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Costs of Migration and Operation in the Cloud

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Agenda

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- Introduction
- Cloud Computing
  - Defined
  - Benefits and Risks
- Cloud Migration
- Pricing in the Cloud
- Cost Estimation Guidance
- Wrap Up

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Introduction

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- Cloud computing is a paradigm that opens the door for utility computing

- Instead of investing in hardware, software and infrastructure, organizations can access through the cloud on an as-needed basis

- Still lots of hype – some vendors have their head further in the clouds than their technology

THERE MUST BE A BETTER WAY OF CHOOSING CLOUD PROVIDERS!

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Introduction

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- Cloud computing is a notion that's gaining traction
  - Information Week forecasts $180 billion by the end of 2015
  - Business insider reports that 84% Of CIOs cut application costs by moving to the cloud
  - IDC predicts that one of every seven dollars spent on packaged software, server and storage offerings will be through the public cloud by 2015
  - Gartner has predicted that "2016 will be the defining year for cloud as private cloud begins to give way to hybrid cloud, and nearly half of large enterprises will have hybrid cloud deployments by the end of 2017"

Cloud Computing

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You are probably already are a cloud consumer!

Cloud Computing

- Consumers of cloud computing access hardware, software and networking capabilities from third party providers

- The cloud can be defined as resources and applications that are available on the Internet or other network via any device that connects to the Internet or other network

- According to National Institute of Standards and Technology (NIST), cloud computing delivers the following…
  - On demand self service
  - Ubiquitous network access
  - Location independent resource pooling
  - Rapid elasticity
  - Measured services

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Cloud Computing

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- Four types of clouds
  - Public cloud
  - Private cloud
  - Community cloud
  - Hybrid cloud

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Cloud Computing

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- Cloud computing offerings include
  - Software as a Service (SaaS)
    - *Project management*
    - *Customer Relationship Management (CRM)*
    - *Human Resources (HR)*
  - Platform as a Service (PaaS)
    - *Database*
    - *Development and Testing*
    - *Business Intelligence*
  - Infrastructure as a Service (IaaS)
    - *Backup and Recovery*
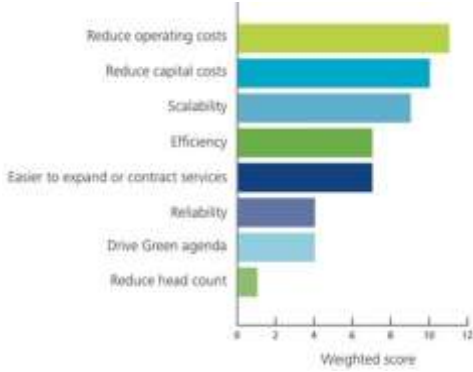   - *Storage*
    - *Computation*

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Cloud Computing Benefits

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- Cost savings
- Agility
- Scalability
- On-Demand Availability
- Portability
- Environment
- Increased Innovation
- Disaster Relief

Study conducted by Deloitte 2010

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Could Computing Risks and Challenges

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- Security
- Reliability
- Vendor Lock In
- Loss of Control
- Data Governance
- Legal Concerns

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Migration to Cloud

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- Steps for Migration
  - Discovery and Analytics
    - *What apps to migrate*
    - *Profile of the source environment (app, its supporting software and hardware)*
  - Map
    - *What will target (cloud) landscape look like*
  - Provision
    - *Create the physical environment (if doing IaaS)*
  - Migrate
    - *Database changes*
    - *Code Changes*
    - *Connection Changes*
  - Remediate and Test
    - *Functions as expected*
    - *Performs as expected*

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Software as a Service (SaaS)

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- Could be completely trivial
  - Sign up for Facebook, Twitter, Dropbox

- May require a database migration
  - For CRM, time keeping, etc.

Sample of SaaS Providers
with SSAE 16 (SOC1) or SOC 2 Report

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Infrastructure as a Service (IaaS)

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- Provisioning needs to occur – physically moving applications and supporting software stack

- Should be few compatibility issues since user can install whatever components they need

- If resource requirements are unstable or providers resources are inadequate – resource management component(s) may require development

- Potential overhead associated with familiarization with target platform technology, installation, administration

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Platform as a Service (PaaS)

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- More tight control than IaaS

- Potential configuration issues
  - Programming Language Compatibility – version matters!
  - Database Compatibility
  - Third party and other supporting components
  - Graphical User Interface

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Cloud Provider Pricing Plans

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Cloud Computing Cost Models

- Consumption Based
- Subscription Based
- Market Based
- Advertising Based

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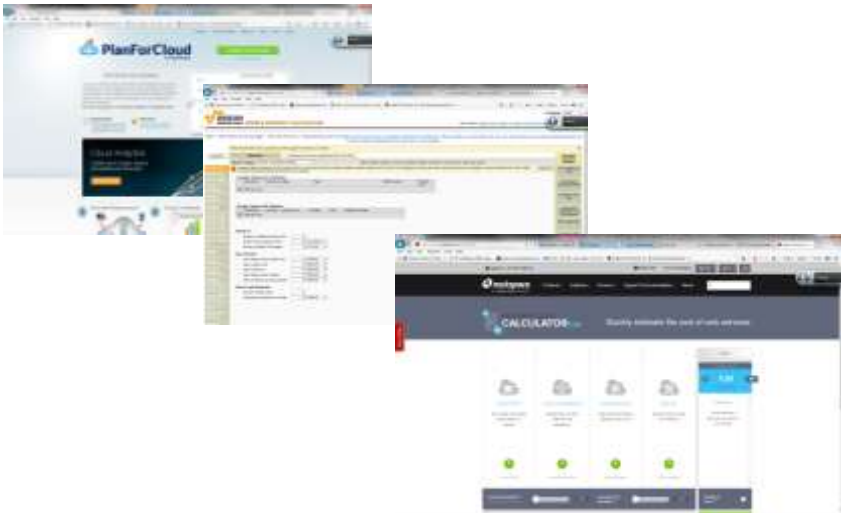
Different Consumption Based Price Models

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- Set Price per hour for resources

- Price per hour based on memory in GB, processing units, storage space in GB and platform

- Price per transferred data in GB (either inbound, outbound or both)

- Price per quantity of queries

- Price per TB of data stored

- Network price per GB stored (either inbound, outbound or both)

- Bandwidth charged per GB transferred

- Providers generally have one or more of these pricing models (depending on the types of services they provide and SLAs)

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How to choose?

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Cost Estimation Guidance

- Business first needs to determine that applications are suitable for migration

- Reasons application might not be a candidate for the cloud
  - Deal with sensitive data
  - Require special hardware device
  - Physical configuration difficult to replicate in the cloud
  - Intense requirements for bandwidth or speed – cloud might be too expensive

- Once feasibility is established, next step is to decide on cloud model and pick a provider
  - Best platform for capability
  - In house capability to perform migration
  - Unique or special requirements
  - Cost – use the calculators if other than SaaS

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Check List for Cost Assessment

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- Does migration include SaaS Solutions? If so….
  - Does data need to be migrated to cloud? If so….
    - *Is target platform database compatible with source database? If so……*
      - Determine the extent to which queries require modification, treat this as a software estimation exercise
    - *Assess the size and complexity of the database and bandwidth to evaluate the time for physical import of the data*

- Does migration include IaaS Solutions? If so….
  - Are resource requirements of application stable and well within the offerings of the cloud provider? If not…..
    - *Determine resource requirements for resource management component, treat this as a software estimation exercise.*
  - Is the migration staff experienced with the technologies available on the cloud platform? If not….
    - *Determine the amount of training and installations necessary to get the staff and the platform ready for migrated application(s)*

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Check List for Cost Assessment (cont)

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- Does migration include any PaaS solutions? If so….
  - Is programming language compatible with the language for the source application? If not….
    - *Assess the amount of code that will require modification, treat this as a software estimation exercise*
  - Are there database compatibility or migration issues? If so….
    - *Same treatment as with SaaS as detailed previously*
  - Are there third party components or other supporting components that are not compatible with the selected platform? If so….
    - *Assess the amount of capability that will need to be modified or created, treat this as a software estimation exercise*
  - Is the GUI suitable for a cloud implementation? If not….
    - *Assess amount of software that will be needed to create a suitable GUI, treat this as a software estimation exercise.*

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Conclusion

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- Cloud computing allows organizations to offload their IT resource requirements and responsibilities to outside providers

- It can represent significant cost savings especially to small and medium businesses and start ups

- Lack of standards make price comparisons among providers difficult.
  - All the providers have calculators to help with this
  - Important to understand you requirements for processing power , storage space, bandwidth, etc. to support decision

- Migration activities need to well thought out. Considerations include:
  - Cloud Computing model (SaaS, IaaS, PaaS)
  - The capability being provided
  - The technology gaps between source platform and target platform

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Questions

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