Industrial Update on the Cloud
The Widespread Use of Cloud Computing in the US and Where it is Heading

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Topics

- Exploding Use of the Cloud – US and Elsewhere
- U.S. Sector-Specific Cloud Use
  - Private Sector
  - Public Sector
- Motivators for Using
- Challenges for Using
- Security Breaches
- U.S. Patriot Act Impact
- Laws/Guidances
Exploding Use of the Cloud – Globally

- 375M users of the cloud as of June 2012
- 800M expected users by 2015
- 1.3B expected users by 2017
- $150-160 billion dollar industry by 2013
- $240 billion by 2020
- Every 600 iPhones = 1 new cloud server
U.S. Consumer Perspective
August 2012 Citrix Survey

- Lack of understanding by many U.S. consumers
- “Fluffy white thing”
- “Weather-related”
- “Outer space”
- “Something to do with pillows, drugs, heaven, or toilet paper”
U.S. Consumer Use of the Cloud - Examples

- Facebook
- YouTube
- LinkedIn
- Twitter
- Apple
- Google
- Gmail
- Dropbox
- Amazon
- Microsoft
Exploding Amount of Electronic Data

- 1 trillion portable devices
- 2.4 billion connected to the web
- 571 new websites per minute
- 10 million pictures uploaded to Facebook per hour
Exploding Use of the Cloud

2011-2012

- BIG DATA
- 8% of all data stored in the cloud
- 92% of business data stored on site
- 80% of new apps store data in cloud
- 50% use cloud for sensitive data
- Growing but cautious acceptance
- Legal landscape still in flux
- Security breaches occurring

2014-2016

- MONUMENTAL DATA
- 36% of all data stored in the cloud
- 64% of all business data stored on site
- 90% or more will be cloud based
- 75% or more will do so
- Increasing acceptance
- Additional guidance documents
- Security breaches still occurring
Motivation for Using the Cloud

60% now using the cloud
20% more within 12 months

SAP Study - 2012
# Motivation for Using the Cloud

<table>
<thead>
<tr>
<th>Main drivers for Cloud investments</th>
<th>IT</th>
<th>LoB</th>
<th>User</th>
<th>Significantly above overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need for reduction of operating costs</td>
<td>32%</td>
<td>40%</td>
<td>40%</td>
<td>28%</td>
</tr>
<tr>
<td>Need for improvement of operational efficiency</td>
<td>38%</td>
<td>22%</td>
<td>29%</td>
<td>39%</td>
</tr>
<tr>
<td>Increasing need for flexibility</td>
<td>37%</td>
<td>34%</td>
<td>32%</td>
<td>28%</td>
</tr>
<tr>
<td>Increasing need for mobile worker support</td>
<td>32%</td>
<td>28%</td>
<td>29%</td>
<td>24%</td>
</tr>
<tr>
<td>Company growth</td>
<td>27%</td>
<td>20%</td>
<td>16%</td>
<td>34%</td>
</tr>
<tr>
<td>(Increasing) Globalization of business</td>
<td>24%</td>
<td>20%</td>
<td>18%</td>
<td>27%</td>
</tr>
<tr>
<td>Need for improvement of speed of innovation</td>
<td>21%</td>
<td>19%</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Need for collaboration with other companies</td>
<td>14%</td>
<td>19%</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Need for higher customer focus &amp; retention</td>
<td>22%</td>
<td>16%</td>
<td>12%</td>
<td>16%</td>
</tr>
<tr>
<td>Changing regulatory requirements</td>
<td>10%</td>
<td>13%</td>
<td>15%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Q07 Selection of max. 3 aspects possible
Base: Cloud Computing User, Planner, Undecided (n=540)

Source: Online Survey Q1 2012, TNS Infratest on behalf of SAP
Motivations to Use the Cloud

- Cost management
- Agility
- Time to market
- Efficiency
- Productivity
- Business unit demand
- Resilience
- New technology
- Customer demand
- Technical resources
- New markets
Motivations for Using the Cloud

CFO Perspective:

76% -- “Solid Cloud computing strategy” will be important for success

52% -- Cloud transition being considered or underway

40% -- Include Cloud-based options when evaluating new systems

12% -- Already prefer Cloud-based systems over traditional on-site servers

[Image: Cloud infrastructure and cost savings symbol]
US Sectors With Largest Cloud Uptake

- IT services
- Manufacturing
- Financial Services
- Transportation
- Healthcare
Other US Sectors With Strong Cloud Use

- Retail
- Medical Research
- Legal
- Education
US Government Cloud Use

Cloud First Strategy – 2011
Justifications

- Low Asset Utilization
- Fragmented Demand For Resources
- Duplicative Systems
- Environments Which Are Difficult To Manage
- Long Procurement Lead Times
US Government Cloud Use

Statutory compliance
to laws, regulations, and agency requirements

Data characteristics
to assess which fundamental protections an application’s data set requires

Privacy and confidentiality
to protect against accidental and nefarious access to information

Integrity
to ensure data is authorized, complete, and accurate

Data controls and access policies
to determine where data can be stored and who can access physical locations

Governance
to ensure that cloud computing service providers are sufficiently transparent, have adequate security and management controls, and provide the information necessary or the agency to appropriately and independently assess and monitor the efficacy of those controls
US Government Cloud Use -- Examples

- NASA
- Army
- Air Force
- Agriculture
- HHS
- GSA
- DOT
- CDC
- Education
Constraints to Using the Cloud

- Security of the data
- Data ownership/custodian responsibilities
- Legal and contractual issues
- Regulatory compliance
- Information assurance
- Longevity of suppliers
- Contract lock-in/portability of the data
- Performance standards
- Disaster recovery/business continuity
- Performance monitoring
- Technical instability
Encryption By Cloud Users

When to Encrypt
- 38% encrypt *before* transfer to the cloud
- 27% encrypt *after* transfer to the cloud

How to Manage Key Access
- 38% say their organization is responsible for keys
- 19% don’t share key access with cloud provider
- 22% rely on cloud provider to manage encryption keys
- Another 22% defer to a third party to manage keys

What to Encrypt
- 16% encrypt at application level
- 11% defer to the cloud provider to decide

Source: Poneman Institute Study – August 2012
Recent studies have found that, as mobile device popularity increases, cyber attacks are targeting smartphones, tablets and laptops more frequently. A McAfee report, for instance, revealed that mobile malware increased 700 percent since 2011.
Examples of Security Breaches in the Cloud

- Amazon—April 2011
- Twitter—May 2012
- Apple iCloud – August 2012
- Dropbox – July 2012
- Epsilon – December 2010 to February 2011
- Zappos – January 2012
- Facebook – numerous breaches
- Blackberry/RIM – October 2011
US Patriot Act Impact on the Cloud

Patriot Act

The FBI has not been here

[watch very closely for the removal of this sign]
Some Key Guidance Documents

- NIST – Multiple publications
- ISO
- SINA
- IWGDPT
- Article 29 Working Party Guidance
Thank You

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