USE OF CLOUD COMPUTING BY SMALL AND MEDIUM ENTERPRISES
Small and Medium Enterprises (SMEs) are the drivers of a nation’s economy

SMEs are leading the way for entering new global markets and for innovations in the emerging markets

Cloud technology are well suited for SMEs as they do not have significant amount of resources and technical expertise to set up the appropriate infrastructure so as to compete with their larger competitors

KEY DRIVERS OF CLOUD COMPUTING ADOPTION IN SMEs

- Cost Reduction Structure
- Quick Accessibility
- Innovative Incentive Structure
- On demand structure
Cost Reduction Structure

- Cloud computing approach remarkably decreases the cost of entry for SMEs.

- SMEs can benefit from compute-intensive business analytics that were available only to the largest of companies.

- SMEs in the developing countries can compete and propose their new IT solutions globally.

Quick Accessibility

- Cloud Computing can give quick access to hardware resources with no requirement for upfront capital investments
- Faster time to market in many businesses
- Startups like 37 Signals (web designing), Jungle Disk (on-line storage), Gigavox (podcast), SmugMug (photo website) realized with investments in IT that are order of magnitude lesser than that required a few years ago

Cloud Computing can lower IT barriers to innovation, as can be witnessed from many startups like the online applications such as Facebook and Youtube to the more focused applications like Triplt (travel related) or Mint (for finance).

Cloud computing makes it easier for SMEs to scale their services according to client demand. As they notify to need renting new resources, the required resources are delivered quickly through the internet.

New Applications and Services

- Location aware Mobile applications (involving humans as well as sensors)
- Parallel batch processing (Google’s MapReduce and Hadoop)
- Business analytics (use computer resources to understand customers, buying habits)
- Offloading of compute-extensive desktop applications

Examples of Different Types of Services

- Web Application Service
- Compute Service
- Collaboration Services
- Database service
- Job Scheduling Service
- Virtual Client service
- Content Classification
- Storage service
- Storage backup, archive... service

Source: IBM
The Cloud Offers a Better Model for Application Development

Comparison to Build Custom Brand Promotions Application

<table>
<thead>
<tr>
<th>Development Time</th>
<th>100 Hours</th>
<th>4,000 Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to Deploy</td>
<td>Instant</td>
<td>4 Weeks</td>
</tr>
<tr>
<td>No Hardware and Software</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>No Maintenance Required</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>No Extra Development Required</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>IT Administration Console</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Analytics</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Internationalization</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Authentication &amp; Security Model</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Mobile Device Deployment</td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Compliance Audit Trail</td>
<td>✔️</td>
<td></td>
</tr>
</tbody>
</table>

End User Usability Rating: ✨✨✨✨✨ vs. ✨✨

Cloud Computing Offers wider Choices

**Low Cost:** Subscription Model: Pay as You Go

**Simplicity:** Focus on Innovation not Infra

**Ease Of Use:** Build and Deploy Apps Instantly

**Global Development, Global Deployment**

Source: Fortune 500 Media Corporation Evaluation
Most significant opportunity for cloud services will be in applications

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2014 Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applications</td>
<td>15,332</td>
<td>17,470</td>
<td>20,580</td>
<td>37.1%</td>
</tr>
<tr>
<td>Development</td>
<td>4,325</td>
<td>6,075</td>
<td>8,618</td>
<td>15.5%</td>
</tr>
<tr>
<td>Systems Infrastructure</td>
<td>7,194</td>
<td>8,877</td>
<td>11,345</td>
<td>20.5%</td>
</tr>
<tr>
<td>Servers</td>
<td>4,960</td>
<td>6,000</td>
<td>7,548</td>
<td>13.6%</td>
</tr>
<tr>
<td>Storage</td>
<td>4,098</td>
<td>5,414</td>
<td>7,366</td>
<td>13.3%</td>
</tr>
<tr>
<td>Total</td>
<td>35,911</td>
<td>43,837</td>
<td>55,457</td>
<td>100%</td>
</tr>
</tbody>
</table>

1. Applications (SaaS) was the largest segment representing 37.1% in 2014. By 2018 the market will grow from $55 B to $127B

2. The Applications segment includes messaging, conferencing, and team collaboration software and business applications (e.g., CRM, ERP, financial, PLM, and SCM), delivered via the cloud services model

3. Communications and collaboration applications lead the way for market entry – followed by opportunities for business applications

SOURCE: IDC April 2014 Study

Product Life Cycle Management, Supply Chain Management, Enterprise Resource Planning
Services being delivered via Cloud by SMEs

Fast Moving Applications on Cloud Platform

Which IT services/Applications supporting business processes are most likely to be outsourced to a Cloud Computing service provider?

<table>
<thead>
<tr>
<th>Service</th>
<th>Outsourced Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payroll</td>
<td>30%</td>
</tr>
<tr>
<td>Human Resource</td>
<td>20%</td>
</tr>
<tr>
<td>Procurement</td>
<td>15%</td>
</tr>
<tr>
<td>CRM/Sales</td>
<td>10%</td>
</tr>
<tr>
<td>Accounting/Finance</td>
<td>5%</td>
</tr>
<tr>
<td>Project Management</td>
<td>2%</td>
</tr>
<tr>
<td>App Development</td>
<td>1%</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>1%</td>
</tr>
<tr>
<td>Others</td>
<td>1%</td>
</tr>
</tbody>
</table>

Most Used Enterprise Cloud Apps

1. Facebook Social
2. Google Drive Cloud storage
3. Google Gmail Email
4. Twitter Social
5. iCloud Cloud storage
6. Google Docs Productivity
7. YouTube Consumer
8. LinkedIn Social
9. Dropbox Cloud storage
10. Microsoft Onedrive Cloud storage
11. Salesforce Customer relationship management/sales force automation
12. Cisco WebEx Collaboration
13. Evernote Productivity
14. RingCentral Telecon
15. OnToe Security

Source: Nacsone Cloud Report 2015
RapidCompute a Cloud Service Provider in Pakistan

RapidCompute is an example of an IaaS cloud service provider that has transitioned from providing critical infrastructure to managing mission critical services

- Cloud for data backup (ownCloud to provide a dropbox type service)
- Cloud for Disaster Recovery and business continuity
- Provides open source and proprietary email (Atmail, Microsoft Exchange etc) as a hosted service
- Hosts databases such as Microsoft SQL, MySQL and Oracle to cut down licensing and maintenance costs for SMEs for complex database backed solutions
- Provide a test case for local software houses to showcase cloud enabled applications quickly to prospective customers such as retail POS solutions
Arbisoft-SME Case Study from Pakistan

- Forward-looking software house in Lahore established in 2007
- Develop Smartphone apps, interactive enterprise apps, and search analysis
- 100+ staff with Multi million dollar revenue
- One of the Fastest growing software house in Pakistan

Atbisoft-100% Cloud Adoption

- Entire development activity on Amazon cloud (PaaS)
- All IT enterprise services (email, collaboration, calendars) are on GoogleApps cloud (SaaS)
- Using other cloud services (SaaS) such as drop box

Presently, some of the significant global technological and political powers are making laws that can have an inverse impact on development of the cloud solutions globally.
Expected Challenges for SMEs

Data Privacy and Confidentiality - Security
• Where will your data be located?
• What are the security features provided?

Poor Awareness
• SMEs are not typically aware of the pros and cons of the Cloud, but also how to negotiate with cloud providers

Contractual Issues and SLAs
• Liabilities, Vendor Lock in, Data Portability

Source: http://www.ccici.in/Whitepaper_2_0.pdf
SMEs & Cloud Computing

Standardisation: An opportunity AND a threat

The opportunity

- A ready made IT roadmap; everything has been considered security, scaling, consistency, performance & availability, version control, programming language

Things to watch

- Choosing a cloud is a decision point on the IT roadmap
- The leading clouds all have different ‘flavours’;
  - Google Apps is search optimised (python & big table)
  - Salesforce is Customer relationship orientated
  - Microsoft is versatile but it will continue the licensing arrangements...
  - Amazon – low complexity and high volume

Source: Easynet Connect
Date: July 29, 2015 Chinese e-commerce giant Alibaba is planning a $1bn push into the cloud, taking on Amazon by expanding its cloud computing unit Aliyun into international markets.

The company, often described as the “Chinese Ebay”, is expanding its cloud computing arm from its current bases in China and Silicon Valley to the Middle East, Europe and Japan, in what is a direct competition with Amazon’s rapidly growing rival, Amazon Web Services.

Alibaba’s chief executive, Daniel Zhang, said in a statement that this additional $1bn investment was “just the beginning”:

Cloud computing and Aliyun, which was spun off in 2012, are Alibaba’s fastest growth areas.

Conclusions

- Cloud is the way to go due to the ubiquitous nature of internet
- Cloud makes economic sense as capital costs are minimal
- Enterprises spend $270 billion on software every year
- Forrester Research expects the global cloud computing market to reach $241 billion in 2020
- Subscription is becoming the only way of Software Sales. Cloud wins because there is no CAPEX and a predictable OPEX
- According to Gartner, most enterprises have part of their run-the-business software functionally executing in the cloud, using PaaS services

Thank You