

Cloud Computing Concepts

CS 3132

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Cloud Computing Deployment Models

Cloud Computing - Deployment Models - NIST



- A cloud computing system
 - may be deployed privately or hosted on the premises of a cloud customer,
 - may be shared among a limited number of trusted partners,
 - may be hosted by a third party
 - may be a publically accessible service, i.e., a public cloud.
- The different deployment models present a number of tradeoffs in how customers can control their resources, and the scale, cost, and availability of resources.

Cloud Computing

- **Cloud consumer or customer**
 - a person or organization that is a customer of a cloud;
- **Client:**
 - a machine or software application that accesses a cloud over a network connection, perhaps on behalf of a **consumer**
- **Cloud provider or provider:**
 - an organization that provides cloud services

Cloud Computing - Deployment Models

- Private Cloud
- Community Cloud
- Public Cloud
- Hybrid Cloud



Cloud Computing - Deployment Models - Private Cloud

“Cloud infrastructure”

- Provisioned for exclusive use by -
 - a single organization
 - comprising multiple consumers (e.g., business units)

Owned, Managed, and Operated by

- Organization
- Third party, or some combination of them

Cloud Computing - Deployment Models - Private Cloud

A high level of security and privacy to data

- through firewalls and internal hosting

Ensures

- operational and sensitive data are not accessible to third-party providers

Medical offices, banking institutions, and other organizations

- Required to meet guidelines for data controls use a private cloud

VMWare

Cloud Computing - Deployment Models - Public Cloud

“Cloud infrastructure”

- Provisioned for open use by
 - the general public
- Owned, Managed, and Operated by
 - A business,
 - Academic, or government organization, or some combination of them

It exists on the premises of the cloud provider

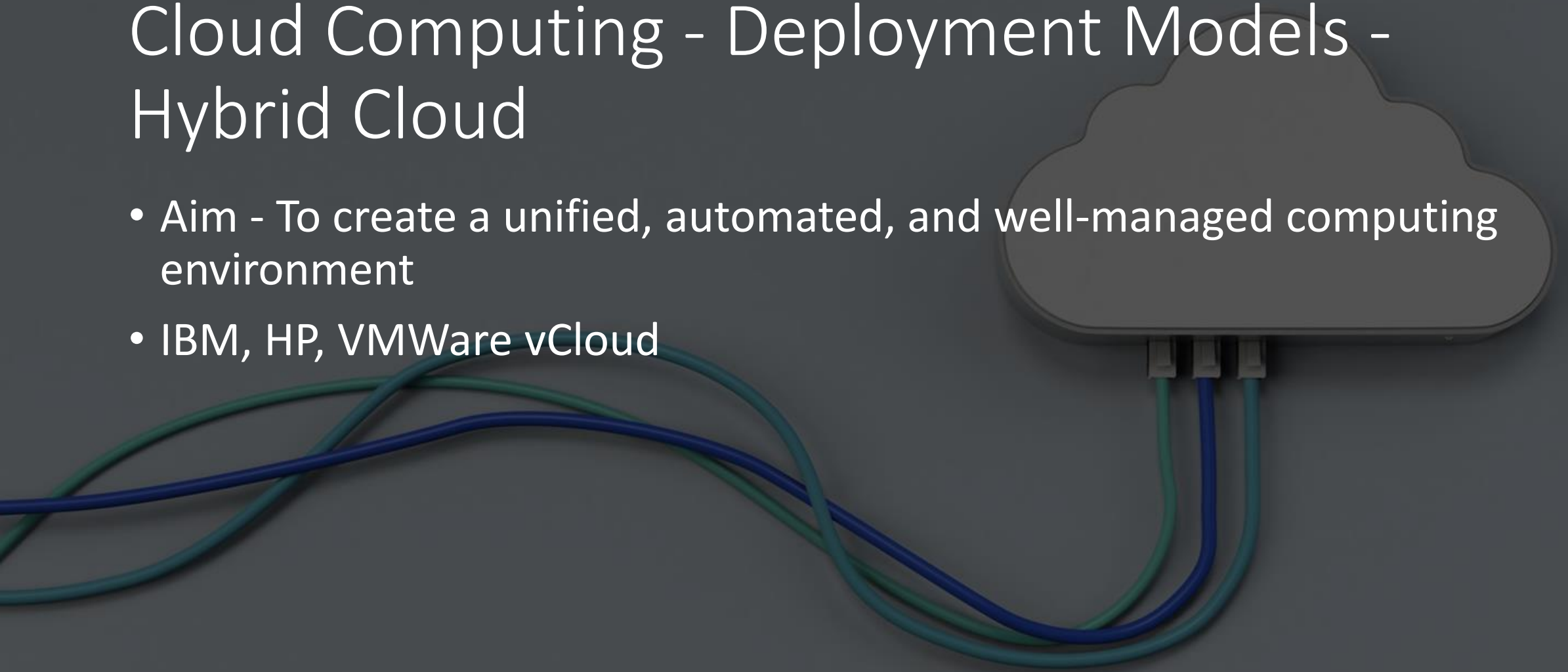
Google, Amazon, Microsoft

Cloud Computing - Deployment Models - Hybrid Cloud

- “Cloud infrastructure”
 - A composition of two or more distinct cloud infrastructures
 - (private, community, or public) - remain unique entities
 - Bound together by standardized or proprietary technology that -
 - Enables data and application portability
 - e.g. - load balancing between clouds

Cloud Computing - Deployment Models - Hybrid Cloud

- Aim - To create a unified, automated, and well-managed computing environment
- IBM, HP, VMWare vCloud

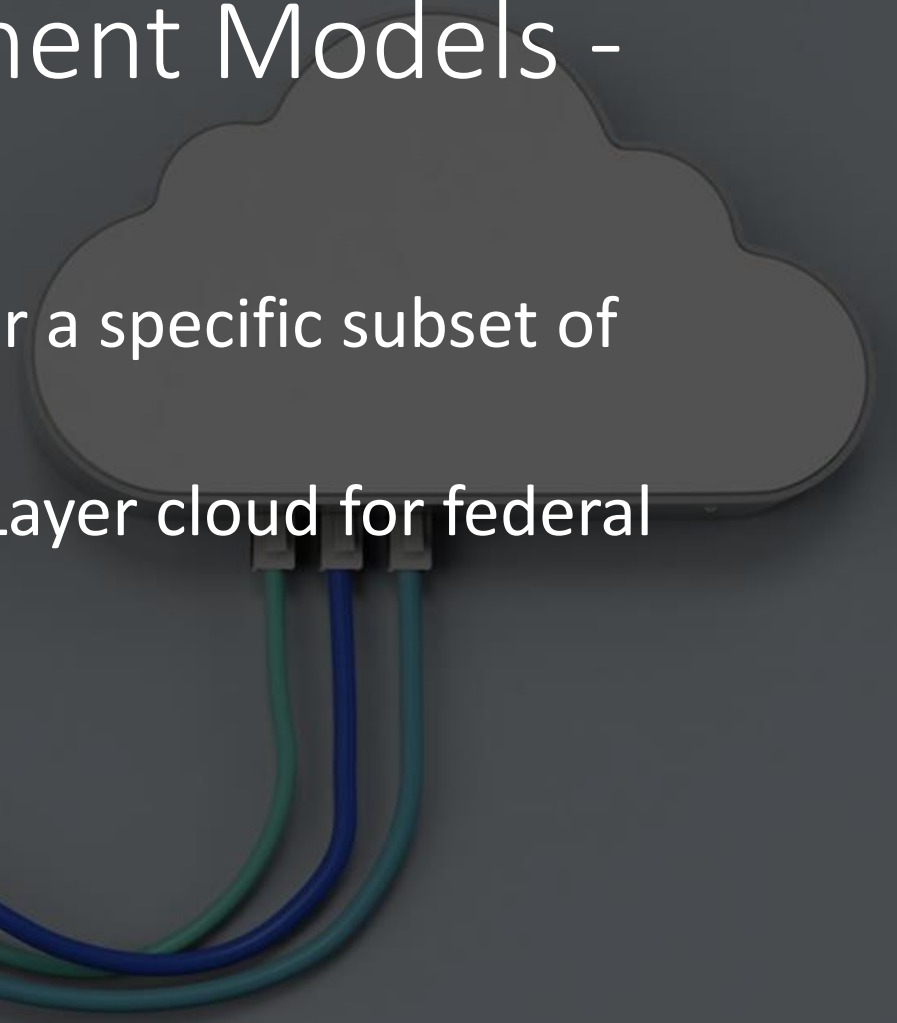


Cloud Computing - Deployment Models - Community Cloud

- “Cloud infrastructure”
 - Provisioned for exclusive use by
 - a specific community of consumers from organizations
 - That have shared concerns
 - Mission, Security Requirements, Policy, and Compliance Considerations
- Owned, Managed, and Operated by
 - One or more of the organizations in the community
 - A third party, or some combination of them

Cloud Computing - Deployment Models - Community Cloud

- A cloud platform that is accessible only for a specific subset of customers
- Example - U.S.-based dedicated IBM SoftLayer cloud for federal agencies



Cloud Deployment Models

HYBRID

Combination of cloud deployment models

COMMUNITY

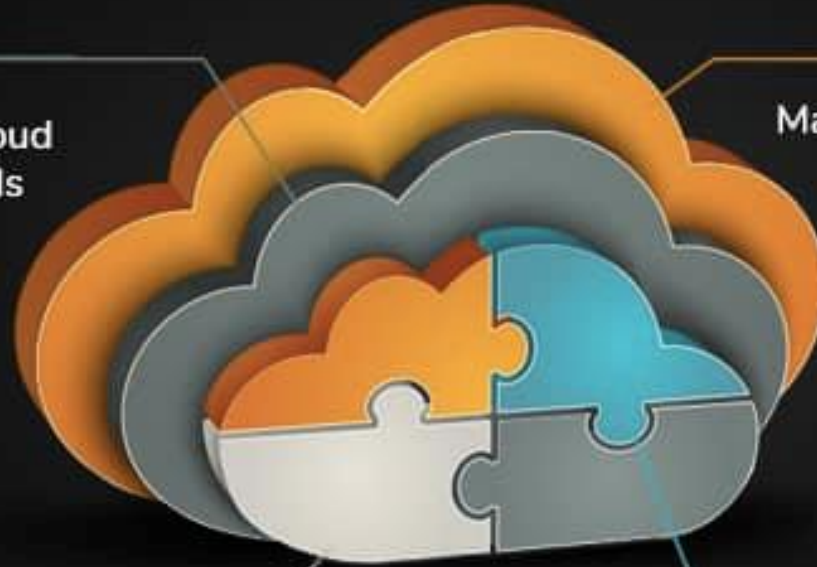
Manufacturing organization shares cloud with other organizations with similar interests

PUBLIC

Manufacturing organization shares cloud with general public

PRIVATE

Manufacturing organization has its own private cloud





PRIVATE CLOUD

- Offered to select users over the internet or a private internal network
- Provides greater security controls
- Requires traditional data center staffing and maintenance



HYBRID CLOUD

- Combination of both public and private cloud
- Shared security responsibility
- Helps maintain tighter controls over sensitive data and processes



PUBLIC CLOUD

- Offered by third-party providers
- Available to anyone over the public internet
- Scales quickly and convenient

Cloud Computing

Public Cloud

- Publicly shared virtualised resources
- Supports multiple customers
- Suited for less confidential information

Private Cloud

- Privately shared virtualised resources
- Cluster of dedicated customers
- Suited for secured confidential information

Cloud Computing - NIST Model

