

**AWS CERTIFIED SOLUTION ARCHITECT: ASSOCIATE**

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## INTRODUCTION

# CLOUD COMPUTING

- Introduction to Cloud Computing
- Advantages of Cloud Computing
- Cloud Computing Modes
- Cloud Computing Deployment Models
- AWS Infrastructure



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CLOUD COMPUTING

# DEFINE

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Cloud computing is the on-demand delivery of compute power, database storage, applications, and other IT resources through a cloud services platform via the internet with pay-as-you-go pricing.

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## CLOUD COMPUTING

# WORKING

Cloud computing provides a simple way to access servers, storage, databases and a broad set of application services over the Internet. A Cloud services platform such as Amazon Web Services owns and maintains the network-connected hardware required for these application services, while you provision and use what you need via a web application.

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## **CLOUD COMPUTING**

# **BENEFITS**

Cloud computing provides a simple way to access servers, storage, databases and a broad set of application services over the Internet. A Cloud services platform such as Amazon Web Services owns and maintains the network-connected hardware required for these application services, while you provision and use what you need via a web application.

**OPEX**

**COST**

**SCALE**

**TIME**

**UPKEEP**



## CLOUD COMPUTING: BENEFITS

# OPEX

Instead of having to invest heavily in data centers and servers before you know how you're going to use them, you can only pay when you consume computing resources, and only pay for how much you consume.





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## CLOUD COMPUTING: BENEFITS

# COST

Lower variable cost than you can get on your own. Because usage from hundreds of thousands of customers are aggregated in the cloud, providers such as Amazon Web Services can achieve higher economies of scale which translates into lower pay as you go prices.



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## CLOUD COMPUTING: BENEFITS

# SCALE

When you make a capacity decision prior to deploying an application, you often either end up sitting on expensive idle resources or dealing with limited capacity. With cloud computing, these problems go away. You can access as much or as little as you need, and scale up and down as required with only a few minutes notice.





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## CLOUD COMPUTING: BENEFITS **TIME**

New IT resources are only ever a click away, which means you reduce the time it takes to make those resources available to your developers from weeks to just minutes. This results in a dramatic increase in agility for the organization, since the cost and time it takes to experiment and develop is significantly lower.



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## CLOUD COMPUTING: BENEFITS **UPKEEP**

Focus on projects that differentiate your business, not the infrastructure. Cloud computing lets you focus on your own customers, rather than on the heavy lifting of racking, stacking and powering servers.

CLOUD COMPUTING

# TYPES

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Each type of cloud service, and deployment method, provides you with different levels of control, flexibility, and management.

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## CLOUD COMPUTING

# TYPES

Understanding the differences between Infrastructure as a Service, Platform as a Service, and Software as a Service, as well as what deployment strategies you can use, can help you decide what set of services is right for your needs.

IAAS

PAAS

SAAS

FAAS

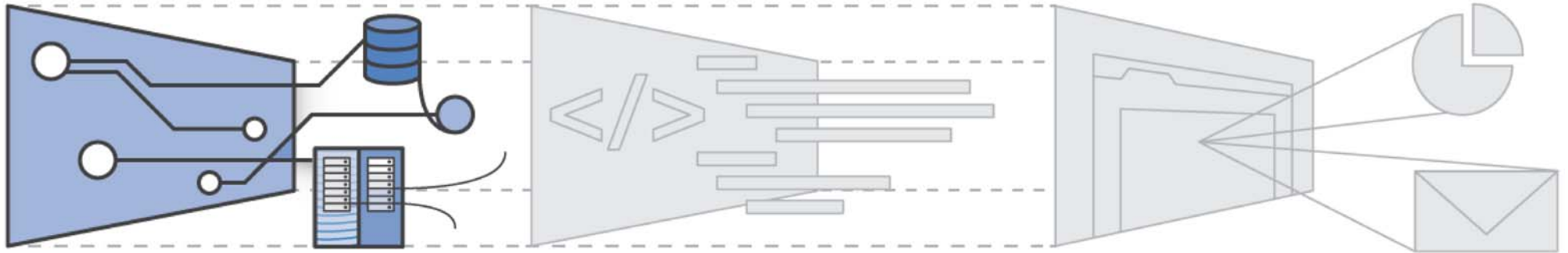


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# INFRASTRUCTURE AS A SERVICE

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IAAS



Infrastructure as a Service, sometimes abbreviated as IaaS, contains the basic building blocks for cloud IT and typically provide access to networking features, computers (virtual or on dedicated hardware), and data storage space. Infrastructure as a Service provides you with the highest level of flexibility and management control over your IT resources and is most similar to existing IT resources that many IT departments and developers are familiar with today.

Ex: EC2, VPC, EBS

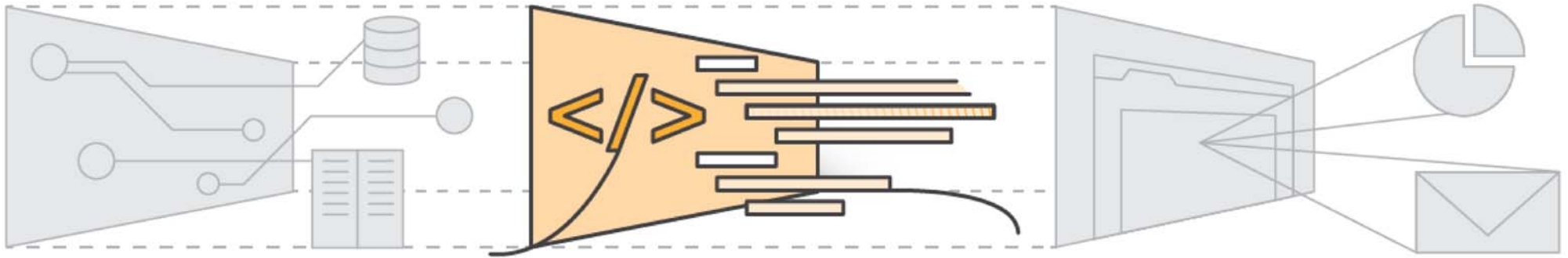


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# PLATFORM AS A SERVICE

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PAAS



Platforms as a service remove the need for organizations to manage the underlying infrastructure (usually hardware and operating systems) and allow you to focus on the deployment and management of your applications. This helps you be more efficient as you don't need to worry about resource procurement, capacity planning, software maintenance, patching, or any of the other undifferentiated heavy lifting involved in running your application.

Ex: RDS, EMR, Elastic Search

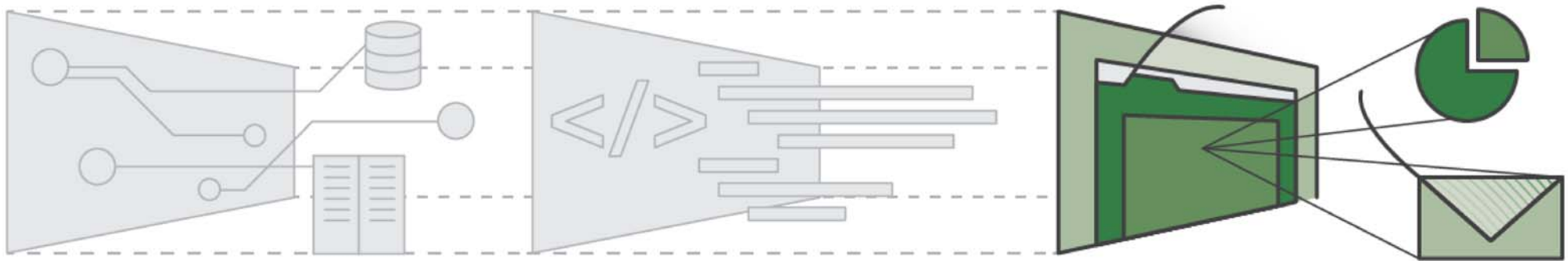
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# SOFTWARE AS A SERVICE

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SAAS





Software as a Service provides you with a completed product that is run and managed by the service provider. With a SaaS offering you do not have to think about how the service is maintained or how the underlying infrastructure is managed; you only need to think about how you will use that particular piece software. A common example of a SaaS application is web-based email where you can send and receive email without having to manage feature additions to the email product or maintaining the servers and operating systems that the email program is running on.

Ex: Salesforce, Office 365, Google Docs

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CLOUD COMPUTING

# MODELS

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Each model has its own features. Its important to understand all cloud computing models very clearly.

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## **CLOUD COMPUTING DEPLOYMENT MODELS**

Cloud computing is defined with several deployment models, each of which has specific trade-offs for agencies that are migrating services and operations to cloud-based environments. It is important that IT professionals have a clear understanding of their specific needs as well as how the various systems can help them meet these needs.

**CLOUD**

**HYBRID**

**ON PREMISE**



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CLOUD COMPUTING DEPLOYMENT MODELS

**CLOUD**

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**A CLOUD-BASED APPLICATION IS FULLY DEPLOYED IN THE CLOUD AND ALL PARTS OF THE APPLICATION RUN IN THE CLOUD. APPLICATIONS IN THE CLOUD HAVE EITHER BEEN CREATED IN THE CLOUD OR HAVE BEEN MIGRATED FROM AN EXISTING INFRASTRUCTURE TO TAKE ADVANTAGE OF THE BENEFITS OF CLOUD COMPUTING. CLOUD-BASED APPLICATIONS CAN BE BUILT ON LOW-LEVEL INFRASTRUCTURE PIECES OR CAN USE HIGHER LEVEL SERVICES THAT PROVIDE ABSTRACTION FROM THE MANAGEMENT, ARCHITECTING, AND SCALING REQUIREMENTS OF CORE INFRASTRUCTURE.**



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CLOUD COMPUTING DEPLOYMENT MODELS

**HYBRID**

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**A HYBRID DEPLOYMENT IS A WAY TO CONNECT INFRASTRUCTURE AND APPLICATIONS BETWEEN CLOUD-BASED RESOURCES AND EXISTING RESOURCES THAT ARE NOT LOCATED IN THE CLOUD. THE MOST COMMON METHOD OF HYBRID DEPLOYMENT IS BETWEEN THE CLOUD AND EXISTING ON-PREMISES INFRASTRUCTURE TO EXTEND, AND GROW, AN ORGANIZATION'S INFRASTRUCTURE INTO THE CLOUD WHILE CONNECTING CLOUD RESOURCES TO INTERNAL SYSTEM. FOR MORE INFORMATION ON HOW AWS CAN HELP YOU WITH YOUR HYBRID DEPLOYMENT, PLEASE VISIT OUR HYBRID PAGE.**



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CLOUD COMPUTING DEPLOYMENT MODELS

**ON-PREMISES**

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**DEPLOYING RESOURCES ON-PREMISES, USING VIRTUALIZATION AND RESOURCE MANAGEMENT TOOLS, IS SOMETIMES CALLED "PRIVATE CLOUD". ON-PREMISES DEPLOYMENT DOES NOT PROVIDE MANY OF THE BENEFITS OF CLOUD COMPUTING BUT IS SOMETIMES SOUGHT FOR ITS ABILITY TO PROVIDE DEDICATED RESOURCES. IN MOST CASES THIS DEPLOYMENT MODEL IS THE SAME AS LEGACY IT INFRASTRUCTURE WHILE USING APPLICATION MANAGEMENT AND VIRTUALIZATION TECHNOLOGIES TO TRY AND INCREASE RESOURCE UTILIZATION.**



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GLOBAL INFRASTRUCTURE

# AWS

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AWS now spans 69 Availability Zones within 22 geographic regions around the world, and has announced plans for thirteen more Availability Zones and four more AWS Regions in Italy, Indonesia, South Africa, and Spain

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Figure 1. Magic Quadrant for Cloud Infrastructure as a Service, Worldwide



Source: Gartner (July 2019)