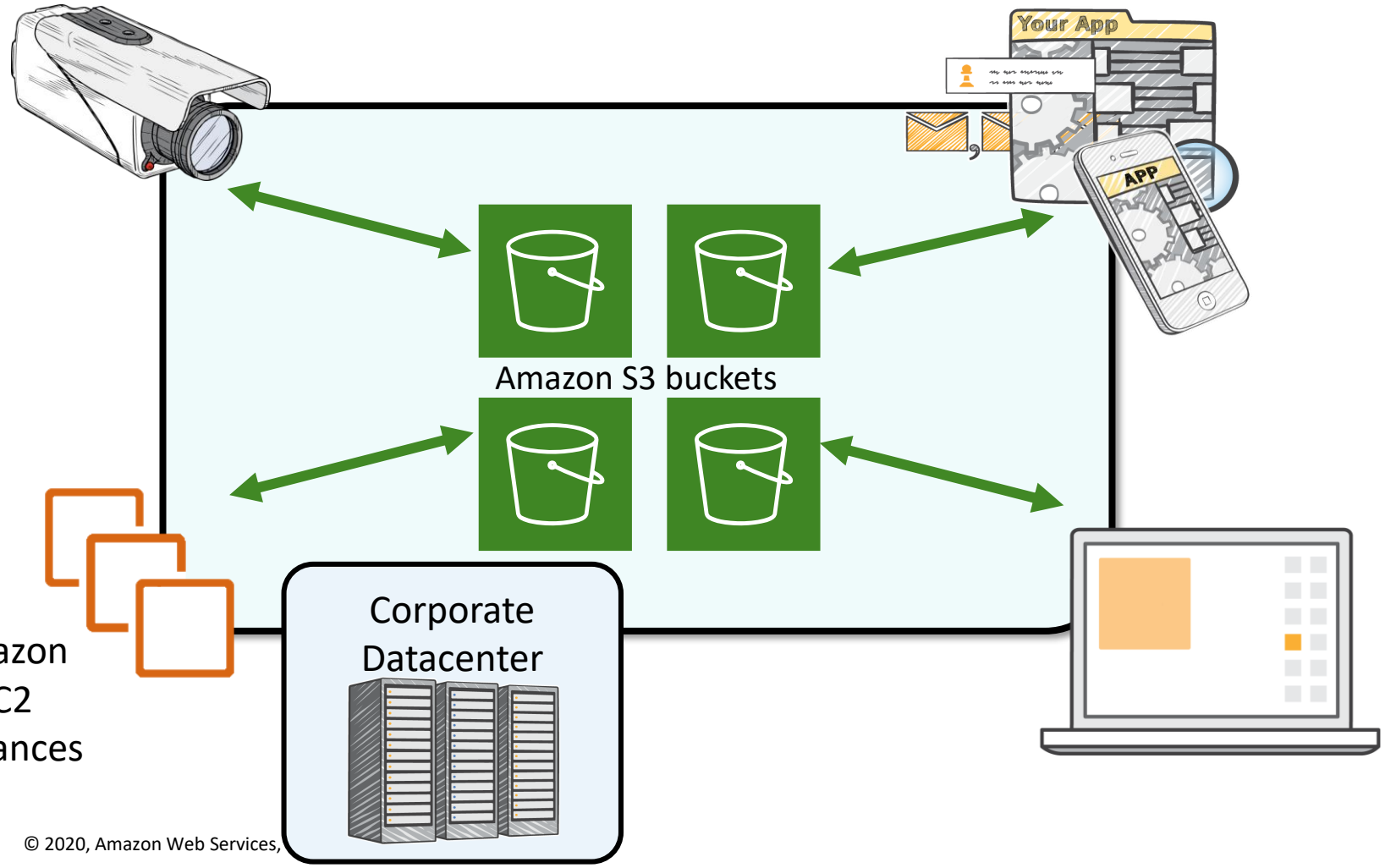
Amazon S3 common scenarios

- Backup and storage
- Application hosting
- Media hosting
- Software delivery



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Not just a storage bucket

Requester pays

Versioning

Hosting static websites

Object lifecycle management

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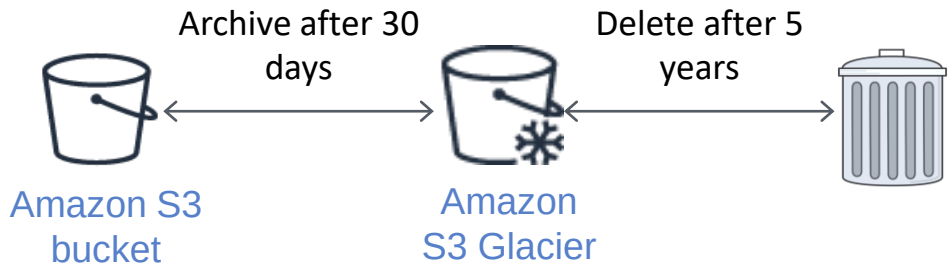
What is Amazon S3 Glacier?

- Low-cost data archiving and long-term backup
- 3- to 5-hour or within 12 hours*
- Can configure lifecycle archiving of Amazon S3 content to Amazon Glacier



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Amazon S3 Glacier use cases

Media asset workflows

Healthcare information archiving

Regulatory and compliance archiving

Scientific data storage

Digital preservation

Magnetic tape replacement

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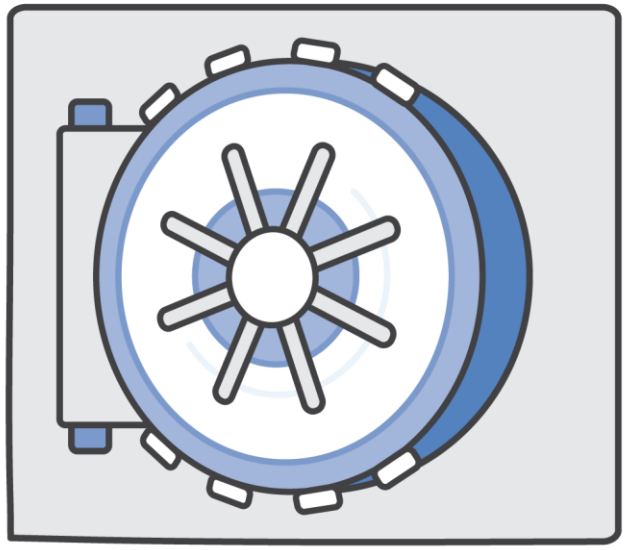
Amazon S3 Glacier vault lock policy



- Deploy and enforce compliance controls on individual Amazon Glacier vaults
- Vault becomes immutable once locked

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Amazon S3 storage classes

Storage class	Features
S3 Standard	• ≥3 availability zones
S3 Standard - Infrequent Access (IA)	• Retrieval fee associated with objects • Most suitable for infrequently accessed data
S3 Intelligent- Tiering	• Automatically moves objects between tiers based on access patterns • ≥3 availability zones
S3 One Zone-IA	• 1 availability zone • Costs 20% less than S3 Standard-IA
S3 Glacier	• Not available for real-time access • Must restore objects before you can access them • Restoring objects can take 1 minute - 12 hours
S3 Glacier Deep Archive	• Lowest cost storage for long term retention (7-10 years) • ≥3 availability zones • Retrieval time within 12 hours

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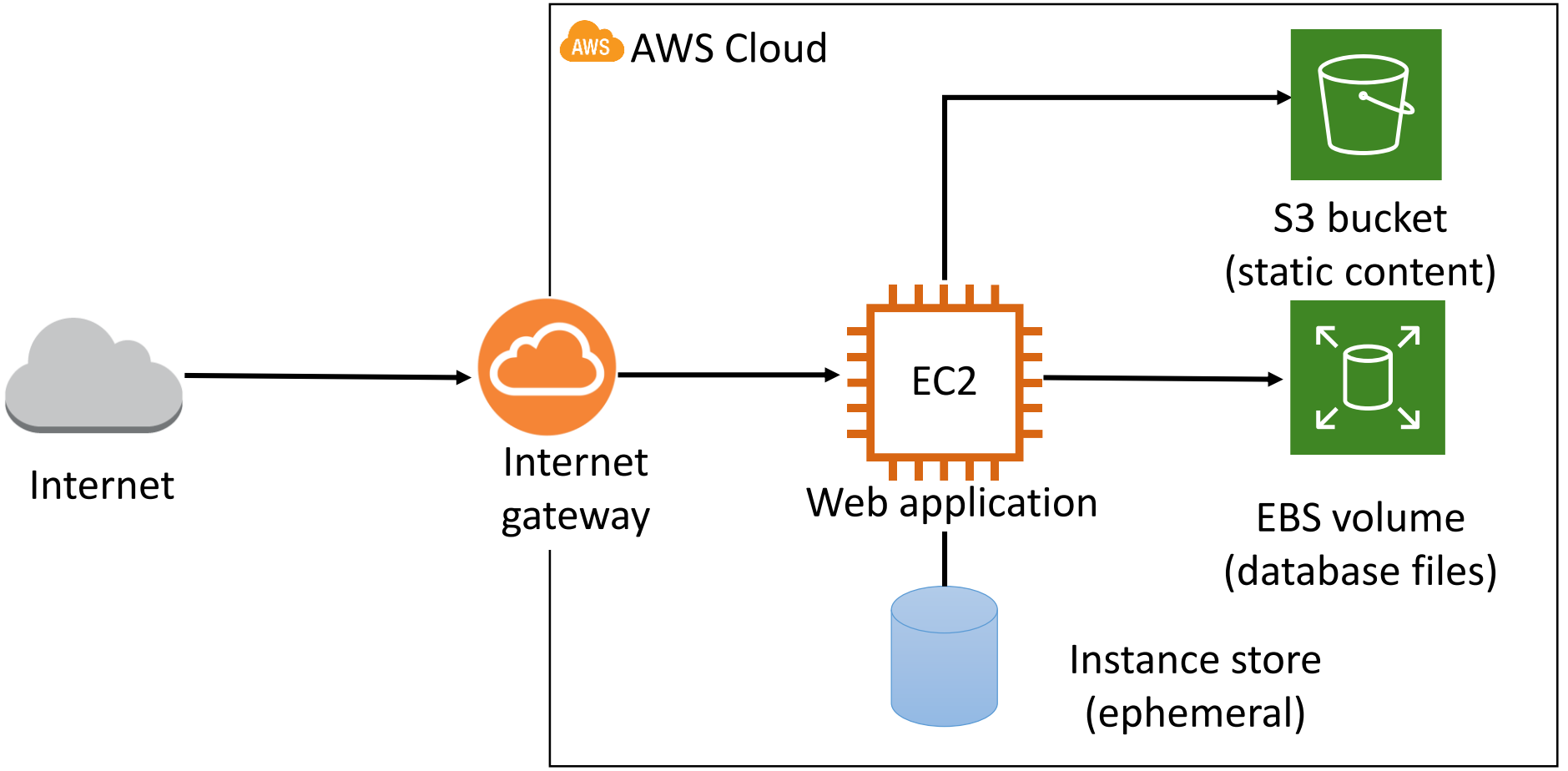
Architecture example



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Secure your data

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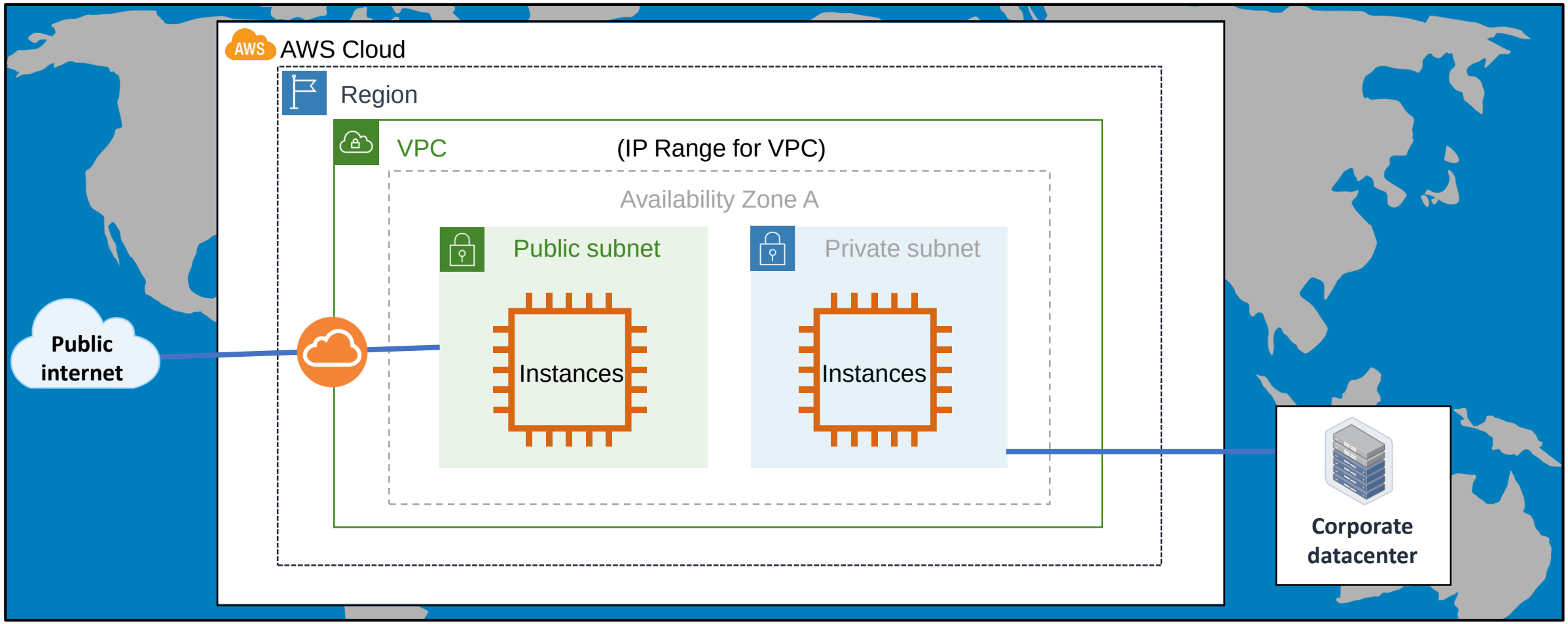
Amazon Virtual Private Cloud (Amazon VPC)



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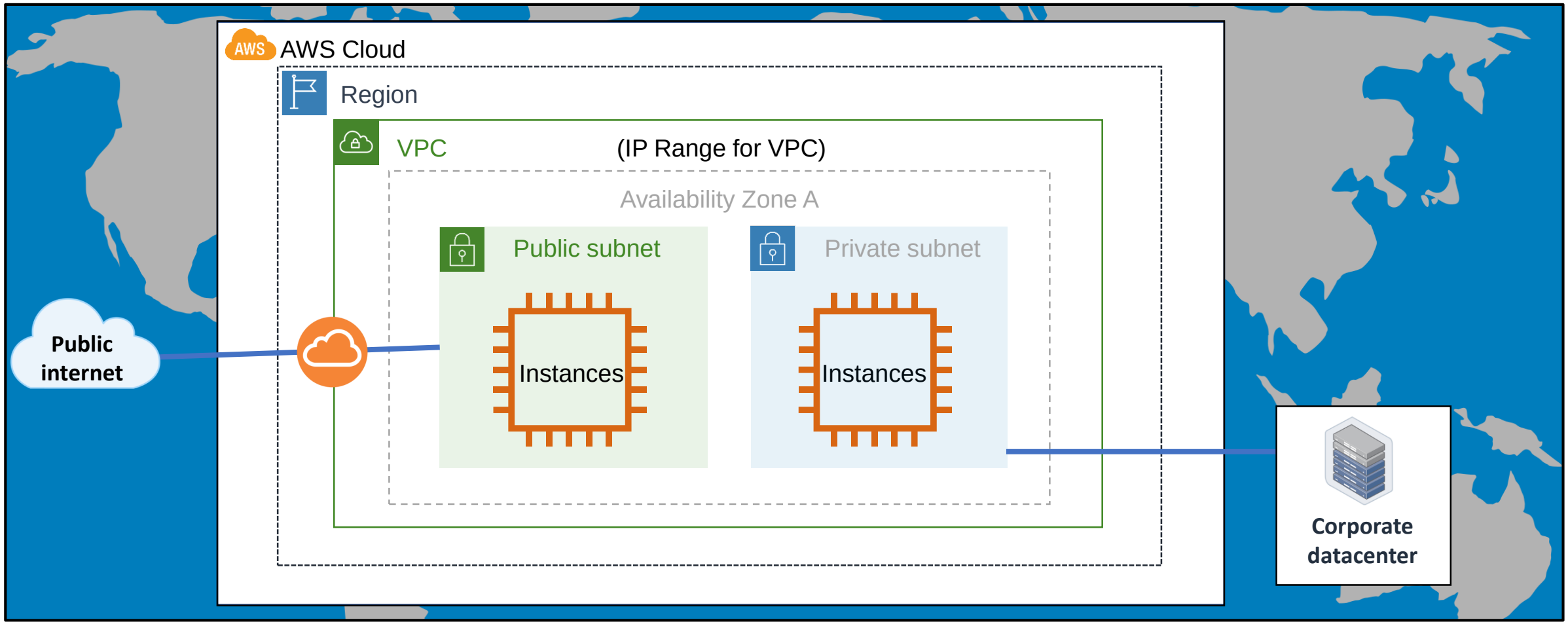
Amazon Virtual Private Cloud (Amazon VPC)



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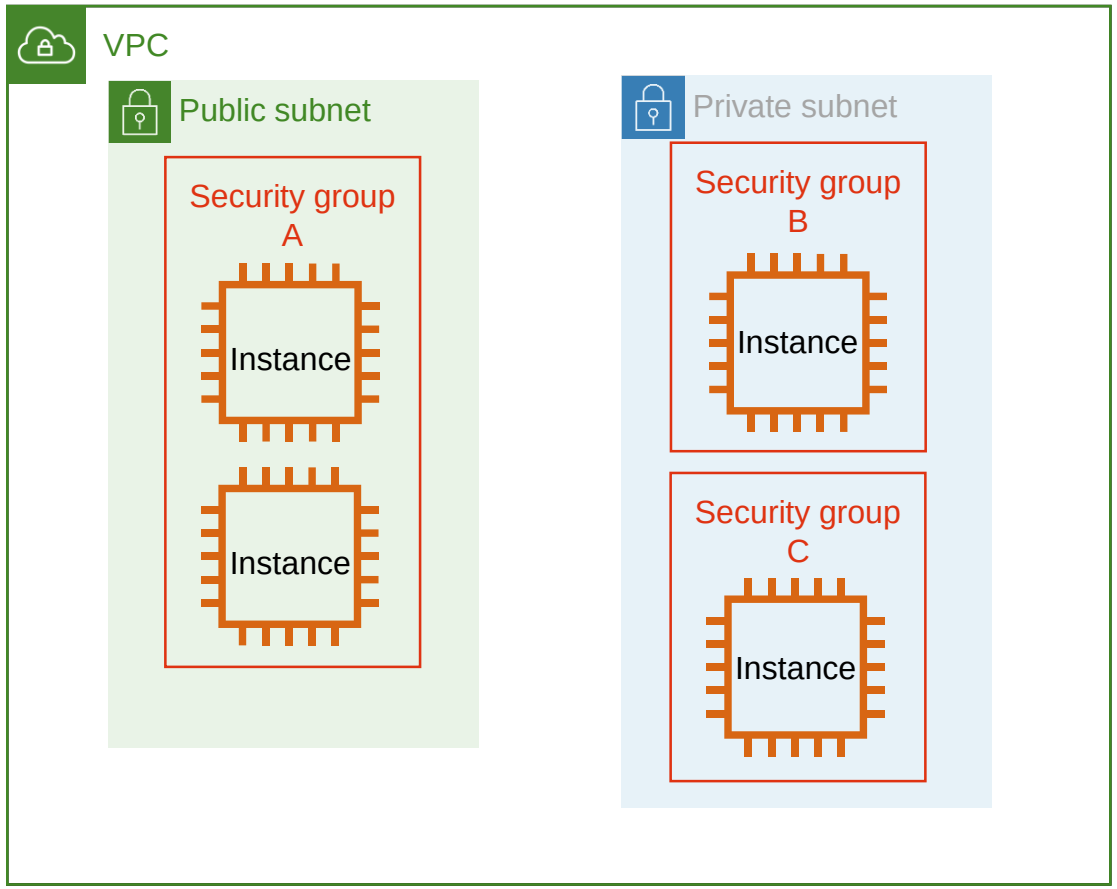
Security groups



Security Group A

Inbound		
Source	**Protocol**	**Port Range**
0.0.0.0/0	TCP	80
0.0.0.0/0	TCP	443

Security Group-B

Inbound		
Source	**Protocol**	**Port Range**
10.0.1.0/24	TCP	22

Security Group-C

Inbound		
Source	**Protocol**	**Port Range**
ID of Security Group B	All	All

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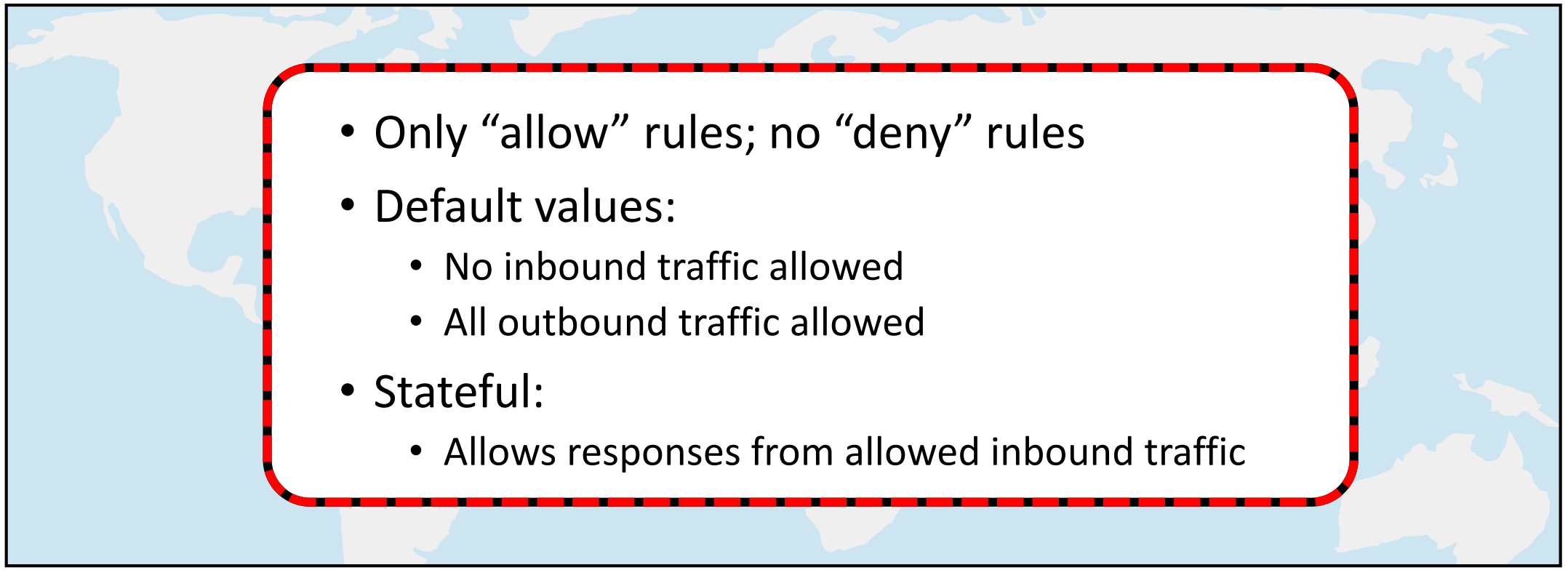
Security group details



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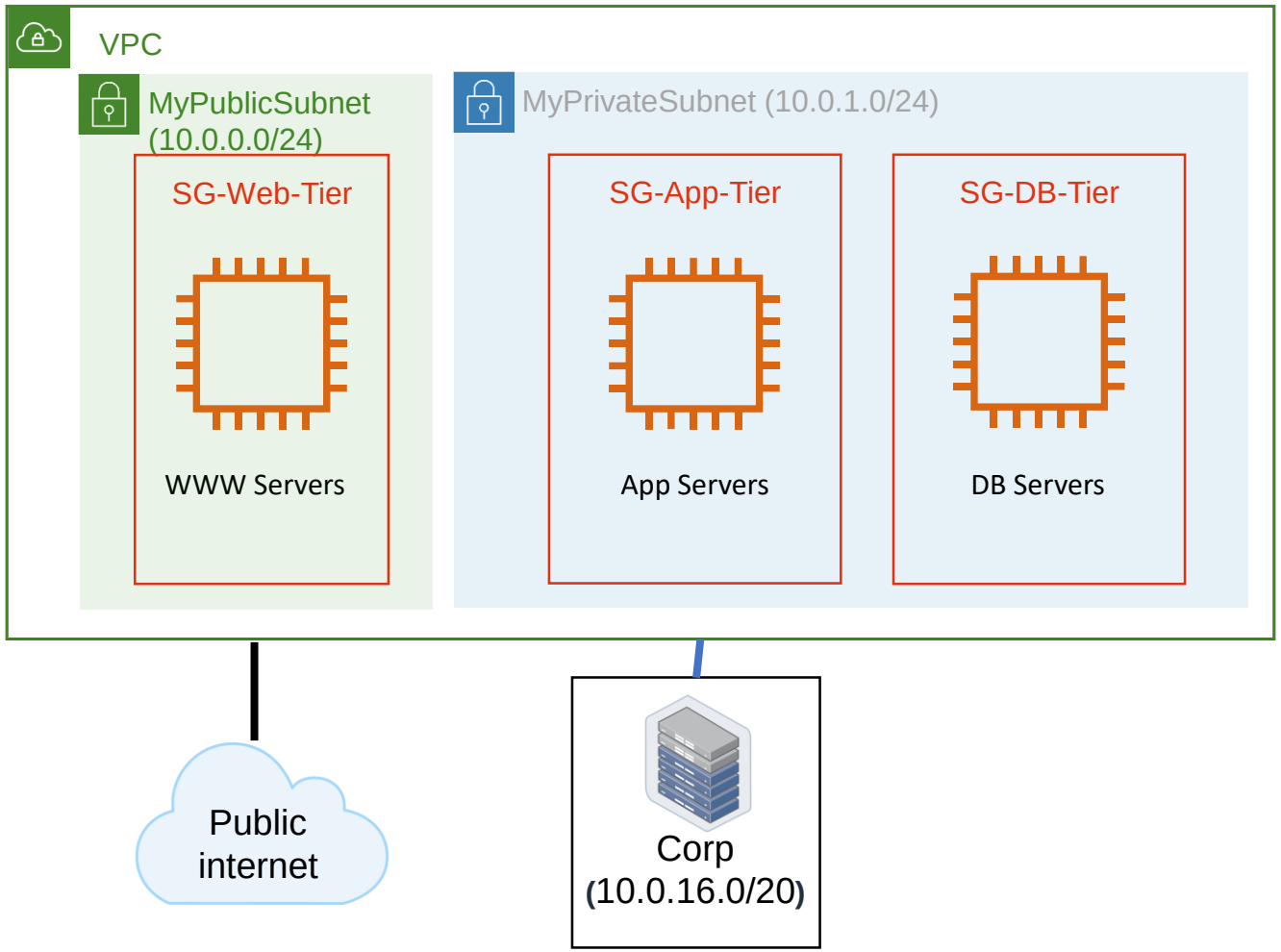
Security groups example



SG-Web-Tier

Inbound		
Source	**Protocol**	**Port Range**
0.0.0.0/0	TCP	80
0.0.0.0/0	TCP	443
10.0.16.0/20	TCP	22

SG-App-Tier

Inbound		
Source	**Protocol**	**Port Range**
ID of SG-Web-Tier	TCP	6455
10.0.16.0/20	TCP	22

SG-DB-Tier

Inbound		
Source	**Protocol**	**Port Range**
ID of SG-App-Tier	TCP	3306
10.0.16.0/20	TCP	22

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End of Module 2
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