

# Introduction to Cloud Computing

## Day1 - Cloud

Week - 2 days, 2 Hours  
Theory + Labs  
20 Topic (Cloud Architect)  
2 Month - 2 Sep  
Supporting - material Recording, Course content, Exam Dump, Preparation, Documentation  
Student Portal - Student login/Password

### Requirement

Linux Admin (Easy)  
CCNA Level  
Cloud Account - AWS Singin (Labs) - Registration free account  
1 Yrs (Limited services, limited)  
Debit Card/ Payment - Compliance



Website | Sale >> Business  
IceCream | Focus >>> Best to Best Product (Non-IT)  
Responsibility | Infra or Services  
Website | Online

Network (Land, Base)  
Base create | Services

Next Technical Saf - Network  
AWS >>> VPC  
Virtual Private Network  
IP CIDR  
IP Class  
Type of IP Class  
Subnetting

High Demand | Avail - Less (CTC)  
Technology - ? - Grooming (Business) - (Cloud)  
Are we right direction? Handover - Simply  
Business env + Costly + Imp = Env Important  
Responsibility = Value, Demand = Value = Top

Labs) - Complicated

What is the Cloud?

Google  
Oracle  
Microsoft

Now solution ?????

Ola, Ueber, Flipcart

Via Internet = Reachable over network = Cloud  
Anything = Invisible = Cloud  
Information Tech = Cloud (AWS)

AWS, GCP, Microsoft

Cloud, Technologies = Shared by ISP

Virtual (ISP)

(i) Pay as much use  
(ii) Secure = prove (Feedback)  
(iii) Scalable Env & On-demand  
Cost save

Laptop? Desktop? = No  
Flipcart.com  
Location = DataCenter  
(Services + Hardware)

6 Months

1. Hardware (Servers - 24\*7)
  2. AC - Cooling
  3. Electricity
  4. Fire Alarm
  5. Water Deduction
  6. Smoke
  7. Alarm
- = 50 Lacs (Hardware) - Ready  
= 50 Lacs (Software)  
Time, Setup, Handover  
Business  
Marketing  
Sales  
Testing  
Cap

Live = Order

Servers = High utilize

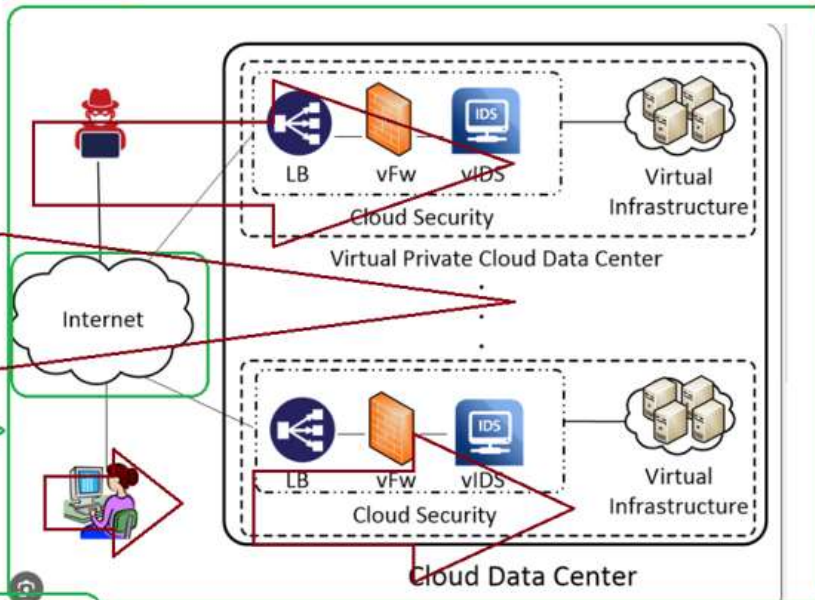
99% - Hand

Server busy

site not reachable

Server down H

Last



New Technology - Cloud  
Manage - Resources | Cloud Engineer

Less Time | More productivity  
== Popular

Availability

Globally - Worldwide popular 2016  
Region = Country  
India = Region, 2 Region  
DataCenter = AZs  
Sub location: Edge location

Region: AZs

Anything reachable over internet | technology  
Cloud Cloud?

AWS  
Azure  
GCP

Ease of management | Interface | GUI | Console |  
Management, Support, Consume, Free Credit  
Client | Money | R&D, Research | Feedback | Solve

Cloud >> AWS

(Deployment)

Public - Public Cloud

Private - Restricted, Openshift, Tool Private Cloud (Bank)

Hybrid - (AWS + Private) Office (Private) >>> AWS Cloud (Public)

Service Model

IaaS  
PaaS  
SaaS

Cloud Provider

Big Brand - AWS, Azure, GCP  
Semi - Go daddy, Bigrock, nextgen, ...  
Low - Nxta, Airtel, ...

# What is Cloud

- ▶ The term Cloud refers to a Network or Internet.
- ▶ In other words, we can say that Cloud is something, which is present at remote location.
- ▶ Cloud can provide services over network, i.e., on public networks or on private networks, i.e., WAN, LAN or VPN.
- ▶ Applications such as e-mail, web conferencing, customer relationship management (CRM), all run in cloud.



# What is Virtualization

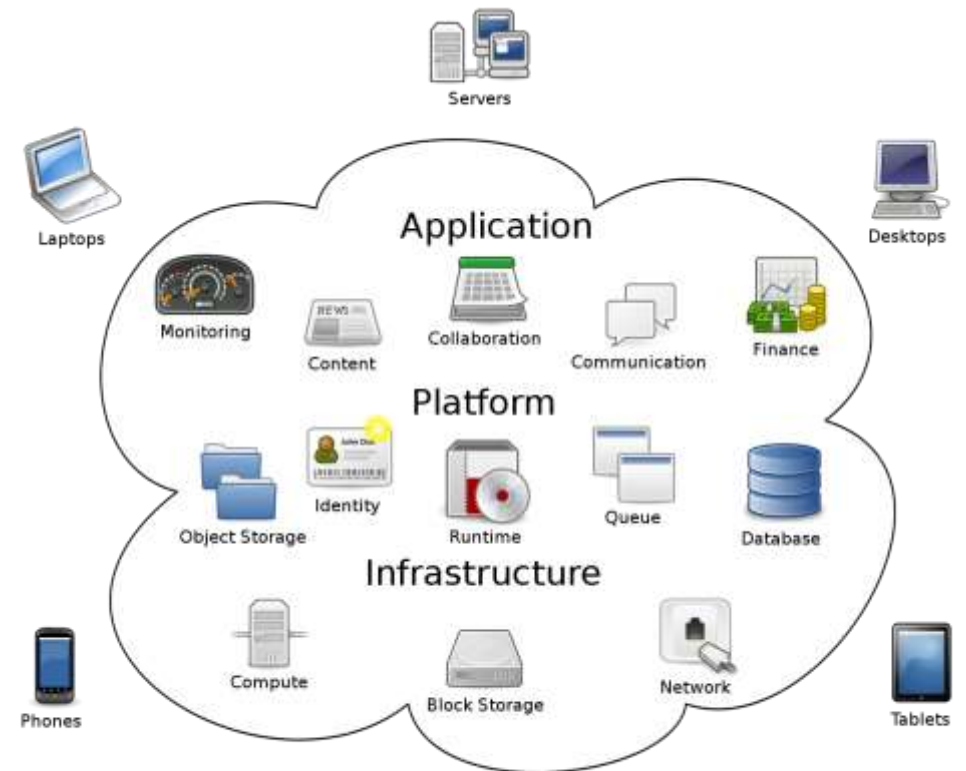
- ▶ Virtualization is the process of running a virtual instance of a computer system in a layer abstracted from the actual hardware.
- ▶ Most commonly, it refers to running multiple operating systems on a computer system simultaneously.

## ▶ Hypervisor

- ▶ A hypervisor is a program for creating and running virtual machines.
- ▶ Hypervisors have traditionally been split into two classes: type one, or "bare metal" hypervisors that run guest virtual machines directly on a system's hardware, essentially behaving as an operating system.
- ▶ Type two, or "hosted" hypervisors behave more like traditional applications that can be started and stopped like a normal program.

# What is Cloud Computing

- ▶ Cloud Computing refers to manipulating, configuring, and accessing the applications online.
- ▶ It offers online data storage, infrastructure and application.
- ▶ Cloud Computing is both a combination of software and hardware-based computing resources delivered as a network service.



# Basic Concepts

There are certain services and models working behind the scene making the cloud computing feasible and accessible to end users. Following are the working models for cloud computing:

## 1. Deployment Models

Deployment models define the type of access to the cloud, i.e., how the cloud is located? Cloud can have any of the four types of access: Public, Private, Hybrid and Community.

## 2. Service Models

Service Models are the reference models on which the Cloud Computing is based. These can be categorized into three basic service models (IaaS, PaaS and SaaS):

# Types of Cloud or Deployments Models

**PUBLIC CLOUD:** The Public Cloud allows systems and services to be easily accessible to the general public. Public cloud may be less secure because of its openness, e.g., e-mail.

**PRIVATE CLOUD:** The Private Cloud allows systems and services to be accessible within an organization. It offers increased security because of its private nature.

**HYBRID CLOUD:** The Hybrid Cloud is mixture of public and private cloud. However, the critical activities are performed using private cloud while the non-critical activities are performed using public cloud.

**COMMUNITY CLOUD:** The Community Cloud allows systems and services to be accessible by group of organizations.



# Cloud Computing Service Models



## Infrastructure as a Service



IaaS is the delivery of technology infrastructure as an on demand scalable service. IaaS provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.



## Platform as a Service



PaaS provides the runtime environment for applications, development & deployment tools, etc. PaaS provides all of the facilities required to support the complete life cycle of building and delivering web applications and services entirely from the Internet.



## Software as a Service



SaaS model allows using software applications as a service to end users. SaaS is a software delivery methodology that provides licensed multi-tenant access to software and its functions Remotely as a Web-based service.

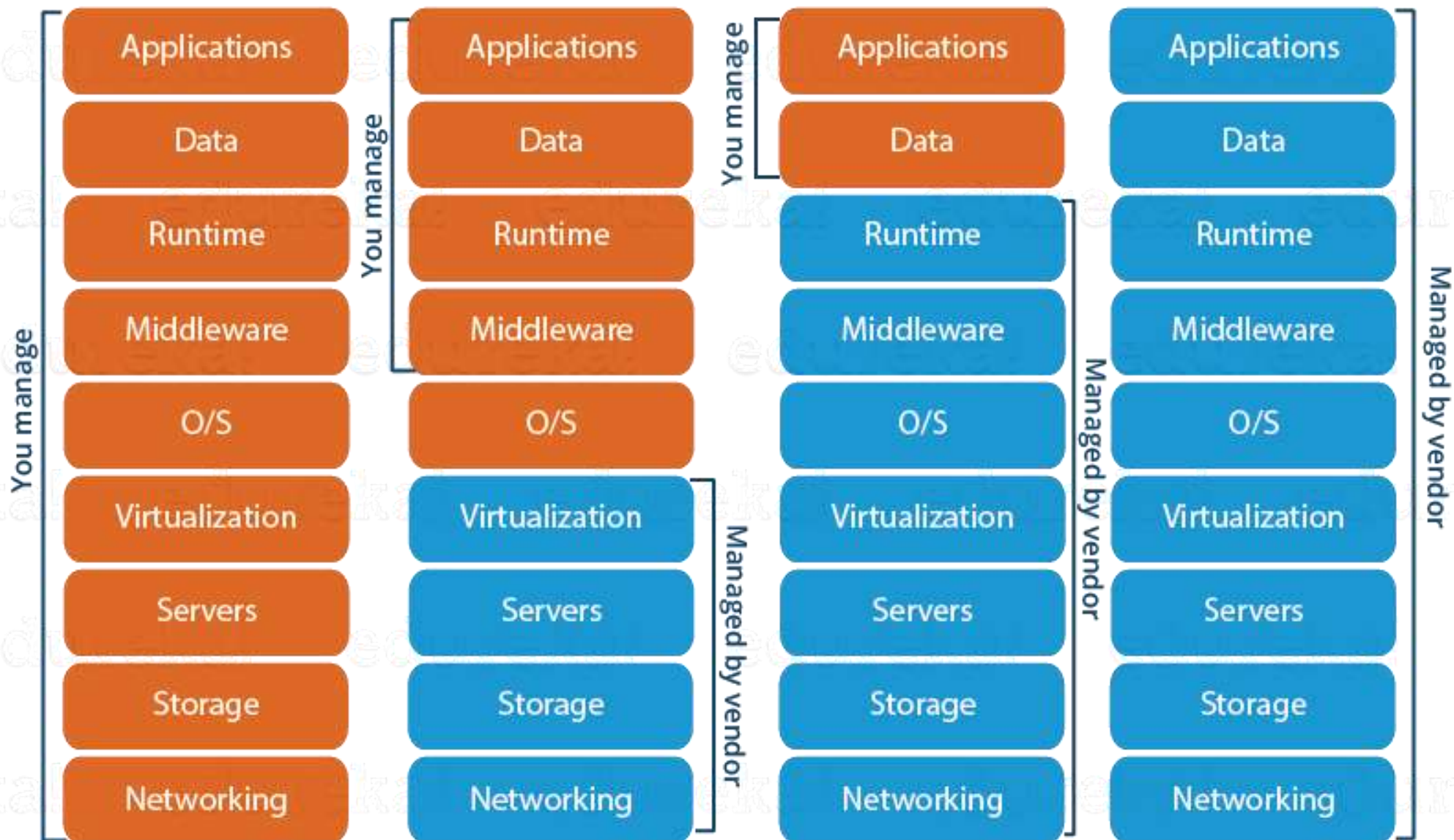


## Packaged Software

## Infrastructure (as a Service)

## Platform (as a Service)

## Software (as a Service)



## Do you Use the Cloud?



# AWS Certifications

## Professional

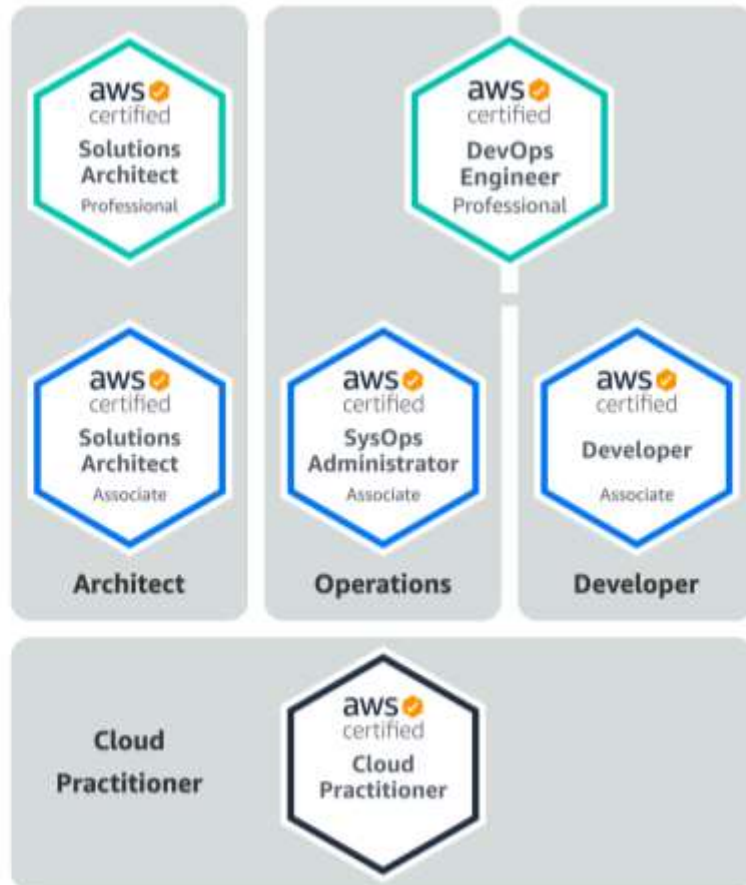
**Two years** of comprehensive experience designing, operating, and troubleshooting solutions using the AWS Cloud

## Associate

**One year** of experience solving problems and implementing solutions using the AWS Cloud

## Foundational

**Six months** of fundamental AWS Cloud and industry knowledge



## Specialty

Technical AWS Cloud experience in the Specialty domain as specified in the **exam guide**



<https://aws.amazon.com/certification/>



# AWS Certification Cost

AWS Certification Type	Duration (Minutes)	Cost (USD)
AWS Certified Cloud Practitioner	90 min.	100 USD (Practice Exam: 20 USD)
AWS Certified Solutions Architect - Associate	130 min.	150 USD (Practice exam: 20 USD)
AWS Certified SysOps Administrator - Associate	130 min.	150 USD (Practice exam: 20 USD)
AWS Certified Developer - Associate	130 min.	150 USD (Practice exam: 20 USD)
AWS Certified Solutions Architect - Professional	180 min.	300 USD (Practice Exam: 40 USD)
AWS Certified DevOps Engineer - Professional	180 min.	300 USD
AWS Certified Security - Speciality	180 min.	300 USD (Practice exam: 40 USD)
AWS Certified Data Analytics - Speciality	180 min.	300 USD (Practice exam: 40 USD)
AWS Certified Advanced Networking - Speciality	170 min.	300 USD
AWS Certified Machine Learning - Speciality	180 min.	300 USD (Practice exam: 40 USD)
AWS Certified Alexa Skill Builder - Speciality	170 min.	300 USD (Practice exam: 40 USD)
AWS Certified Database - Specialty	180 min.	300 USD (Practice exam: 40 USD)

## Exam overview

**Level:** Associate

**Length:** 130 minutes to complete the exam

**Cost:** 150 USD

**Format:** 65 questions, either multiple choice or multiple response

**Delivery method:** Pearson VUE and PSI; testing center or online proctored exam

[Schedule an exam](#)

▼ AWS Certification					
AWS Certified Cloud Practitioner	CLF-C01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
▼ AWS Certified Associate					
AWS Certified Developer - Associate	DVA-C01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified SysOps Administrator - Associate	SOA-C01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Solutions Architect - Associate (Retiring)	SAA-C01	Mar 19, 2020	Jun 30, 2020	<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Solutions Architect - Associate	SAA-C02	Mar 23, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
▼ AWS Certified Professional					
AWS Certified DevOps Engineer - Professional	DOP-C01	Feb 18, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Solutions Architect - Professional	SAP-C01	Feb 18, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
▼ AWS Certified Specialist					
AWS Certified Advanced Networking - Specialty	ANS-C00	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Security - Specialty	SCS-C01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Machine Learning - Specialty	MLS-C01	Mar 12, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Alexa Skill Builder - Specialty	AXS-C01	Apr 22, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Big Data - Specialty (Retiring)	BDS-C00	Mar 19, 2020	Jun 30, 2020	<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Database - Specialty	DBS-C01	Apr 06, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Data Analytics - Specialty	DAS-C01	Apr 13, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
▼ AWS Practice Exams					
AWS Certified Cloud Practitioner Practice	CLF-P01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Developer - Associate Practice	DVA-P01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Security - Specialty Practice	SCS-P01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified SysOps Administrator - Associate Practice	SOA-P01	Jan 15, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Solutions Architect - Professional Practice	SAP-P01	Jan 29, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified DevOps Engineer - Professional Practice	DOP-P01	Feb 12, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Machine Learning - Specialty Practice	MLS-P01	Mar 12, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Certified Alexa Skill Builder - Specialty Practice	AXS-P01	Apr 16, 2019		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Solutions Architect - Associate Practice	SAA-P02	Feb 25, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Database - Specialty Practice	DBS-P01	Mar 10, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Data Analytics - Specialty Practice	DAS-P01	Mar 17, 2020		<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>
AWS Solutions Architect - Associate Practice (Retiring)	SAA-P01	Mar 19, 2020	Jun 30, 2020	<a href="#">Schedule with PSI</a>	<a href="#">Schedule with Pearson VUE</a>

PSI

Pearson  
Vue

# AWS Certification Exam Code

# What is AWS

- ❑ In 2006, Amazon Web Services (AWS) began offering IT infrastructure services to businesses as web services—now commonly known as cloud computing.
- ❑ One of the key benefits of cloud computing is the opportunity to replace upfront capital infrastructure expenses with low variable costs that scale with your business.
- ❑ With the cloud, businesses no longer need to plan for and procure servers and other IT infrastructure weeks or months in advance.
- ❑ Instead, they can instantly spin up hundreds or thousands of servers in minutes and deliver results faster.
- ❑ Today, AWS provides a highly reliable, scalable, low-cost infrastructure platform in the cloud that powers hundreds of thousands of businesses in 190 countries around the world.

## Prerequisites:

- ❑ AWS fundamentals.
- ❑ Microsoft and Linux operating system essentials.
- ❑ Networking Essentials. IP Address, subnets, Load Balancer and routers etc.
- ❑ Working knowledge of virtualization.
- ❑ Storage fundamentals.

# AWS Global Infrastructure

Amazon web services (AWS) is a global public cloud provider, and as such, it must have global network of infrastructure to run and manage its many growing cloud services that support customers around the world. In this post, we will look at the components that make up the AWS global Infrastructure.

The number of regions is increasing year after year as AWS works to keep up with the demand for cloud computing services.

To Understand AWS Global Infrastructure, you need to understand following concepts and components:

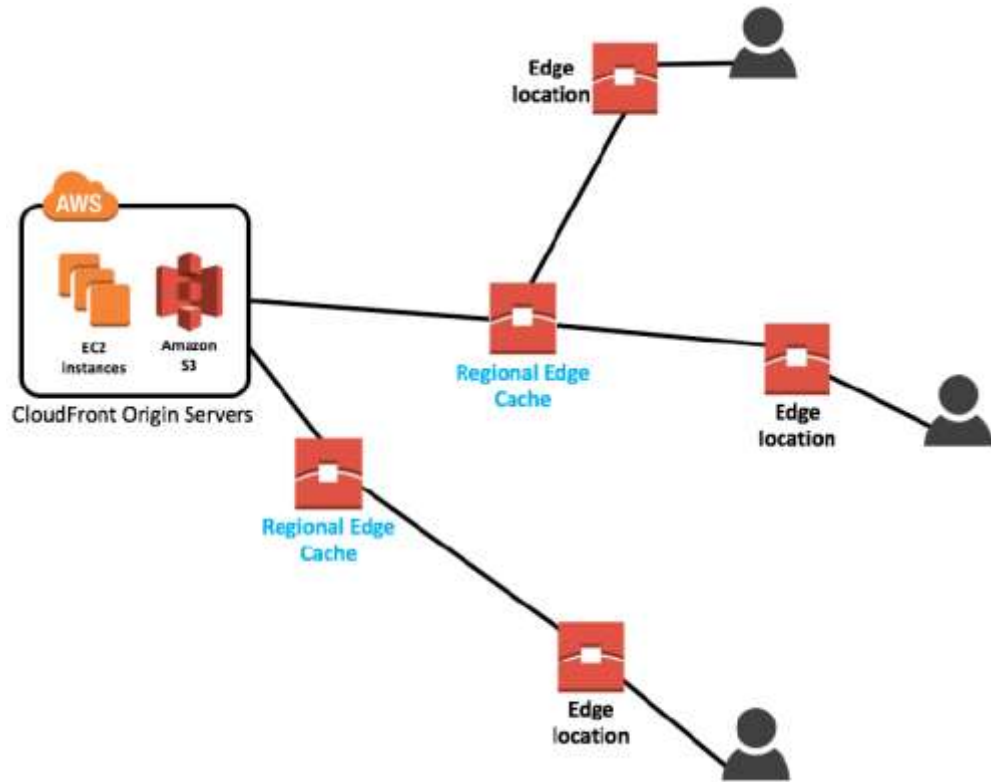
- 1. Regions: 29.**
- 2. Availability Zone (AZs): 90.**
- 3. Edge Locations: 400+.**
- 4. Regional Edge Locations: 13.**

<https://aws.amazon.com/about-aws/global-infrastructure/>



# AWS Global Infrastructure

Region	Availability Zone	Edge Location	Regional Edge Location
<ul style="list-style-type: none"><li>• Each Amazon EC2 Region is designed to be isolated from the other Amazon EC2 Regions.</li><li>• This achieves the greatest possible fault tolerance and stability.</li><li>• When you view your resources, you see only the resources that are tied to the Region that you specified.</li><li>• This is because Regions are isolated from each other, and we don't automatically replicate resources across Regions.</li></ul>	<ul style="list-style-type: none"><li>• Each Region has multiple, isolated locations known as Availability Zones.</li><li>• When you launch an instance, you can select an Availability Zone or let us choose one for you.</li><li>• If you distribute your instances across multiple Availability Zones and one instance fails, you can design your application so that an instance in another Availability Zone can handle requests.</li></ul>	<ul style="list-style-type: none"><li>• A site that CloudFront uses to cache copies of your content for faster delivery to users at any location.</li><li>• Edge locations are AWS sites deployed in major cities and highly populated areas across globe.</li></ul>	<ul style="list-style-type: none"><li>• In Nov-2016, AWS announced a new type of edge location, called a regional edge cache.</li><li>• These sit between your CloudFront origin servers and edge locations.</li><li>• regional edge cache has a larger cache width than each of the individual edge locations and because data expires from the cache at the edge locations, the data is retained at the regional edge cache.</li></ul>



#### How to choose region



# AWS Sign UP

A Valid Credit/Debit Card is required for account validation.

**Official Website URL:** <https://aws.amazon.com>

## **Verification:**

- 1. Phone Verification:** Phone verification. (Name, Email Address, Phone Number).
- 2. Payment Method:** Update or add billing method.