CLOUD COMPUTING AND M4D

Balwinder Sodhi
Indian Institute of Technology Ropar

MOOC on M4D 2013
Deployment Model Based Cloud Variants

• Following are common
  – Public
  – Private
  – Community
  – Hybrid

• A variant from above list can offer any service model variant (e.g. IaaS, PaaS or SaaS)
Public Cloud

• The cloud services are offered to general public for a subscription
  – Services are easy and fast to obtain

• Leverages economies of scale
  – Lowers the costs for consumers
  – Optimization of services due to dedicated focus
Public Cloud

• Why would you use public cloud services:
  – Mainly because it lets you focus on delivering differentiating business value
  – Hardware and other infrastructure managed by cloud provider → Reduces cost and effort
  – On-demand processing power, storage, etc. → Easy scalability
  – Self service eliminates procurement overheads → Improved time-to-market for customers
  – Pay as you go → No wasted resources because you pay for what you use
Public Cloud Vendors

- **Amazon Web Services**
  - Core infrastructural services
    - EC2 for compute, S3 and EBS for storage, Route 53 for networking etc.
  - Specialized services
    - Databases (RDS, SimpleDB etc.), CloudWatch for monitoring, SQS for queuing etc.

- **Rackspace**
  - Core infrastructural services
    - Service for compute, storage and networking
  - Specialized services
    - Monitoring, load balancers etc.
Public Cloud Vendors

• Google
  – App Engine (PaaS offering)
  – Apps (SaaS offering)
  – Storage and compute

• MS Azure
  – Virtual Machine (IaaS offering)
  – Cloud services (PaaS offering)
  – Online services (SaaS offering)
Private Cloud

- Operated solely for one organization
- Full ownership, control and custody of applications, data and computing assets
- Allows custom configurations of cloud infrastructure
- Often has a homogeneous virtualization environment
Toolkits/Frameworks for Private Clouds

- IaaS cloud
  - OpenNebula
  - Eucalyptus
  - Apache CloudStack
  - OpenStack
  - Nimbus

- PaaS cloud
  - AppScale
  - CloudFoundry Micro
Hybrid Cloud

- A composition of two or more clouds
  - E.g. private and public
- Member clouds are bound together but remain unique entities
  - Allow benefits of multiple deployment models
- Both in-house resources and off-site server-based cloud infrastructure are needed
- Lack flexibility, security and certainty of in-house applications
- Offers flexibility of on-premise applications with fault tolerance and scalability of a public cloud
Motivation and Use Case

• Mainly used to augment the in-house computing
  – For instance, when handling spikes in application load

• Offloading special purpose computing tasks to a cloud based service provider
  – For instance, a cloud based video compression cluster
THANK YOU