Above the Clouds: A Berkeley View of Cloud Computing &
Outlook: Cloudy with a Chance of Security Challenges and Improvements

Presented by Nikhil Tripathi
Introduction

• Cloud provides resources necessary to execute user tasks.

• No need for users to purchase and maintain resources.

• Plug in to the cloud and pay as you use.
Definition

**Engineering definition**: Use of Internet based technology for variety of services whereby dynamically scalable and often virtualized resources are provided as a service over the Internet.

**Business definition**: A method to address scalability and availability concerns for large scale applications.
Pay as you use

- Vendor provides resources on which customers can run one or more cloud instances concurrently.

- Customers pay fee based on the cloud resources used to run their instances.

- Pricing is based on computing resources used like compute time, memory or network bandwidth.
Views of Audience

Do you think if user of a cloud is over-dependent on the cloud then the provider would take advantage of this situation by increasing costs or other policies of service?
Components involved in Cloud Computing
Users and Providers of Cloud Computing
Cloud Computing in Health Care

- Hospitals could share infrastructure with vast number of systems linked together for reducing cost and increasing efficiency.

- Access patient information from any internet enabled device without installing any software.

- Cloud computing would help hospitals to achieve more efficient use of their hardware and software investments and increase profitability by improving the utilization of resources to the maximum.
Cloud Computing in Health Care

- Improving patient care by digitizing health records and streamlining their business operations using cloud-based software.

- Accessing technology that handles various tasks -- from electronic health records (EHRs) to on-line appointment scheduling -- as a service through the Internet.

- By digitizing health records and other processes, the company can provide faster and more accurate billing to individuals and insurance companies, reducing the average time to create a bill from 7 days to less than 24 hours.
Views of Audience

- If all the patient data is stored in the cloud and the instead of storing Name of patient and SSN of patient, a unique patient number is stored in cloud. Only the patient knows this unique patient number and can provide this number to hospitals or health insurance company whenever required.

- Does this help in creating a cloud which helps to hide information of patient from hackers?
Application Opportunities

- Mobile interactive applications
- Parallel batch processing
- Business Analysis
- Extension of compute-intensive desktop applications
- Earthbound applications
Elasticity

- Owning a resource may result in underprovisioning.

- Else if provision for satisfying peak load is made possible then there is wastage of resources.
Elasticity

(a) Provisioning for peak load

(b) Underprovisioning
Obstacles

- Availability of service
- Data Lock-In
- Data Confidentiality and Auditability
- Data Transfer Bottlenecks
Obstacles

- Performance Unpredictability
- Scalable Storage
- Bugs in Large-Scale Distributed Systems
- Scaling Quickly
Obstacles

- Reputation Fate Sharing
- Software Licensing
Views of Audience

Can you list some questions that should be asked to cloud computing vendor before trusting the cloud?
Questions to be asked before trusting the cloud computing vendor

- What is vendor’s approach to the security of their infrastructure?

- What are the security procedures that are in place to protect the data center?

- What are the encryption technologies used by the vendors to authenticate users to the services?
Questions to be asked before trusting the cloud computing vendor

• What are their terms when it comes to ownership of data?

• How easy it is to export the data from their service in order to move to a new service?

• Are there any extra charges for exporting the data out of a cloud vendor’s service?

• What is their privacy policy? Do they use customer’s data to promote their business interests?
Summary: Key characteristics of Cloud Computing

- Minimize capital expenditure
- Device and location independence
- Multi-Tenancy
- On-demand allocation
Thank You