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Introduction To Cloud Computing

What is Cloud Computing?

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

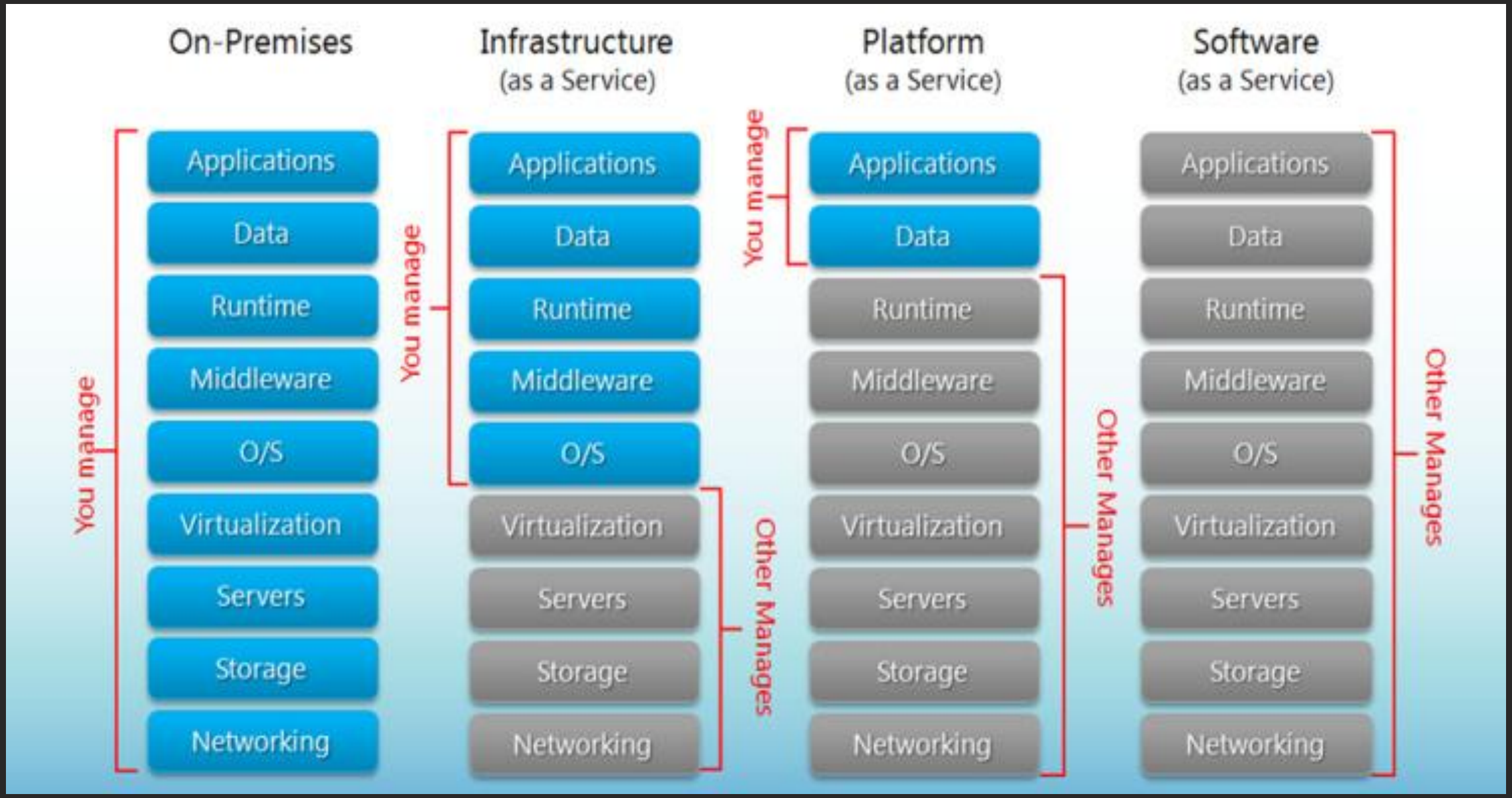
In simple terms

Cloud computing means it provides services to access programs, applications, storage, networks, and servers over the internet through web browser or client side application on your pc or laptop or mobile or smart TV, by the end user without installing, updating and maintaining them.

❑ Essential Characteristics:

- *On-demand self-service:* A consumer can unilaterally provision computing capabilities, such as server time and network storage, as needed automatically without requiring human interaction with each service provider.
- *Broad network access:* Ability to access the service via standard platforms (Desktop, Laptop, Mobile, etc.)
- *Resource pooling:* Resources are pooled across multiple customers.
- *Rapid Elasticity:* Capability can scale to cope with demand peaks.
- *Measured Service:* Billing is metered and delivered as a utility service. Resource usage can be monitored, controlled, and reported, providing transparency for both the provider and consumer of the utilized service. Typically this is done on a pay-per-use or charge-per-use basis.

Service Models:



Software as a service (SaaS)

Software-as-a-service (SaaS) is a method for delivering software applications over the Internet, on demand and typically on a subscription basis. With SaaS, cloud providers host and manage the software application and underlying infrastructure and handle any maintenance, like software upgrades and security patching. Users connect to the application over the Internet, usually with a web browser on their phone, tablet or PC.

- SaaS Providers:
  - Google – mail, calendar, docs, presentations etc..
  - Microsoft – mail, MS word, paint etc..
  - Twitter
  - Facebook
  - Flipkart
  - GoTomeeting

Platform as a service (PaaS)

Platform-as-a-service (PaaS) refers to cloud computing services that supply an on-demand environment for developing, testing, delivering and managing software applications. PaaS is designed to make it easier for developers to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.

- PaaS Providers:
  - AWS Beanstalk
  - Google App Engine
  - Force.com from Salesforce
  - Windows Azure Cloud Services.
  - Red Hat OpenShift

Infrastructure as a service (IaaS)

The most basic category of cloud computing services. With IaaS, you rent IT infrastructure—servers and virtual machines (VMs), storage, networks, operating systems—from a cloud provider on a pay-as-you-go basis.

- IaaS Providers:
  - Amazon AWS
  - Windows Azure
  - Google Compute Engine.
  - Rackspace Open Cloud.
  - Alibaba cloud
  - IBM Smart Cloud Enterprise.

Cloud Deployment Models

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❑ Public cloud

Public clouds are owned and operated by a third-party cloud service provider, which deliver their computing resources like servers and storage over the Internet. With a public cloud, all hardware, software and other supporting infrastructure is owned and managed by the cloud provider. You access these services and manage your account using a web browser.

❑ Private cloud

A private cloud refers to cloud computing resources used exclusively by a single business or organization. A private cloud can be physically located on the company's on-site datacenter. Some companies also pay third-party service providers to host their private cloud. A private cloud is one in which the services and infrastructure are maintained on a private network.

❑ Hybrid cloud

Hybrid clouds combine public and private clouds, bound together by technology that allows data and applications to be shared between them. By allowing data and applications to move between private and public clouds, hybrid cloud gives businesses greater flexibility and more deployment options.

❑ Community cloud

The cloud infrastructure is provisioned for exclusive use by a specific community of consumers from organizations that have shared concerns (e.g., mission, security requirements, policy, and compliance considerations). It may be owned, managed, and operated by one or more of the organizations in the community, a third party, or some combination of them, and it may exist on or off premises.

What is AWS?

Amazon web service is a secure cloud services platform, offering compute power, database, storage, network content delivery and other functionality to help business scale and growth.

- Why do individuals and companies use AWS?

❑ Benefits of cloud computing

- Cost

Cloud computing eliminates the capital expense of buying hardware and software and setting up and running on-site datacenters—the racks of servers, the round-the-clock electricity for power and cooling, the IT experts for managing the infrastructure. It adds up fast.

- High availability

If you put a file up into the cloud you can access it from any type of device or any type of computer as long as it has an internet connection. So that makes that file highly available, you can access it from anywhere.

- Fault tolerant

If there is a fault in the system or hard disk you will still always have the ability to retrieve file from other device from the cloud.

- Scalability

As user based grows you have the ability to quickly and easily add more servers, so you can scale up extremely easily.

- Elasticity

Elasticity means you can grow and you can shrink. So as you go from 1000 users to 5000 you can grow your server size, as if you drop down to 3000 users then you can shrink your server size.

How The Exams Fit Together

How The Exams Fit Together

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What You Will Need

- An AWS Free Tier Account
  - https://aws.amazon.com/free/
- A computer with an SSH terminal
- A domain name (optional)

Mac Users

- Go to Finder
- Applications
- Utilities
- Double Click Terminal

PC Users

- Need to download Putty and Putty Keygen
- http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html

The Exam Blue Print

Objective	Weighting
Designing highly available, cost efficient, fault tolerant, scaleable systems	60%
Implementing/Deploying	10%
Data Security	20%
Troubleshooting	10%

The Exam Blue Print - BETA

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Objective	Weighting
Design Resilient Architectures	34%
Define Performant Architectures	24%
Specify Secure Applications and Architectures	26%
Design Cost-Optimized Architectures	10%
Define Operationally-Excellent Architectures	6%

About The Exam

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- 80 Minutes in Length
- 60 Questions (this can change)
- $150 USD
- Multiple Choice
- Pass mass is based on a bell curve (it moves around)
- Aim for 70%
- Qualification is valid for 2 years
- Scenario based questions

About The Beta Exam

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- https://aws.amazon.com/certification/beta-exam/
- 150 Minutes in Length
- 80 Questions
- Results within 3 months
- $75 USD
- Multiple Choice
- Pass mass is based on a bell curve (it moves around)
- Aim for 70%
- Qualification is valid for 2 years
- Scenario based questions

CONCEPTS AND COMPONENTS

SA Associate

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Game Development

Business Productivity | Desktop & App Streaming | Internet Of Things

AR / VR | Application Integration | Customer Engagement

Analytics | Security & Identity & Compliance | Mobile Services

Management Tools | Media Services | Machine Learning

Migration | Networking & Content Delivery Delivery | Developer Tools

Compute | Storage | Databases

AWS Global Infrastructure

CONCEPTS AND COMPONENTS

SA Associate

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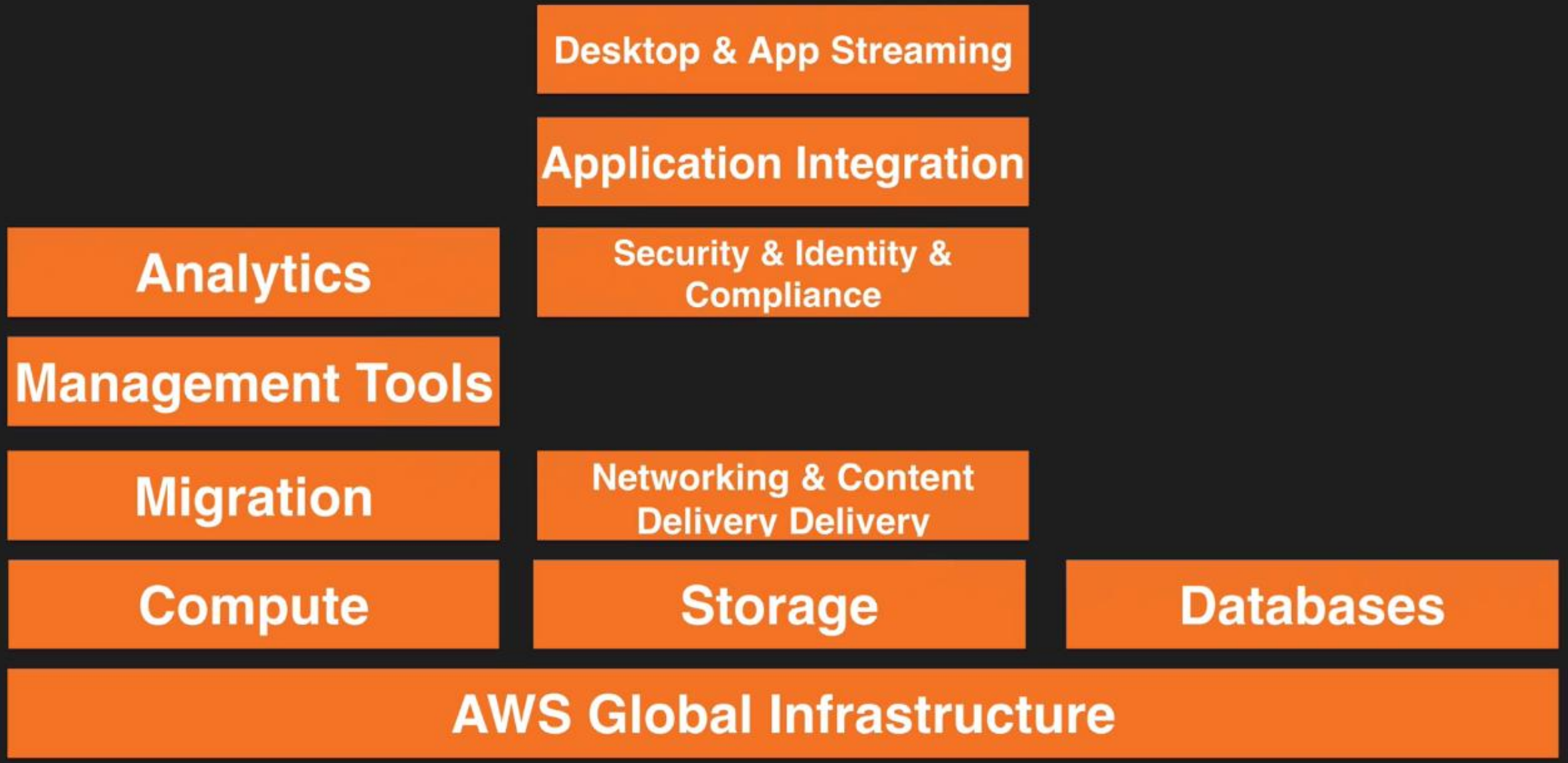
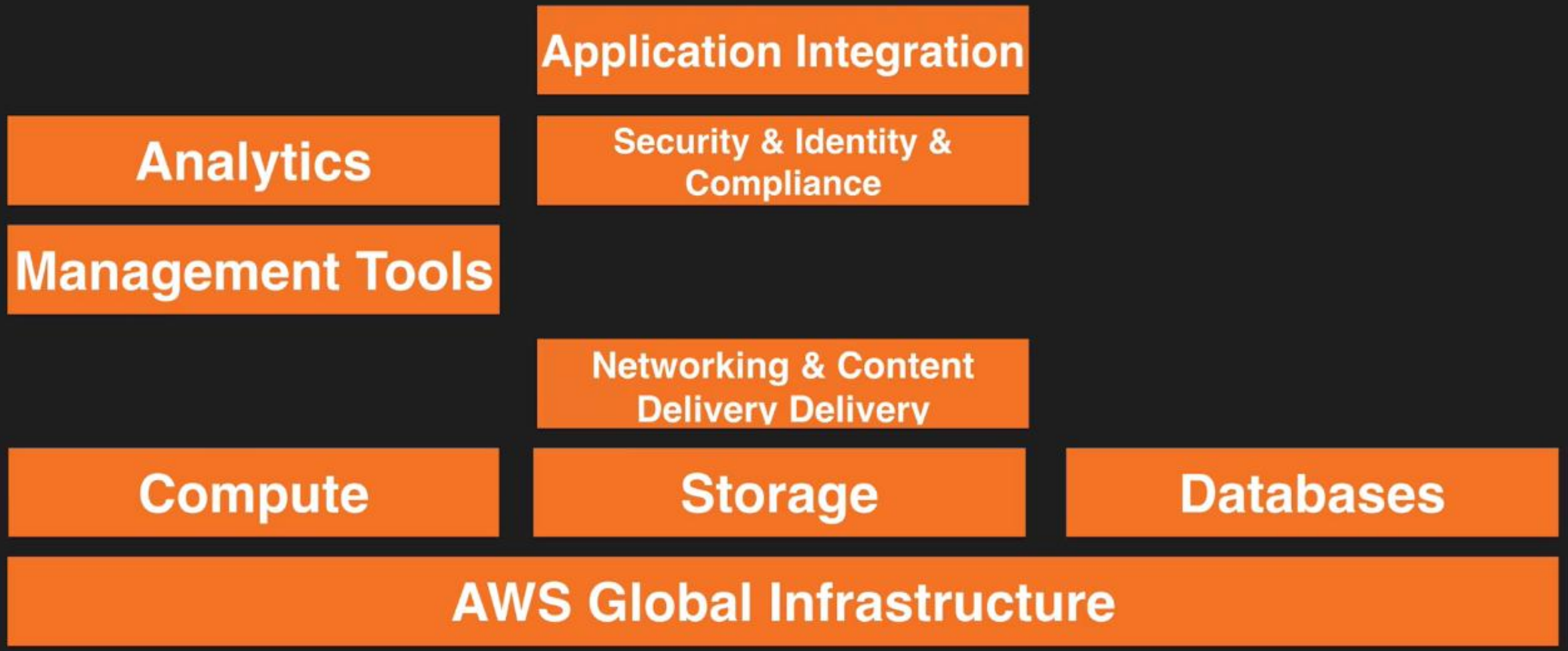
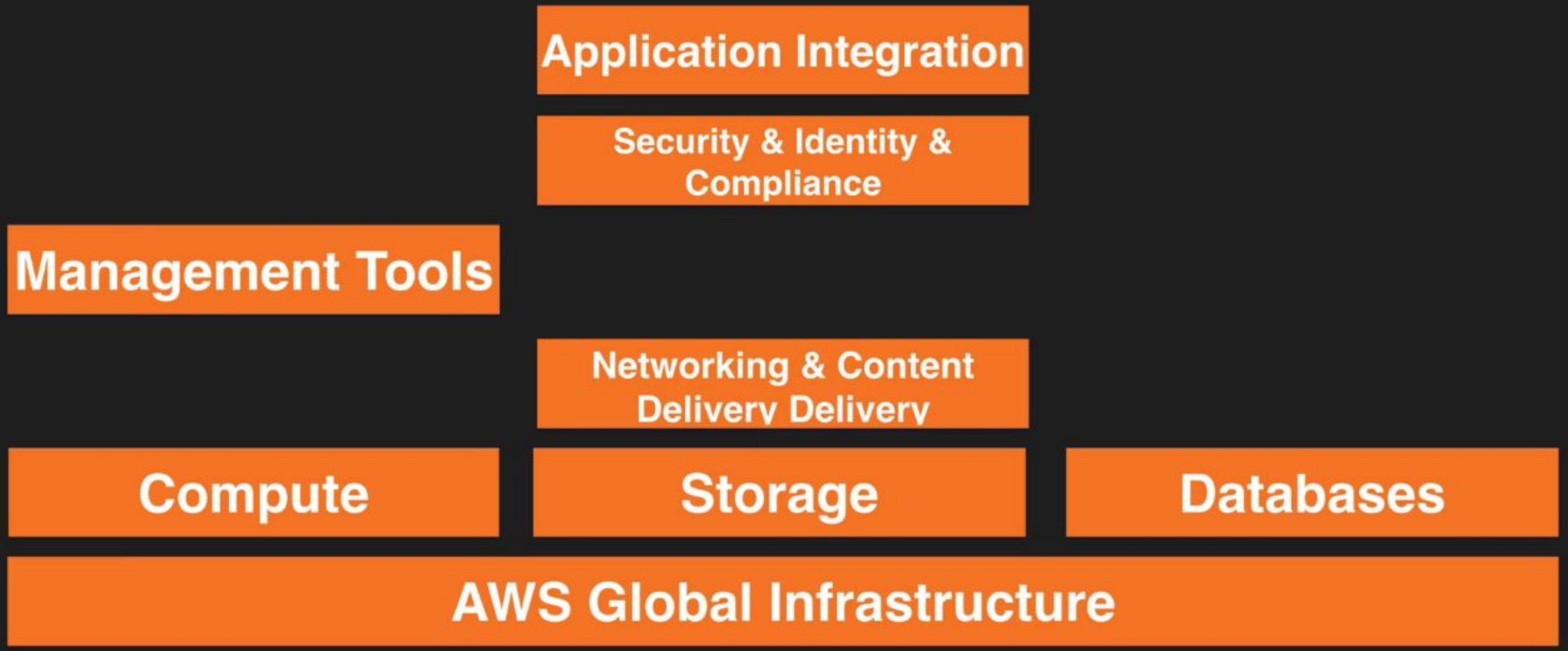


Developer Associate



Sysops Administrator Associate



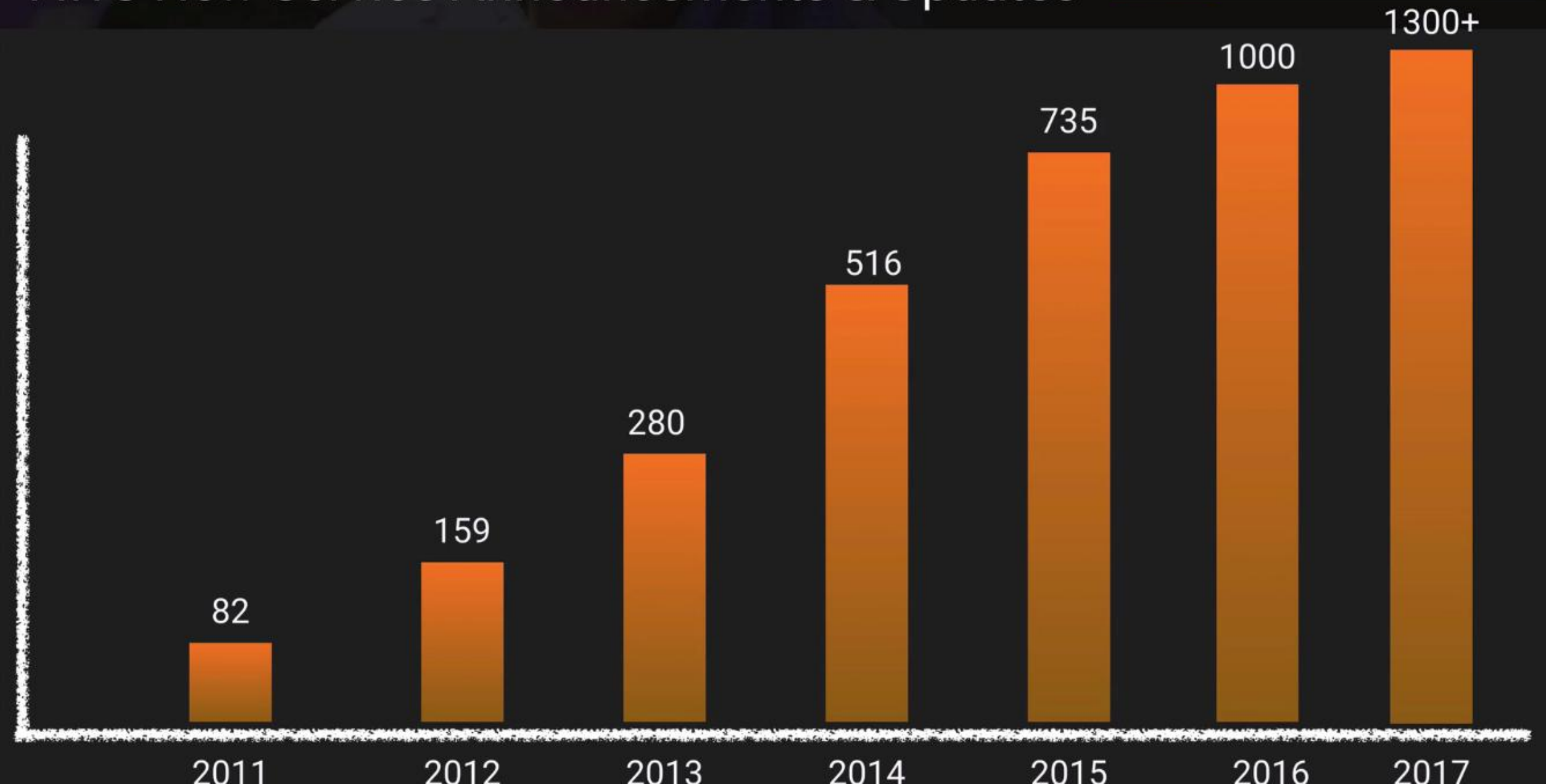
The Power Of AWS

"Invention requires two things:
1. The ability to try a lot of experiments, and 2. not having to live with the collateral damage of failed experiments."
- Andy Jassy CEO AWS

A Brief Time Line of AWS

- 2003 - Chris Pinkhan & Benjamin Black present a paper on what Amazon's own internal infrastructure should look like
- Suggested selling it as a service and prepared a business case.
- SQS officially launched in 2004
- AWS Officially launched in 2006
- 2007 over 180,000 developers on the platform
- 2010 all of amazon.com moved over
- 2012 First re:Invent Conference
- 2013 Certifications Launched
- 2014 Committed to achieve 100% renewable energy usage for its global footprint
- 2015 AWS breaks out its revenue: $6 Billion USD per annum and growing close to 90% year on year
- 2016 Run rate of $13 billion USD.
- 2017 AWS re:invent releases a host of Artificial Intelligent Services as well as Virtual Reality services.

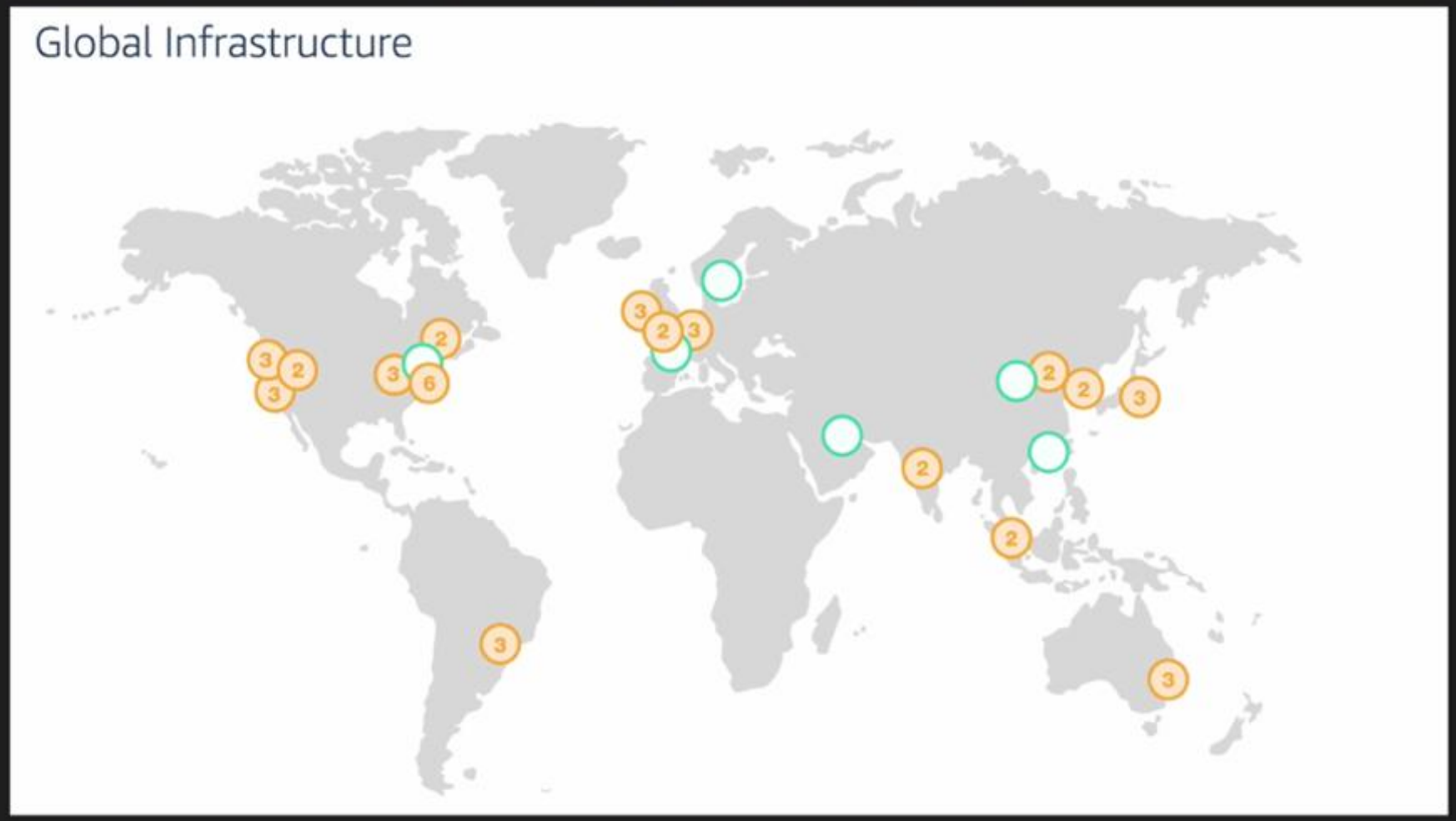
AWS New Service Announcements & Updates



Gartner's Magic Quadrant

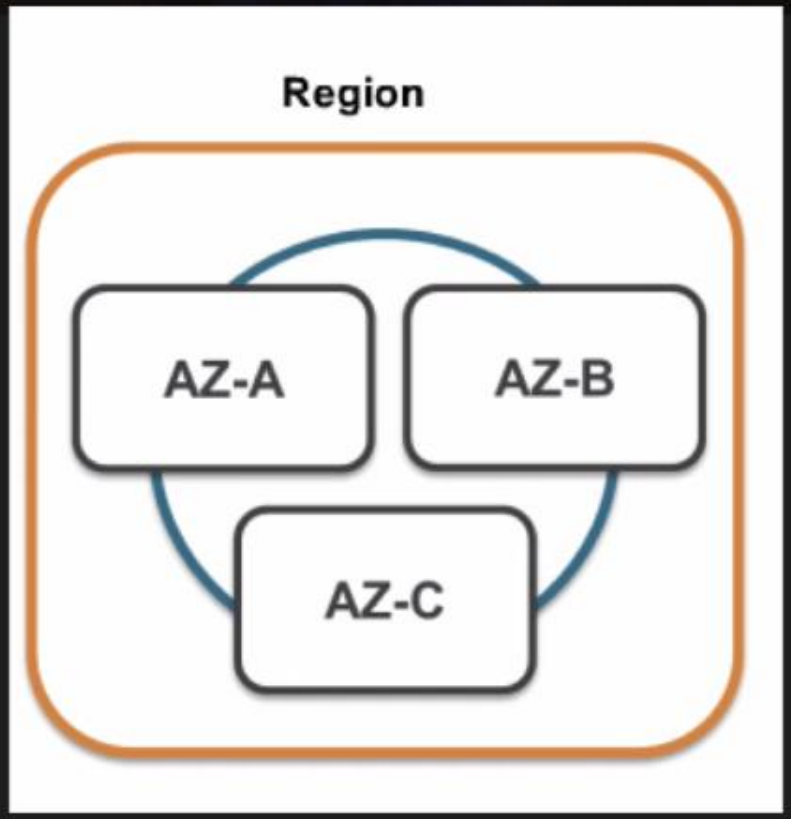
In June 2017, AWS was named as a leader in the IaaS Magic Quadrant for the 7th consecutive year

AWS Global Infrastructure



The AWS Cloud spans 53 Availability Zones within 18 geographic Regions, with announced plans for 12 more Availability Zones and 4 more Regions.

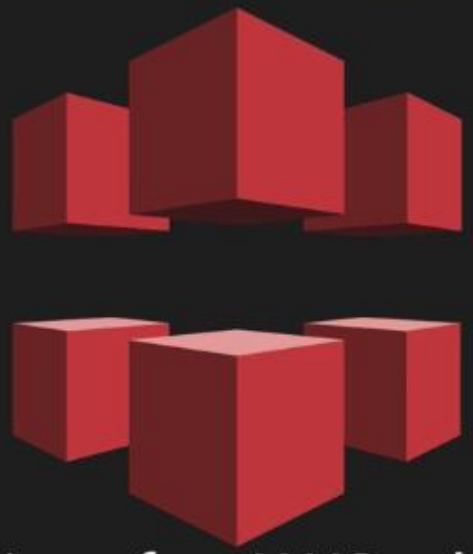
What is a Region? What is an AZ?



A Region is a geographical area. Each Region consists of 2 (or more) Availability Zones.

An Availability Zone (AZ) is simply a Data Center.

What Is An Edge Location?



Edge Locations are endpoints for AWS which are used for caching content. Typically this consists of CloudFront, Amazon's Content Delivery Network (CDN)

There are many more Edge Locations than Regions.
Currently there are over 96 Edge Locations.

EXAM TIPS

Understand the difference between a region, an Availability Zone (AZ) and an Edge Location.

- A Region is a physical location in the world which consists of two or more Availability Zones (AZ's).
- An AZ is one or more discrete data centers, each with redundant power, networking and connectivity, housed in separate facilities.
- Edge Locations are endpoints for AWS which are used for caching content. Typically this consists of CloudFront, Amazon's Content Delivery Network (CDN)

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Thank you!!!