An Overview of Cloud Computing

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Introduction

• Internet-based computing whereby computational resources are provided on demand as a service, much like a public utility: pay-as-you-go, pay-for-what-you-use

• Allows large-scale and specialized enterprise computing without the computational infrastructure investment and maintenance cost

• Scales and evolves with the enterprise’s fluctuating data processing needs
Motivation for Cloud Computing

Traditional Hardware Model

Customer Dissatisfaction (Insufficient Hardware)

Large Capital Expenditure

Predicted Demand
Actual Demand
Traditional Hardware
Opportunity Cost

Scalable Cloud Model

Use RightScale's Alert System to configure an automated and scalable setup that helps you stay ahead of the curve.

Predicted Demand
Actual Demand
Scalable Cloud Hardware
Automated Trigger Actions
The Downside

• Just a lot of hype?

• Excessive dependence on the Internet

• Subject to ISP / Cloud Service Providers’ disclosure policy

• Inappropriate for sensitive, classified data

• Data replication, coherency, integrity loss
**Cloud Delivery Layers**

• **Software as a Service (SaaS)**
  provides commercial software execution as a service

• **Platform as a Service (PaaS)**
  provides computing platform and/or solution stack as a service

• **Infrastructure as a Service (IaaS)**
  provides platform virtualization environment as a fully outsourced service
Cloud Deployment Models

- **Public Cloud**
  Publicly shared resources provided by off-site 3rd party provider

- **Community Cloud**
  Infrastructure shared by small group of users with similar requirements

- **Private Cloud**
  Emulation of cloud on internal, private networks and clusters

- **Hybrid Cloud**
  Typical for most enterprises
Foundations

- Cloud computing is realized through existing web, server/cluster, and information integration technologies (EII and EAI) but is also evolving.
A Cloud Implementation

- Google App Engine provides a free (up to 500MB storage, ~5M page hits/month), scalable PaaS
- Development in Python and Java supported
- Eclipse plug-ins allow fast, easy deployment of scalable web apps
- Storage provided by interface to Google’s GFS and Bigtable (non-relational, key-value store) through JDO, JPA, and low-level APIs
- Easy access to Google Apps APIs and services but limited to JRE Class White List
- Demonstrate dynamic web application and deployment
For More Information

• On Cloud Computing
  
  http://en.wikipedia.org/wiki/Cloud_computing

• On Google App Engine Tutorial
  