

GRIDS MART.[®]
TECHNOLOGIES, INC.

**INTRODUCTION TO AWS AND QUICK DIVE
IN SQS, S3, AND EC2.**

AWS BASICS

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AGENDA

- ▶ AWS Basics
- ▶ Global Infrastructure
- ▶ Security
- ▶ SQS, S3, & EC2
- ▶ Use Cases
- ▶ Q&A

AWS BASICS

- ▶ **Cost:** pay-as-you-go model
- ▶ **Scalability:** instant elasticity
- ▶ **Flexibility:** agnostic platform
- ▶ **Security:** industry certifications

AWS CLOUD SERVICES

- ▶ Global*
- ▶ API backbone
- ▶ Compute
- ▶ Storage (and databases)
- ▶ Networking
- ▶ Analytics
- ▶ IoT
- ▶ Security
- ▶ Machine Learning
- ▶ Media Services
- ▶ AR/VR
- ▶ And more coming each year...



MARCH 14, 2006
AWS LAUNCHED THE
FIRST CLOUD
SERVICE, AMAZON **S3**.



AWS HAS MORE THAN
1 MILLION
ACTIVE CUSTOMERS
PER MONTH



AMAZON S3
REGULARLY PEAKS
AT **MILLIONS** OF
REQUESTS PER SEC

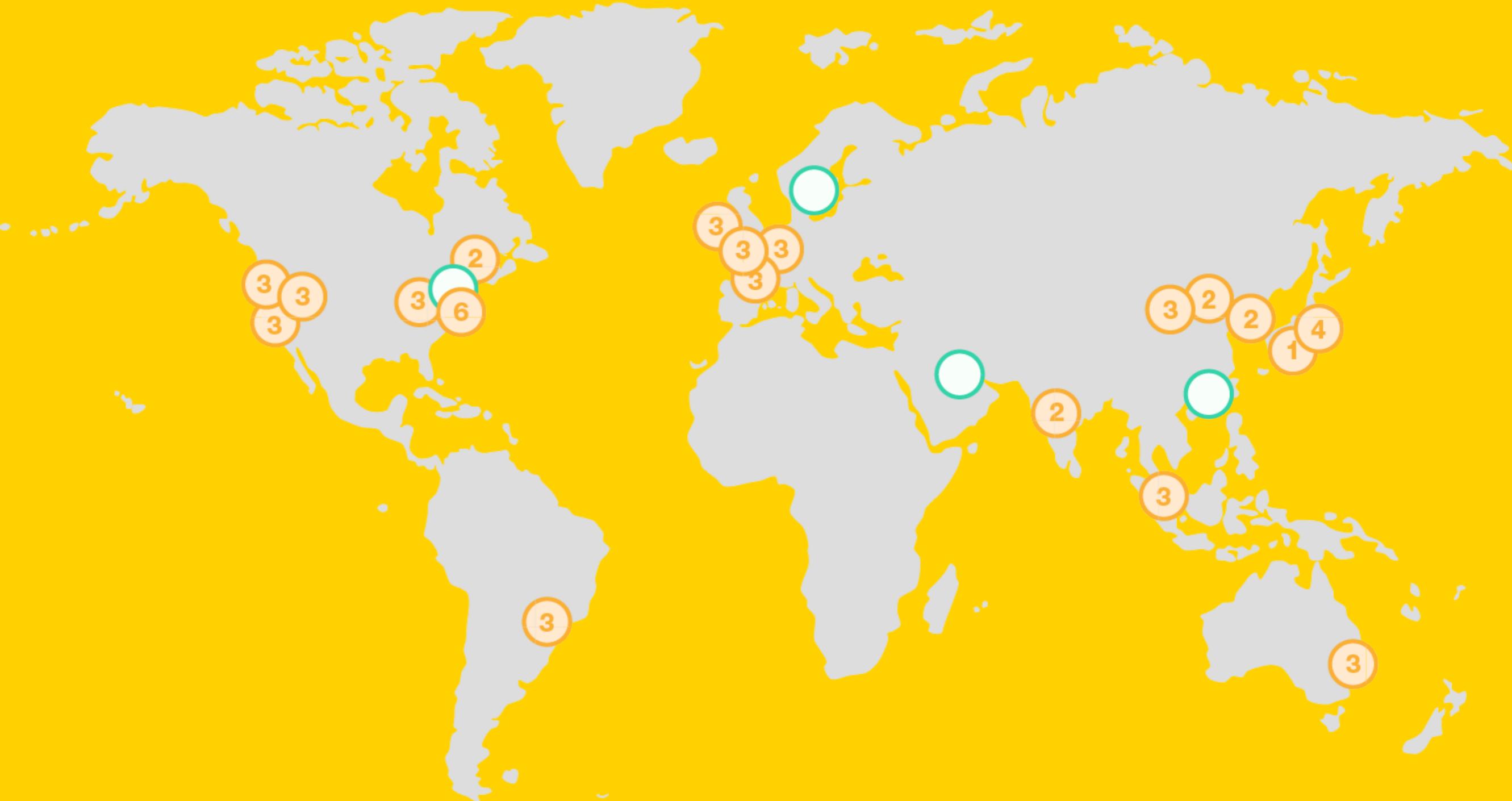


NEW FEATURES LAUNCHED PER
YEAR (WITH MORE COMING
ALMOST **DAILY**)



AWS ALREADY HAS MORE
THAN **70** SERVICES

GLOBAL INFRASTRUCTURE

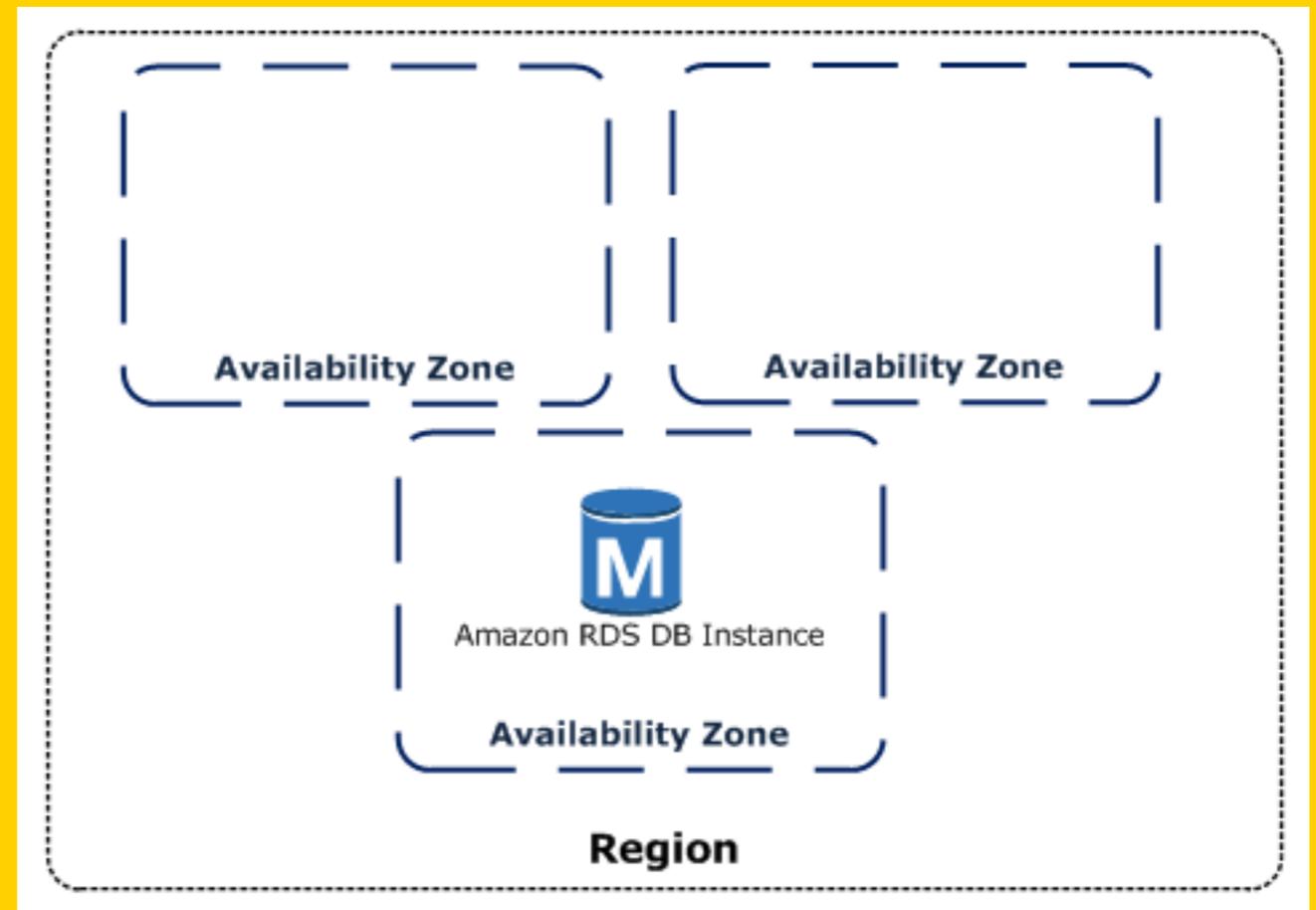


GLOBAL INFRASTRUCTURE

- ▶ **Key Terms**

- ▶ Regions

- ▶ AZs



REGIONS

- ▶ Separate geographic area and completely independent
- ▶ Designed to be completely isolated from the other regions & helps achieve the greatest possible fault tolerance and stability
- ▶ Communication between regions is across the public Internet and appropriate measures should be taken to protect the data using encryption
- ▶ Data transfer between regions is charged at the Internet data transfer rate for both the sending and the receiving instance
- ▶ Resources aren't replicated across regions unless done explicitly

AVAILABILITY ZONES

- ▶ Each Region has multiple Availability Zones.
- ▶ Each AZ is physically isolated from each other so that an uncommon disaster such as fire, earthquake would only affect a single AZ
- ▶ AZs are geographically separated from each other, within the same region, and acts as an independent failure zone
- ▶ AZs are redundantly connected to multiple tier-1 transit providers
- ▶ AZs in a region are connected with low-latency private links and not through public internet
- ▶ Multi-AZ, distribution of resources across multiple Availability Zones, feature can be used to distribute instances across multiple AZ to provide High Availability

SECURITY

- ▶ AWS security measures meet the requirements of these organizations, adhering to standards such as ISO 270001, PCI DSS, NIST 800-171, and FedRAMP.
- ▶ All data is confidential and protected via inbound and outbound network traffic filtering to prevent data leaks.
- ▶ Data is backed up several times a day and backups are transferred over an encrypted link.
- ▶ Multiple secure data centers ensure connectivity is always available.
- ▶ The IP addresses of devices are not externally accessible and are on a private network for GRIDSMART devices.
- ▶ Shared Responsibility Model

SQS (SIMPLE QUEUE SERVICE)

- ▶ Technically the first service
- ▶ Created by Amazon for amazon.com
- ▶ Queue service for order processing

S3 (SIMPLE STORAGE SERVICE)

- ▶ Object store (Key/Value)
- ▶ Global (and unique) Identifier
- ▶ Durable (99.9999999999%)
- ▶ HA (Highly Available) - Multiples Availability Zones
- ▶ Replicable to other regions (automatically)
- ▶ <https://S3-euwest-1.amazonaws.com/testbucket>

EC2 (ELASTIC COMPUTE CLOUD)

- ▶ Provision in minutes, not hours or days
- ▶ Elastic
- ▶ Full control
- ▶ Flexible
- ▶ Secure (AWS managed infrastructure)
- ▶ Reliable

USE CASES

- ▶ Log upload and storage (S3)
- ▶ Log analytics (Kinesis)
- ▶ General server infrastructure (i.e. replace on-prem instance/datacenter) (EC2)
- ▶ Host static websites (S3/Lambda/API Gateway)

AWS FTW (FOR THE WIN)?!?

- ▶ Not quite
- ▶ Doesn't solve every solution
- ▶ Not always the most cost effective or convenient
- ▶ Other providers

Q&A

- ▶ This is where you ask your hardest questions and potentially stump me.

RESOURCES

- ▶ <https://aws.amazon.com/10year/>
- ▶ <https://aws.amazon.com/documentation/gettingstarted/>
- ▶ <https://aws.amazon.com/about-aws/global-infrastructure/>
- ▶ <https://gridsmart.com/white-papers/>
- ▶ ANY AWS Resources
 - ▶ Warning! It is a rabbit hole