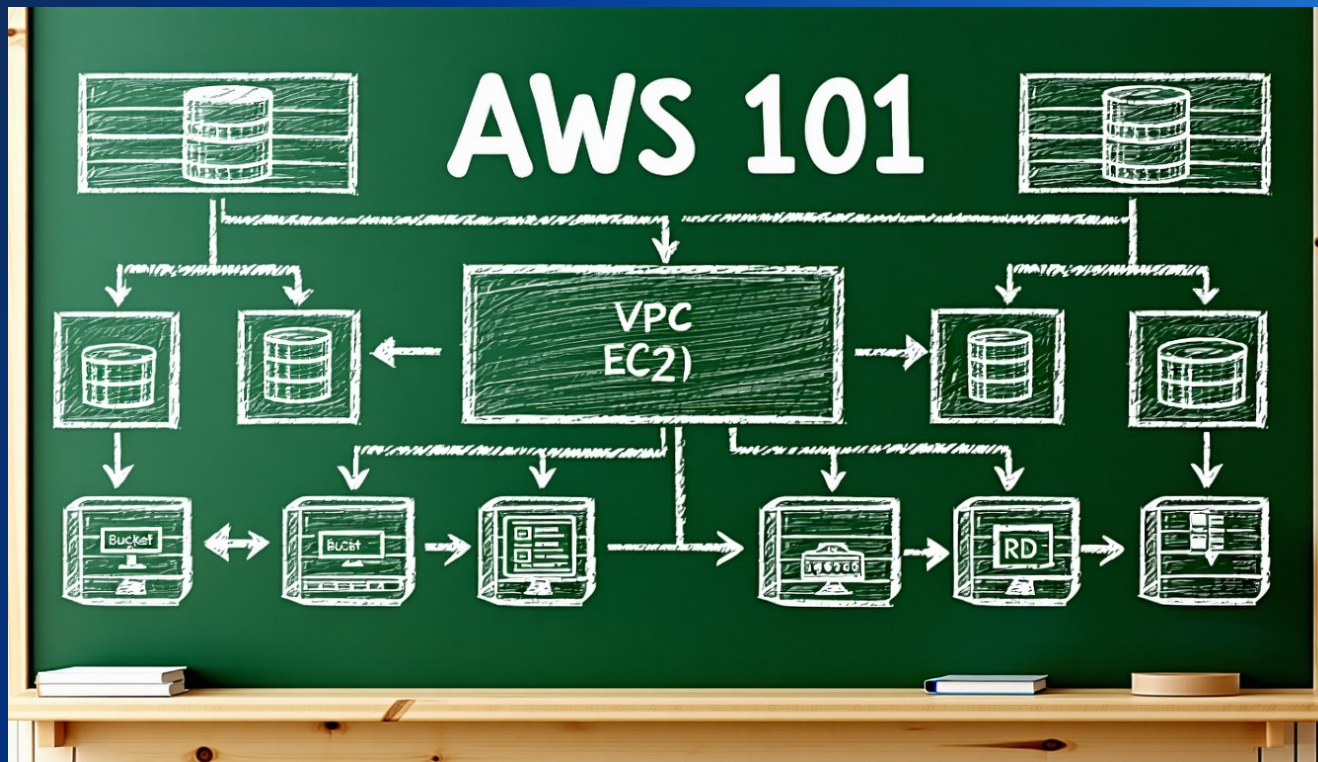
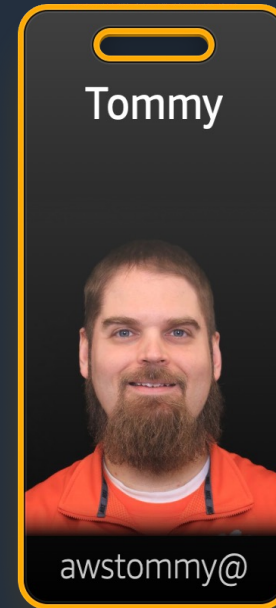




Intros



Nelson Colón
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Account Manager -- NCCCS



Tommy Johnston
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Solutions Architect – NCCCS

Event Agenda

Day 1

- Intro to AWS & EC2
- Hands on Lab – EC2 Windows OR EC2 Linux
- Storage in AWS
- Hands on Lab – S3 (Simple Storage Service)
- Networking in AWS
- Hands on Lab – VPC

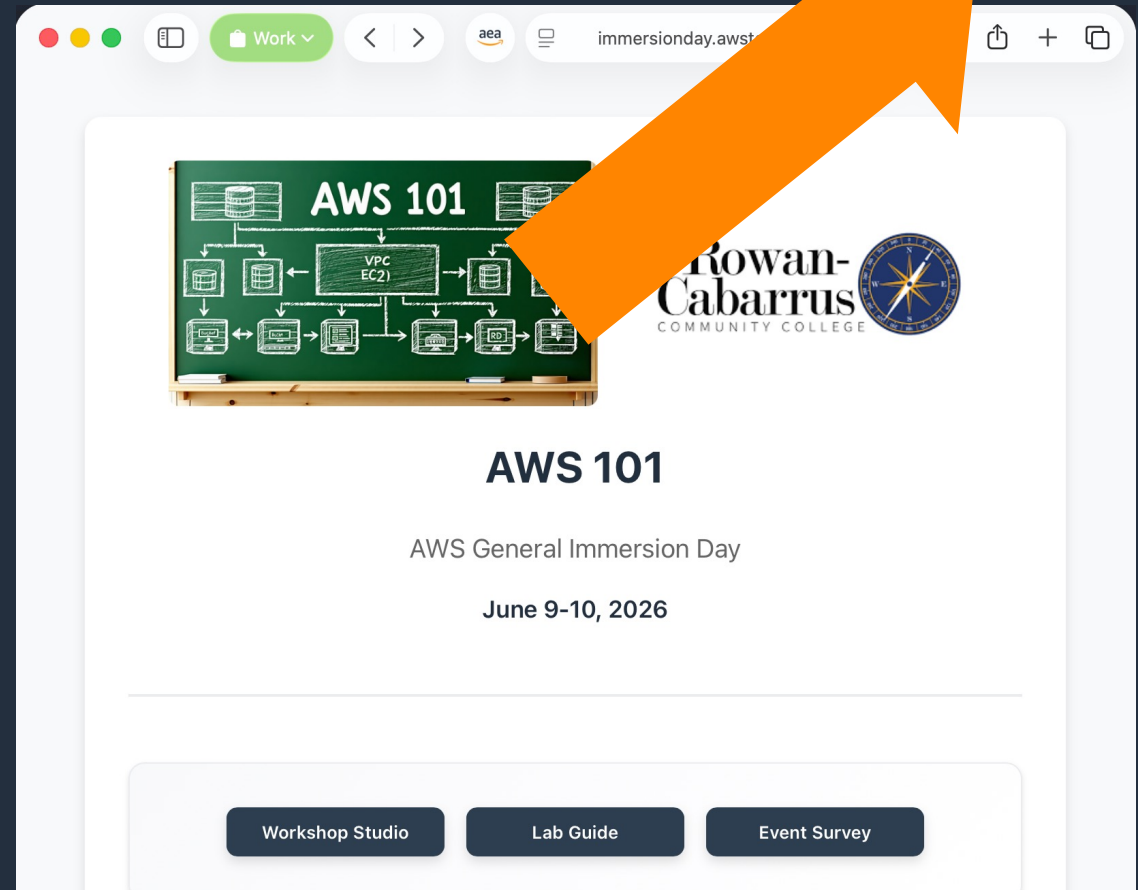
Day 2

- AWS Security Overview
- Hands on Lab – IAM (Identity & Access Management)
- Q & A
- Review & Conclusion



Event Website

<https://immersionday.awstommy.com/rccc>



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Introduction to Amazon Cloud

Amazon EC2 Overview

Tommy Johnston

Solutions Architect – Higher Education



Agenda

- Introduction to Amazon Cloud
- AWS Global Reach
- Amazon EC2 Overview
- Amazon EC2 Design



What is AWS?

AWS provides a highly reliable, scalable, low-cost infrastructure platform in the cloud that powers millions of businesses in over 245 countries and territories around the world.

Benefits

- Low Cost
- Elasticity & Agility
- Open & Flexible
- Secure
- Global Reach



What sets AWS apart?



Security

Fine-grained identity and access control;
Build with the Highest Standards for Privacy and Data Security



Service Breadth & Depth; Pace of Innovation

240+ fully featured services to support any cloud workload; AWS released thousands of significant features and services in 2025



Experience: 1M+ customers

Building and managing cloud since 2006



Global Footprint

123 Availability Zones within 39 geographic Regions, 40+ Local Zones, 750+ Points of Presence in 100+ cities across 50+ countries



GenAI & Machine Learning

Amazon Bedrock powers generative AI for more than 100,000 organizations worldwide. The broadest selection of leading foundation models -- GenAI in the hands of every builder.



Ecosystem

130,000+ APN partners from over 200 countries. The AWS Marketplace offers 18,000+ products across 80+ categories



Enterprise leader

AWS positioned as a Leader in the Gartner Magic Quadrant for Strategic Cloud Platform Services

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Pricing Philosophy

High volume / low margin businesses are in our core DNA

Trade capital
expense for
variable expense

Pay for what
you use

Our economies of
scale provide us
with lower costs

151 price
reductions
since 2006

Pricing model
choice to support
variable and
stable workloads

On-demand
Savings Plans
Reserved Instances
Spot

Save more money as
you grow bigger

Tiered pricing
Volume discounts
Custom pricing

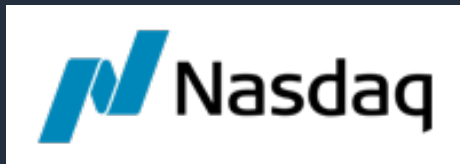


Customer obsessed



90%

of roadmap originates with customer requests
and are designed to meet specific needs



“ We were able to easily support the jump from 30 billion records to 70 billion records a day because of the flexibility and scalability of Amazon S3 and Amazon Redshift. ”

– Robert Hunt, Vice President of Software Engineering, Nasdaq



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It's **greener** in the cloud.

AWS's infrastructure is

3.6x more energy efficient

than the median of the surveyed U.S. enterprise data centers

AWS performs the same task with an

80% lower carbon footprint

Source: 451 Research, 2019, all rights reserved



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Responsible **water** use

AWS has multiple initiatives to improve our **water use efficiency** for cooling data centers:

- Evaporative cooling
- Reduce potable water usage
- Recycled cooling water
- Invest in reclaimed water infrastructure

AWS has committed to being **water positive** by 2030. Our four pillars:

- Water efficiency
- Sustainable Sources
- Water reuse in communities
- Water replenishment



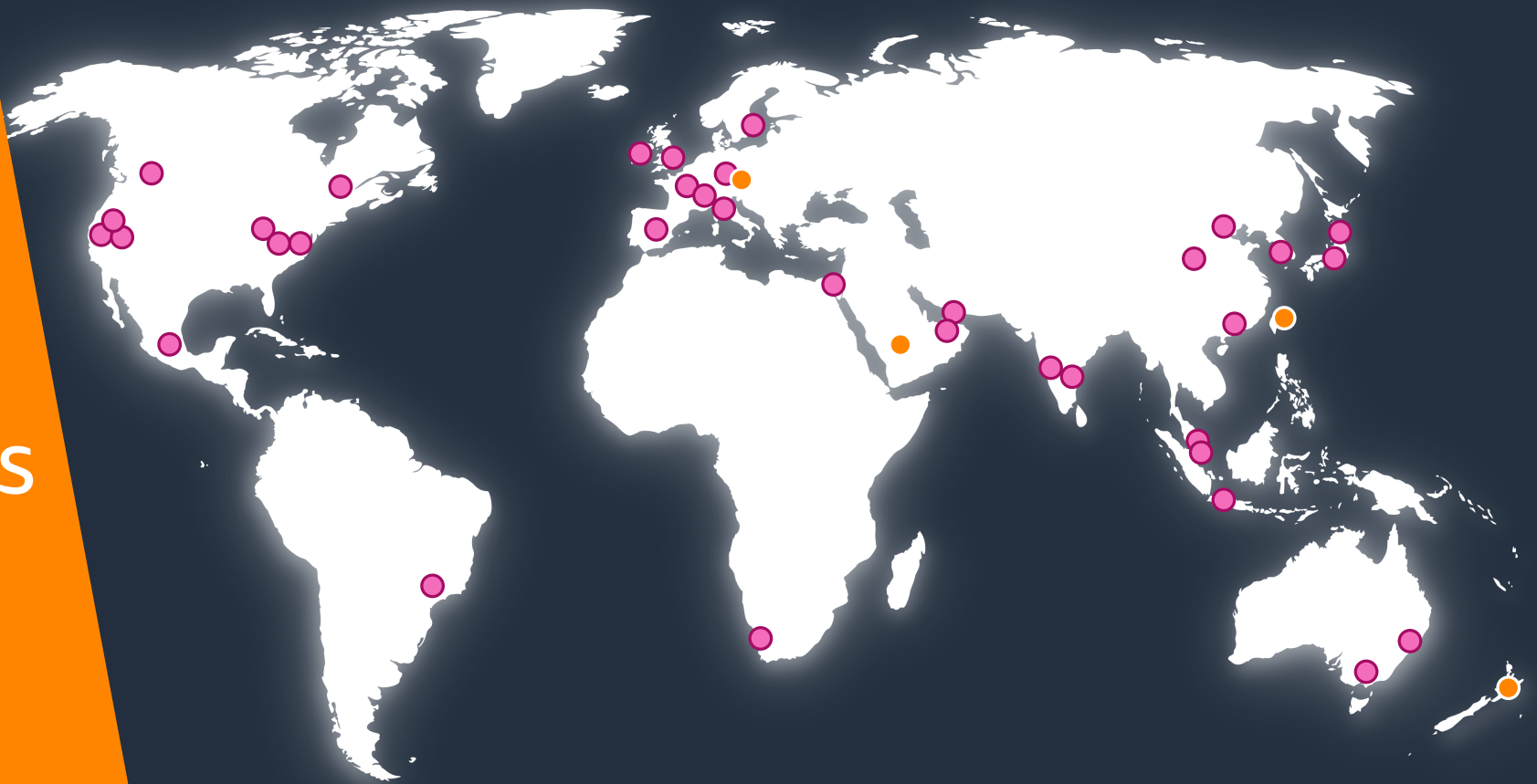
AWS Global Reach



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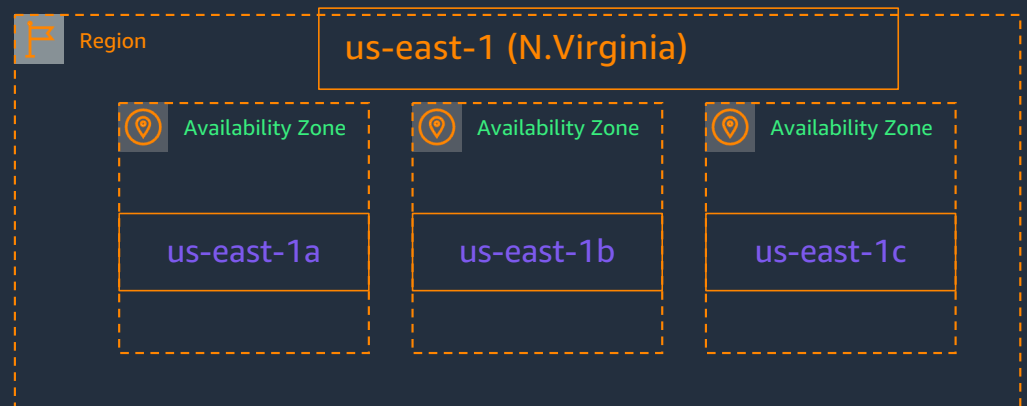


39
Regions



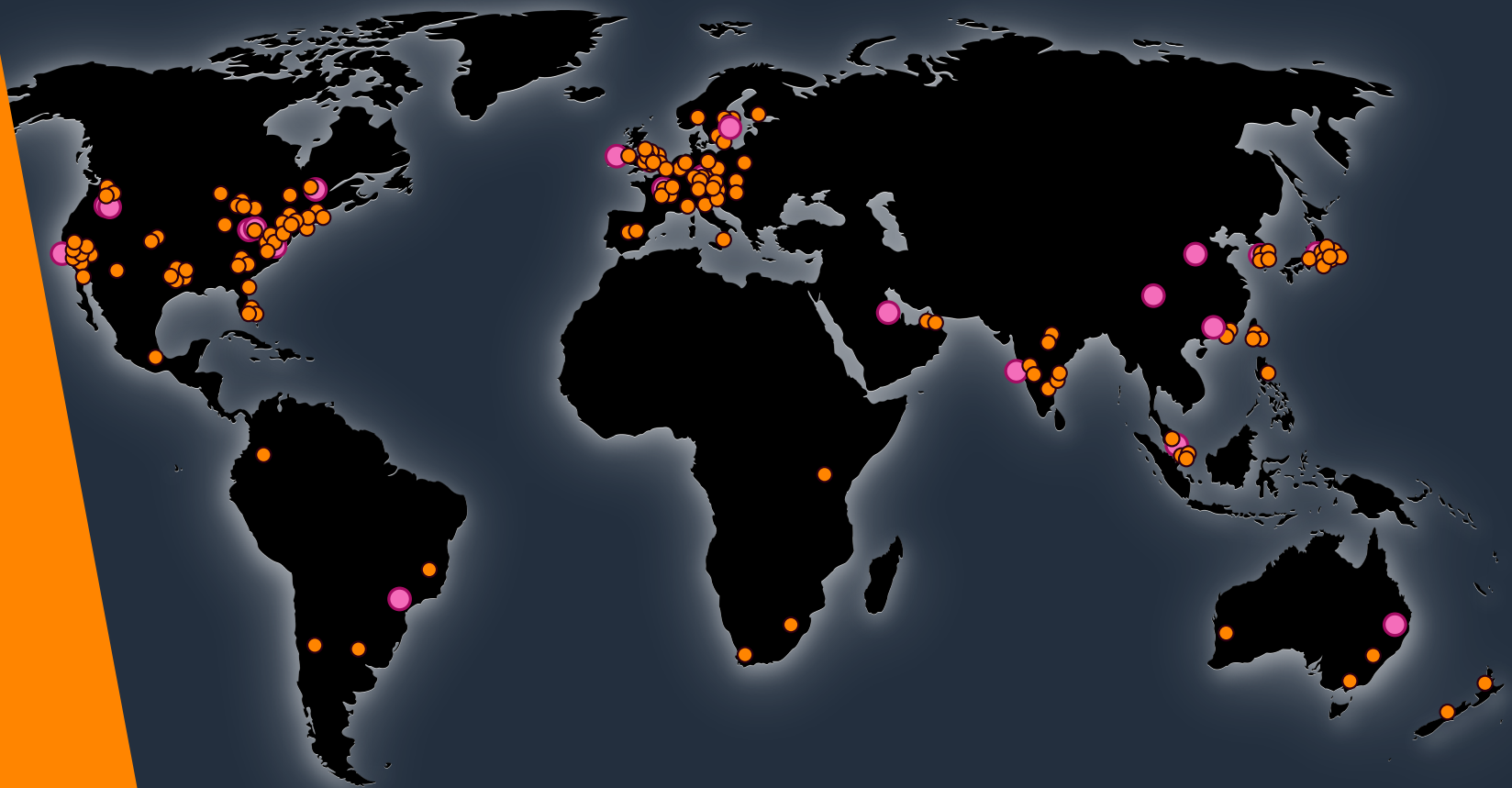
Availability Zones

- Each AWS Region consists of multiple, isolated, and physically separate AZs within a geographic area
- An Availability Zone (AZ) is one or more discrete data centers with redundant power, networking, and connectivity in an AWS Region
- High throughput, low latency (< 10 ms) network between Availability Zones
- All traffic between AZs is encrypted
- Physical separation with-in 100 km (60 miles)



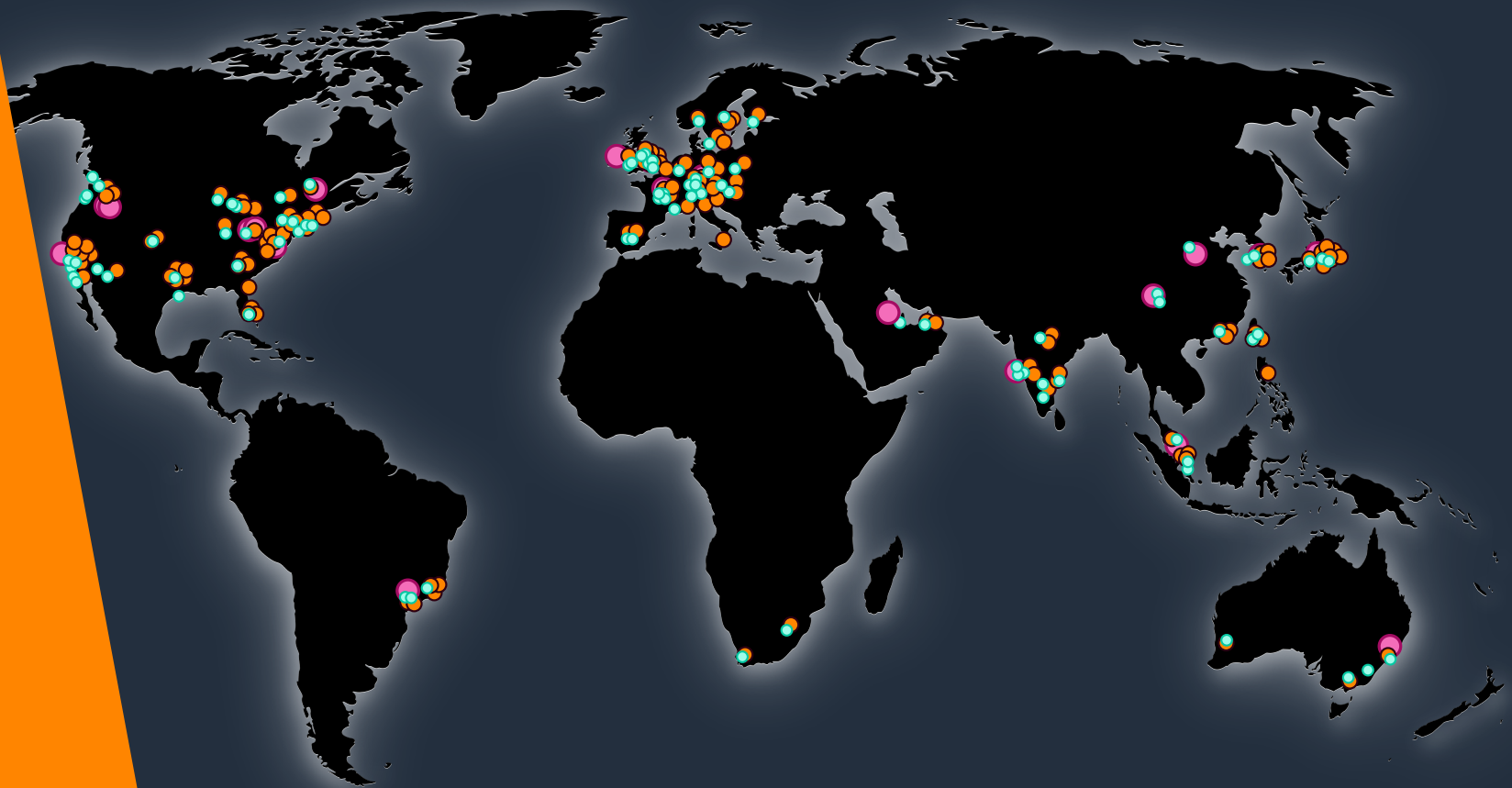
750+

Amazon
CloudFront
Points of
Presence



146

AWS Direct
Connect
locations

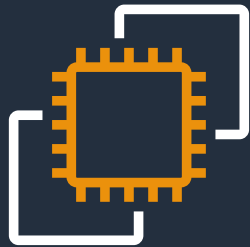


Amazon EC2 Overview



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Amazon Elastic Compute Cloud (Amazon EC2)



AMAZON EC2

Linux | Windows | Mac

Arm and x86 architectures

General purpose and workload optimized

Bare metal, disk, networking capabilities

Packaged | Custom | Community AMIs

Multiple purchase options: On-Demand, Spot instances, Reserved Instances, Savings Plans, Dedicated Hosts



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Instance Types

General Purpose

Compute Optimized

Memory Optimized

Accelerated Computing

Storage Optimized

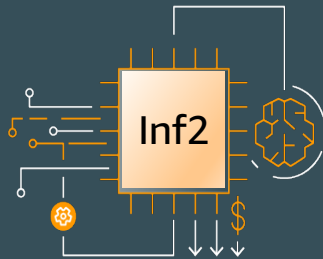
	Burstable performance	General Purpose	Compute Intensive	Compute + network up to 100 Gbps*	Memory Optimized	In-memory	Memory Intensive	Compute and Memory Intensive	Graphics Intensive	General Purpose GPU	FPGA	High I/O	Dense Storage	Big Data Optimized
intel	T3	M5	C5	C5n	R6i	X1	X2iedn		G6	P5	F1	I3en	D3	H1
Local storage (NVMe SSD)		M5d	C5d		R5d			Z1d				I3		
AMD	T3a	M5a			R6a				G5					
metal		M5	C5		R5	u-24tb1		Z1d				I3		
AWS Graviton	T4g	M7g	C7g	C7gn	R8g	X2gd			G5g			Im4gn		



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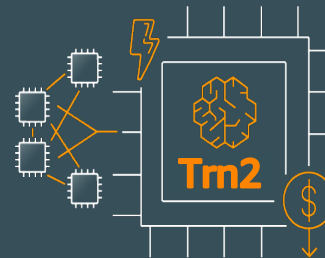
AWS chips optimized for deep learning

AWS Inferentia



Purpose-built for generative AI inference at scale— up to 40% better price-performance than comparable Amazon EC2 instances

AWS Trainium



The most cost-efficient high performance DL training instance

Instance Naming

Instance generation

c7gn.xlarge

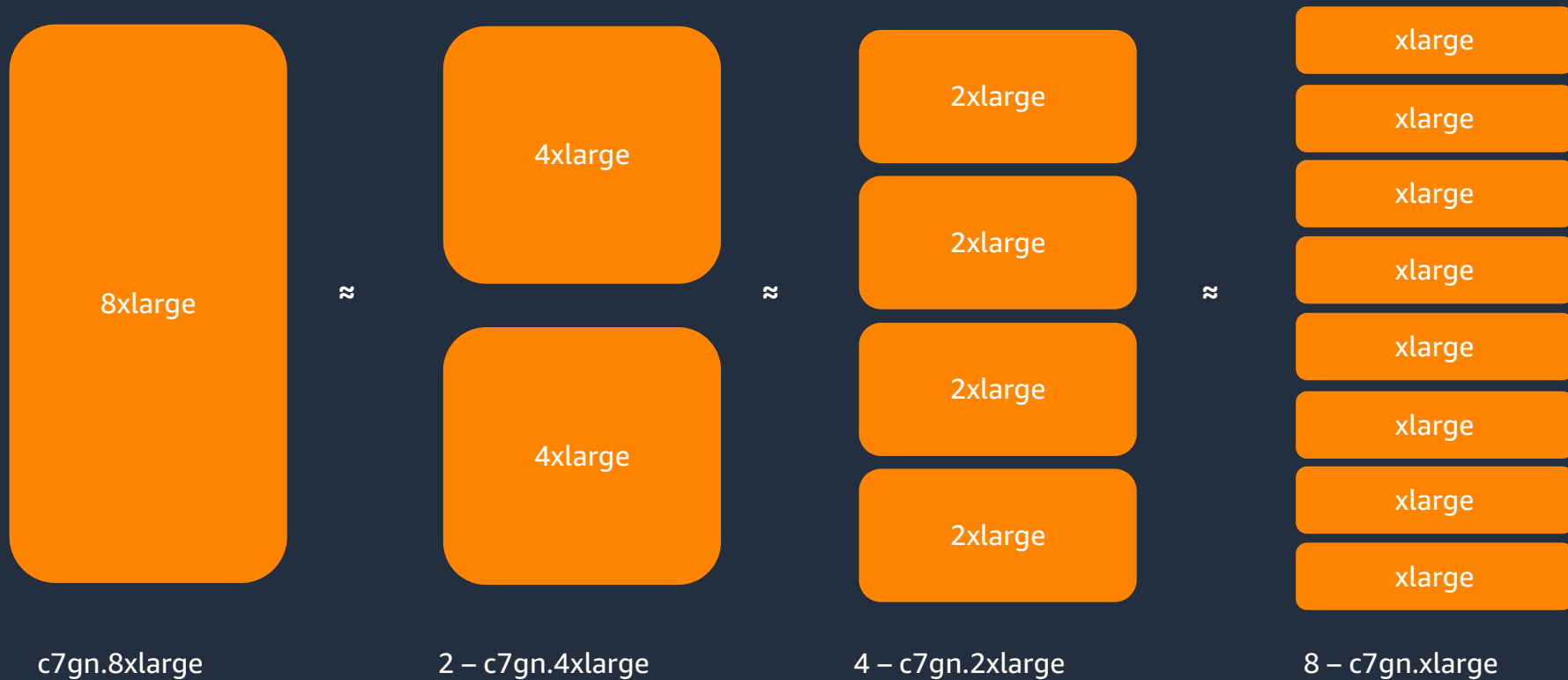
Instance
family

Attribute(s)

Instance size



Instance Sizing



Choose your processor and architecture



Intel® Xeon® Scalable
(Sapphire Rapids) processor



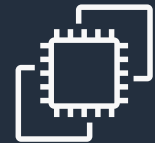
NVIDIA B200, H100
Tensor Core GPUs



AMD EPYC processor



AWS Graviton
Processor (arm)



FPGAs for custom
hardware acceleration

Right compute for the right application and workload



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AWS Graviton Processor

Enabling the best price/performance for your cloud workloads

Graviton4 Processor



30-40% Better Performance than Graviton3



Built with 64-bit Arm Neoverse V2 cores with AWS-designed silicon using 5 nm manufacturing technology



Up to 192 vCPUs, 3x more Memory
75% higher memory bandwidth

Generally Available Today:
m8g, c8g, r8g, i8g

Graviton5 Processor



Up to 192 cores, 25-35% better performance than Graviton4



Built with 64-bit Arm Neoverse V3 cores with AWS-designed silicon using 3 nm manufacturing technology



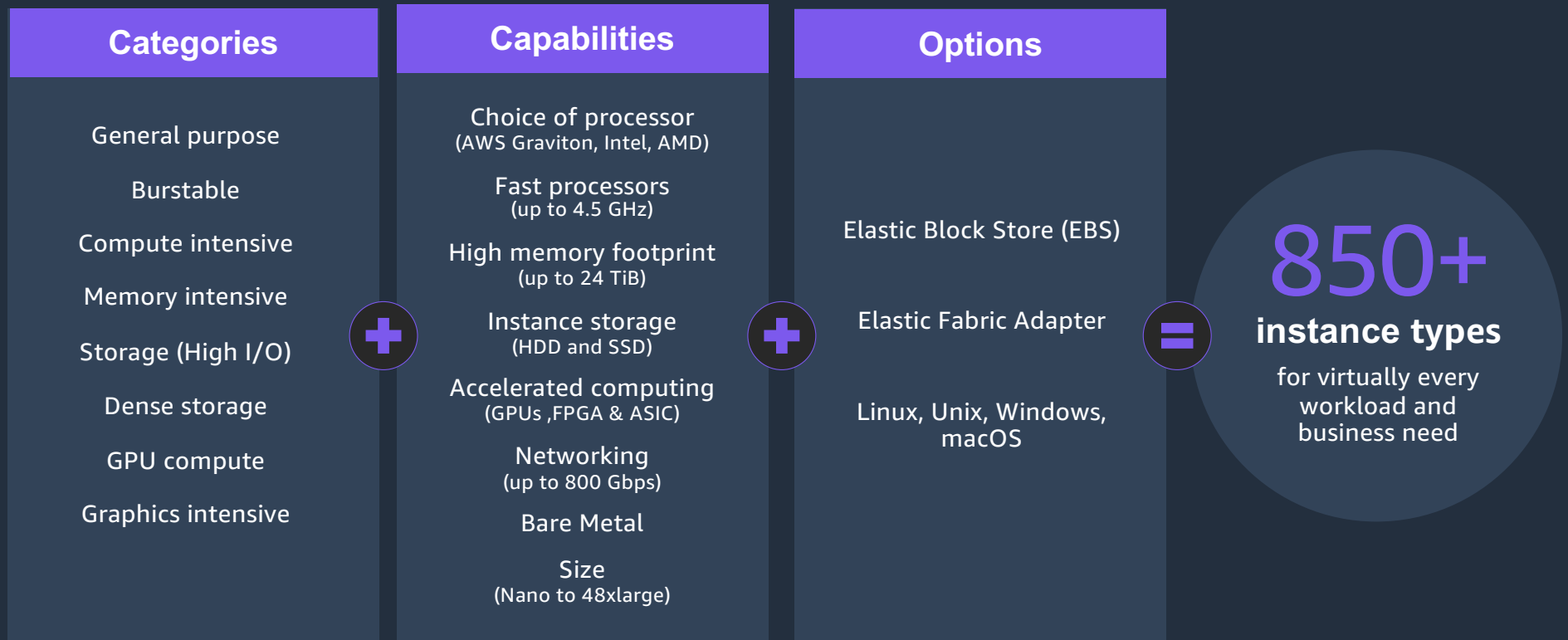
5x larger cache, 33% lower inter-core communication latency

Preview Today: m9g
Announced: c9g, r9g



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Broadest and deepest platform choice



EC2 Operating Systems

- Windows Server 2016/2019/2022/2025
- Amazon Linux (NEW: Amazon Linux 2023)
- Debian
- SUSE
- Rocky
- Red Hat Enterprise Linux (RHEL)
- Ubuntu
- MacOS



Visit the AWS Marketplace for more Operating Systems



What is an Amazon Machine Image (AMI)?

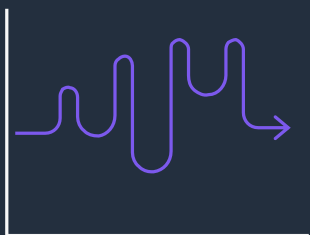
- Provides the information required to launch an instance
- Launch multiple instances from a single AMI with the same configuration
- An AMI includes the following:
 - One or more Amazon Elastic Block Store (Amazon EBS) snapshots, or a template for the root volume (operating system, applications)
 - Launch permissions that control which AWS accounts can use the AMI
 - Block device mapping that specifies volumes to attach to the instance



Amazon EC2 purchase options

On-Demand

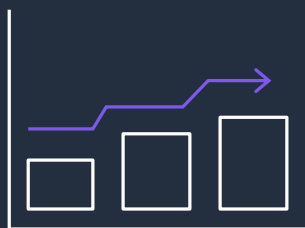
Pay for compute capacity by **the second** with no long-term commitments



Spiky workloads,
to define needs

Reserved Instances

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



Committed and
steady-state usage

Savings Plans

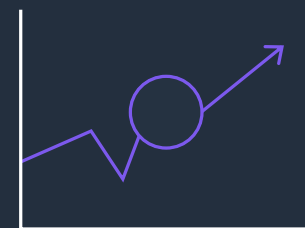
Same great discounts as Amazon EC2 RIs with **more flexibility**



Committed flexible
access to compute

Spot Instances

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



Fault-tolerant, flexible,
stateless workloads



EC2 Security Groups

- Virtual firewall
- Security Group Rules
 - Security Group name
 - Description
 - Protocol
 - Port range
 - IP address, IP range

Basic details

Security group name [Info](#)
MyWebServerGroup
Name cannot be edited after creation.

Description [Info](#)
Security for Production Web Server

VPC [Info](#)
Q

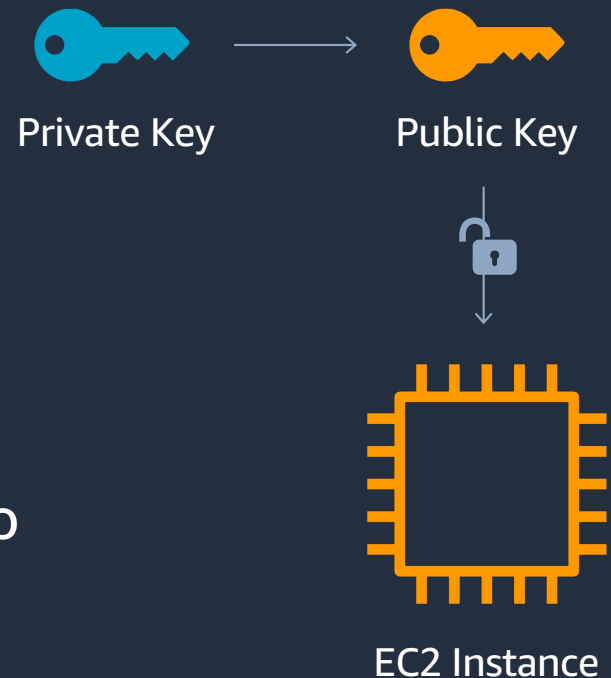
Inbound rules [Info](#)

Type Info	Protocol Info	Port range Info	Source Info	Description - optional Info	
SSH	TCP	22	Custom Q 1.2.3.4/32 X	Admin access	Delete
HTTP	TCP	80	Anywhere-I... Q 0.0.0.0/0 X	Web traffic	Delete
HTTPS	TCP	443	Anywhere-I... Q 0.0.0.0/0 X	Secure web traffic	Delete

Add rule

EC2-Specific Credentials

- EC2 key pairs
 - Linux – SSH key pair for first-time host login
 - Windows – Retrieve Administrator password
- Standard SSH RSA key pair
 - Public/Private Keys
 - Private keys are not stored by AWS
- AWS approach for providing **initial** access to a generic OS
 - Secure
 - Personalized
 - Non-generic (NIST, PCI DSS)



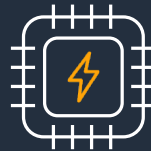
AWS Nitro System

Nitro Card



Local NVMe storage
Elastic Block Storage
Networking, monitoring,
and security

Nitro Security Chip



Integrated into motherboard
Protects hardware resources

Nitro Hypervisor



Lightweight hypervisor
Memory and CPU allocation
Bare metal-like performance

Modular building blocks for rapid design and delivery of **Amazon EC2** instances



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Thank you!

Tommy Johnston
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