

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



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

**On-demand
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Resource Pooling

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Rapid Elasticity



Cloud Computing Characteristics

On-demand
Self-service

Resource Pooling

Measured Service

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Cloud Computing Characteristics

On-demand
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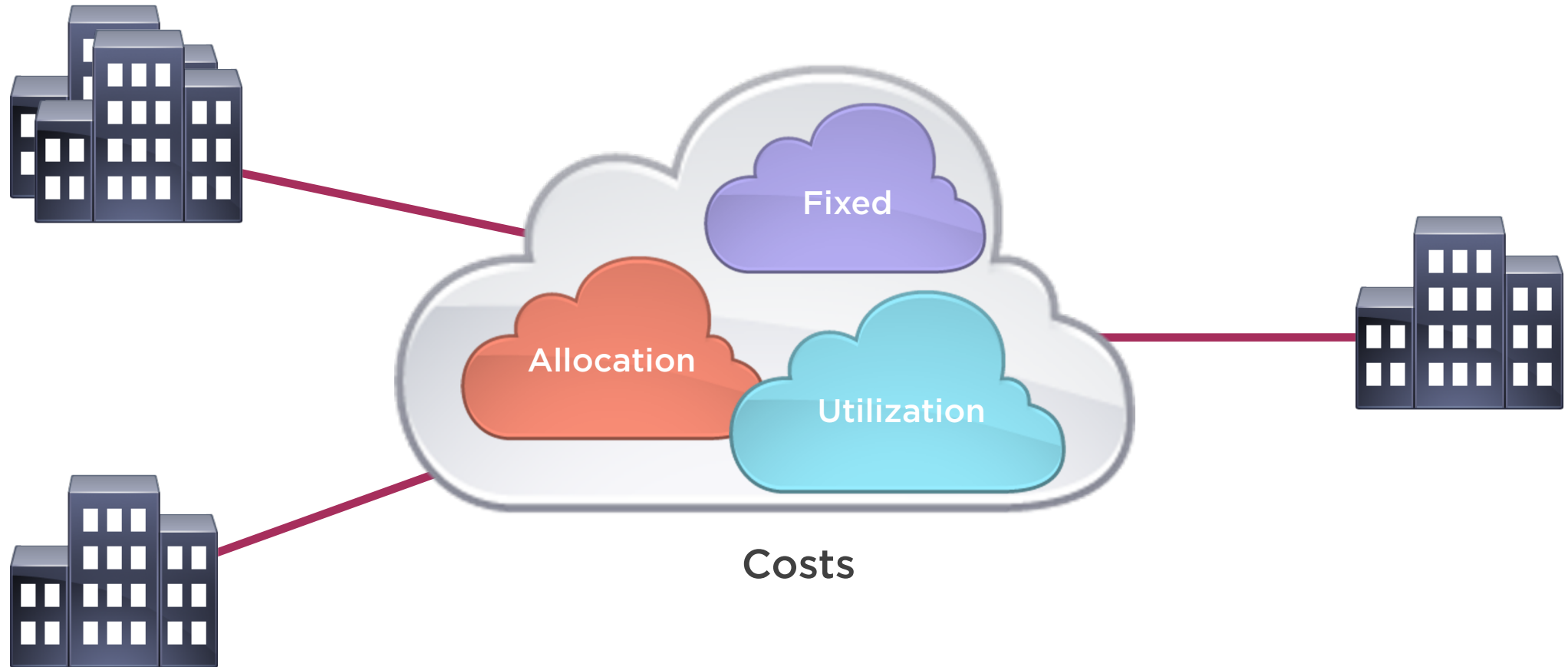
Resource Usage



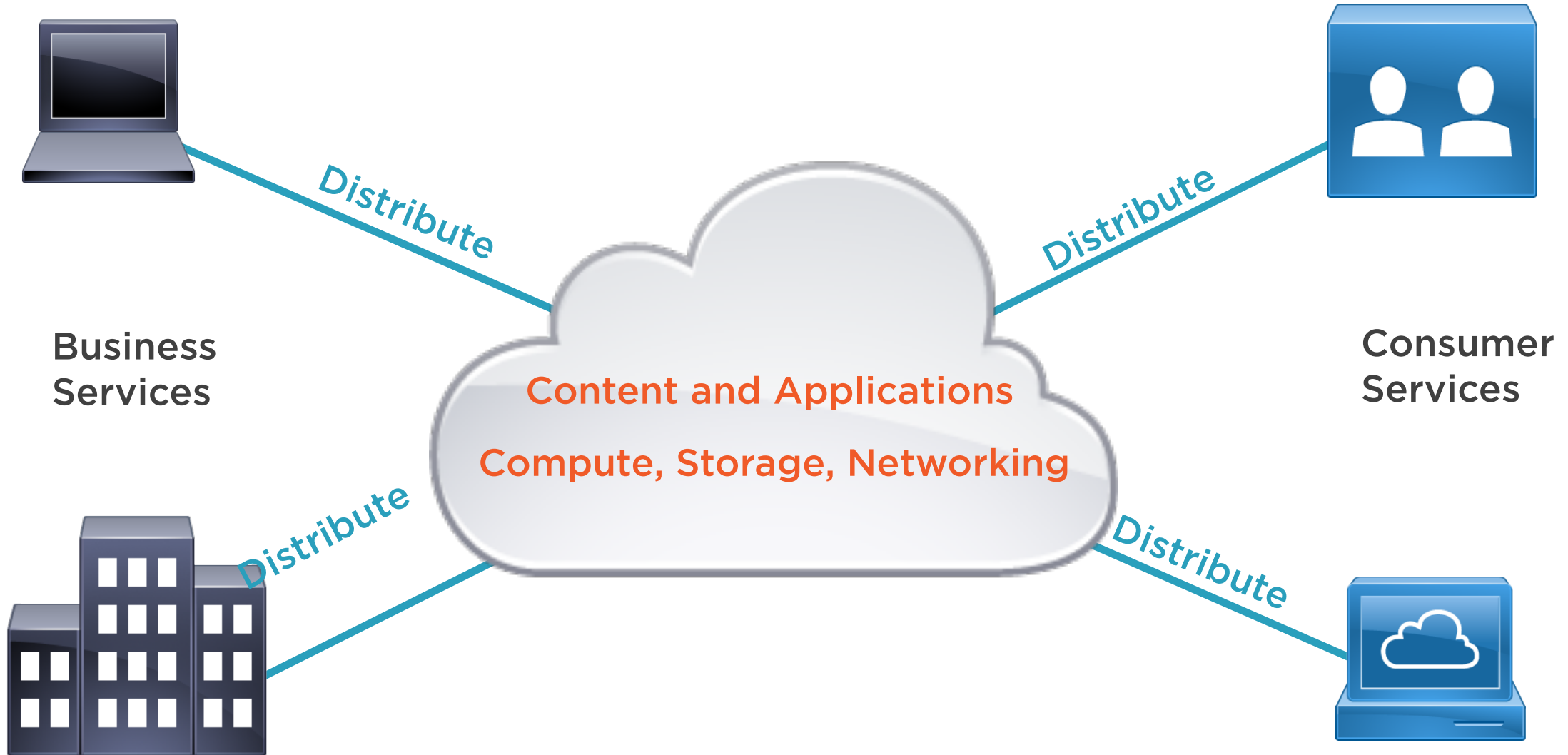
Cloud Service Models



Cloud Service Cost Models



Cloud Architectures



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

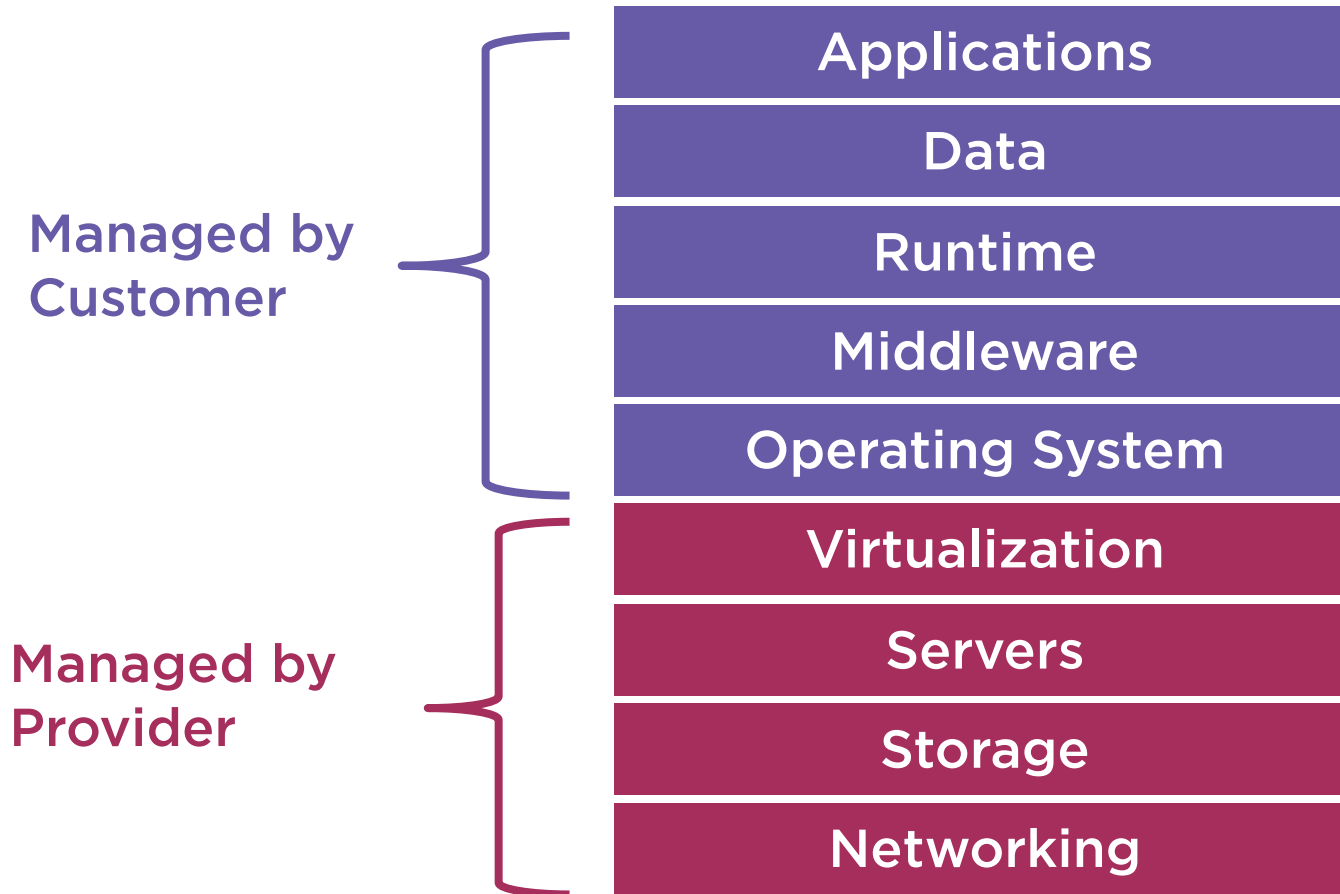
Consumer can deploy and run arbitrary software

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

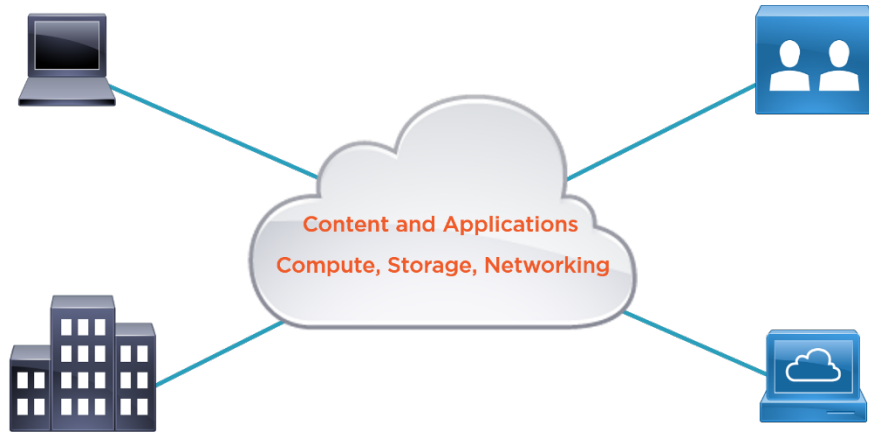


A utility computing service and billing model

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

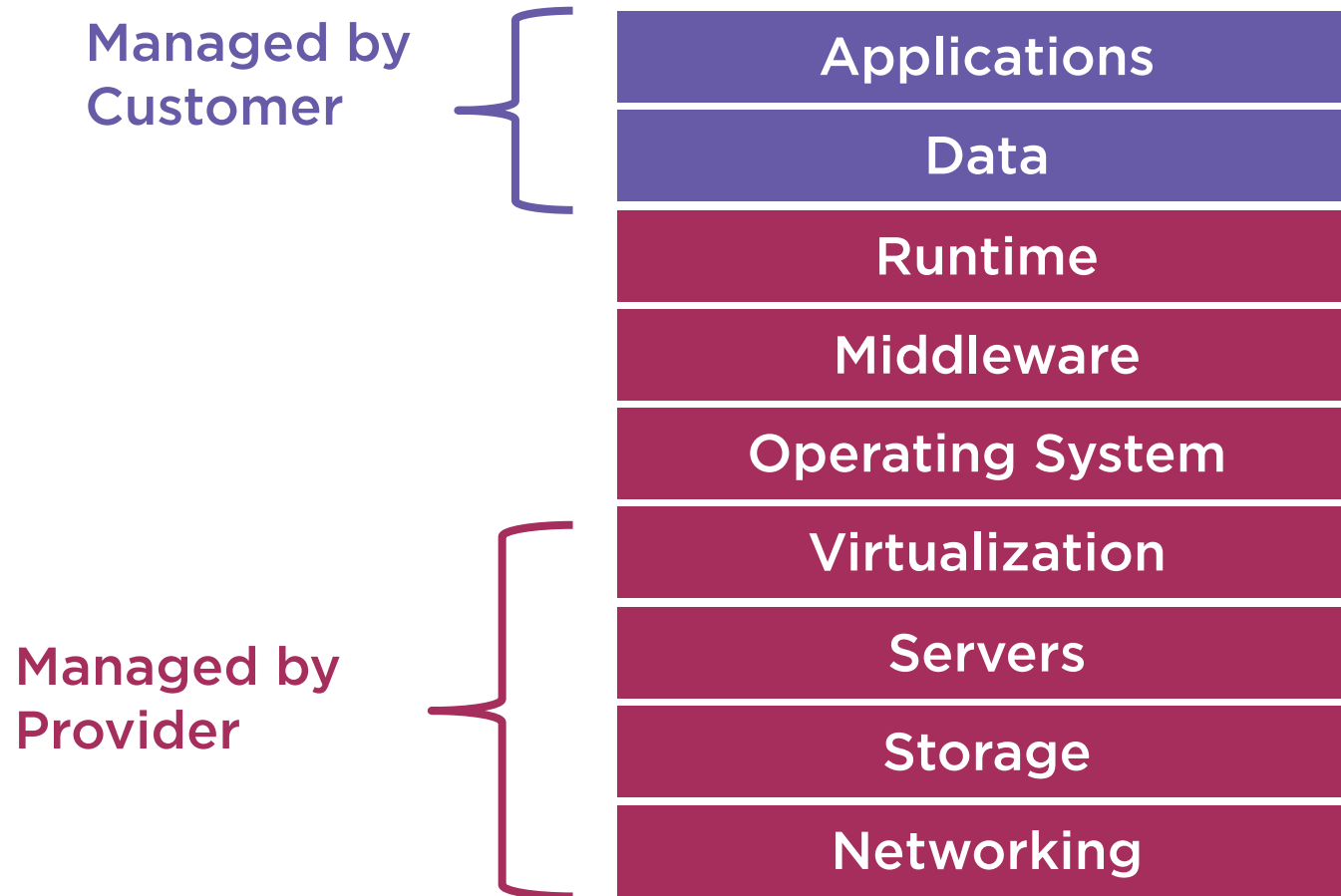
Hosting, testing, deployment

Collaboration

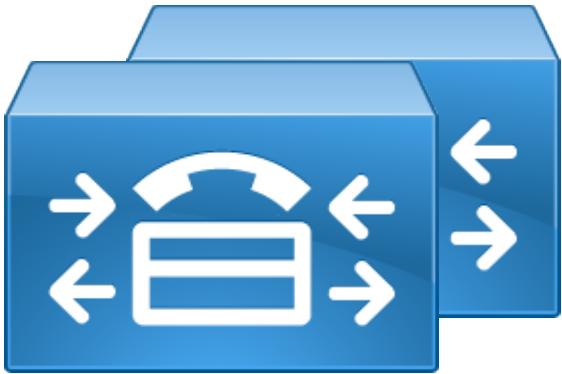


PaaS Model

PaaS



Unified Communication Servers



CUCM



IM&P



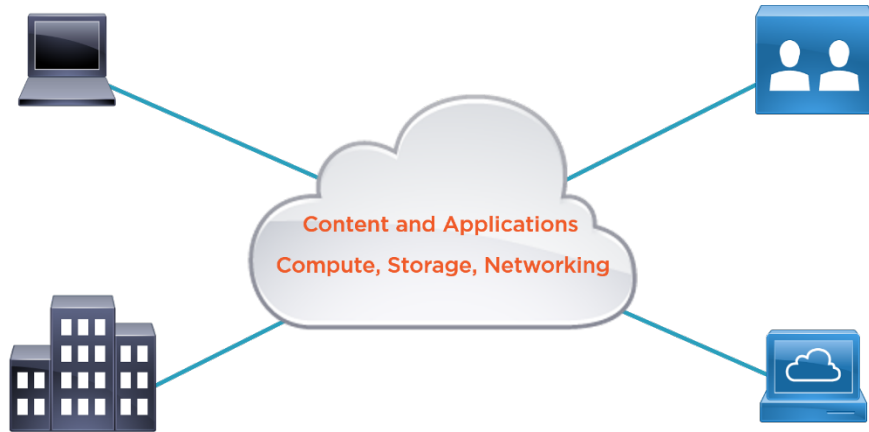
Unity Connection



CCX



Software as a Service (SaaS)



Applications are accessible from many client devices

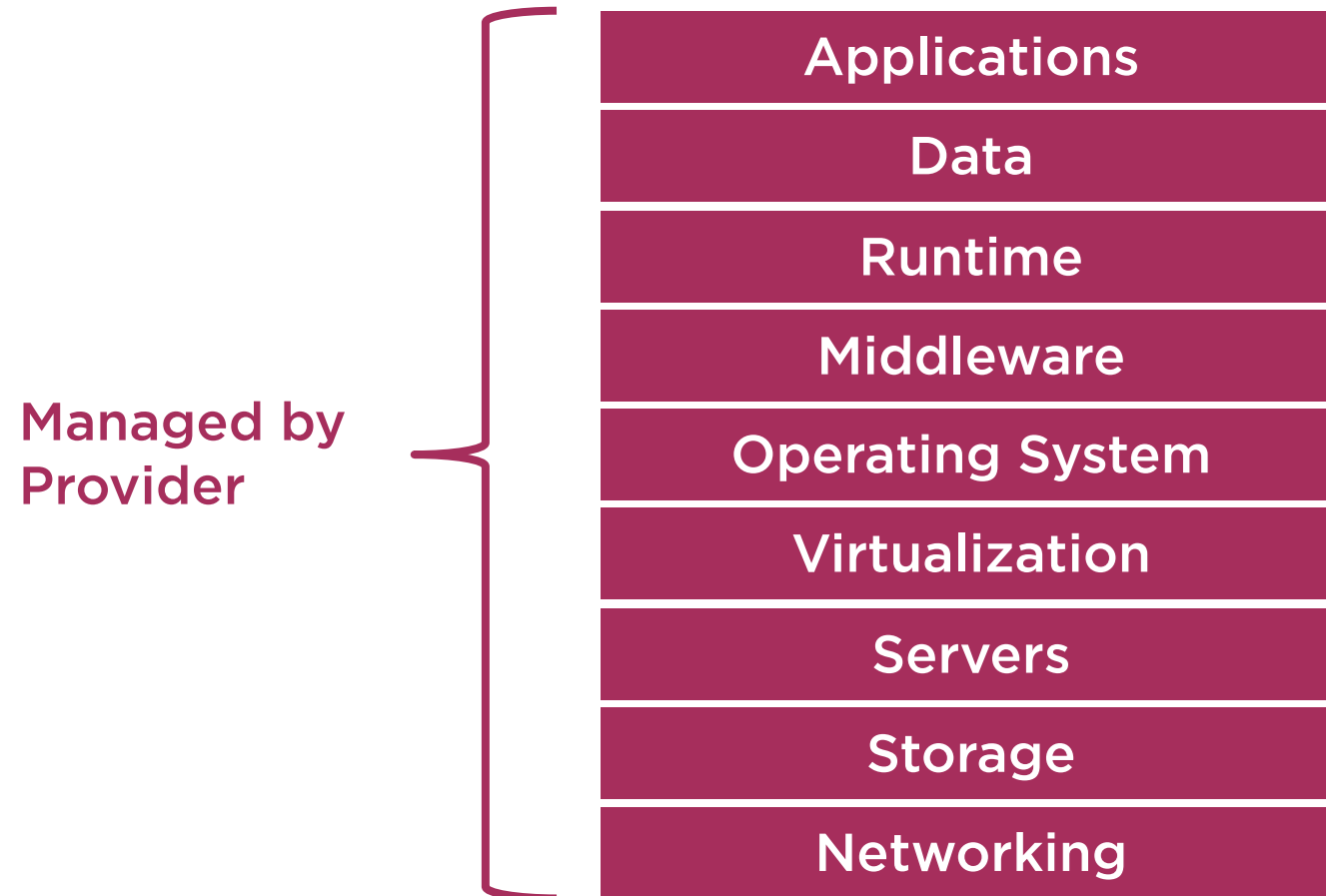
It can use the provider applications running on a cloud infrastructure

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

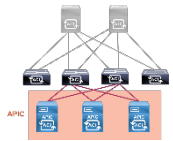
Cloud Deployment Models



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

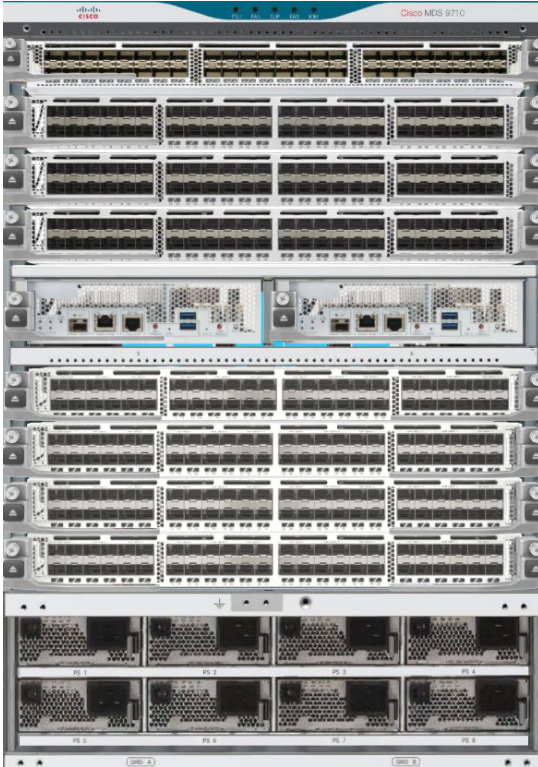
Hybrid: Composition of two or more clouds

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

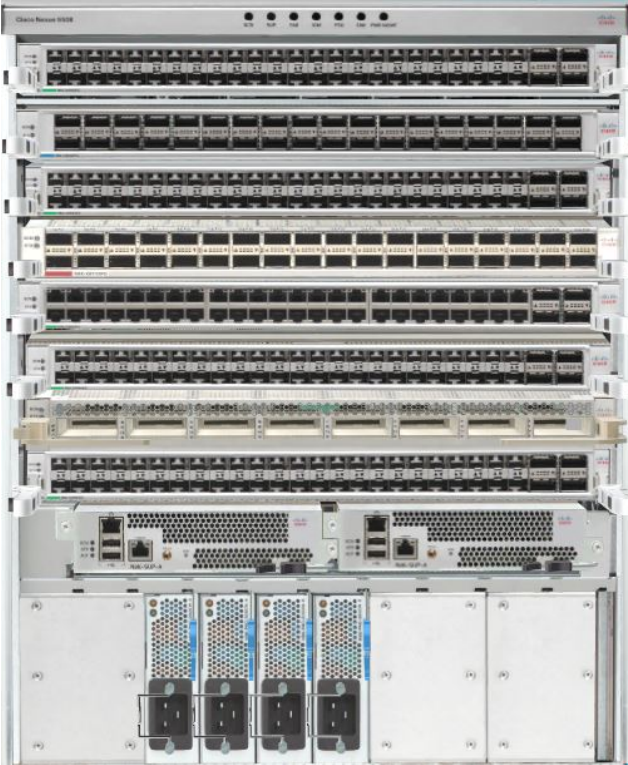
Control of changes

- 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

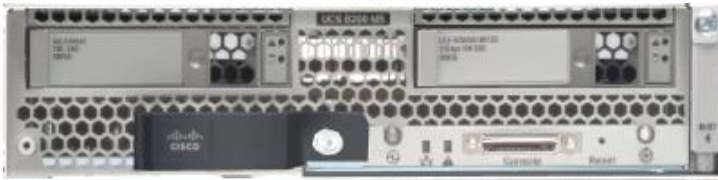
Maintained by external provider

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

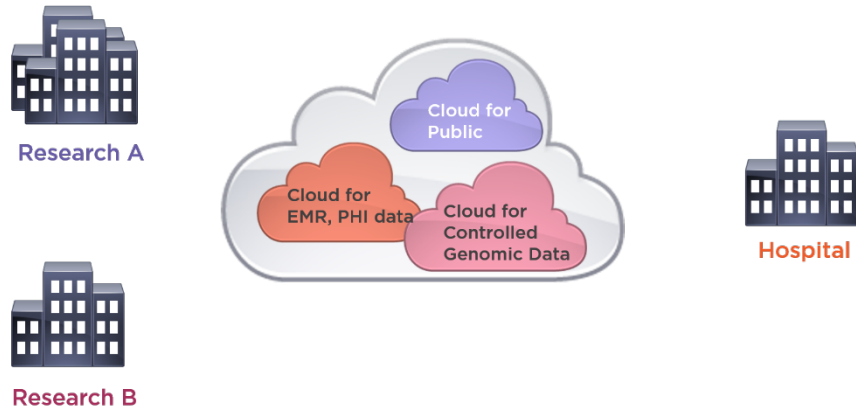
Control over spending

- 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

