

**Instructor Notes:**

Add instructor notes here.

**DevOps**

Lesson 02 Introduction to Cloud

## Instructor Notes:

Add instructor notes here.

## Lesson Objectives

- To understand the following topics:
  - What is Cloud
  - What is Cloud Computing
  - Deployment Models
  - Cloud Computing Services
  - Advantages
  - Disadvantages
  - Cloud Storage
  - DevOps and Cloud



**Instructor Notes:**

2.1: What is Cloud

## Introduction

- What is Cloud ?
  - Cloud provides us a means by which we can access the applications as utilities, over the internet
  - The term cloud refers to a **Network** or **Internet**
  - Cloud is something which is present at remote location
  - E.g. Yahoo!, **GMail**, **Hotmail** ,**WAN**,**LAN**,**VPN**–
    - *Instead of running an e-mail program on our computer, we log in to a Web e-mail account remotely.*
    - *The software and storage for our account doesn't exist on our computer –*
    - *it's on the service's computer cloud.*

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2.2: What is Cloud Computing

## Cloud Computing

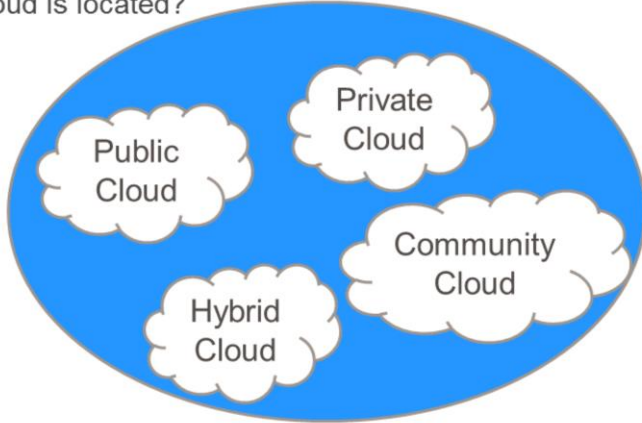
- What is Cloud Computing ?
  - Cloud Computing refers to manipulating, configuring, and accessing the applications online.
  - It offers online data storage, infrastructure and application.
  - Cloud Computing is both a combination of software and hardware based computing resources delivered as a network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

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2.3: Deployment Models

## Deployment Models

- Deployment models define the type of access to cloud, i.e. how the cloud is located?



The diagram illustrates four cloud deployment models: Public Cloud, Private Cloud, Hybrid Cloud, and Community Cloud. These models are represented as white clouds with black outlines, each containing its name. They are all contained within a larger blue oval, which represents the overall cloud environment.

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2.3: Deployment Models

## Deployment Models

- There are four different cloud models
  - **Private Cloud:** The **Private Cloud** allows systems and services to be accessible within an organization. It offers increased security because of its private nature
  - **Community Cloud:** The **Community Cloud** allows systems and services to be accessible by group of organizations
  - **Public Cloud:** The **Public Cloud** allows the systems and services to be easily accessible to the general public. Public cloud may be less secure because of its openness.
  - **Hybrid Cloud:** The **Hybrid Cloud** is a mixture of public and private cloud. However, the critical activities are performed using private cloud while non-critical activities are performed using public cloud

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Cloud can have any of the four types of access:

**Private Cloud:** Here, computing resources are deployed for one particular organization. This method is more used for intra-business interactions. Where the computing resources can be governed, owned and operated by the same organization.

**Community Cloud:** Here, computing resources are provided for a community and organizations.

**Public Cloud:** This type of cloud is used usually for B2C (Business to Consumer) type interactions. Here the computing resource is owned, governed and operated by government, an academic or business organization.

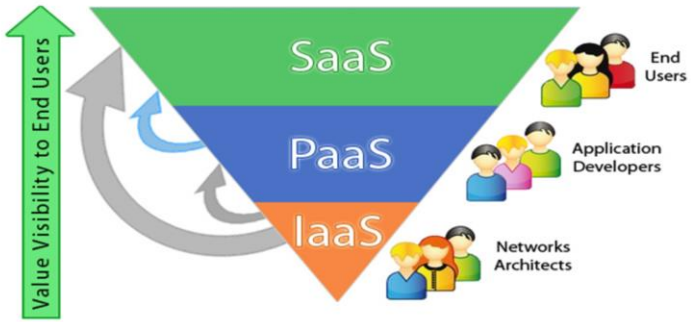
**Hybrid Cloud:** This type of cloud can be used for both type of interactions - B2B (Business to Business) or B2C (Business to Consumer). This deployment method is called hybrid cloud as the computing resources are bound together by different clouds.

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2.4: Cloud Computing Services

## Cloud Computing Services

- The three major Cloud Computing Offerings are
  - Software as a Service (SaaS)
  - Platform as a Service (PaaS)
  - Infrastructure as a Service (IaaS)



The diagram illustrates the three major Cloud Computing Offerings as a stack of three inverted triangles. The top triangle is green and labeled 'SaaS', the middle is blue and labeled 'PaaS', and the bottom is orange and labeled 'IaaS'. To the left of the stack is a green vertical arrow pointing upwards, labeled 'Value Visibility to End Users'. To the right of the stack are three groups of people icons: 'End Users' at the top, 'Application Developers' in the middle, and 'Networks Architects' at the bottom. A large grey curved arrow points from the bottom of the stack (IaaS) up towards the top (SaaS), and a smaller blue curved arrow points from the middle (PaaS) up towards the top (SaaS).

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2.4: Cloud Computing Services

## Infrastructure as Service(IaaS)

- It provides access to computing resources in a virtualized environment “**the cloud**” on internet
- It provides computing infrastructure like virtual server space, network connections, bandwidth, load balancers and IP addresses



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**IaaS(Infrastructure as a service)** is a complete package for computing. For small scale businesses who are looking for cutting cost on IT infrastructure, IaaS is one of the solutions. Annually a lot of money is spent in maintenance and buying new components like hard-drives, network connections, external storage device etc. which a business owner could have saved for other expenses by using IaaS.



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2.4: Cloud Computing Services

## Platform as a Service(PaaS)

- It provides a platform and environment to allow developers to build applications and services
- This service is hosted in the cloud and accessed by the users via Internet
- It provides all of the facilities required to support the complete life cycle of building and delivering web applications and services entirely from the internet



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PaaS services are constantly updated & new features added. Software developers, web developers and business can benefit from PaaS. It provides platform to support application development. It includes software support and management services, storage, networking, deploying, testing, collaborating, hosting and maintaining applications.

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2.4: Cloud Computing Services

## Platform as a Service(PaaS)

- To understand in a simple terms, compare this with painting a picture, where you are provided with paint colors, different paint brushes and paper by your school teacher and you just have to draw a beautiful picture using those tools.

Platform Computing can be compared to your painting class where the teacher gives you paints, brushes etc as a platform to create your painting



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2.4: Cloud Computing Services

## Software as a Service(SaaS)

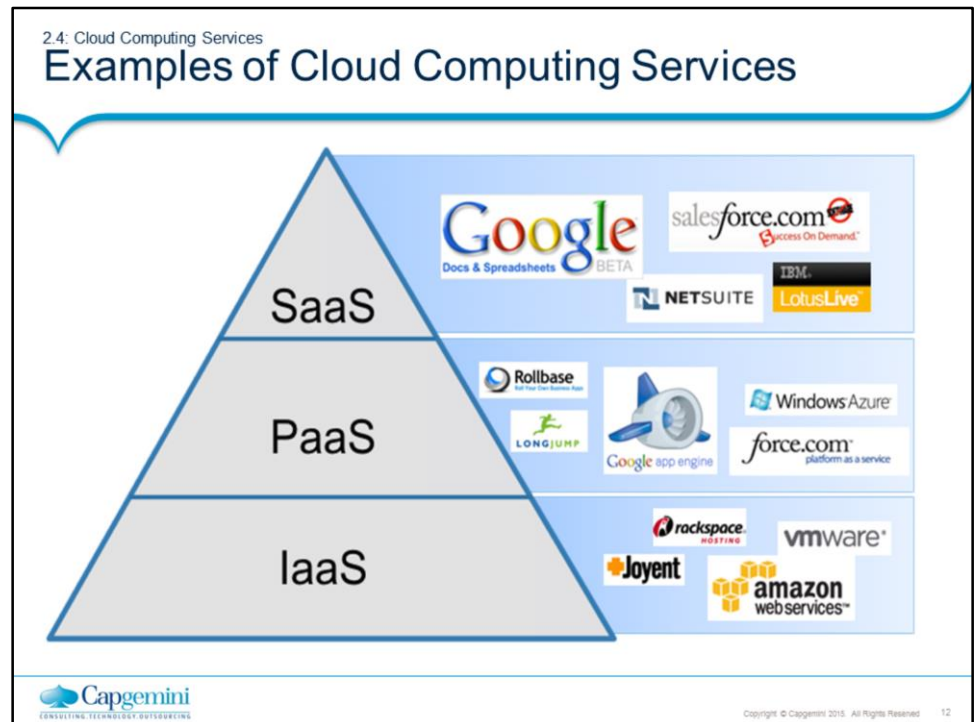
- SaaS model allows to use software applications as a service to end users
- Here the applications are hosted by a vendor or service provider and are made available to customers over a network (internet)
- Anyone who needs an access to a particular piece of software can be subscribed as a user
- SaaS is compatible with all internet enabled devices.



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Traditionally, software application needed to be purchased upfront & then installed it onto your computer  
SaaS users on the other hand, instead of purchasing the software subscribes to it, usually on monthly basis via internet.  
Many important tasks like accounting, sales, invoicing and planning all can be performed using SaaS.

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**Instructor Notes:**

2.4: Cloud Computing Services

## Examples of Cloud Computing Services

**Do you Use the Cloud?**

The image displays a collection of logos for various cloud-based services and applications. These include file storage and productivity tools like Dropbox, Box, and Google Drive; entertainment services like Netflix, Hulu, and YouTube; social media platforms like Twitter, Facebook, and LinkedIn; and other services like Amazon, eBay, and Pandora. The logos are arranged in a grid-like fashion, illustrating the wide range of services available in the cloud.

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2.5: Advantages

## Advantages of Cloud

- Lower computer cost
- Improved performance
- Reduced software costs
- Instant software updates
- Fewer Maintenance issues
- Unlimited storage capacity
- Increased data reliability
- Universal document access
- Latest version availability
- Easier group collaboration
- Device independence



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2.6: Disadvantages


## Disadvantages of Cloud

- Requires a constant Internet connection
- Does not work well with low-speed connections
- Features might be limited
- Can be slow
- Stored data can be lost
- Stored data might not be secure


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2.7: Cloud Storage

## Cloud Storage



- Create an Account  
User name and password.
- Content lives with the account in the cloud.
- Log onto any computer with Wi-Fi to find your content

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2.7: Cloud Storage


## Cloud Storage

### Download For Storage

- Download a cloud based app to on your computer
- The app lives on your Computer
- Save files to the app
- When connected to the Internet it will sync with the cloud
- The Cloud can be accessed from any Internet connection



<https://www.slideshare.net/Agarwaljay/cloud-computing-simple-ppt-41561620>

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2.8: DevOps and Cloud

## DevOps and Cloud

- As DevOps and cloud become the primary way to build and deploy software, the below table shows the necessary changes

The old way	The new way
Software is build and shipped	Services are run and managed
Development of features is done	Services are never done until turned off
Dev must go through ops to get work done	Ops enables Dev to get work done
Ops monitors apps	Ops provides Dev with tools to operate apps
Reactive monitoring / Ops	Proactive monitoring / Dev
Customers are isolated from each other	Multi-tenancy and shared resources
Application services share common platform and infrastructure	Distributed services on isolated instances, hardware independence

**Instructor Notes:**

2.8: DevOps and Cloud

## DevOps and Cloud

- DevOps is about streamlining development so user requirements can quickly make it into application production, while the cloud offers automated provisioning and scaling to accommodate application changes
- We can reap huge benefits from leveraging DevOps in conjunction with cloud-based platforms
- This potent combination can enhance agility and time to market, as well as greatly reduce operating costs

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## Summary

- Cloud provides us a means by which we can access the applications as utilities, over the internet
- Cloud Computing refers to manipulating, configuring, and accessing the applications online
- Private Cloud, Community Cloud, Public Cloud and Hybrid Cloud are the four types of deployment models
- SaaS, PaaS and IaaS are the 3 major Cloud Computing services



Add the notes here.

**Instructor Notes:**

Question 1:  
Platform,Software,Infrastructure

Question 2: Private  
Cloud

Question 3:Infrastructure  
as a Service

## Review Question

- Cloud Service consists of
  - Platform, Software, Infrastructure
  - Software, Hardware, Infrastructure
  - Platform, Hardware, Infrastructure
- The \_\_\_\_\_ Cloud allows systems and services to be accessible within an organization
  - Private Cloud
  - Public Cloud
  - Hybrid Cloud
- Amazon Web Services is a \_\_\_\_\_ type of cloud computing distribution model
  - Software as a Service
  - Platform as a Service
  - Infrastructure as a Service



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