Cloud Computing

Business Drivers for Cloud Computing

or

What are the business motivations for Cloud Computing?

- ***Revisiting the NIST definition of cloud computing:***
- *Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications & services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.*

Revisiting NIST Definition of Cloud Computing

- Cloud computing can fulfill the business drivers such as
  - IT Capacity Planning
  - Cost Reduction
  - Organizational Agility

Business Drivers for Cloud Computing

- Various business drivers lure the organizations to start using Cloud.
- These include (but not limited to):
  - IT Capacity Planning
  - Cost Reduction
  - Organizational Agility

Business Drivers for Cloud Computing

- IT Capacity Planning:
  - It is the estimation and fulfillment of future IT requirements of an organization.
  - The over provisioning of IT happens when acquired equipment is more than the estimated requirements. Resulting in over expenditure.

Business Drivers for Cloud Computing

- The under provisioning occurs when the equipment turns out to be inadequate to fulfill the IT requirements of the future.
- IT Capacity planning is a difficult job as it should cover the fluctuating load.

Business Drivers for Cloud Computing

- Usually the companies adopt any of the following strategies:
  - Lead Strategy: Adding new IT capacity in anticipation of future needs.
  - Lag Strategy: Adding new IT capacity when the IT resources reach the full utilization
  - Match Strategy: Adding IT capacity in small increments.

Business Drivers for Cloud Computing

- The capacity planning may lead to adopting the option of Cloud Computing and then planning for future needs of Cloud resources rental instead of purchasing the IT equipment.

Business Drivers for Cloud Computing

- Cost Reduction: The costs include
  - Cost of acquiring the IT infrastructure
  - Operational overheads such as technical personnel salaries, upgrades, utility bills, security, accounts and administrative staff salaries
- Why not choose the Cloud instead ?

Business Drivers for Cloud Computing

- Organizational Agility: It is the responsiveness to the change. We consider the *change* in IT for this topic.
- A possible shift, upgrade or acquiring a new software may require to upgrade the hardware.

Business Drivers for Cloud Computing

end

- The routine procedures and the business may come to halt or the competitors may out run if the organization fails to invest in IT just because of lack of affordability.
- The Cloud on the other hand, just charges for the usage of IT resources, no need to invest in infrastructure.

Cloud Computing

Module 44

Some key terms about Cloud Computing

- Some key terms and concepts essential for understanding Cloud Computing course:
  1. IT Resources
  2. On-premises
  3. Cloud Consumers
  4. Cloud Providers

Some key terms about Cloud Computing

1. Cloud IT Resources: Can be physical or virtual resources (virtual resources are implemented in software):
   - Physical/Virtual machines/servers
   - Physical/virtual storage

Some key terms about Cloud Computing

2. On-premises: An IT resource which is hosted/located at the enterprise's premises.
   - It is different from a Cloud resource since a Cloud resource is hosted on Cloud.
   - An on-premises IT resource can be connected to a Cloud resource and/or can be moved to a Cloud.
   - However the distinction is difficult for private clouds.

Some key terms about Cloud Computing

3. Cloud Providers: The party providing the cloud-based IT resources.
4. Cloud Consumer: The user of cloud-based IT resources is called *cloud consumer*.

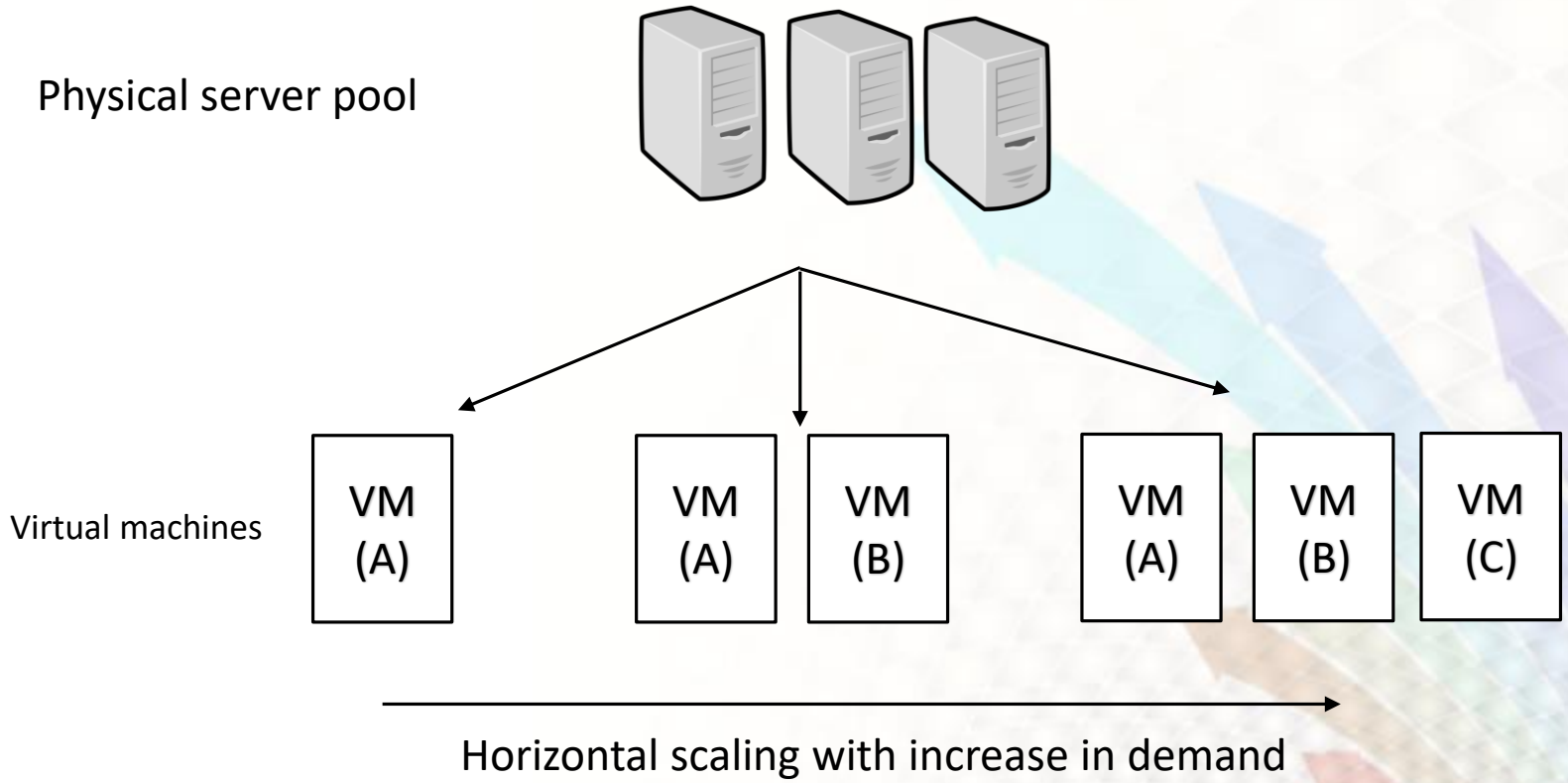
Scaling

- Scaling: It refers to the ability of an IT resource to handle increased or decreased usage demands.

Horizontal Scaling

- Following are the types of scaling:
  - Horizontal scaling: It is the scaling out or scaling in of the IT resources of same type. The number of resources increases or decreases according to load.
  - Commodity hardware can do the work, instantly available IT resources, not limited by hardware capacity

Horizontal Scaling



Vertical Scaling

- Vertical scaling: When an IT resource is replaced with a resource of higher capacity (scaling up) or when replaced with the resource of lower capacity (scaling down) according to workload.
- Specialized server are required, instantly available IT resources, additional setup is required (downtime required during replacement), limited by maximum hardware capacity, less common in Cloud.

Vertical Scaling

Dedicated physical server with 4 CPUs

Vertical scaling with increase in demand

Virtual machine with 2 vCPU

Q & A