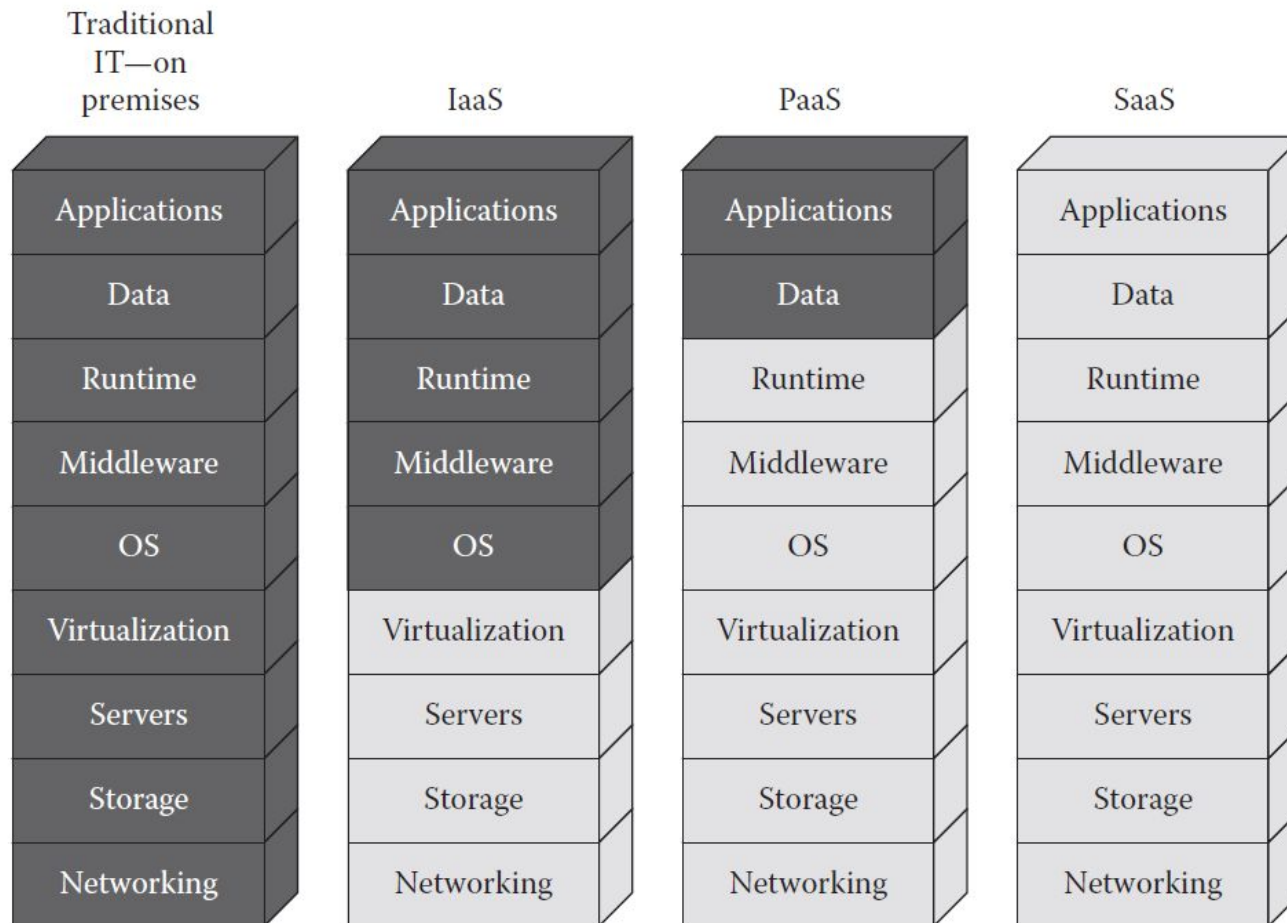


OpenStack Infrastructure-as-a-Service Lab

Dr. Padraig Corcoran

Application of virtual machines to distributed systems

- For distributed systems, an important application of virtualisation lies in cloud computing.
- Cloud providers offer three different types of services:
 - Infrastructure-as-a-Service (IaaS) - basic infrastructure.
 - Platform-as-a-Service (PaaS) - system-level services.
 - Software-as-a-Service (SaaS) - actual applications.
- Virtualisation plays a key role in each of the above.
- For IaaS, instead of renting a physical machine, a client will rent a virtual machine (Amazon EC2).



■ Managed by customer □ Managed by cloud service provider

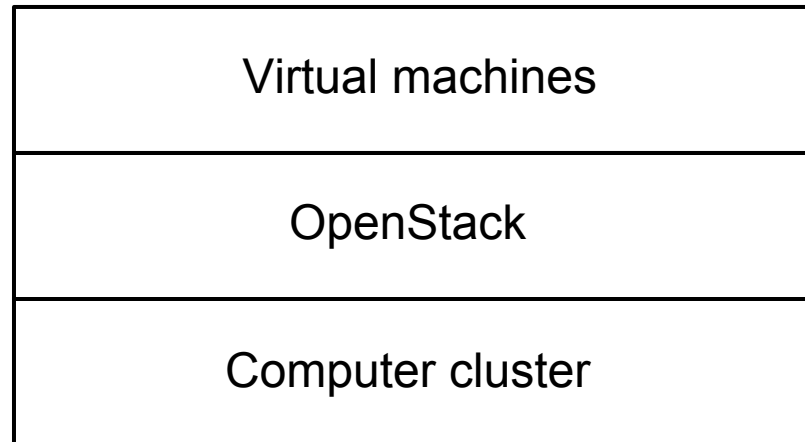
Separation of responsibilities in cloud operation (taken from Vacca 2016)

OpenStack

- OpenStack is a free and open-source software platform for cloud computing.
- Deployed as infrastructure-as-a-service (IaaS) - virtual servers and other resources are made available to customers.



- The School runs an OpenStack cluster for both students and staff to provide cloud computing capabilities.



Lab

- You will create a virtual machine instance using OpenStack.
- Once created, you will remotely login and access this instance using SSH.
- SSH (Secure Socket Shell) is a network protocol that provides a secure way to access a remote computer.

- Terminate instances when finished with them (i.e. at the end of a lab session).
- Do not use Internet Explorer. Creating a key pair works on Chrome, Firefox and Edge.
- Create a key pair instead of importing one.
- Use *Git Bash* to log in to your virtual machine.
- Create a Ubuntu instance.