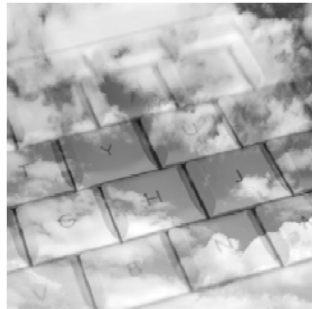




# Cloud Computing

New IT Paradigm

- ✓ 1 What is Cloud Computing?
- 2 Benefits of Cloud Computing
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- 7 Q&A

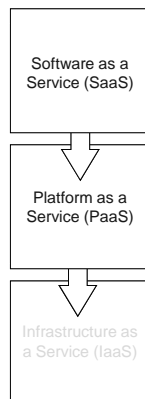


## Cloud Computing Defined

**”...model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.”**

*--National Institute of Standards and Technology  
<http://www.nist.gov/itl/csd/cloud-102511.cfm>*

## Core Cloud Options “Service Models”



Software applications traditionally purchased, installed, and executed by the user on a local computer are now provided on-demand as a web application. Users don't purchase software, but rather access the application on a subscription basis (or free in some circumstances). (Example: SalesForce.com)

Provides an application platform as a service from which software engineers can develop, test, and deploy applications quickly and efficiently. (Example: Microsoft Windows Azure)

The traditional company data center is replaced with off-premise, scalable technology resources encompassing both server and workstation on-demand availability via the internet. (Example: Amazon EC2)

## Key Features from the Cloud



- Off premise computing resources
- On-demand self-service
- Broad network availability (via internet)



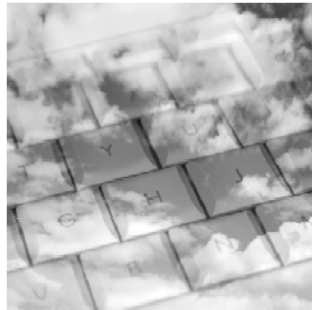
## Popular Cloud (SaaS) Applications



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## Benefits

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- Reduced Cost for Implementation
- Flexibility
- Scalability
- Disaster Relief
- Multitenancy
- Virtualization
- Pay incrementally
- Automatic Updates
- Reduced Burden on In-House IT



## Example: In-House vs. Hosted E-mail Solution



- **Cost of implementation**
  - In-House for 20 users
    - Microsoft Small Business Server 2011 (includes Exchange) ~ \$7,500 for hardware, software, and installation
    - Ongoing maintenance and support costs
  - Hosted Exchange
    - Little or no upfront setup fees
    - \$10/mailbox/month
    - Monthly cost for organization: \$200



## Example: In-House vs. Hosted E-mail Solution



- **Flexibility**
  - Both available via Outlook, web, and smartphones
- **Scalability**
  - Setup of new mailboxes is easy on both platforms
  - Increased monthly cost for new mailboxes on Hosted platform
  - Upgrade to enterprise-level server in minutes on Hosted vs. days/weeks for In-House



Example:  
In-House vs. Hosted E-mail Solution



- Disaster Relief
  - Data redundancy usually built-in to Hosted agreements
  - Expensive to replicated in-house
- Multitenancy
  - Hosted environments share resources among many users, resulting in lower costs



Example:  
In-House vs. Hosted E-mail Solution



- Virtualization
  - Hosted e-mail more than likely running on virtual servers
- Pay Incrementally
  - No up-front costs for Hosted vs. expensive capital expenditure for In-House server
  - \$10/mailbox/month



## Example: In-House vs. Hosted E-mail Solution



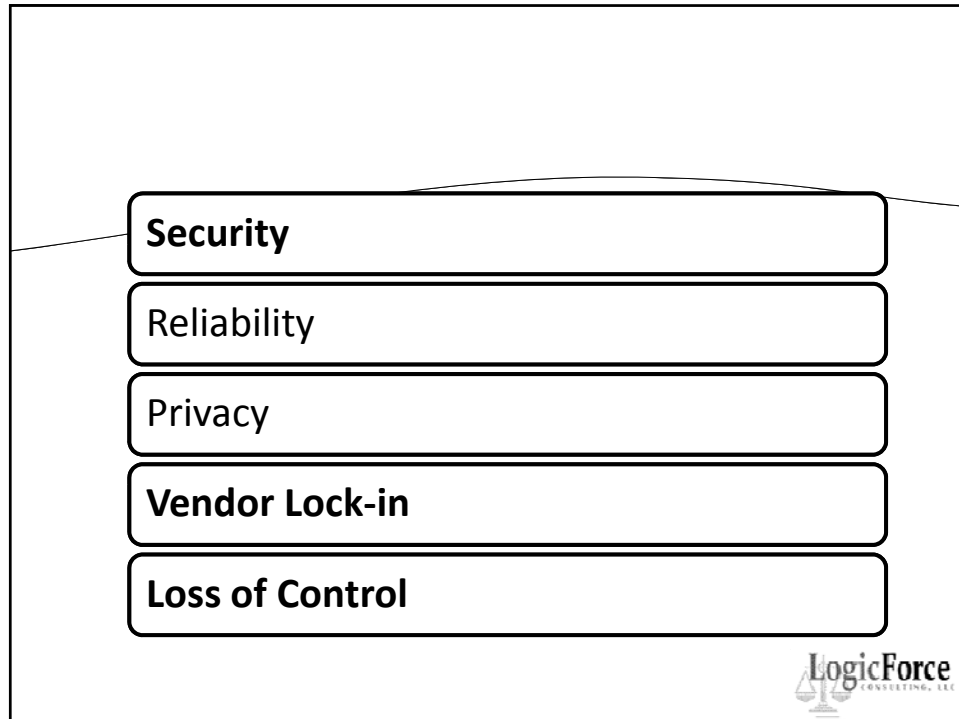
- Automatic Updates
  - Hosted e-mail servers patched automatically
- Reduced Burden on IT
  - Hosted does not require IT personnel for updates, backup maintenance, and database maintenance



## Cloud Computing Risks

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## Cloud Security Breaches



- Feb. 2011: **Google** suffers 30-hour outage. 40,000 Gmail accounts lost.
- June 2011: **Sony's PlayStation Network** outage compromised sensitive data for 77 million customers
- June 2011: **Dropbox** accounts accessible without password
  - "A code update gone awry introduced what the site delicately called an 'authentication bug.' The error was fixed five minutes after it was discovered, but for a four-hour stretch, the site's defenses were down." (CNN.com)
- January 2012: **Zappos** (Amazon subsidiary) hacked exposing 24 million customers' personal data



## Cloud Reliability Concerns



- **Big Provider Performance Issues**
  - April & August 2011: **Amazon's Elastic Computer Cloud (EC2)** service suffers large scale outages affecting multiple public websites (Foursquare, Reddit, Instagram, Netflix, etc.).
  - August & September 2011: **Microsoft's Office 365** outage leaves customers with no access to cloud-based services such as e-mail and file storage for hours
- **Cascading impact of cloud failures**



## Vendor Lock-In



“Cloud computing may be erasing the gains we’ve made in terms of vendor dependence lock-in. Going with a cloud solution means buying into the specific protocols, standards and tools of the cloud vendor, making future migration costly and difficult. How is this so? Because standards are still being formed, and cloud computing is still too immature to reach the point where customers are demanding vendor independence. The problem is, when companies sit down to calculate the cost of using cloud computing services, they don’t factor in the costs of migrating off the system – expenses which could be prohibitive and unexpected.”  
--Joe McKendrick (Forbes.com)



## Loss of Control with Cloud Computing

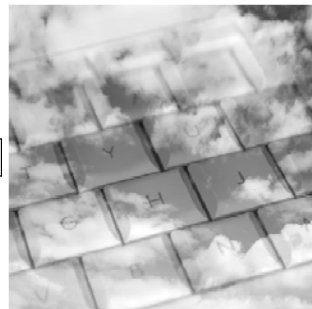


- **Systems Updates**
  - Decision on applying updates lies with cloud provider
  - Date and time of updates out of control of local IT
- **Admin Access to Data**
  - Cloud provider personnel not answerable to local IT
  - Unknown hiring practices of cloud provider
- **Non-sanctioned cloud provider/employee alliances**
- **Physical location of data**
- **Vulnerability to business failure of cloud provider**



## Cloud Computing Adoption Strategies

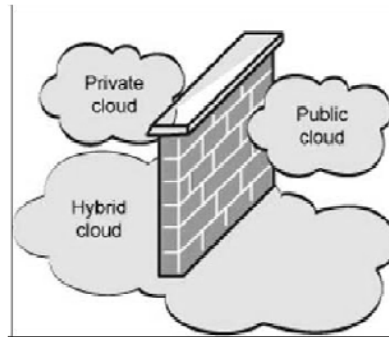
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## Adoption Strategies



- Private, Public or Hybrid Cloud
  - Adopt a “Private Cloud” strategy for sensitive applications/data with company-owned resources behind the corporate firewall
  - Move less strategic data to public cloud
  - Use a hybrid approach where public cloud is used as extension of private cloud holdings



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## Adoption Strategies



- Server Virtualization
  - Servers for e-mail, file, print, database, and application services can be hosted on one platform
  - Smart consideration as legacy server equipment nears retirement
- Desktop Virtualization
  - Deploy multiple virtual desktops easily and quickly
  - Alternative to Citrix and Terminal Services/Remote Desktop access paradigm



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## Adoption Strategies



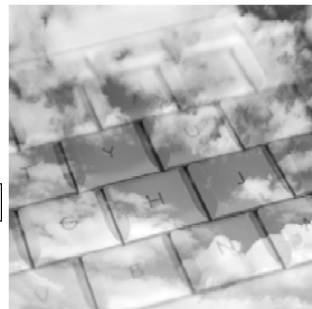
- Application migration to the cloud
  - In lieu of an “all-cloud” strategy, strategically migrate selected applications to the cloud
- Mesh business needs with cloud solutions
  - Regulatory requirements
  - Scalability needs
  - Legacy application dependence
  - Performance/SLA requirements



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## Practical Applications



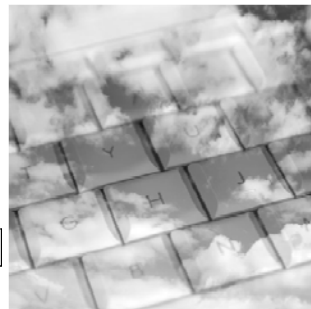
- **Backup/Disaster Recovery Services**
  - Imaged based backup solutions
- **Hosted Mail Services**
  - Both Outlook and web access
  - Low monthly mailbox charge
  - Low risk
- **Data Storage**
  - Dropbox, FilesAnywhere, Box, Microsoft SkyDrive
  - File sharing
  - Mobile device integration
- **Virtual Servers**
  - Data center consolidation
  - Enhanced redundancy
  - Backup simplicity
- **Virtual Desktops**
  - Mobile or temp users
  - Low intensity PC users
- **Popular Applications**
  - CRM systems
  - Standard billing systems
  - Client extranets



## Cloud Computing

Future of Cloud Computing

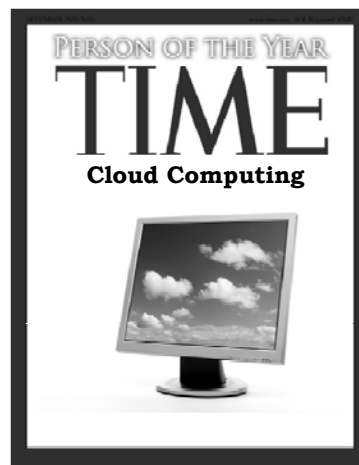
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## 2012 – Year of Cloud Legitimacy

“As of early January 2012 – I put us at the “mid-point” in the Cloud era, which would be comparative to the Internet era, so let’s call it 1998 all over again – and quickly heading into the ‘1999’ party feeling. I think it’s more than a simply mean/average calculation. Really, we’re talking about Cloud legitimacy.”

--Harry Brelsford  
([www.cloudnation.co](http://www.cloudnation.co))



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## Key Cloud Computing Trends



- Personal cloud usage will drive corporate adoption
  - We currently already use the cloud to shop, bank, share photos/files, maintain music libraries, consume news, and connect with friends
- Proliferation of mobile devices (smartphones and tablets) will increase appetite for cloud resources
- Security will be a major focus in cloud governance
- The cloud will revolutionize disaster recovery strategies
- Microsoft’s embrace of the cloud will speed acceptance at the corporate level

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## Cloud Computing Q&A

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Thank You

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