

# Examining Cisco Cloud Service and Deployment Models

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# Overview



**Cloud computing data center infrastructure allows several services to be available to many users**

- Examine cloud architectures
- Cloud service models
- Cloud deployment models



# Cloud Architectures

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# Cloud Computing

The National Institute of Standards and Technology defines cloud as a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.



# Cloud Deployment



Deploying a cloud means deploying a network of systems, from which computing resources are offered to remote users



From a user perspective, the resources are transparently available, regardless of the user point of entry



Data that is stored by the user is available whenever the user is connected to the cloud



Resources (storage, computing, or apps) offered by a cloud can vary. The resources are delivered as a service rather than a product



# Cloud User Advantages



**On-demand, self-service resource provisioning**

**Programmatic interface APIs**

**Appearance of centralized resources**

**Data that is stored in the cloud will always be available on-demand**

**Backups and data management are centralized and managed within the cloud**



# Cloud Provider Advantages



**Cost savings in operational expenses due to standardization and automation**

**High utilization through virtualized, shared resources**

**Customer self-service**



# Cloud Computing Characteristics

On-demand  
Self-service



# Cloud Computing Characteristics

On-demand  
Self-service

Broad Network Access



# Cloud Computing Characteristics

On-demand  
Self-service

Resource Pooling

Broad Network Access



# Cloud Computing Characteristics

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Rapid Elasticity



# Cloud Computing Characteristics

On-demand  
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Measured Service

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# Cloud Computing Characteristics

On-demand  
Self-service

Resource Pooling

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Broad Network Access

Rapid Elasticity

Resource Usage

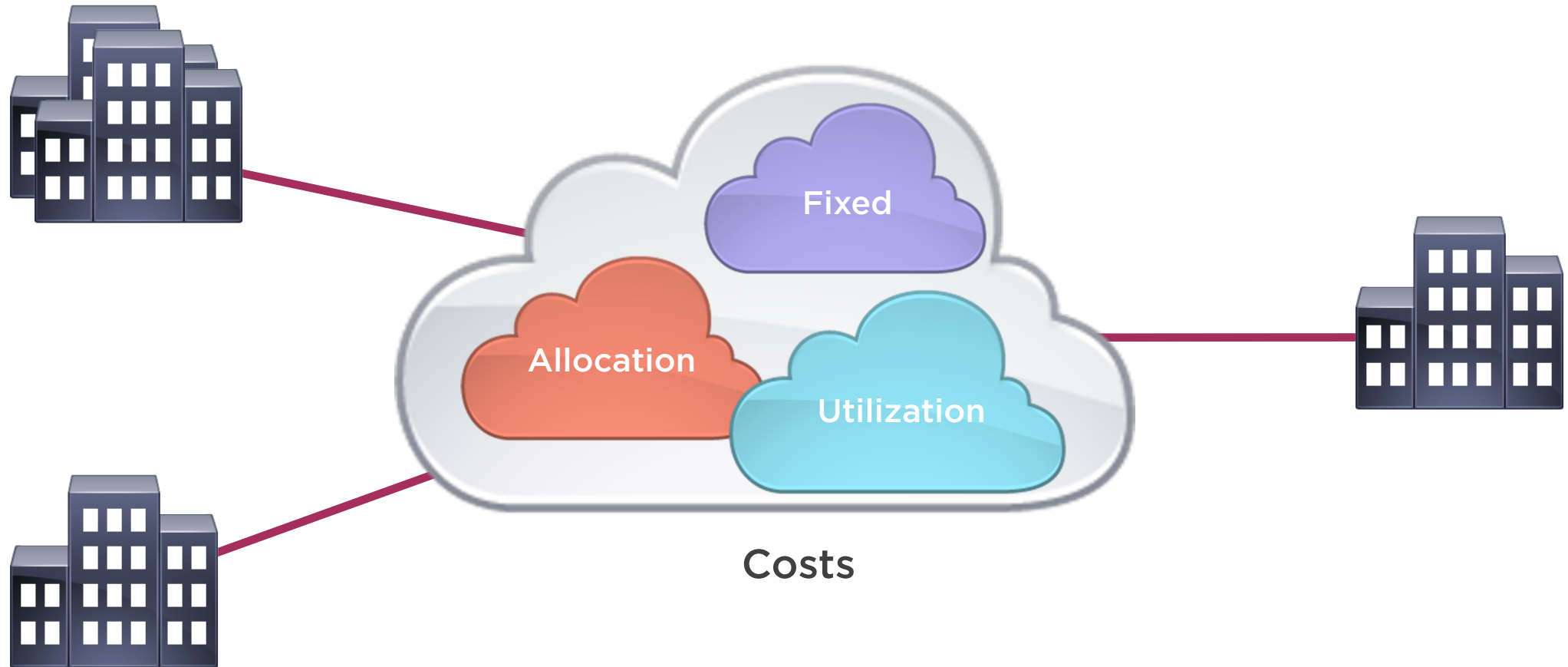


# Cloud Service Models

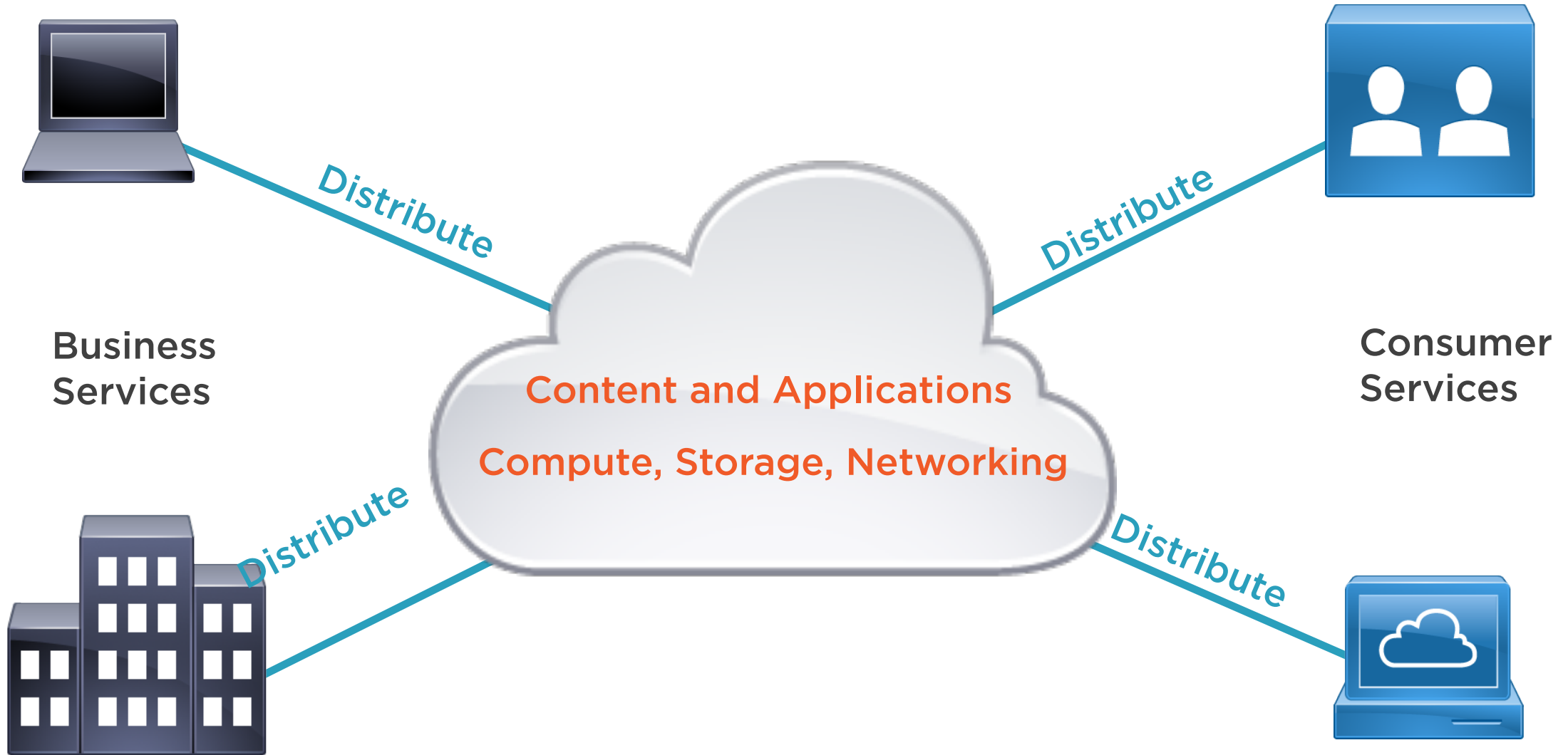
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# Cloud Service Cost Models



# Cloud Architectures



Business Services

Consumer Services

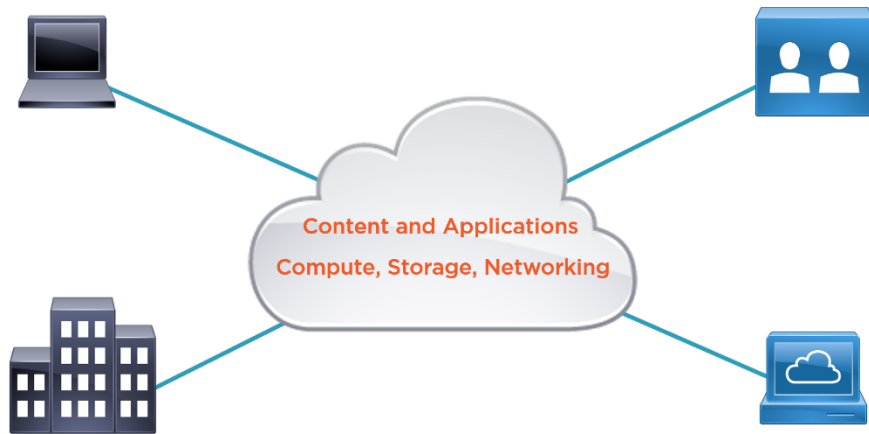


# Cloud Service Cost Models

Cost Model	Description
Fixed Cost	Specific per-VM instance costs, such as floor space, power, cooling, software, or administrative overhead
Allocation-based Costs	Variable costs per VM that are based on allocated resources, such as the amount of memory, CPU, or storage that is allocated for the VM
Utilization-based Costs	Variable costs per VM that are based on actual resources that are used, including memory, disk and CPU usage, network I/O, and disk I/O



# Infrastructure as a Service (IaaS)



**Can provision computing resources**

**Consumer can deploy and run arbitrary software**

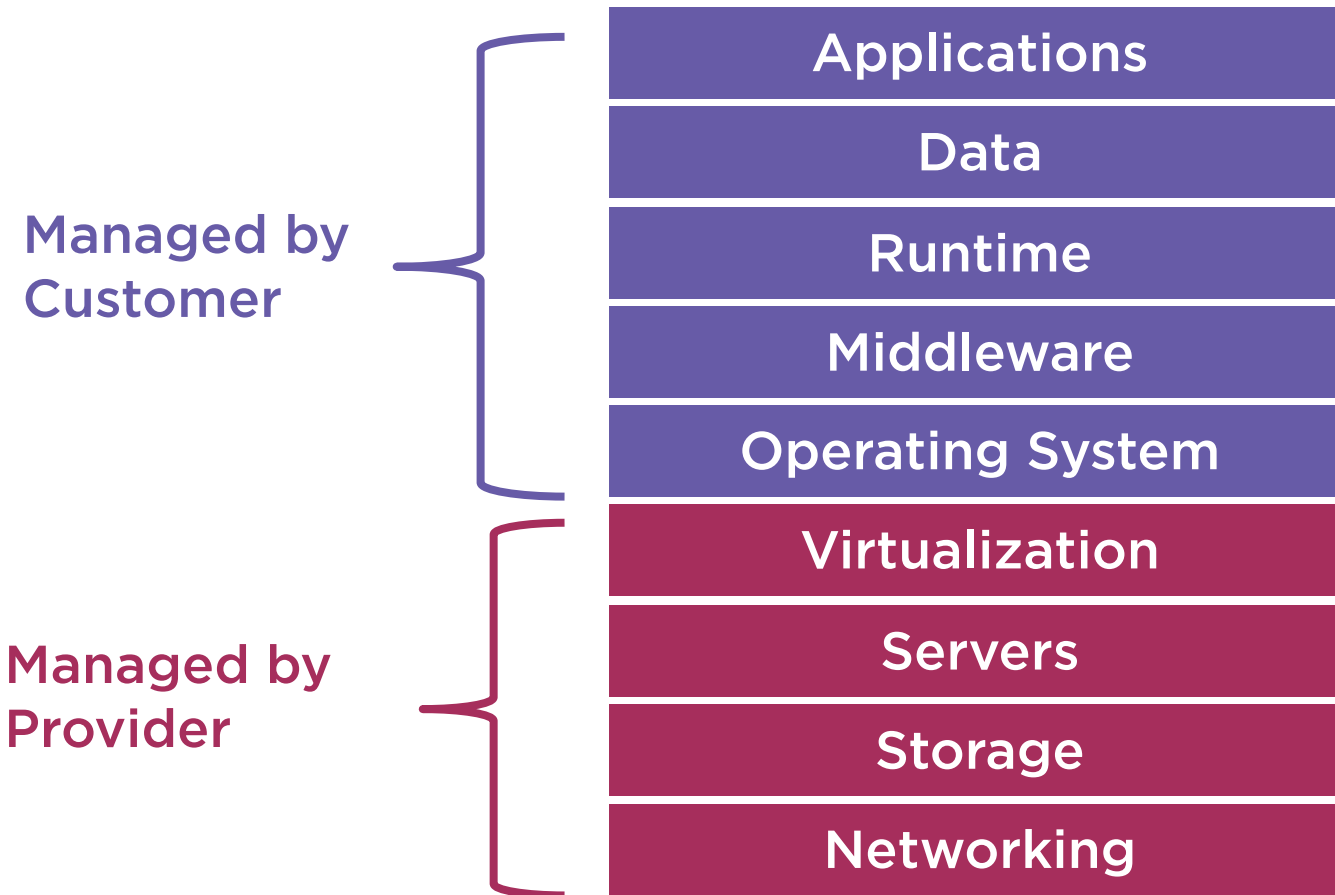
**Consumer does not manage or control the underlying cloud infrastructure**

**Billed as a utility with predictable cost structure**



# IaaS Model

## IaaS



# Infrastructure Characteristics of IaaS



A utility computing service and billing model

Amount of resources that are consumed will typically reflect the cost

IaaS is evolution of virtual private server solutions



# Platform as a Service (PaaS)



**Only customer application and data are managed by customer**

**Customer does not manage or control the underlying cloud infrastructure**

**Application design and development**

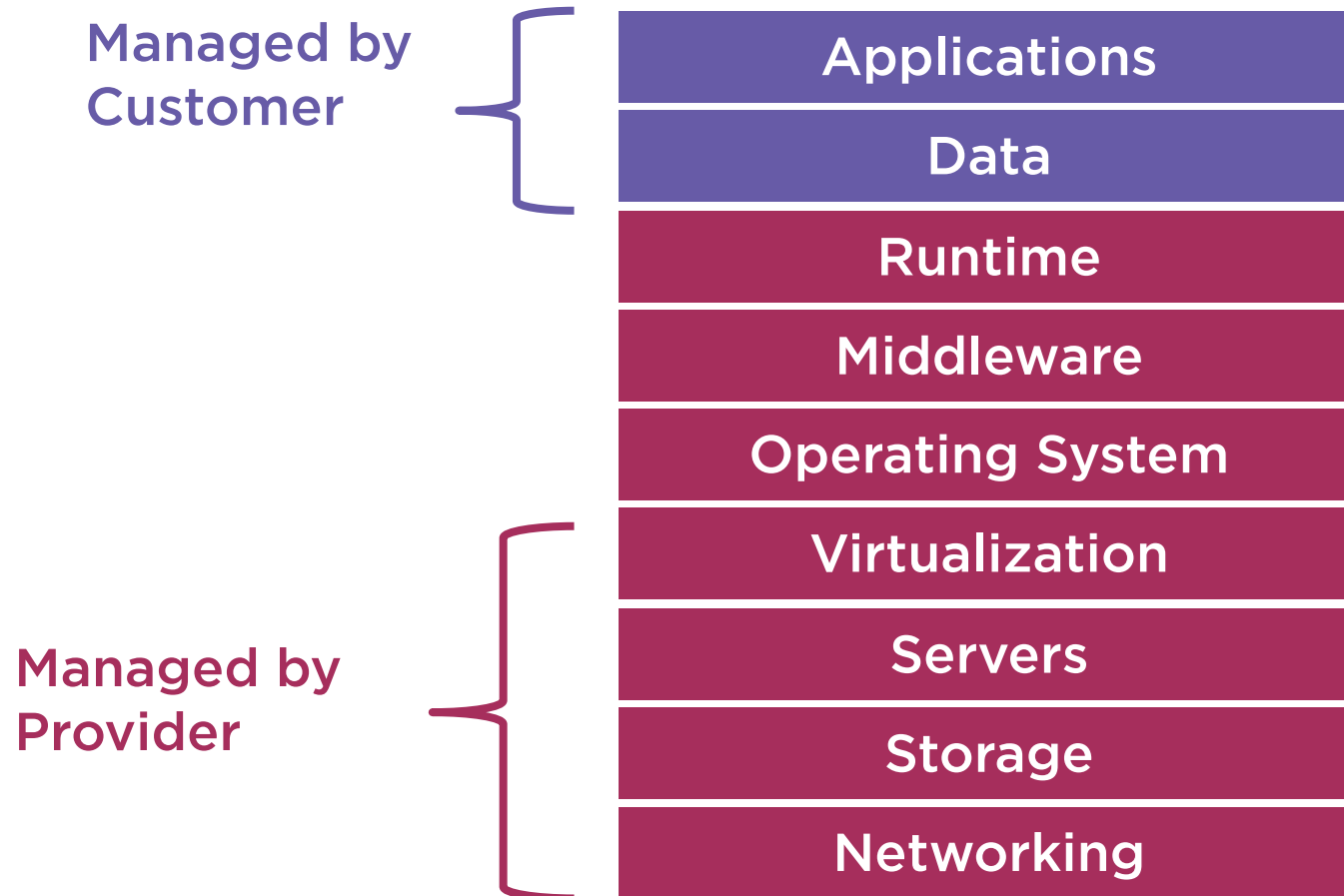
**Hosting, testing, deployment**

**Collaboration**

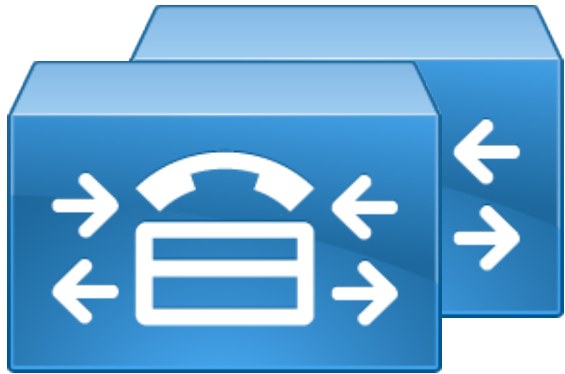


# PaaS Model

## PaaS



# Unified Communication Servers



CUCM



IM&P



Unity Connection



CCX



# Software as a Service (SaaS)



**Applications are accessible from many client devices**

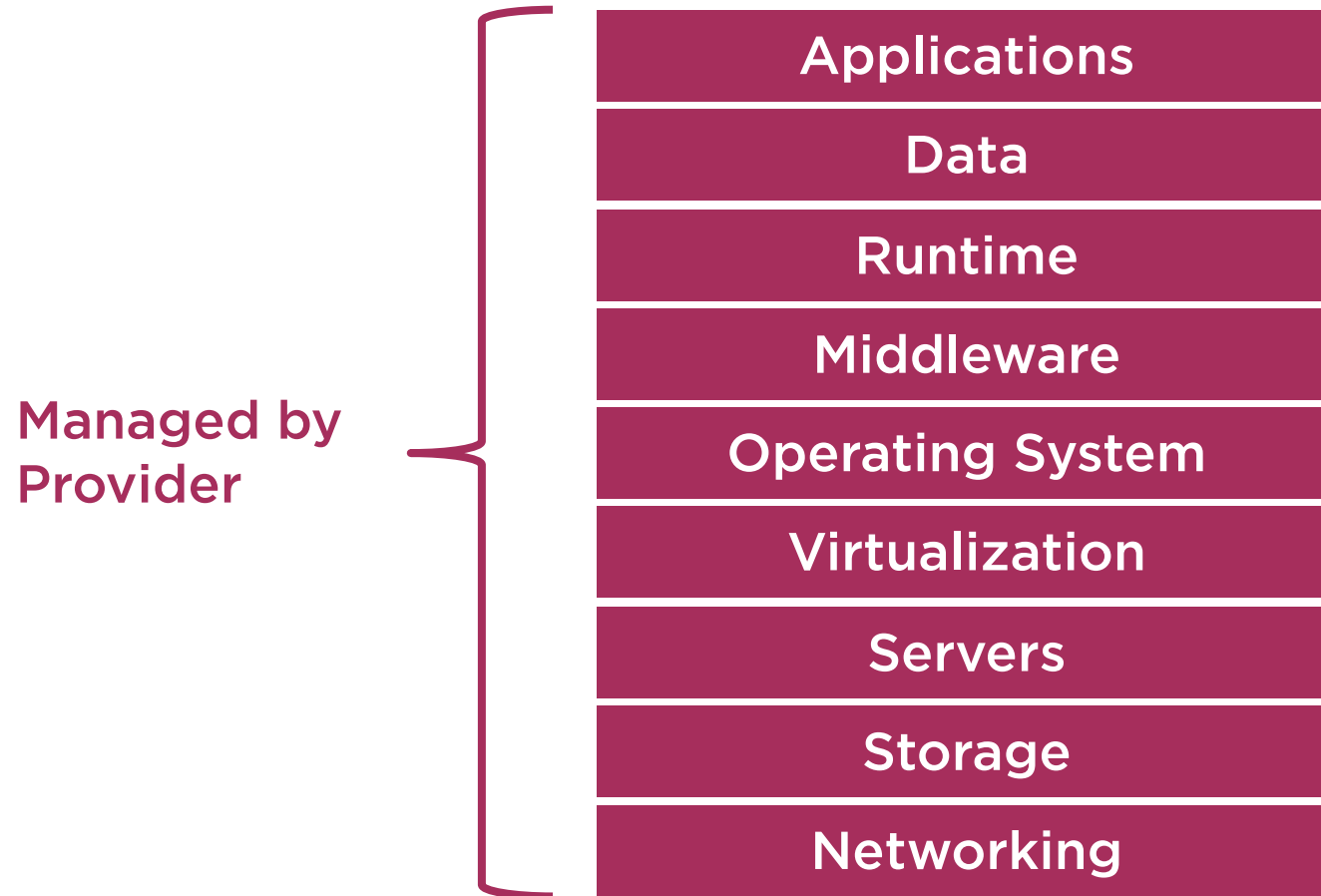
**It can use the provider applications running on a cloud infrastructure**

**Consumer does not manage or control the underlying cloud infrastructure**



# SaaS Model

## SaaS



# Infrastructure Characteristics of SaaS



**Cloud providers should operate application software**

**Cloud users do not manage the infrastructure and platform**

**There is no need to install and run applications on the computers of the users**



# Cloud Deployment Models

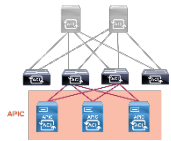
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# Cloud Deployment Models



**Private cloud:** The cloud infrastructure is completely dedicated to an organization; there is no public access. Usually located on-premise



**Public cloud:** The cloud infrastructure is offered by a third-party provider and is accessible by the general public. May be a fee



**Hybrid cloud:** The cloud infrastructure is a mix of at least two cloud models. Often the public cloud may supplement a private cloud



**Community cloud:** The cloud infrastructure is commonly built by several organizations for the purposes of addressing shared concerns



# Cloud Deployment Models

**Private:** used by a single organization

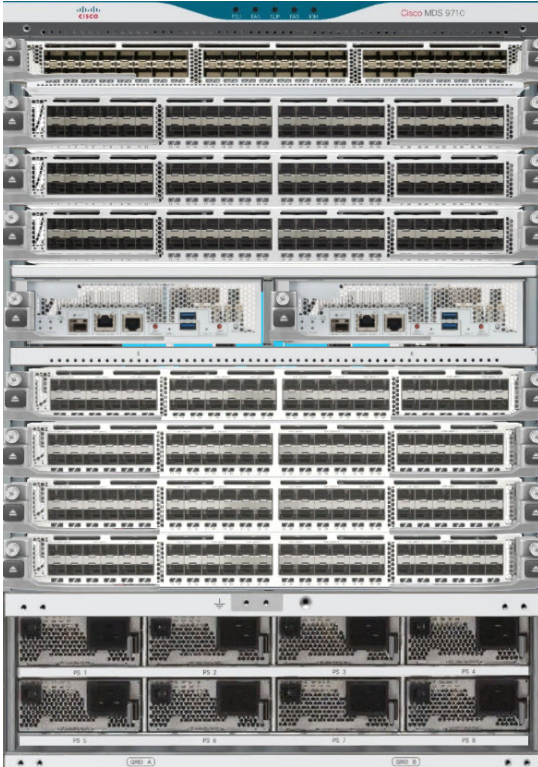
**Hybrid:** Composition of two or more clouds

**Public:** Deployed by provider for public use

**Community:** shared by several organizations



# Characteristics of Private Cloud Deployment



**Scales by pooling IT resources under a single cloud operating system or management platform**

**Can be solely managed and used by a single organization**

**Can be deployed and managed by an external organization but used an enterprise**



# Advantages of Private Cloud Deployment



## Control of all resources

- Resources are not shared with other cloud users

## Control of changes

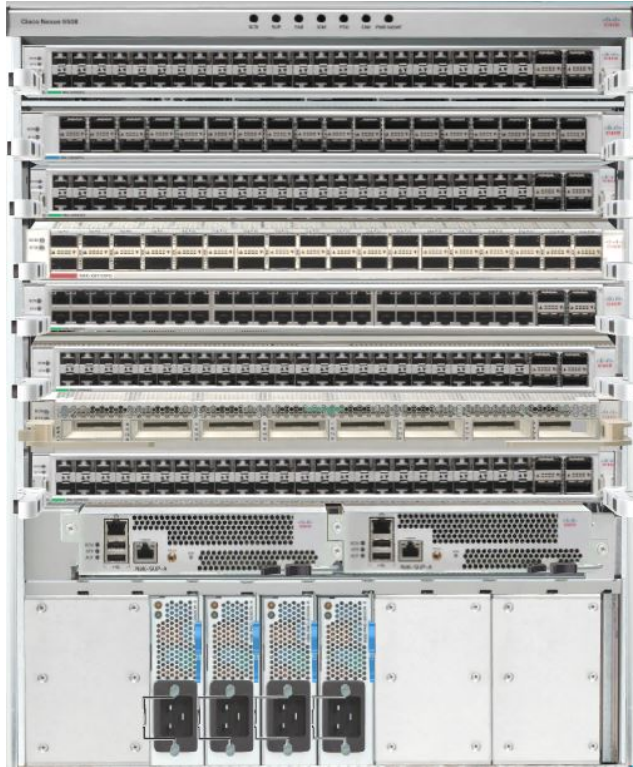
- Permits changes when they are required
- Patches and updates may be applied when wanted

## Control of information

- Prevents information theft



# Advantages of Public Cloud Deployment



**Easy and inexpensive setup**

**No wasted resources**

**Maintained by external provider**

**Supports multiple customers**

**Suited for information that is not sensitive**



# Disadvantages of Public Cloud Deployment



**Little control over the stored data retention policy**

**Little to no control over upgrades, security fixes, updates**

**Legal restrictions prevent you from using public clouds to store client data**

**No control over how the cloud provider implements technologies**



# Characteristics of Hybrid Cloud Deployment



## Combination of a public and private cloud

### Resource Allocation

- A private cloud running out of resources, can offload tasks to public cloud
- Permits changes when they are required

### Data protection

- Can combine a private cloud with a public cloud



# Benefits of Hybrid Cloud



## Flexibility

- Option to utilize resources from the private and public clouds

## Control over spending

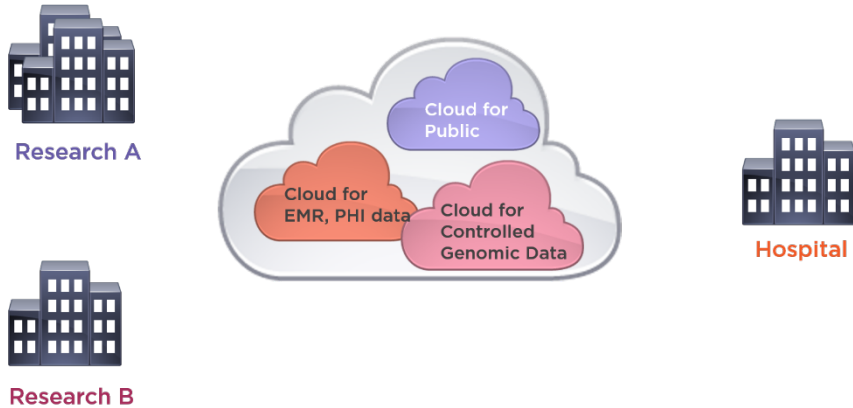
- Uses the cloud, which offers cheaper resources

## Deployment

- A combination of strong sides of the private and public clouds



# Characteristics of Shared Cloud Deployment



## Shared by several organizations

- Managed either by the participating organizations
- Third-party service provider

## Allows companies to take advantage of a public cloud with the benefits of a private cloud

- Privacy
- Security
- Compliance



# Summary



## Examined cloud computing

- Cloud architectures
- Cloud service models
- Cloud deployment models

