

Unit IV

Cloud Delivery and Deployment Models

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Cloud Delivery and Deployment Models

► 4.1 Delivery Models

4.1.1 IAAS

4.1.2 PAAS

4.1.3 SAAS

4.1.4 BPAAS

4.2 Deployment Models

4.2.1. Private Cloud

4.2.2. Public Cloud

4.2.3 Hybrid Cloud



Deployment Models

- ▶ Based on **how** and **where** the Cloud is set up and deployed, the cloud may be classified into three major deployment models
- ▶ □ **Private Cloud:**
- ▶ An organization may choose to build a Cloud within their datacenter.
- ▶ The organization purchases own hardware and software to set up the Cloud.
- ▶ The main intention behind this kind of Cloud is to deliver cloud service to internal departments within the organization.
- ▶ Security could be a major factor contributing to the decision to set up a cloud in-house.
- ▶ This type of cloud is known as **Private Cloud**.



► □ **Public Cloud :**

- ▶ This is a more general form of Cloud. It is deployed to provide cloud-services to the general population irrespective of their organization affiliation.
- ▶ The services are generally available through a website using an on-demand payment and subscription mechanism.
- ▶ Public Cloud is considered less secure than Private Clouds.
- ▶ From an end-user perspective, there's no capital expenditure involved in setting up a public cloud. The end-user pays only a monthly subscription fee based on the usage.

► □ **Hybrid Cloud :** The Cloud is set up to handle a fraction of the workload on Private Cloud and a fraction of the workload on the Public Cloud.

- ▶ Typically, a customer would normally place their production workload on the Private Cloud and use Public Cloud for development and test environments.
- ▶ The workload can be moved between the Private and Public section of the Hybrid Cloud based on demand.
- ▶ The non-production workload on the public cloud moves back to the private cloud when the private cloud is less loaded. Hybrid Clouds combine the benefits of public and private cloud and help further optimize the capital and operational expenses of running a workload.

Delivery Models

- ▶ **Based on the layer at which a cloud service is delivered.**
 - ▶ □ **IaaS (Infrastructure as a Service)** : The cloud provides infrastructure services to the end-user on a subscription basis.
 - ▶ The infrastructure services may include custom designed virtual machines, storage and backup infrastructure, tape backup as service etc.
 - ▶ This type of cloud deals primarily with the hardware resources and services. Some common examples are Amazon EC2, Rackspace etc.
 - ▶ □ **PaaS (Platform as a Service)** : This type of cloud provides platform services to end-users on a subscription basis.
 - ▶ The platform services may include the webserver stacks, middleware or other similar platforms.
 - ▶ Some common examples are: the apache-php-perl webserver platform, IBM websphere as a service, tomcat servlet container as a service, moodle LMS, Microsoft Azure etc.
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- ▶ **SaaS (Software as a Service)** : This type of cloud provides software services to end-users on a subscription basis.
- ▶ The end-user customer is not required to maintain any license for using the cloud provided software.
- ▶ All updates to the software is taken care by the cloud service provider.
- ▶ For example:
- ▶ Google Apps etc.
- ▶ **BPaaS (Business Process as a Service)** : This type of cloud provides a particular business process as a service along with the staff that is required to run the process activities.
- ▶ The end-user is not required to hold any license or hire any staff for using the Business Process services.
- ▶ This kind of service provides an end-to-end business process coverage for a business on an on-demand subscription basis.
- ▶ For example:
- ▶ Providing business analytics as a service to end-customers, tailor made for the business.



Cloud Transformation Roadmap

- ▶ An organization planning to transform their infrastructure to Cloud move through **three major stages of evolution**
- ▶ **1. Consolidation and Virtualization :**
- ▶ This stage involves moving from a pure physical infrastructure to a virtual infrastructure.
- ▶ This is achieved through virtualization and consolidation of all physical assets.
- ▶ At this stage, basic asset management, monitoring and optimization can be built in using the tools provided by virtualization.
- ▶ The incident, change, asset management remains the same as it was done for the physical infrastructure.



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- ▶ **2. Automation and Optimization :** Over time, the customer would want to optimize and automate their complete infrastructure to further reduce provisioning and turnaround times.
- ▶ Automation also allows for ease in moving the resources on an on-demand basis.
- ▶ A centralized database to record the configuration of various components in the infrastructure is set up.
- ▶ This is known as the configuration management database or CMDB.
- ▶ If there are multiple datacenters, a federated CMDB may be setup to achieve the same.
- ▶ Over time, the requests for resources may be standardized into templates.
- ▶ A user may request a service from the templates to get faster service and reduce time spent on describing the service request.
- ▶ These templates are collated in the form of service catalog.
- ▶ The customer may improvise the methods used for monitoring and centralize the same to record information in the CMDB.
- ▶ An event driven mechanism to automate the processing of the monitoring and configuration events may be set up to enable faster resolution of problems in the infrastructure.
- ▶ A basic per-user usage tracking mechanism may be set up at this stage to track individual utilization.



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- ▶ **3. Integration of Service Management :**
- ▶ The last stage involves integration of Service Management processes with Cloud.
- ▶ Service Management involves setting up a Service Catalog for the services available in the Cloud.
- ▶ These services may be used on a self-service basis and on-demand.
- ▶ The stage involves integration and working of all the eight layers of the cloud architecture.

