

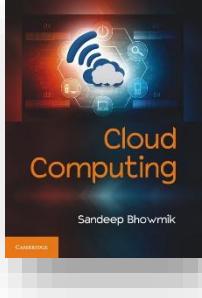
Cloud Computing

Sandeep Bhowmik

Chapter 4

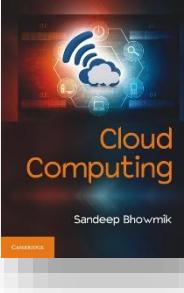
Cloud Computing Model (Contd.)

Cambridge University Press



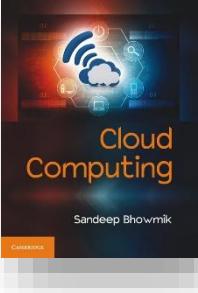
Cloud Deployment Model

- Cloud services can be arranged or deployed in a number of ways.
- The deployment choice depends on the requirements of the consumer organization.



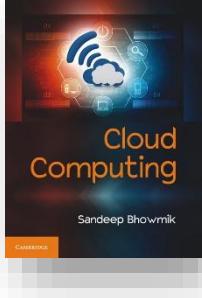
Cloud Deployment Model

- The deployment model describes -
 - the utility of a cloud
 - specifies its access boundary
 - indicates the relative location of the cloud with respect to the location of consumer



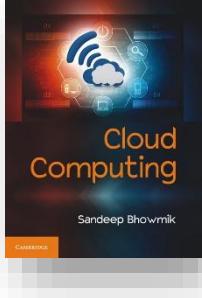
Cloud Deployment Model

- **Public Cloud**
- Physical location wise this cloud remains external or off-premises.
- Consumers remotely access the service.
- Public cloud is also referred as *external cloud*.
- Public cloud shares one-to-many relationship with consumers.



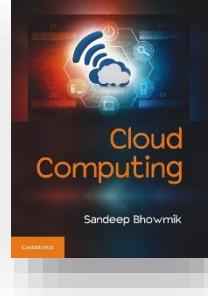
Cloud Deployment Model

- **Public Cloud**
- It is hosted and managed by some computing vendor, who establishes datacenters to provide service.
- Consumers under this cloud deployment model are entirely free from any headache of infrastructure administration and system management.
- Consumers have low degree of control over the cloud.



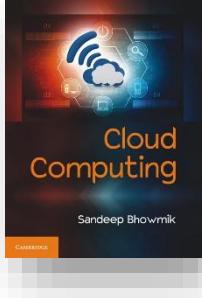
Cloud Deployment Model

- **Public Cloud**
- Public cloud deployment promotes multi-tenancy at its highest degree.
- This increases resource utilization rates and decreases vendor's cost of service delivery.
- Through this model consumers can access potentially superior service at a lower cost.
- Amazon Web Services, Google Cloud, Microsoft Azure and Salesforce.com are popular public clouds.



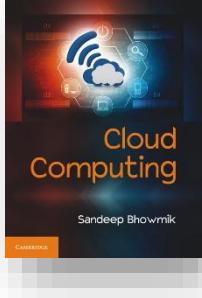
Cloud Deployment Model

- **Private Cloud**
- This deployment does not provide open access to all.
- It is mainly for organizational use, and access to a private cloud deployment is restricted for general public.
- Private cloud is also referred as *internal cloud*.



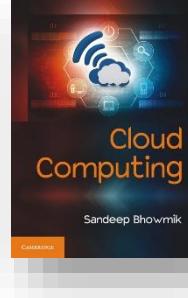
Cloud Deployment Model

- **Private Cloud**
- Private cloud is user for high security and critical systems.
- Private cloud may reside either inside consumer organization's premises (on-premises) or outside (off-premises) at any neutral location.
- private cloud shares one-to-one relationship with consumer.



Cloud Deployment Model

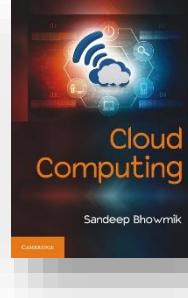
- **Private Cloud**
- The feature of multi-tenancy does not apply in private cloud.
- Consumers have more control over the cloud.
- The cost of availing private cloud is higher than public cloud.



Cloud Deployment Model

Private Cloud vs. Public Cloud

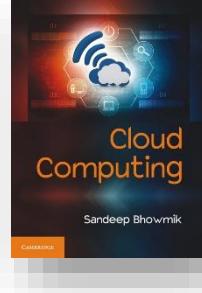
Private Cloud	Public Cloud
Can be both of type on-premises or off-premises.	There can't be any on-premises public cloud deployment.
On-premises private cloud can be delivered over private network.	Can only be delivered over public network.
Does not support multi-tenancy for unrelated and external tenants.	Demonstrates multi-tenancy capability with its full ability.
Resources are for exclusive use of one consumer (generally an organization).	Resources are shared among multiple consumers.
A private cloud is accessible to a restricted number of people.	This facility is accessible to anyone.



Cloud Deployment Model

Private Cloud vs. Public Cloud

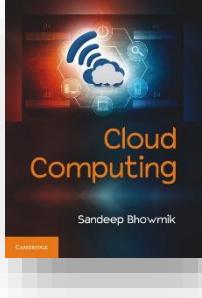
Private Cloud	Public Cloud
This is for organizational use.	Can be used both by organization and user.
Consumers have important roles to play in management of the cloud.	Management is entirely provider's responsibility.
Consumers have more control over the environment.	Consumers have very less control or no control.
Provides more confidence regarding data security as remains under the control of consumer organization's security boundary.	Public cloud deployment often creates concerns regarding security and privacy of data.
Cost of computing is more in comparison to public cloud.	This is more economical, as multiple unrelated consumers (tenants) share same infrastructure.



Cloud Deployment Model

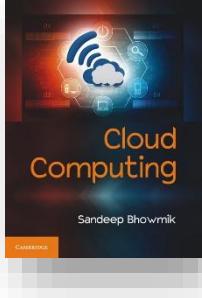
Private Cloud vs. Public Cloud

Private Cloud	Public Cloud
Not ideal for promoting pay-as-you-use philosophy.	Ideal model for practicing pay-as-you-use philosophy.
Resource may often remain idle, resulting resource wastage.	Resource utilization is optimum, due to presence of larger number of consumers.
Not so environment friendly like public cloud.	Promotes green computing at its best.



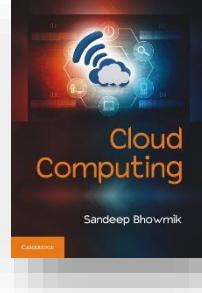
Cloud Deployment Model

- **Community Cloud**
- This deployment model allows access to a number of organizations or consumers - belonging to a community.
- The model is built to serve some common and specific purpose.
- This model allows sharing of infrastructure and resources among multiple consumers belonging to a single community.



Cloud Deployment Model

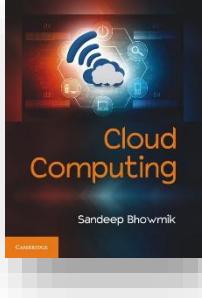
- **Community Cloud**
- Community cloud deployment can be on-premises or off-premises.
- It may be identified as a generalized form of private cloud.
- It is cheaper compared to private cloud.
- Community cloud provides advantages of public cloud deployment, combined with the promise of private cloud like security and privacy of data.



Cloud Deployment Model

Private Cloud vs. Community Cloud

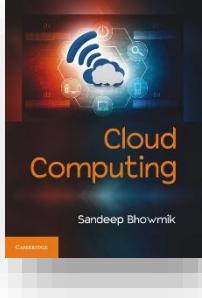
Private Cloud	Community Cloud
One private cloud can be used by one consumer (may be an organization).	One community cloud can be used by one community.
Access is restricted among members of a single consumer.	Access is restricted among members of a single community.
Resources of a private cloud are for exclusive use of one consumer.	Resources are shared among multiple consumers of a single community.
May reside at consumer's premises.	May reside at some consumer's premises within the community.



Cloud Deployment Model

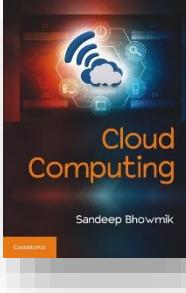
Private Cloud vs. Community Cloud

Private Cloud	Community Cloud
Private cloud (on-premises) can be delivered over private network.	To provide access to multiple consumers (of a community), delivered over public network.
Does not support multi-tenancy.	Multi-tenancy is supported.
This is for organizational use.	This one is for use of communities.



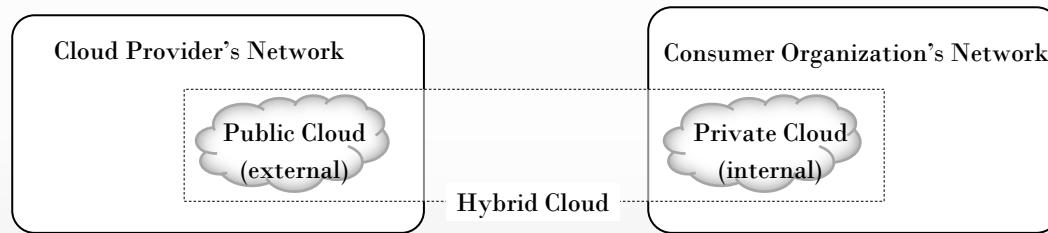
Cloud Deployment Model

- **Hybrid Cloud**
- It is created by combining private or community deployment with public cloud deployment together.
- This model helps businesses to take advantage of private or community cloud by storing critical applications and data there.
- It also provides cost benefit by keeping shared data and applications on the public cloud.

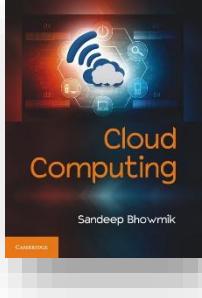


Cloud Deployment Model

- **Hybrid Cloud**

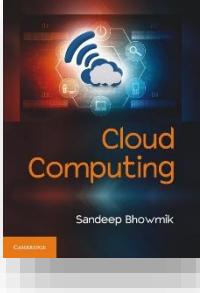


A hybrid cloud model combining public cloud with on-premises private cloud



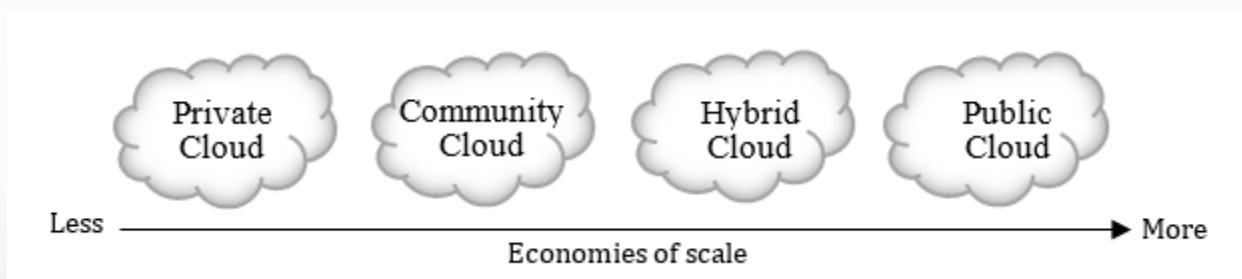
Cloud Deployment Model

- Cloud deployment states how exclusively a cloud consumer can use computing resources.
- To select the appropriate cloud deployment model, one will have to
 - assess the business needs,
 - strengths and weaknesses of a model,
 - privacy/security requirements, and
 - goals of the organization.

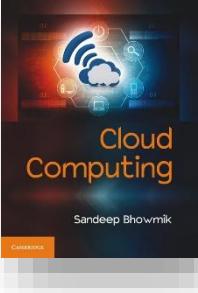


Cloud Deployment Model

- **Economies of Scale**

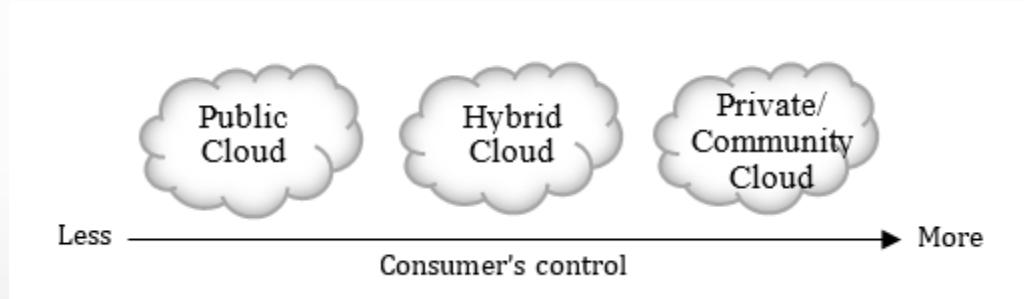


Variation of cost-effectiveness with different cloud deployments

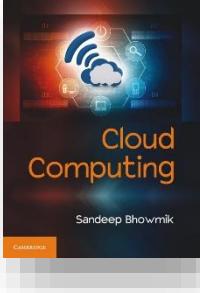


Cloud Deployment Model

- Consumer's Authority



Variation in user's control over different cloud deployments



Thank You